NOTICE OF MEETING
Tuesday, October 10, 2023, 3:30 to 5:00 p.m.
Email the Academic Senate office at academicsenateoffice@ucsd.edu to obtain the Zoom link.

ORDER OF BUSINESS

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<td>(c)</td>
<td>Update on the Implementation of Holistic Teaching and Mentoring Evaluation</td>
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<td>Phoebe Bronstein, Sixth College Director of Academic Programs</td>
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<td>(9)</td>
<td>Reports of Special Committees [none]</td>
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(10) Reports of Standing Committees

(a) Graduate Council, Arshad Desai, Chair; Maria Savoia, Dean for Medical Education, Emeritus and Professor of Medicine; and Elias Villarreal, Associate Dean and Program Director and Professor of Family Medicine
   • Proposal to establish the Master of Advanced Studies in Physician Assistant Studies

(b) Senate Council, Olivia A. Graeve, Senate Vice Chair; Robert Continetti, Senior Associate Vice Chancellor of Academic Affairs, Workgroup Co-Chair; and Shankar Subramaniam, Distinguished Professor, Department of Bioengineering, Workgroup Co-Chair
   • School of Computing, Information, and Data Sciences Full Proposal
   • Senate-Administration Workgroup on Undergraduate Climate Change Education for All Report
   • Proposal to amend San Diego Divisional Regulation 600- Campuswide Graduation Requirements to establish the Jane Teranes Climate Change Education Requirement
   • Proposal to establish San Diego Divisional Bylaw 212 to create the Jane Teranes Climate Change Education Requirement Committee

(c) Senate Council, Olivia A. Graeve, Senate Vice Chair; Jan Kleissl, Professor, Mechanical and Aerospace Engineering, Workgroup Co-Chair; and K. Wayne Yang, Provost, Muir College, Workgroup Co-Chair
   • Senate-Administration Workgroup on Undergraduate Climate Change Education for All Report
   • Proposal to amend San Diego Divisional Regulation 600- Campuswide Graduation Requirements to establish the Jane Teranes Climate Change Education Requirement
   • Proposal to establish San Diego Divisional Bylaw 212 to create the Jane Teranes Climate Change Education Requirement Committee

(d) Senate Council, Olivia A. Graeve, Senate Vice Chair; Jeffrey Harris, Chief of the Division of Otolaryngology
   • Proposal to establish the Department of Otolaryngology

(11) Reports of Faculties

(12) Petitions of Students [none]

(13) Unfinished Business [none]

(14) New Business
SAN DIEGO DIVISIONAL REPRESENTATIVE ASSEMBLY MEETING ZOOM ATTENDANCE INSTRUCTIONS

A Logging into the Meeting

1 Senate Members who are not Representative Assembly Members & Invited Guests

RSVP prior to the start of the meeting to obtain the meeting link: email the Academic Senate Office at academicsenateoffice@ucsd.edu.

2 Representative Assembly Members

Representative Assembly members are not required to RSVP for the meeting. The Senate Office will distribute a meeting link to all members via email. Contact the Academic Senate Office at academicsenateoffice@ucsd.edu if you are an Assembly Representative and you did not receive the meeting link.

B Meeting Participation

When you join the meeting, you will be placed in a waiting room until the meeting host admits you into the meeting. Please log in 15 minutes early (at 3:15) to ensure that you are admitted to the meeting before it starts (at 3:30).

Your audio will be disabled by default when you enter the meeting; please refrain from turning on your microphone unless called upon by the Chair.

During the meeting, the Chair will call for questions and comments at the appropriate intervals, as usual, and you may raise your electronic hand in Zoom to request to speak. However, discussion may be limited due to the Zoom format of the meeting. Thus, participants are strongly encouraged to review the meeting materials in advance of the meeting and send questions to academicsenateoffice@ucsd.edu with the agenda topic number or proposal title in the subject line of the email, by noon on Friday, October 6, 2023. Your questions will be shared with the presenters so that they may address them in their presentations, and thus help to mitigate the challenge presented by a large Zoom meeting.

Following discussion of items that require a vote, a poll will pop-up on your screen to vote. As with in-person meetings, only Representative Assembly members may vote. Primary Representatives and Alternate Representatives should coordinate their attendance and voting for this meeting. Both may attend; however, Alternate Representatives may only vote in the absence of the Primary Representative. Please coordinate who will attend and cast votes in advance of the meeting.

C Additional Zoom Meeting Note

Please use your actual first and last name with your Zoom account; the Senate Office must be able to establish your identity in order to admit you into a Representative Assembly meeting.

Instructions on how to manage your Zoom profile can be found here: https://support.zoom.us/hc/en-us/articles/201363203-Customizing-your-Profile
## REPRESENTATIVE ASSEMBLY MEMBERSHIP - 2023/2024 Roster

### EX OFFICIO MEMBERS

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### ELECTED MEMBERS & ALTERNATES

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<td>2023/2024</td>
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<td>Rady School of Management</td>
<td>LIU, JUN</td>
<td>2024/2025</td>
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<td>2023/2024</td>
<td>DOBKE, MAREK KRZYSZTOF</td>
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<td>DOUCET, JAY J</td>
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<td>BARRICELLI, MARC ALEXANDER</td>
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<td>LERNER, AMY M</td>
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<td>Visual Arts</td>
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<td>GARNETT, MARIAH J</td>
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<td>ERDMANN, DEAN</td>
<td>2024/2025</td>
<td>SEGADE, ALEXANDRO ABRAHAM</td>
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**ADVISORS**

**PRIMARY MEMBERS**

<table>
<thead>
<tr>
<th>Research Advisor - GC</th>
<th>ORLOV, DMITRI</th>
<th>2023/2024</th>
<th>MELIS, CARL</th>
<th>2023/2024</th>
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<td>Research Advisor - HS</td>
<td>GROESSL, ERIK</td>
<td>2023/2024</td>
<td>LIU, LIN</td>
<td>2023/2024</td>
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<tr>
<td>Research Advisor - SIO</td>
<td>WATERHOUSE, AMY</td>
<td>2023/2024</td>
<td>MELLORS, ROBERT</td>
<td>2023/2024</td>
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Chair Postero called the meeting to order. A quorum was present (see attached attendance sheet), along with other Academic Senate members and guests. Chair Postero welcomed everyone to the fifth Representative Assembly meeting of the 2022-2023 academic year. Chair Postero reviewed the Academic Senate Bylaws governing membership, privileges of the floor, and voting.

Minutes of the Meeting on April 18, 2023

The April 18, 2023 meeting minutes were approved as submitted.

Announcements by the Chair of the Division

The results of the Senate election were announced on May 23rd (https://adminrecords.ucsd.edu/Notices/2023/2023-5-23-1.html).

- Senate Vice Chair-Elect: Olivia Graeve, Professor, Mechanical & Aerospace Engineering
- Committee on Committees members: Padmini Rangamani, Professor, Mechanical & Aerospace Engineering; Linda Awdishu, Professor of Clinical Pharmacy, Skaggs School of Pharmacy & Pharmaceutical Sciences; David Stegman, Professor, SIO-IGPP; David FitzGerald, Professor, Sociology
- Divisional Representatives to UC Assembly: Randolph (Randy) Hampton, Professor, Cell & Developmental Biology; Gabriela Caballero, Associate Professor, Linguistics; Kimberly Cooper, Professor, Cell & Developmental Biology; Deborah Stein, Associate Professor, Theatre & Dance

Chair Postero summarized several important accomplishments of the Senate this academic year; some were started in previous years and some were related to events that occurred this year. All are the result of the ongoing hard work of Senate committees and Senate Council. Chair Postero thanked Chancellor Khosla and EVC Simmons for their productive collaborations this year.

The Senate’s role during the UAW strike was to give faculty as much guidance as possible to help them navigate the strike and to work with the Administration during and after the strike. The Senate worked with the Administration, Associated Students, and Graduate & Professional Student Association (GPSA) to extend grade submission deadlines and to identify those students most vulnerable to losing financial aid if they did not receive grades. The Senate also worked with the Administration and encouraged them to provide funding to help with the shortfalls caused by the new salary scales required by the UAW contract and to limit cuts to TA allocations. Chair Postero thanked all the relevant committee Chairs, especially the Educational Policy Committee (EPC), Undergraduate Council (UGC) and Graduate Council (GC) for their counsel during that difficult time.

A Senate-Administration Workgroup on the Future of Graduate Education has been formed and charged with discussing how graduate education will or should be organized in the future.
The Senate has been advocating for more affordable graduate housing for years, and this year has worked with the CFO Ouillet, Housing Dining and Hospitality (HDH), and the Graduate and Professional Student Association (GPSA) to move forward a plan for building a large new graduate housing development project.

The Senate proposed that the Administration provide resources to help faculty whose research was impacted by the pandemic. In response, the EVC instituted the COVID Career Support Program, providing $9000 for pre-tenured faculty and Teaching Professors to use for course release, and in the case of the Teaching Professors, research funding.

Over the past two years, the Senate worked with the Teaching + Learning Commons to reform its Senior Council, bringing greater Senate participation and guidance to the Commons. The new Senior Council members from both Senate and Administration have been appointed. Chair Postero thanked EVC Simmons, the Commons Director Ruiter, and AVC-EI Jensen for their partnership on this.

The Senate continues to monitor issues with the Oracle Financial Systems (FIS). Although issues still persist, substantial progress has been made this past year. The CFO’s office has provided resources and staff to resolve the issues, and the Chancellor’s Advisory Committee has overseen the process. Chair Postero thanked Committee on Academic Information Technology (CAIT) Chair Dave Barner, and former Senate Chair Tara Javidi for their relentless attention to this.

The Senate Ad Hoc on Distance Education issued their first report, calling for a streamlining of the R course designation process. The Educational Policy Committee (EPC) will review and make decisions on the recommendations. The Ad Hoc is conducting a survey of department chairs to gather data about how R courses fit into current and future pedagogical plans. Chair Postero thanked the members of the committee and its Chair, John Hildebrand, as well as Senate staff Lori Hullings and Ashley Hill for this important work.

This has been a banner year for climate action at UCSD. In response to the Memorial passed last year asking the Regents to fund the infrastructure necessary to decarbonize the university, President Drake gave each university $1 million ($1.5 million to those with medical schools) to carry out the planning necessary for this transition. Former Divisional and Systemwide Chair Robert Horwitz is co-Chairing the Fossil Free UC Pathways Committee coordinating this, and CCCC Chair Cathy Gere is working with Resource Management and Planning (RMP) on choosing the consultants who will develop the plan. Chair Postero thanked Professors Horwitz and Gere for their important climate action work. The Senate-Administration Workgroup on Undergraduate Climate Change Education for All submitted their report, recommending coursework in climate change education for all undergraduate students. Chancellor Khosla also previously publicly announced an intention to decarbonize UCSD by 2030.
Chancellor Pradeep Khosla Remarks

Chancellor Khosla reported that the UAW strike presented many challenges for the university this year and was an awakening for all involved. As there continues to be some lingering unhappiness amongst students and faculty, the top priority moving forward is to harmonize relationships and repair the culture of the university. UCSD is a great institution because of the great students who attend here, so students need to be treated with the utmost respect, and not just as workers. Although the state budget is in a deficit, the Governor has made it clear that he intends to give the UC system the 5% that was promised. Chancellor Khosla thanked Senate Chair Postero for the productive partnership this academic year.

UC San Diego Decarbonization Study by Michelle Perez, UC San Diego Energy and Sustainability Manager

In order for UCSD to receive the $1.5 million from UCOP for decarbonization, the campus must complete a decarbonization study that:

- Creates a strategy for 90% or greater reduction in scope 1 (direct) emissions from fossil gas use in campus energy systems.
- Provides high level estimates of total capital and operational costs/savings.
- Identifies climate justice and equity considerations related to the transition of campus energy systems and propose solutions or next steps.
- Documents knowledge gaps and subsequent studies/analyses needed to conduct comprehensive climate action planning, inclusive of all scopes.
- Documents knowledge gaps and subsequent analyses/engagement needed to conduct climate action and resiliency planning for an academic setting, inclusive of living laboratory opportunities.

The decarbonization study must be completed within one year. It will begin at UCSD in July 2023 after consultants are hired. A project of this magnitude requires a lot of coordination between several offices on campus and the core planning group will consist of: executive sponsorship, communications teams, sub-working planning groups, and advisory groups. UCSD’s Sustainability Office plans to provide updates on the study on an ongoing basis.

See page 1 of the presentation slides.

Special Orders

Consent Calendar

2022-2023 Distinguished Research Awards

Chair Postero introduced Committee on Senate Awards (CSA) Chair Kester to present the nominations for the Distinguished Research Awards. CSA Chair Kester explained that up to two
members of the Academic Senate, one in the Arts/Humanities/Social Sciences and one in the Sciences/Engineering, are nominated to receive awards and present a public lecture. The awards are $1,500 each.

The following nominations were approved:
- Arts/Humanities/Social Sciences – Shelley Streeby, Department of Ethnic Studies
- Engineering/Sciences – Catriona Jamieson, Department of Medicine

2022-2023 Distinguished Teaching Award

CSA Chair Kester reported that the Committee on Senate Awards had one additional nomination for a 2022-23 Distinguished Teaching Award, Non-Senate member.

The following nomination was approved:
- Jörg Neuheiser (History)

Reports of Special Committees [None]

Reports of Standing Committees

(a) Educational Policy Committee, Geoff Cook, Chair
- Proposal to amend San Diego Divisional Senate Manual Appendix II: UCSD Policy on Integrity of Scholarship

The proposed amendments include the following:
1. Changing the name of the Policy;
2. Modifying the language to provide more clarity;
3. Modifying Section II.A to clarify when instructors should withdraw allegations;
4. Modifying Section II.B to update administrative responsibilities;
5. Modifying Section II.C to update AIO responsibilities;
6. Modifying Section III.B to fix loopholes with failures to respond;
7. Modifying Section III.C to add clarifying language on multi-student cases;
8. Modifying Section III.G to clarify appeals can only be filed once;
9. Modifying Section III.M to clarify cases that involve unenrolled students;
10. Modifying Section III.P to add language about informing student about non-academic misconduct during the process;
11. Modifying Section III.Q to add language about records retention

The proposed amendments include a policy name change from the UCSD Policy on Integrity of Scholarship to the Academic Integrity Policy. The name of the policy has always been confusing to international students since the word “scholarship” is usually associated with financial awards so the hope is the new policy name will alleviate the
confusion. In addition, several sections of the policy will be updated to include current academic integrity vernacular that is widely used today.

The changes were originally requested by the Academic Integrity Office and supported by the Committee on Academic Integrity Policy and Procedures (CAIPP), Colleges, Division of Graduate Education and Postdoctoral Affairs (GEPA), Registrar’s Office, and the Division of Undergraduate Education (DUE).

EPC Chair Cook made the following motion. Because the motion was made on behalf of a Senate committee, no second was required. Senate Chair Postero opened the floor to questions and discussion of each motion.

Motion: Proposal to amend San Diego Divisional Senate Manual Appendix II: UCSD Policy on Integrity of Scholarship

- Questions & Discussion: None
- Vote: The proposal was approved by 2/3 majority vote.

See page 42 of the meeting materials, and page 5 of the presentation slides.

(b) Senate Council, John Hildebrand, Vice Chair
- Proposal to update Senate representation on Campus/Community Planning Committee

In Fall 2022, the San Diego Divisional Senate submitted a proposal to Vice Chancellor for Resource Management and Planning Gary Matthews to update how Senate committees are represented on the Chancellor’s Campus Community Planning Committee (the Planning Committee), an administrative committee convened by Resource Management and Planning (RMP). This Planning Committee, composed of administrative representatives, Senate representatives, and student representatives advises the Chancellor through the Vice Chancellor – Resource Management & Planning regarding the physical development of the La Jolla campus, Elliott Field Station and the surrounding community. Senate Bylaw 190, Committee on Campus Community and Environment (CCCE), specifies that six of its committee members serve on the Planning Committee, and the chair of CCCE serves as the Planning Committee’s co-chair. No other Senate committees are currently represented on the Planning Committee.

After consultation with CCCE, the Committee on Planning and Budget (CPB), and the Committee on Campus Climate Change (CCCC), Senate Council proposed updating the membership of RMP’s Planning Committee to reduce the number of members from CCCE to four members and add one member each from CCCC and CPB to enhance Senate representation on this important committee. Vice Chancellor Matthews approved the proposal. As a final step, the bylaws of CCCE (Bylaw 190), CCCC (Bylaw 187), and
CPB (Bylaw 228) require amendments to reflect these changes. Each of these committees voted on the bylaw amendments in support of the change and following this presentation, the Chair of each committee will formally put forward their proposal to Assembly to vote on amending their committee bylaw.

- Questions & Discussion: None
- Vote: Informational item only so no vote was needed.

See page 43 of the meeting materials.

(c) Committee on Campus and Community Environment, Robert Brill, Member

- Proposal to amend San Diego Divisional Bylaw 190, Campus and Community Environment

In order to make the change to Senate representation on the Chancellor’s Campus Community Planning Committee (CCPC) effective, the bylaw for CCCE requires an amendment. The bylaw 190 amendment is to change the number of CCCE representatives/alternates on the CCPC from six to four.

CCCE Member Brill made the following motion. Because the motion was made on behalf of a Senate committee, no second was required. Senate Chair Postero opened the floor to questions and discussion.

Motion: Proposal to amend San Diego Divisional Bylaw 190, Campus and Community Environment

- Questions & Discussion: None
- Vote: The proposal was approved by 2/3 majority vote.

See page 44 of the meeting materials.

(d) Committee on Planning and Budget, Michael Provence, Chair

- Proposal to amend San Diego Divisional Bylaw 228, Planning and Budget

In order to make the change to Senate representation on the Chancellor’s Campus Community Planning Committee (CCPC) effective, the bylaw for CPB requires an amendment. The bylaw 228 amendment is to include one representative/alternate from CPB on the CCPC.
CPB Chair Provence made the following motion. Because the motion was made on behalf of a Senate committee, no second was required. Senate Chair Postero opened the floor to questions and discussion.

Motion: Proposal to amend San Diego Divisional Bylaw 228, Planning and Budget

- Questions & Discussion: None
- Vote: The proposal was approved by 2/3 majority vote.

See page 47 of the meeting materials.

(e) Committee on Campus Climate Change, Cathy Gere, Chair
- Proposal to amend San Diego Divisional Bylaw 187, Committee on Campus Climate Change

In order to make the change to Senate representation on the Chancellor’s Campus Community Planning Committee (CCPC) effective, the bylaw for CCCC requires an amendment. The bylaw 187 amendment is to include one representative/alternate from CCCC on the CCPC.

CCCC Chair Gere made the following motion. Because the motion was made on behalf of a Senate committee, no second was required. Senate Chair Postero opened the floor to questions and discussion.

Motion: Proposal to amend San Diego Divisional Bylaw 187, Committee on Campus Climate Change

- Questions & Discussion: None
- Vote: The proposal was approved by 2/3 majority vote.

See page 50 of the meeting materials, and page 9 of the presentation slides.

(f) Graduate Council, Timothy Gentner, Chair; and Yuval Rottenstreich, Faculty Director, Rady MBA Program
- Proposal to amend San Diego Divisional Regulation 702, Requirements for the Master of Business Administration (M.B.A.) Degree

Rady proposed an amendment to Senate Regulation 702 to remove the specific unit language from the Regulation to allow for flexibility to adjust the core and elective unit requirements for the M.B.A. without having to revise the Regulation with each M.B.A. curricular revision. Graduate Council approval of curricular changes will continue to be
required. The amendment brings the Regulation in line with comparable regulations at other UC campuses.

GC Chair Gentner made the following motion. Because the motion was made on behalf of a Senate committee, no second was required. Senate Chair Postero opened the floor to questions and discussion of each motion.

Motion: Proposal to amend San Diego Divisional Regulation 702, Requirements for the Master of Business Administration (M.B.A.) Degree

- Questions & Discussion: None
- Vote: The proposal was approved by 2/3 majority vote.

See page 53 of the meeting materials, and page 11 of the presentation slides.

(g) Committee on Extended Studies and Public Service, Glenn Tesler, Member

Proposal to amend San Diego Divisional Bylaw 260, Committee on Extended Studies and Public Service

CESPS proposed changing the committee name from the Committee on Extended Studies and Public Service to the Committee on Extended Studies to more accurately reflect the committee’s focus and close association with the Division of Extended Studies. The proposed Bylaw changes also include revising the language to reflect current leadership’s title at UCSD’s Division of Extended Studies. Previously, Mary Walshok sat on CESPS as ex officio in her role as Associate Vice Chancellor for Extended Studies and Public Service. Since AVC Walshok’s retirement, the title for the position has been changed to Dean of the Division of Extended Studies and is currently being held by Dr. Hugo Villar. The committee would like to recognize Dean Villar’s appropriate title as Dean and CESPS ex officio through this bylaw change.

CESPS Member Tesler made the following motion. Because the motion was made on behalf of a Senate committee, no second was required. Senate Chair Postero opened the floor to questions and discussion of each motion.

Motion: Proposal to amend San Diego Divisional Bylaw 260, Committee on Extended Studies and Public Service.

There was a friendly amendment to change the Dean of University Extension title used in the proposal to the correct title of Dean of the Division of Extended Studies.

- Questions & Discussion:
A member commented that it seems unnecessary to remove “public service” from the committee’s name since the committee is still charged with advising on it.

- Vote: The proposal with amended language was approved by 2/3 majority vote.

See page 55 of the meeting materials, and page 16 of the presentation slides.

(h) Committee on Undergraduate Scholarships and Honors, Lisa McDonnell, Chair

- Proposal to amend San Diego Divisional Bylaw 255, Undergraduate Scholarships and Honors

CUSH proposed amendments to Bylaw 225 to change the composition of the committee’s membership. Specifically, CUSH proposed increasing representation from engineering from two to three members and changing the wording to allow two members from biology, chemistry, or pharmacy (current phrasing only specifies biology). This is in response to the types of scholarships that CUSH reviews.

CUSH Chair McDonnell made the following motion. Because the motion was made on behalf of a Senate committee, no second was required. Senate Chair Postero opened the floor to questions and discussion of each motion.

Motion: Proposal to amend San Diego Divisional Bylaw 255, Undergraduate Scholarships and Honors

- Questions & Discussion: None

- Vote: The proposal was approved by 2/3 majority vote.

See page 59 of the meeting materials.

(i) Committee on Academic Information Technology, Brett Stalbaum, Vice Chair

- Proposal to amend San Diego Divisional Bylaw 192, Academic Information Technology

CAIT proposed a revision to Bylaw 192 to include the recognition of the AVC for Educational Innovation (AVC-EI) as a nonvoting consultant to the committee. The recognition of the AVC-EI as a consultant supports CAIT’s objective to increase collaboration between the Academic Senate and the Administration.
CAIT Vice Chair Stalbaum made the following motion. Because the motion was made on behalf of a Senate committee, no second was required. Senate Chair Postero opened the floor to questions and discussion of each motion.

Motion: Proposal to amend San Diego Divisional Bylaw 192, Academic Information Technology

• Questions & Discussion: None

• Vote: The proposal was approved by 2/3 majority vote.

See page 62 of the meeting materials.

**Reports of Faculties**

(a) Skaggs School of Pharmacy and Pharmaceutical Sciences, Brookie Best, Dean

• Proposal to amend San Diego Divisional Senate Manual Appendix 5.11 Bylaws and Regulations of the Faculty of the School of Pharmacy and Pharmaceutical Sciences

SSPPS proposed an amendment to Appendix 5.11 to update the timing for the requirement in Year 4 that if a student receives an F grade for the Advanced Pharmacy Practice Experience (APPE), then it must be repeated. The timing of the repeated APPE will be at the discretion of the Associate Dean for Experiential Education. The current policy restricts when the APPE can be retaken and that poses problems with timing for students.

Dean Best made the following motion. Because the motion was made on behalf of a Senate faculty committee, no second was required. Senate Chair Postero opened the floor to questions and discussion of each motion.

Motion: Proposal to amend San Diego Divisional Senate Manual Appendix 5.11 Bylaws and Regulations of the Faculty of the School of Pharmacy and Pharmaceutical Sciences

• Questions & Discussion: None

• Vote: The proposal was approved by 2/3 majority vote.

See page 65 of the meeting materials.

**Petitions of Students** [None]
Unfinished Business [None]

New Business [None]

Chair Postero called for any new business. There being none, the meeting was adjourned.

The meeting was adjourned at 5:02 p.m.

Recorded by Jenna Lucius, Senior Senate Analyst.
EX OFFICIO MEMBERS

☒ POSTERO, NANCY GREY
☒ HILDEBRAND, JOHN A
☐ POWELL, HENRY C
☒ KHOSLA, PRADEEP K
☒ SIMMONS, ELIZABETH H
☒ LEINEN, MARGARET S
☒ JAVIDI, TARA
☒ PEEK-ASA, CORINNE LEE
☐ KAISER, BONNIE
☒ COOK, GEOFFREY WILLIAM
☒ BIESS, FRANK PETER
☒ GENTNER, TIMOTHY Q
☒ PROVENCE, MICHAEL THOMAS
☒ SINHA, SHANTANU
☒ YANG, JING
☒ KIRSH, DAVID JOEL
☒ PARDO GUERRA, JUAN PABLO
☒ BETTS, JULIAN
☒ LLEWELLYN SMITH, STEFAN G
☒ HEYMAN, GAIL D
☒ KENYATTA, KAMAU
☒ CESSI, PAOLA
☒ DE SA, VIRGINIA

CHAIR, SAN DIEGO DIVISION
VICE CHAIR, SAN DIEGO DIVISION
PARLIAMENTARIAN, SAN DIEGO DIVISION
CHANCELLOR, UC SAN DIEGO
EXECUTIVE VICE CHANCELLOR, ACADEMIC AFFAIRS
VICE CHANCELLOR, MARINE SCIENCES
IMMEDIATE PAST CHAIR, SAN DIEGO DIVISION
VICE CHANCELLOR, RESEARCH AFFAIRS
CHAIR, UNDERGRADUATE COUNCIL
CHAIR, EDUCATIONAL POLICY
CHAIR, ACADEMIC PERSONNEL
CHAIR, GRADUATE COUNCIL
CHAIR, PLANNING & BUDGET
CHAIR, DIVERSITY & EQUITY
CHAIR, RESEARCH
CHAIR, CAMPUS & COMMUNITY ENVIRONMENT
CHAIR, FACULTY WELFARE
CHAIR, ADMISSIONS
CHAIR, PRIVILEGE & TENURE
CHAIR, COMMITTEE ON COMMITTEES
SENIOR REPRESENTATIVE, ACADEMIC ASSEMBLY
SENIOR REPRESENTATIVE, ACADEMIC ASSEMBLY
SENIOR REPRESENTATIVE, ACADEMIC ASSEMBLY
ELECTED MEMBERS & ALTERNATES

MARSHALL COLLEGE
☒ BUSSEY, THOMAS J
Primary Representative
☒ DAHL, GORDON BOYACK
Primary Representative
☒ NGUYEN, TRUONG QUANG
Alternate Representative
☐ XU, SHENG
Alternate Representative

MUIR COLLEGE
☒ COOKE, JAMES EDWARD
Primary Representative
☒ SAIER, MILTON H
Primary Representative
☒ MUSEUS, SAMUEL DAVID
Alternate Representative
☐ OPATKIEWICZ, JUSTIN PAUL
Alternate Representative

REVELLE COLLEGE
☒ MUENDLER, MARC ANDREAS
Primary Representative
☒ PEKKURNAZ, GULCIN
Primary Representative
☒ GRAEVE, OLIVIA A
Alternate Representative
☒ RICHARDS, STEPHANIE F
Alternate Representative

ROOSEVELT COLLEGE
☒ CHENG, LI-TIEN
Primary Representative
☒ KEHLER, ANDREW SCOTT
Primary Representative
☐ MOHAMMADI, AMIR
Alternate Representative
☒ PATTERSON, PATRICK HYDER
Alternate Representative

SIXTH COLLEGE
☒ MACAGNO, EDUARDO R
Primary Representative
☒ ZLATOS, ANDREJ
Primary Representative
☐ STEIGER, RAND
Alternate Representative

WARREN COLLEGE
☒ XIAO, MING
Primary Representative
☒ WESLING, MEGAN E
Alternate Representative

EMERITUS FACULTY
☒ WATSON, JOSEPH W
Primary Representative
☒ ADLER, STEVEN
Alternate Representative

SEVENTH COLLEGE
☒ DRESSER, MARK
Primary Representative
☐ ARCOS HERRERA, CAROL
Alternate Representative
☒ KENWORTHY, LANE A
Primary Representative
☒ BORGO, DAVID GARCIA
Alternate Representative

ANESTHESIOLOGY
☐ ZEIDAN, FADEL
Primary Representative
☒ WALLACE, MARK S
Alternate Representative
ANTHROPOLOGY
☒ MARCHETTO, MARIA CAROLINA
  Primary Representative
☒ BRENNER, SUZANNE A
  Alternate Representative

BIOENGINEERING
☒ FRALEY, STEPHANIE I
  Primary Representative
☒ MCVEIGH, ELLIOT R
  Alternate Representative

CELL & DEVELOPMENTAL BIOLOGY
☒ KIGER, AMY
  Primary Representative
☒ TOUR, ELLA
  Alternate Representative

CELLULAR & MOLECULAR MEDICINE
☒ DOWDY, STEVEN F
  Primary Representative
☒ CORBETT, KEVIN DANIEL
  Alternate Representative

CHEMISTRY & BIOCHEMISTRY
☒ JOSEPH, SIMPSON
  Primary Representative
☒ MOLINSKI, TADEUSZ F
  Alternate Representative
☒ STALLINGS, DONTARIE M
  Primary Representative
☒ XIONG, WEI
  Alternate Representative

COGNITIVE SCIENCE
☒ XIA, HAIJUN
  Primary Representative
☒ FLEISCHER, JASON
  Alternate Representative

COMMUNICATIONS
☒ ZILBERG, ELANA J
  Primary Representative
☒ DOMINGUEZ RUBIO, FERNANDO
  Alternate Representative

CSE
☒ MICCIANCIO, DANIELE
  Primary Representative
☒ ORAILOGLU, ALEX
  Primary Representative
☒ SNOEREN, ALEX C
  Primary Representative

DERMATOLOGY
☒ DORSCHNER, ROBERT A
  Primary Representative
☒ DI NARDO, ANNA
  Alternate Representative

ECE
☒ PAL, PIYA
  Primary Representative
☒ SCHURGERS, CURT
  Primary Representative
☒ TOURI, BEHROUZ
  Primary Representative
ECOLOGY, BEHAVIOR & EVOLUTION
- CLELAND, ELSA E
  Primary Representative
- KOHN, JOSHUA R
  Alternate Representative

ECONOMICS
- ALON, TITAN MICHAEL
  Primary Representative
- ZHU, YING
  Primary Representative

EDUCATION STUDIES
- EGUCHI, AMY
  Primary Representative
- WISHARD GUERRA, ALISON G
  Alternate Representative

EMERGENCY MEDICINE
- DAMEFF, CHRISTIAN JORDAN
  Primary Representative
- LINDHOLM, KARL PETER
  Alternate Representative

ETHNIC STUDIES
- FUSTE, JOSE IGNACIO
  Primary Representative
- SASAKI, CHRISTEN T
  Alternate Representative

FAMILY & PREVENTIVE MEDICINE
- TAI-SEALE, MING
  Primary Representative
- ALLISON, MATTHEW AUBREY
  Alternate Representative

GLOBAL POLICY AND STRATEGY
- MCINTOSH, CRAIG
  Primary Representative
- BAZZI, SAMUEL ALI
  Alternate Representative
- PRATHER, LAUREN R
  Primary Representative
- WALTER, BARBARA FLORENCE
  Alternate Representative

HALICIIOGLU DATA SCIENCE INST
- DANKS, DAVID JOSEPH
  Primary Representative
- POLITIS, DIMITRIS
  Alternate Representative

HISTORY
- COWAN, BENJAMIN A
  Primary Representative
- GERE, CATHERINA M
  Primary Representative
- EDINGTON, CLAIRE ELLEN
  Alternate Representative
- PATTERSON, PATRICIA
  Alternate Representative

HWSPH
- SALEM, RANY MANSOUR
  Primary Representative
- BOUTELLE, KERRI
  Alternate Representative
- SHI, YUYAN
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- THOMAS, RONALD G
  Alternate Representative

LINGUISTICS
- STYLER, WILLIAM F
  Primary Representative
- MAYBERRY, RACHEL IRENE
  Alternate Representative
LITERATURE
☒ FISS, GERALDINE
Primary Representative
☒ KONTJE, TODD CURTIS
Primary Representative
☒ NICOLAZZO, SAL
Alternate Representative
☒ VITKUS, DANIEL J
Alternate Representative

MAE
☒ GHAZINEjad, MAZIAR
Primary Representative
☒ GRAVISH, NICHOLAS G
Primary Representative
☑ SAINTILLAN, DAVID
Primary Representative
☒ MCENEANEY, WILLIAM MICHAEL
Alternate Representative

MATHEMATICS
☒ ARIAS-CASTRO, ERY
Primary Representative
☒ CLONINGER, ALEXANDER
Primary Representative
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Primary Representative
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Alternate Representative

MEDICINE
☒ MOLINA, ANTHONY JOSEPH
Primary Representative
☒ YADlapATI, RENA HIren
Primary Representative

MOLECULAR BIOLOGY
☒ SUEL, GUROL MEHMET
Primary Representative
☒ HASTY, JEFF M
Alternate Representative

MUSIC
☒ BRITT, KING JAMES
Primary Representative
☒ LOU, MICHELLE S
Alternate Representative

NANOENGINEERING
☒ CHEN, ZHENG
Primary Representative
☒ LUBARDA, VLADO
Alternate Representative
☒ YANG, KESONG
Alternate Representative

NEUROBIOLOGY
☒ HALPAIN, SHELLEY L
Primary Representative
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Alternate Representative

NEUROLOGICAL SURGERY
☒ BEAUMONT, THOMAS LA MAR
Primary Representative
☒ CIACCI, JOSEPH D
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  Primary Representative
- SERENES, JOHN THOMAS
  Primary Representative
- BRADY, TIMOTHY
  Alternate Representative
- FERREIRA, VICTOR S
  Alternate Representative

RADIATION MEDICINE & APPLIED SCIENCES
- BANEGAS, MATTHEW PATRICK
  Primary Representative
- MOORE, KEVIN LAWRENCE
  Alternate Representative

RADIOLOGY
- MAREK BYKOWSKI, JULIE LYNN
  Primary Representative
- RAKOW-PENNER, REBECCA ANN
  Primary Representative

Rady School of Management
- GNEEZY, AYELET
  Primary Representative
- BANERJEE, SNEHAL
  Alternate Representative
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  Primary Representative

SIO
- BECKER, JANET MARIA
  Primary Representative
- D'ALPOIM GUEDES, JADE A
  Primary Representative
- EISENMAN, IAN
  Primary Representative

SOCIOLOGY
- GOLDMAN, HARVEY STERN
  Primary Representative
- BINDER, AMY JILL
  Alternate Representative
- SKRENTNY, JOHN DAVID
  Primary Representative

SSPPS
- DORRESTEIN, PIETER C
  Primary Representative
- O'DONOGHUE, ANTHONY JOHN
  Alternate Representative

Structural Engineering
- TSAMPRAS, GEORGIOS
  Primary Representative
- CONTE, JOEL P
  Alternate Representative

SURGERY
- BOUVE, MICHAEL
  Primary Representative
- FRIEDMAN, RICK ADAM
  Primary Representative
- WATSON, DEBORAH
  Primary Representative
- DOBKE, MAREK KRZYSZTOF
  Alternate Representative
- DOUCET, JAY J
  Alternate Representative
- MADANI, MICHAEL M
  Alternate Representative
THEATRE & DANCE
☒ MCELVER, ROBERT HARRISON
Primary Representative
☒ POWELL, ALYSSA
Primary Representative
☒ BURELLE, JULIE SARA
Alternate Representative
☒ KUHL, CHRISTOPHER AUGUST
Alternate Representative

URBAN STUDIES & PLANNING
☒ FRANK, LAWRENCE DOUGLAS
Primary Representative
☒ PEZZOLI, KEITH
Alternate Representative

UROLOGY
☒ JAMIESON, CATRIONA H M
Primary Representative
☒ ANGER, JENNIFER TASH
Alternate Representative

VISUAL ARTS
☒ IGLESIAS, JANELLE ANN
Primary Representative
☒ NEWSOME, ELIZABETH ANN
Alternate Representative
☒ ROSE, JORDAN M
Primary Representative
☒ WILLIAMS, ALENA J
Alternate Representative
ADVISORS

RESEARCH ADVISOR - GC
☒ ORLOV, DMITIRY
    Primary Advisor
☐ MELIS, CARL
    Alternate Advisor

RESEARCH ADVISOR - HS
☐ GROESSL, ERIK
    Primary Advisor
☒ LIU, LIN
    Alternate Advisor

RESEARCH ADVISOR - SIO
☒ WATERHOUSE, AMY
    Primary Advisor
☒ MELLORS, ROBERT
    Alternate Advisor

GRADUATE STUDENT ADVISOR
☒ BERTELLE, MIKAH
    Primary Advisor
☐ ELKOBI, JONATHAN
    Primary Advisor

UNDERGRADUATE STUDENT ADVISOR
☒ CALLAHAN, RHIANEN
    Primary Advisor
☐ YANG, SKY
    Primary Advisor
UC San Diego Decarbonization Study
Decarbonization Study Requirements

Five common deliverables:

• Strategy for 90% or greater reduction in scope 1 (direct) emissions from fossil gas use in campus energy systems.

• Provide high level estimates of total capital and operational costs/savings

• Identify climate justice and equity considerations related to the transition of campus energy systems and propose solutions or next steps.

• Document knowledge gaps and subsequent studies/analyses needed to conduct comprehensive climate action planning, inclusive of all scopes*.

• Document knowledge gaps and subsequent analyses/engagement needed to conduct climate action and resiliency planning for an academic setting, inclusive of living laboratory opportunities.

*While still included in policy goals, Scope 2 (electricity purchases) and Scope 3 (indirect related to commuting, air travel) emissions are out of scope for State-funded Decarb studies. Scope 2 emissions will be addressed via participation in Clean Power Program and other similar programs. Scope 3 emissions to be reassessed through separate effort that will require additional funding and support.
A notification of funding letter sent to Campus. Core Team develops a Project Management Plan (PMP).

PMP reviewed and endorsed by the executive sponsors, the EVC-Provost, VC/CFO, VC RMP, VC Student Affairs, VC Research Affairs, VC EDI, and CEO Health, as well as Academic Senate Division, Chair of Committee on Campus Climate Change.

Decarb Studies Kick-Off with Consultant(s)

PMP will be used to track the project progress on quarterly basis.

Final report complete. Chancellor Review and Endorsement.

Campus Points of Contact will provide a Decarbonization Study Close Out Report and deliverables to UC Fossil Free Task Force.

3/23

5/23

6/23

7/23

7/23 + 5/24

5/24

6/24

7/24

Draft study results submitted for final peer review.
Core Planning Team

Executive Sponsorship
- EVC-Provost, VC/CFO, VC RMP, VC Student Affairs, VC Research Affairs, VC EDI, and CEO Health
- Division Faculty Senate Rep

Advisory Groups
- Advisory Committee on Sustainability
- Sustainability Action Groups
- Focus Groups

Sub-working Planning Groups
- Technical
- Financial
- Resiliency
- Living Laboratory
- DEIJ

Communication
- RMP/Univ Comm Team
- Systemwide Sprint Teams and Location Work Group
Educational Policy Committee

Proposed Changes to Amend Appendix II: UCSD Policy on Integrity of Scholarship
The Educational Policy Committee approved the proposal to amend Appendix II: UCSD Policy on Integrity of Scholarship:

1. Appendix II name – Change the name to the “Academic Integrity Policy”.
2. Modify the language throughout the Policy to make the language clearer and more accessible.
3. Section II.A – Clarify the language on the circumstances for instructors withdrawing an allegation of academic integrity violation.
4. Section II.B – Update the administrative responsibilities to indicate who can resolve allegations of academic integrity violation, as well as who determines and imposes sanctions, and who reviews and decides appeals.
5. Section II.C – Modify the language to correspond with the proposed edits to section II.B.
Continued...

6. Section III.B – Edit the language to fix loopholes in the policy when there are students who fail to respond and attend scheduled meetings.
7. Section III.C – Clarify the procedures that apply to multi-student cases.
8. Section III.G – Edit the language to indicate AI Review or Administrative Sanction appeals can only be filed once.
9. Section III. M – Add language about what the AI Office does with cases that involve students that are no longer enrolled.
10. Section III.P – Add a statement to inform students about misconduct during the process of resolving academic integrity violations.
11. Section III.Q – Add a statement about the University’s records retention schedule.
CRJ review

The Committee on Rules and Jurisdiction reviewed the proposed changes and found them consonant with the Code of the Academic Senate. EPC is supportive of the proposed changes and recommends that the Representative Assembly approve the proposal.
Committee on Campus Climate Change

“The CCCC is an Academic Senate Committee that confers with and advises the Senate and administration on matters pertaining to campus decarbonization, climate change impacts and mitigation, climate change in educational programs, and climate change research. It studies and collects data on the climate change impacts of campus activities and develops recommendations for short-term, medium-term, and long-term changes to campus policy and behavior.”

Since decarbonization and climate impact mitigation are infrastructural issues, we have been asking for representation on some of the teams and committees that deal with such questions, including the CCCP, the Chancellor’s Campus/Community Planning Committee.
Proposed Addition to the CCCC Bylaws

“One member of this committee shall be designated as a faculty member on the Chancellor’s Campus/Community Planning Committee, in addition to four members from the Committee on Campus and Community Environment and one member from the Committee on Planning and Budget. One other member from this committee shall be designated as official alternate for the one designated member and shall be invited to attend all its meetings.”
Senate Regulation 702: Unit Requirements
• SR 702 currently reads:
The candidate shall complete at least 40-quarter units constituting the core curriculum and 52 remaining quarter units of electives

• Other UC business schools do not have this wording in their SR, which provides them with the flexibility needed to create new dual and joint degrees and update program requirements
We propose amending SR 702 to read:

- The candidate shall complete the program of study as specified by the Rady School of Management and approved by the Graduate Council subject to divisional and systemwide regulations. Only courses in which the candidate is assigned grades of A, B, C, or S may be counted in satisfaction of the requirements for the M.B.A. degree. All students will complete a capstone project during their program.
Requested Change

Goals

Background

• Bring SR in line with other UC schools
  • Allowing for increased flexibility for future revisions to the core curriculum

• Creation of interdisciplinary dual degrees
  • MD/MBA to educate the next generation of physician leaders and CMOs
  • Explore other dual degree options across campus, e.g. with Public Health and Pharmacy

• Reduce the number of elective units for Flex students
  • In recognition of their advanced professional experience and busy schedules
Questions?
Proposal to amend
San Diego Divisional Bylaw 260
Committee on Extended Studies and Public Service

May 30, 2023

Committee Chair: Stuart Sandin, SIO
Presented by: Glenn Tesler, Mathematics
Our committee works closely with the Division of Extended Studies (previously UCSD Extension). Extension recently changed its name, leadership, and leadership titles. We wish to update San Diego Divisional Bylaw 260 to reflect this.

● **Change committee name:**
  
  **Current:** Committee on Extended Studies and Public Service (CESPS)
  
  **New:** Committee on Extended Studies

● **Change language to reflect current leadership of Division of Extended Studies:**
  
  **1987-2021:** Dr. Mary Walshok, Associate Vice Chancellor for Extended Studies and Public Service
  
  **2021-:** Dr. Hugo Villar, Dean of University Extension

● Dr. Mary Walshok before / Dr. Hugo Villar now, is an *ex officio* member of the committee.
Changes to San Diego Divisional Bylaw 260

260 EXTENDED STUDIES AND PUBLIC SERVICE [Am 1/28/92, Am 5/24/11]

A) This committee shall consist of seven members of the San Diego Division, and the Associate-Vice Chancellor for Extended Studies and Public Service Dean of University Extension, ex officio. It shall also have one undergraduate student representative who shall not have the right to vote. [Am 1/28/92, Am 10/12/21]

2) Public Service Programs [Am 5/24/11]
   a) It shall advise the Associate-Vice Chancellor for Extended Studies and Public Service Dean of University Extension on the following:

260 EXTENDED STUDIES AND PUBLIC SERVICE [Am 1/28/92, Am 5/24/11]

3) It shall review the annual report of the Associate-Vice Chancellor for Extended Studies and Public Service Dean of University Extension, and submit an annual report and such interim special reports as it may deem advisable to the San Diego Division. [Am 5/24/11]
INTRODUCTION

The Committee on Academic Personnel (CAP) is charged with representing Senate faculty by making recommendations to the Administration concerning academic personnel and related matters. It also advises the Chancellor, EVC, Senior Vice Chancellor for Academic Affairs, and the Academic Senate on general policy related to academic personnel. The work of CAP exemplifies the principle and practice of shared governance. Where CAP Stood explains CAP’s deliberations and perspectives on particular issues affecting academic personnel review on our campus and may be helpful to departments in file preparation. This report describes the extent to which the recommendations on these matters have been accepted by the administration and informs the division of other issues that were considered or remain pending.

COMMENTARY

Process, Interaction, and Consultation

CAP held 37 meetings and conducted 849 reviews (734 initial/additional/reconsiderations, 115 post-audits of dean-delegated actions). Actions ranged from consecutive no-change and contested merit advancements to appointments, promotions, career reviews, accelerated merit advancements, and retentions. In the interest of open dialogue and effective communication, CAP regularly extends an invitation to the EVC, the Vice Chancellors for Research, Health Sciences, and Marine Sciences, as well as to Divisional Deans and Department Chairs and their respective AP staff, to visit the committee to discuss its practices and procedures or general issues of campus academic personnel policy. In all, CAP received 28 visitors during 2022-23. The CAP Chair attends three meetings in the Fall to discuss the academic review process, with Department Chairs for the general campus, Health Sciences, and SIO. The CAP Chair also attends the New Faculty Orientation, Faculty Advancement Workshop, and Teaching Professor Briefings.

2022-23 Rate of Override and Disagreement. In seeking to ensure consistency and fairness across departments, divisions, and schools, CAP follows and interprets the APM/PPM policies on all matters in its recommendations to the Administration. Prior to reaching a final outcome for each personnel action, the SVCAA and EVCAA meet weekly with the CAP Chair and Vice-Chair for a ReCAP meeting to discuss potential cases where there may be disagreements in CAP’s recommendation and the preliminary recommendation of the final authority. When the EVC, Senior Vice Chancellor, or other final authority anticipates issuing a final decision contrary to the Committee’s recommendation, that individual attends a CAP meeting once a quarter to discuss their rationale for not following CAP’s recommendation. In some cases, these discussions lead to agreement. In others, there is an agreement to disagree. The latter cases generally involved programmatic priorities of the campus that fall outside the criteria that CAP used to make its recommendations.

Overrides are those cases where the Chancellor/EVC final action (or, in the case of Research Scientist and Unit 18 Lecturer files, the final action of the relevant VC or Dean) differs from CAP’s final recommendation in step or action (appointment, merit advancement, promotion, etc.). Fourth-year appraisal ratings at the Assistant rank that differ from CAP’s recommendation are not considered Overrides. Disagreements are cases where the Chancellor/EVC’s final action differs from CAP’s recommendation in terms of salary (related to market off-scale or bonus off-scale salary components). In cases where the CAP membership is evenly split between two actions, a choice of either action is not considered as an Override or Disagreement. In 2022-23 there were 14 cases in which the Administration’s final action differed from CAP’s recommendation; 3 involved the addition of a half-step bonus off-scale salary component (BOS), 2 were retention or pre-emptive retention actions,
advancement, 3 involved accelerations, 1 involved appointment, and the remaining 4 were related to promotions or career reviews.

Preparation of Files. As part of its ongoing efforts to calibrate requests for accelerated merit advancements, CAP conducts retrospective reviews (post-audits) of dean-delegated appointments and merit advancements from various departments. In general, CAP finds most files to be well prepared, but the committee notes the need for clear articulation of departmental standards for normal merit advancement and accelerated merit advancement in many instances. CAP also strongly encourages Departments to fully document the teaching and service contributions of their faculty members. Files submitted for CAP review can be delayed if an insufficient number of teaching evaluations are not included in the file, or if there is insufficient analysis of a candidate’s teaching and service contributions. CAP recommends consultation of APM210, PPM 230-210, PPM 230-220, and the UC San Diego Academic Personnel Process Manual to assist in file preparation details.

In disciplines where candidates routinely engage in collaborative work, CAP strongly emphasizes the need for both the candidate’s biobib and the departmental recommendation letters to clearly identify the candidate’s contribution to their publications. This is especially important as the University engages in team science and interdisciplinary hires. The absence of sufficient information supporting the departmental proposal occasionally resulted in delays in making a recommendation due to the need for CAP to ask for additional information from the Department.

In cases of conflicts of interest with the candidate, Department Chairs and Deans should fully recuse themselves in file preparation. They should also recuse themselves from writing/signing the solicitation letter for external reviewers. Failing to do so will result in CAP requesting additional information and will further delay the academic review process.

Campus Ad Hoc Committees. Given the diverse representation of disciplines around the table, CAP generally acts as its own ad hoc committee. By the time cases arrive at CAP, there is already considerable expertise represented in the analysis of the file, counting evaluations from the cognizant dean, Departmental and Divisional ad hoc committees, the Department Chair, and external referees, when pertinent. Unless CAP itself lacks suitable expertise, or there is substantial disagreement about the quality of the work, an external ad hoc committee is not regarded as necessary. During 2022-23 CAP convened zero external ad hoc committees, and acted as its own ad hoc committee in 347 cases.

Policies, Issues, and Action Items Addressed

In addition to acting on individual academic personnel files, CAP, at the request of the Chancellor, EVC or the Academic Senate Chair, reviews general academic personnel policies and reports along with other issues of interest related to academic personnel. CAP also reviews departmental voting procedures, the conferral of emeritus status to enate and non-senate academics, reviews of administrators, and appointments and reappointments for Endowed Chairs. CAP reviewed 59 such requests during 2022-23.

CONCLUSION

The Committee is grateful for the wisdom of the various divisional committees: the Division of Arts & Humanities Arts Committee on Academic Personnel (ARTS CAP); the School of Medicine Committee on Academic Personnel (SOM CAP); the Scripps Institution of Oceanography Committee on Academic Personnel (SIO CAP); the Research Scientist Committee on Academic Personnel (RS-CAP); the Deans, Provosts, Department Chairs, and ORU Directors; and those faculty members who served on departmental ad hoc committees. CAP also wishes to thank staff members involved in the academic review process at various levels for their many hours of efficient, knowledgeable, and professional work in file assembly and annotation, which
is so crucial to fair and consistent reviews. Finally, CAP would like to acknowledge the indispensable contribution of Brandy Cheshire, Senate Policy Analyst, who prepares files for members, serves as a researcher and institutional memory for the committee, keeps CAP grounded with relevant passages from the APM or PPM, and edits letters. Her very demanding job encompasses all this and much more, and she does it brilliantly.

Respectfully submitted,
Frank Biess, Chair
Committee on Academic Personnel
Responsibilities and Duties
Pursuant to Bylaw 185, the Committee on Committees (ConC) is responsible for appointing members to the standing Senate committees, nominating candidates for Divisional Senate Vice Chair and Divisional Representatives to the Systemwide Assembly of the Academic Senate, recommending Senate faculty members for membership on UCSD Administrative committees, and making nominations to the University Committee on Committees for service on systemwide committees. ConC met 30 times in 2022-2023.

Appointments to the Senate’s Standing Committees
The Committee on Committees filled 28 standing committees of the Divisional Senate with 265 Senate faculty members. ConC also nominated two candidates to run for Divisional Senate Vice Chair and 8 candidates to run for Divisional Representative to the systemwide Assembly of the Academic Senate. Divisional Senate Vice Chair and the Divisional Representatives to the systemwide Assembly of the Academic Senate were elected by the Divisional Senate faculty in spring 2023.

Recommendations to UCSD’s Administrative Committees
The Committee on Committees received and responded to 68 Administrative committee requests. ConC recommended 1,334 Senate faculty to the Administration for potential membership on the various Administrative committees.

Nominations to Systemwide Senate Committees and Special Committees
The Committee on Committees received 8 requests from the University Committee on Committees for nominations to serve on systemwide Senate committees, subcommittees, task forces, and special committees. ConC forwarded 5 nominees to the University Committee on Committees for consideration for appointment. Additionally, ConC nominated 16 Division members to serve on the 16 Assembly of the Academic Senate committees. The nominations were forwarded to the University Committee on Committees for confirmation.

Submitted by:
Gail Heyman, Chair
Committee on Committees
ANNUAL REPORT
COMMITTEE ON RESEARCH
FISCAL YEAR 2022/23

DIVISION COMMITTEE

The Committee on Research (COR) met monthly during the academic year to consider a number of issues. During the course of these meetings, the following principal issues were addressed and reports were prepared accordingly.

1. Annual Report, Committee on Research, FY 2021/22 – No action needed/taken.
2. By Laws and Charge of COR – No action needed/taken.
3. Review of the Division of Graduate Education and Postdoctoral Affairs’ Update on Holistic Graduate Funding – The Committee continued to be concerned on the underfunding of graduate students. In particular, COR voiced concerns over elimination of diversity fellowships. With the new model of distributing diversity fellowships to departments to use as they see fit, COR members emphasized the need for guidance for departments, as well as a plan for accountable spending to ensure that the funds are being used in ways that supports diversity. COR stressed the importance of the flow and management of funds and the activities that support best practices being coordinated, targeted, and tracked, with mechanisms for flexibility if success is not being achieved.
4. Review of Proposal to Establish a Department of Astronomy & Astrophysics – The Committee supported the proposal to establish a Department of Astronomy and Astrophysics and expressed their hopes that the new Department would continue their collaborations with other faculty members on campus to carry out the highly interdisciplinary research programs at the Center for Astrophysics and Space Sciences.
5. ORU Multi-Year Review of CCIS (Center for Comparative Immigration Studies) – The research conducted by CCIS continues to be timely and important. Their mission to connect research to policy and on-the-ground action is a definite added value to UC San Diego and should continue to be supported. The kind of graduate and undergraduate Interdisciplinary training CCIS offers is not available elsewhere, and is needed for the advancement of rigorous conversations around topics of immigration, climate-related migration, displaced populations and refugees. COR acknowledged that CCIS will continue to play a key role in exploring these topics, and strongly supported the continuation of CCIS as an ORU.
6. Presidential Policy on Inventions, Patents, and Innovation Transfer – The Committee endorsed the proposed revisions and were appreciative of the campuses having more approval authority over certain matters.
7. ORU Multi-Year Review of CHD (Center for Human Development) – Overall, COR was very impressed with the many accomplishments of the Center, especially regarding their groundbreaking interdisciplinary research, their extremely impressive funding portfolio, and the training opportunities they provide to future scientists. COR strongly supported the continuation of CHD as an ORU.
8. CCCC Resolution on the Public Disclosure of External Funding – The Committee was generally supportive of the proposed resolution, especially the broadening of disclosures from fossil fuel industry funding to disclosure of all external funding. The Committee suggested that the onus be on Office of Contracts and Grants Administration to collect and post the data from existing sources, rather than asking individual investigators, divisions, or departments to submit such data.
9. Proposal to Establish a Department of Otolaryngology – The Committee had no objections to the proposal and supported the establishment of a Department of Otolaryngology.
10. The UCORP representative provided reports on the following main issues discussed at the monthly UCORP meetings; no action needed/taken:
   a. MRU reviews and engagement
   b. Climate-focused research funding
   c. Patent policy
   d. Oracle transition
   e. Intellectual property
   f. Lab fee research program
The General Campus Research Grant Committee met on November 22, 2022, February 10, 2023 and April 20, 2023 to review research and bridge grant applications for FY 2022/23. Bridge grant applicants were required to demonstrate strong proposals for continuing research programs that had received peer-reviewed extramural funding for at least four of the last five years and, that despite efforts to re-establish funding, were without any funding. The Committee’s evaluation of proposals emphasized the quality of the research, past publication record, and the likelihood of future funding.

The existing policies regarding awards for bridge funding, individual research proposals, travel to scholarly meetings, and the intercampus exchange program were thoroughly reviewed by the Committee and a few notable modifications were incorporated in the application call letters on the Committee’s website at http://senate.ucsd.edu/grants-awards/grant-funding/. The Committee agreed to continue its policy limiting the ceiling for bridge funding to $40,000. For FY 2022/23, the Committee agreed to raise the ceiling for individual grants to $20,000, with the maximum cumulative support figure of $80,000 over a ten-year period. The policy for Travel to Scholarly Meetings cover any combination of a standard economy airfare, registration fee, and/or hotel for faculty. For FY2022/23, domestic travel awards were limited to $750; foreign travel awards were limited to $1500.

Research – Of 160 individual applications reviewed, 137 were funded for a total of $1,635,609. Three awards totaling $60,000 were made possible by the Earl C. Anthony Endowment Trust Fund. 22 individual research applications totaling $333,132 were denied due to not meeting eligibility criteria. Nine bridge funding program applications were reviewed and seven were funded, totaling $277,118. Two bridge funding requests totaling $74,080 were denied because they did not meet the bridge funding criteria. The breakdown of awards by faculty rank is as follows:

<table>
<thead>
<tr>
<th>Level</th>
<th>Awards</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assistant Professor</td>
<td>40 (2 bridge)</td>
<td></td>
</tr>
<tr>
<td>Associate Professor</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Professor</td>
<td>69 (4 Bridge)</td>
<td></td>
</tr>
<tr>
<td>Professor Emeritus</td>
<td>2 (1 Bridge)</td>
<td></td>
</tr>
<tr>
<td>Assistant Teaching Professor</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Teaching Professor</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>144</td>
<td></td>
</tr>
</tbody>
</table>

The breakdown by department and discipline is as follows:

<table>
<thead>
<tr>
<th>Department</th>
<th>Awards</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anthropology</td>
<td>4</td>
<td>39,545</td>
</tr>
<tr>
<td>Cognitive Science</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Communication</td>
<td>9</td>
<td>106,846</td>
</tr>
<tr>
<td>Economics</td>
<td>8</td>
<td>132,646</td>
</tr>
<tr>
<td>Education Studies</td>
<td>1</td>
<td>20,000</td>
</tr>
<tr>
<td>Ethnic Studies</td>
<td>1</td>
<td>8,776</td>
</tr>
<tr>
<td>Linguistics</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Political Science</td>
<td>1</td>
<td>2,595</td>
</tr>
<tr>
<td>Psychology</td>
<td>4</td>
<td>59,655</td>
</tr>
<tr>
<td>Sociology</td>
<td>1</td>
<td>14,810</td>
</tr>
<tr>
<td>Urban Studies and Planning</td>
<td>1</td>
<td>19,944</td>
</tr>
<tr>
<td>Total Social Sciences</td>
<td>30</td>
<td>$ 404,817</td>
</tr>
<tr>
<td>-----------------------</td>
<td>----</td>
<td>-----------</td>
</tr>
<tr>
<td>History</td>
<td>18</td>
<td>162,027</td>
</tr>
<tr>
<td>Literature</td>
<td>21</td>
<td>161,249</td>
</tr>
<tr>
<td>Music</td>
<td>13</td>
<td>157,838</td>
</tr>
<tr>
<td>Philosophy</td>
<td>12</td>
<td>119,163</td>
</tr>
<tr>
<td>Theatre &amp; Dance</td>
<td>4</td>
<td>57,083</td>
</tr>
<tr>
<td>Visual Arts</td>
<td>14</td>
<td>179,802</td>
</tr>
<tr>
<td><strong>Total Humanities and Arts</strong></td>
<td>83</td>
<td>$ 837,162</td>
</tr>
<tr>
<td>Cell &amp; Developmental Biology</td>
<td>2</td>
<td>29,572</td>
</tr>
<tr>
<td>Ecology, Behavior &amp; Evolution</td>
<td>1</td>
<td>14,377</td>
</tr>
<tr>
<td>Molecular Biology</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Neurobiology</td>
<td>2</td>
<td>33,697</td>
</tr>
<tr>
<td><strong>Total Division of Biological Sciences</strong></td>
<td>5</td>
<td>$ 77,646</td>
</tr>
<tr>
<td>Chemistry &amp; Biochemistry</td>
<td>3</td>
<td>59,943</td>
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<tr>
<td>Mathematics</td>
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<td>0</td>
</tr>
<tr>
<td>Physics</td>
<td>1</td>
<td>17,828</td>
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<tr>
<td><strong>Total Division of Physical Sciences</strong></td>
<td>4</td>
<td>$ 77,771</td>
</tr>
<tr>
<td>Bioengineering</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>CSE</td>
<td>1</td>
<td>19,999</td>
</tr>
<tr>
<td>ECE</td>
<td>1</td>
<td>20,000</td>
</tr>
<tr>
<td>Nanoengineering</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>MAE</td>
<td>2</td>
<td>40,000</td>
</tr>
<tr>
<td>Structural Engineering</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total Engineering</strong></td>
<td>4</td>
<td>$ 79,999</td>
</tr>
<tr>
<td>Rady School of Management</td>
<td>7</td>
<td>108,025</td>
</tr>
<tr>
<td>School of GPS</td>
<td>4</td>
<td>50,189</td>
</tr>
<tr>
<td><strong>Total Schools</strong></td>
<td>11</td>
<td>$ 158,214</td>
</tr>
</tbody>
</table>

**Total Individual Research Awards:** 137 $ 1,635,609

**Bridge Funding Awards**
| Chemistry and Biochemistry | 2 | 77,344 |
| Cognitive Science          | 1 | 39,796 |
| Molecular Biology          | 1 | 39,979 |
| Physics                    | 3 | 120,000|
| **Total Bridge Funding Awards:** 7 $ 277,118 |

**GRAND TOTAL:** 144 $ 1,912,727

*Intercampus Exchange Program (FY 2022/23)* – Four academic departments received grants totaling $16,806 in support of the University's Intercampus Exchange Program. A formula of $75 per Academic Senate member plus $11 per registered graduate student was used to determine the total amount of this award.

*Travel to a Scholarly Meeting* – Of 158 applications reviewed, 149 were funded totaling $151,446. 83 of the trips funded were for foreign travel and 66 for domestic travel. The breakdown of awards by faculty rank is as follows:

<table>
<thead>
<tr>
<th>Level</th>
<th>Awards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assistant Professor</td>
<td>48</td>
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<tr>
<td>Associate Professor</td>
<td>28</td>
</tr>
<tr>
<td>Professor</td>
<td>66</td>
</tr>
<tr>
<td>Professor Emeritus</td>
<td>2</td>
</tr>
</tbody>
</table>
The breakdown by discipline and department is as follows:

<table>
<thead>
<tr>
<th>Department</th>
<th>Awards</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anthropology</td>
<td>3</td>
<td>3,240</td>
</tr>
<tr>
<td>Cognitive Science</td>
<td>3</td>
<td>3,750</td>
</tr>
<tr>
<td>Communication</td>
<td>11</td>
<td>10,633</td>
</tr>
<tr>
<td>Economics</td>
<td>14</td>
<td>12,473</td>
</tr>
<tr>
<td>Education Studies</td>
<td>4</td>
<td>5,204</td>
</tr>
<tr>
<td>Ethnic Studies</td>
<td>3</td>
<td>2,250</td>
</tr>
<tr>
<td>Linguistics</td>
<td>1</td>
<td>1,500</td>
</tr>
<tr>
<td>Political Science</td>
<td>7</td>
<td>7,200</td>
</tr>
<tr>
<td>Psychology</td>
<td>2</td>
<td>3,000</td>
</tr>
<tr>
<td>Sociology</td>
<td>3</td>
<td>2,890</td>
</tr>
<tr>
<td>USP</td>
<td>1</td>
<td>750</td>
</tr>
<tr>
<td><strong>Total Social Sciences</strong></td>
<td><strong>52</strong></td>
<td><strong>$ 52,890</strong></td>
</tr>
<tr>
<td>History</td>
<td>15</td>
<td>13,229</td>
</tr>
<tr>
<td>Literature</td>
<td>12</td>
<td>10,814</td>
</tr>
<tr>
<td>Music</td>
<td>7</td>
<td>7,200</td>
</tr>
<tr>
<td>Philosophy</td>
<td>5</td>
<td>5,129</td>
</tr>
<tr>
<td>Theatre &amp; Dance</td>
<td>2</td>
<td>2,250</td>
</tr>
<tr>
<td>Visual Arts</td>
<td>2</td>
<td>1,824</td>
</tr>
<tr>
<td><strong>Total Humanities &amp; Arts</strong></td>
<td><strong>43</strong></td>
<td><strong>$ 40,446</strong></td>
</tr>
<tr>
<td>Cell &amp; Developmental Biology</td>
<td>2</td>
<td>2,250</td>
</tr>
<tr>
<td>Ecology, Behavior &amp; Evolution</td>
<td>1</td>
<td>750</td>
</tr>
<tr>
<td>Molecular Biology</td>
<td>2</td>
<td>2,250</td>
</tr>
<tr>
<td>Neurobiology</td>
<td>4</td>
<td>4,843</td>
</tr>
<tr>
<td><strong>Total Biological Sciences</strong></td>
<td><strong>9</strong></td>
<td><strong>$ 10,093</strong></td>
</tr>
<tr>
<td>Chemistry &amp; Biochemistry</td>
<td>7</td>
<td>7,500</td>
</tr>
<tr>
<td>Mathematics</td>
<td>3</td>
<td>2,868</td>
</tr>
<tr>
<td>Physics</td>
<td>3</td>
<td>2,874</td>
</tr>
<tr>
<td><strong>Total Physical Sciences</strong></td>
<td><strong>12</strong></td>
<td><strong>$ 13,242</strong></td>
</tr>
<tr>
<td>Bioengineering</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>CSE</td>
<td>4</td>
<td>4,450</td>
</tr>
<tr>
<td>ECE</td>
<td>3</td>
<td>3,000</td>
</tr>
<tr>
<td>MAE</td>
<td>8</td>
<td>10,125</td>
</tr>
<tr>
<td>Nanoengineering</td>
<td>4</td>
<td>4,500</td>
</tr>
<tr>
<td>Structural Engineering</td>
<td>3</td>
<td>3,750</td>
</tr>
<tr>
<td><strong>Total Engineering</strong></td>
<td><strong>22</strong></td>
<td><strong>$ 25,875</strong></td>
</tr>
<tr>
<td>School of GPS</td>
<td>6</td>
<td>5,950</td>
</tr>
<tr>
<td>Rady School of Management</td>
<td>4</td>
<td>2,950</td>
</tr>
<tr>
<td><strong>Total Schools/Colleges</strong></td>
<td><strong>10</strong></td>
<td><strong>$ 8,900</strong></td>
</tr>
</tbody>
</table>

**GRAND TOTAL:** 149 $151,446
HEALTH SCIENCES RESEARCH GRANT COMMITTEE

The Health Sciences Research Grant Committee met on November 9, 2022, February 21, 2023, and May 5, 2023 to review applications for FY 2022/23. The existing policies regarding awards for bridge funding, individual research proposals and travel to scholarly meetings were thoroughly reviewed by the Committee, and the modifications were incorporated in the application call letters on the Committee’s website at http://senate.ucsd.edu/grants-awards/grant-funding/. The Committee agreed to maintain its policy limiting the ceiling for individual grants to $15,000 and to allow for a cumulative total of pilot grant support of $60,000 over a ten-year period per investigator. Also maintained was the policy limiting the ceiling on bridge funding to $40,000. Because of budget constraints, they also agreed to limit Travel to a Scholarly Meeting grants to Academic Senate members only, maintaining the ceiling of $750 for payment towards the cost of an economy airfare and/or registration fee every other fiscal year.

Research – Of 59 research applications reviewed, 35 were funded, totaling $519,089; 23 requests totaling $334,649 were denied due to budget constraints or applicants not meeting eligibility criteria. The Committee reviewed 8 applications for bridge funding and funded 7 bridge program applications, totaling $262,052. The breakdown of the awards by rank is as follows:

<table>
<thead>
<tr>
<th>Level</th>
<th>Awards</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assistant Prof/Assistant Prof-in-Res</td>
<td>8 (1 Bridge)</td>
<td></td>
</tr>
<tr>
<td>Assistant Prof of Clinical X</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Assistant Adjunct Professor</td>
<td>4 (1 Bridge)</td>
<td></td>
</tr>
<tr>
<td>Assistant Clinical Professor</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Assistant Project Scientist</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Associate Prof/Associate Prof-in-Res</td>
<td>4 (1 Bridge)</td>
<td></td>
</tr>
<tr>
<td>Associate Prof of Clinical X</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Associate Adjunct Professor</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Associate Clinical Professor</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Clinical Professor</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Prof/Prof-in Res</td>
<td>12 (3 Bridge)</td>
<td>194,937</td>
</tr>
<tr>
<td>Prof of Clinical X</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Professor Emeritus</td>
<td>1 (1 Bridge)</td>
<td></td>
</tr>
<tr>
<td>Research Scientist</td>
<td>1</td>
<td>42</td>
</tr>
</tbody>
</table>

The breakdown by department is as follows:

<table>
<thead>
<tr>
<th>Department</th>
<th>Awards</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anesthesiology</td>
<td>2</td>
<td>30,000</td>
</tr>
<tr>
<td>Cancer Center</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Cellular Molecular Medicine</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Dermatology</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Emergency Medicine</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Medicine</td>
<td>13</td>
<td>194,937</td>
</tr>
<tr>
<td>Neurosciences</td>
<td>2</td>
<td>30,000</td>
</tr>
<tr>
<td>Ophthalmology</td>
<td>1</td>
<td>15,000</td>
</tr>
<tr>
<td>Orthopedic Surgery</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Pathology</td>
<td>2</td>
<td>30,000</td>
</tr>
<tr>
<td>Pediatrics</td>
<td>3</td>
<td>44,999</td>
</tr>
<tr>
<td>Pharmacology</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Psychiatry</td>
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<td>44,880</td>
</tr>
<tr>
<td>Radiation Medicine</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Radiology</td>
<td>1</td>
<td>15,000</td>
</tr>
<tr>
<td>Obstetrics, Gynecology, and Reproductive Sciences</td>
<td>3</td>
<td>39,994</td>
</tr>
<tr>
<td>School of Public Health</td>
<td>1</td>
<td>15,000</td>
</tr>
<tr>
<td>SSPPS</td>
<td>1</td>
<td>14,279</td>
</tr>
</tbody>
</table>
Surgery 2 30,000
Urology 1 15,000
Total Individual Research Awards: **35** $519,089

**Bridge Funding Awards**
- Anesthesiology 2 79,702
- Cellular Molecular Medicine 1 40,000
- Medicine 2 62,350
- Psychiatry 1 40,000
- Surgery 1 40,000
Total Bridge Funding Awards: **7** $262,052

**GRAND TOTAL:** $781,141

**Travel to a Scholarly Meeting** – Of 27 applications reviewed, 24 were funded totaling $16,683. 11 of the trips funded were for foreign travel and 13 for domestic travel or virtual conference registration fees. The breakdown of the awards by rank is as follows:

<table>
<thead>
<tr>
<th>Level</th>
<th>Awards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asst Professor/Asst Prof-in-Res</td>
<td>3</td>
</tr>
<tr>
<td>Assistant Professor of Clinical</td>
<td>2</td>
</tr>
<tr>
<td>Assoc Professor/Assoc Prof-in Res</td>
<td>6</td>
</tr>
<tr>
<td>Associate Professor of Clinical</td>
<td>0</td>
</tr>
<tr>
<td>Associate Adjunct Professor</td>
<td>1</td>
</tr>
<tr>
<td>Professor/Prof-in-Res</td>
<td>9</td>
</tr>
<tr>
<td>Professor of Clinical X</td>
<td>2</td>
</tr>
<tr>
<td>Professor Emeritus</td>
<td>1</td>
</tr>
</tbody>
</table>
Total: 24

The breakdown of the awards by department is as follows:

<table>
<thead>
<tr>
<th>Department</th>
<th>Awards</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anesthesiology</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Cellular Molecular Medicine</td>
<td>1</td>
<td>750</td>
</tr>
<tr>
<td>Dermatology</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Emergency Medicine</td>
<td>1</td>
<td>750</td>
</tr>
<tr>
<td>Family Medicine/Public Health</td>
<td>3</td>
<td>2,250</td>
</tr>
<tr>
<td>Medicine</td>
<td>5</td>
<td>3,750</td>
</tr>
<tr>
<td>Neurosciences</td>
<td>2</td>
<td>1,028</td>
</tr>
<tr>
<td>Ophthalmology</td>
<td>2</td>
<td>1,300</td>
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<tr>
<td>Orthopedic Surgery</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Pathology</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Pediatrics</td>
<td>2</td>
<td>1,270</td>
</tr>
<tr>
<td>Pharmacology</td>
<td>1</td>
<td>537</td>
</tr>
<tr>
<td>Psychiatry</td>
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<td>1,468</td>
</tr>
<tr>
<td>Radiation Medicine</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Radiology</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Reproductive Medicine</td>
<td>2</td>
<td>1,500</td>
</tr>
<tr>
<td>SSPPS</td>
<td>2</td>
<td>1,500</td>
</tr>
<tr>
<td>Surgery</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Urology</td>
<td>1</td>
<td>580</td>
</tr>
</tbody>
</table>
Total Travel Awards: **24** $16,683

**MARINE SCIENCES RESEARCH GRANT COMMITTEE**

The Marine Sciences Research Grant Committee met on November 21, 2022, February 6, 2023, and April 21, 2023 to review applications for FY 2022/23. The existing policies regarding awards for research and travel to
scholarly meetings were thoroughly reviewed by the Committee. For Fall 2022 and Winter 2023, the Committee agreed to continue its policy to maintain the ceiling for individual grants at $15,000 and the maximum cumulative support figure at $45,000 over a ten-year period. For Spring 2023, the Committee agreed to raise the ceiling for individual grants to $20,000, with the maximum cumulative support figure of $60,000 over a ten-year period. The modifications were incorporated in the application call letters on the Committee’s website at http://senate.ucsd.edu/grants-awards/grant-funding/. The ceilings for payment towards the cost of airfare on economy/coach tickets for Travel to a Scholarly Meeting remained the same as previous years, at $1500 for foreign travel and $1000 for domestic travel.

**Research** – Of 8 research applications reviewed, 8 were funded, totaling $121,745. The breakdown of the awards by rank is as follows:

<table>
<thead>
<tr>
<th>Level</th>
<th>Awards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assistant Professor</td>
<td>2</td>
</tr>
<tr>
<td>Associate Professor</td>
<td>1</td>
</tr>
<tr>
<td>Professor</td>
<td>2</td>
</tr>
<tr>
<td>Professor Emeritus</td>
<td>0</td>
</tr>
<tr>
<td>Associate Teaching Professor</td>
<td>1</td>
</tr>
<tr>
<td>Assistant Research Scientist</td>
<td>1</td>
</tr>
<tr>
<td>Associate Research Scientist</td>
<td>0</td>
</tr>
<tr>
<td>Research Scientist</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Level</th>
<th>Awards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assistant Professor</td>
<td>1</td>
</tr>
<tr>
<td>Associate Professor</td>
<td>1</td>
</tr>
<tr>
<td>Professor</td>
<td>6</td>
</tr>
<tr>
<td>Associate Research Scientist</td>
<td>0</td>
</tr>
<tr>
<td>Assistant Project Scientist</td>
<td>1</td>
</tr>
<tr>
<td>Project Scientist</td>
<td>0</td>
</tr>
</tbody>
</table>

The breakdown of the awards by division is as follows:

<table>
<thead>
<tr>
<th>Division</th>
<th>Awards</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMBB</td>
<td>2</td>
<td>31,360</td>
</tr>
<tr>
<td>GRD</td>
<td>3</td>
<td>42,601</td>
</tr>
<tr>
<td>IGPP</td>
<td>2</td>
<td>27,833</td>
</tr>
<tr>
<td>IOD</td>
<td>1</td>
<td>19,951</td>
</tr>
<tr>
<td>Total Research Awards:</td>
<td>8</td>
<td>$121,745</td>
</tr>
</tbody>
</table>

**Travel to a Scholarly Meeting** – Of 9 applications reviewed, 9 were funded totaling $13,293. 8 of the trips funded were for foreign travel and 1 for domestic travel or virtual conference registration fees. The breakdown of the awards by rank is as follows:

<table>
<thead>
<tr>
<th>Level</th>
<th>Awards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assistant Professor</td>
<td>1</td>
</tr>
<tr>
<td>Associate Professor</td>
<td>1</td>
</tr>
<tr>
<td>Professor</td>
<td>6</td>
</tr>
<tr>
<td>Associate Research Scientist</td>
<td>0</td>
</tr>
<tr>
<td>Assistant Project Scientist</td>
<td>1</td>
</tr>
<tr>
<td>Project Scientist</td>
<td>0</td>
</tr>
</tbody>
</table>

The breakdown of the awards by department is as follows:

<table>
<thead>
<tr>
<th>Division</th>
<th>Awards</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>CASPO</td>
<td>2</td>
<td>$2,462</td>
</tr>
<tr>
<td>CMBB</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>GRD</td>
<td>1</td>
<td>1,500</td>
</tr>
<tr>
<td>IGPP</td>
<td>2</td>
<td>3,000</td>
</tr>
<tr>
<td>IOD</td>
<td>1</td>
<td>1,500</td>
</tr>
<tr>
<td>MBRD</td>
<td>2</td>
<td>3,000</td>
</tr>
<tr>
<td>MPL</td>
<td>1</td>
<td>1,831</td>
</tr>
<tr>
<td>Total Travel Awards:</td>
<td>9</td>
<td>$13,293</td>
</tr>
</tbody>
</table>
Respectfully submitted,

Division Committee
Jing Yang, Chair
George Fuller, Vice Chair
Julie Burelle
Gert Cauwenberghs, UCORP Representative
Andrea Chiba
James Day
Anna DiNardo
Hemal Patel
Ravi Ramamoorthi
Dong-Er Zhang
Elina Zuniga
Corinne Peek-Asa, ex officio

General Campus Research Grant Committee
Lei Liang, Chair
Uri Gneezy
Kenneth Loh
Joseph Pogliano
Ivan Schuller
Gila Sher
Elana Zilberg

Health Sciences Research Grant Committee
Victoria Risbrough, Chair
Jennifer Anger
Frank Furnari
James Murphy
Jianhua Shao
Farah Sheikh

Marine Sciences Research Grant Committee
Jennifer R. Taylor, Chair
Matthias Morzfeld
Dariusz Stramski
The Diversity, Equity, and Inclusion (DEI) Course Requirement Committee is a new committee of the UC San Diego Academic Senate, beginning in Fall 2020. The DEI Course Requirement Committee makes recommendations to the Undergraduate Council on proposed new undergraduate and existing undergraduate courses that may be used for the purpose of fulfilling the Diversity, Equity, and Inclusion Requirement and the criteria these courses are expected to meet (see Divisional Bylaw 211).

Proposals submitted to satisfy the DEI Requirement
The DEI Course Requirement Committee received 20 proposals for courses to satisfy the DEI requirement. The DEI Course Requirement Committee recommended 14 courses that met the criteria to be designated as a DEI course to the Undergraduate Council for approval. The Undergraduate Council approved the following 14 courses to satisfy the DEI requirement:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>AWP 103</td>
<td>Writing About Law</td>
</tr>
<tr>
<td>BILD 61</td>
<td>Biology, Race, and Society</td>
</tr>
<tr>
<td>CHEM 117</td>
<td>Biomedical Research and Health Disparities</td>
</tr>
<tr>
<td>COMM 111B</td>
<td>Global Borders: Communication &amp; Conflict</td>
</tr>
<tr>
<td>EDS 111</td>
<td>Child, Family and Community Partnership with Schools</td>
</tr>
<tr>
<td>EDS 111GS</td>
<td>Child, Family and Community Partnership with Schools</td>
</tr>
<tr>
<td>ETHN 114M</td>
<td>Anti-Racist Medicine and New Perspectives in Health Care</td>
</tr>
<tr>
<td>HILD 60</td>
<td>Global Black History through Biography</td>
</tr>
<tr>
<td>LTEN 185GS</td>
<td>Themes in African American Literature</td>
</tr>
<tr>
<td>POLI 13/13R/13D/13DR</td>
<td>Power and Justice</td>
</tr>
<tr>
<td>SOCI 144P</td>
<td>Sociology of Policing</td>
</tr>
<tr>
<td>VIS 6</td>
<td>Race, Gender, and Robots</td>
</tr>
<tr>
<td>VIS 102</td>
<td>Democratizing the City</td>
</tr>
<tr>
<td>VIS 157D</td>
<td>US Civil Rights in Art and Media</td>
</tr>
</tbody>
</table>

Proposals submitted for DEI mini-grant
To provide course diversity and encourage new courses Senate faculty may be provided up to $1,500 for new or substantially revised courses approved by UGC to fulfill the DEI Requirement. The DEI Course Requirement Committee awarded three mini-grants for a total of $4,500.

Other DEI Course Requirement Committee activities
The DEI Course Requirement Committee reviewed the proposed requirement for Climate Change graduation requirement and evaluated its own proposal guidelines. The Committee plans to work closely with the new DEI program administrators as it develops.

Respectfully submitted,

Mark Hendrickson, Chair, 2022-2023
DEI Course Requirement Committee
The Educational Policy Committee (EPC) makes recommendations to the Division concerning educational policy matters; it establishes policies and procedures related to undergraduate and graduate education, and it reviews and approves or disapproves all petitions requesting exceptions to the Regulations of the Academic Senate (see Divisional Bylaw 200). A brief enumeration of the items considered by the Educational Policy Committee during 2022–23 is presented here.

Policy Exceptions
- EPC approved exceptions to the Policy on Distance Education Courses for instructors with a documented disability and instructors facing extenuating circumstances for 2022-2023.
- EPC approved a limited-term exception to the Policy on Distance Education Courses for Summer 2023.
- EPC initiated revisions to the Policy on Distance Education Courses. The Committee will finalize the policy revisions in 2023-24.

Senate Regulations and Appendices
- San Diego Senate Appendix II. UCSD Policy on Integrity of Scholarship
  The Committee approved and submitted proposed amendments to Appendix II, to the Division for review and approval. The proposed amendments were to the following sections: Section II.A, Section II.B, Section II.C, Section III.B, Section III.C, Section III.G, Section III.M, Section III.P, Section III.Q, and to change the appendix name. The proposed changes were initiated by the Academic Integrity Office.
- San Diego Senate Regulation 502. Grade Appeals
  The Committee initiated a review of the Division’s grade appeal process. The Committee’s review will continue in 2023-24.
- San Diego Senate Regulation 600
  The Committee initiated a review of SD 600, Section H, to align the Division’s Residence requirement with the update systemwide Residence requirement. The Committee’s review will continue in 2023-24.

Petitions Requesting Exceptions to the Regulations of the Academic Senate
- The Committee received 292 undergraduate student petition requests and 414 graduate student petition requests. Of these requests, 99.8 % were approved, 0% were denied, and .2% required no action or were withdrawn.

Grade Appeals
- The Committee received three grade appeals. In three cases, EPC concluded that the allegation that the student’s grades was determined using non-academic criteria was not supported by substantial evidence.

Endowed Chair Proposals
- The Committee reviewed and endorsed four proposals submitted by the Executive Vice Chancellor to establish endowed chairs at UC San Diego.

Respectfully Submitted,

Geoffrey Cook, Chair
Stephanie Mel, Vice Chair
Charles Curtis
Sanjoy Dasgupta
The Graduate Council of the San Diego Division of the Academic Senate has a variety of responsibilities regarding the oversight of graduate education at UCSD (see Divisional Bylaw 220). The majority of the business handled by the Council this year fell into the following areas: proposals for new degree programs, modifications to existing programs, reviews of existing programs, and student petitions requesting exceptions to Graduate Council policies. In addition, the Council issued Syllabus Guidance for Directed Research and Teaching Apprenticeship Courses to assist in clarifying the academic and mentorship expectations for directed research and teaching apprenticeship courses. A brief enumeration of the issues considered by the Graduate Council in 2022-23 is presented here.

Proposals for New Degree Programs
The Graduate Council considered four proposals to establish new degree programs. Three proposals were approved by the Graduate Council. The Council’s consideration of one proposal is still in process and will carry forward to the 2023-24 academic year.

New degree program proposals approved by the Graduate Council:
- Proposal to establish a Master of Advanced Studies in Physician Assistant Studies.
- Department of Chemistry and Biochemistry’s proposal to establish PhD specializations in Biochemistry and Molecular Biophysics in Computational Science, Multiscale Biology, Quantitative Biology, and in Interdisciplinary Environmental Research.
- Department of Mechanical and Aerospace Engineering’s proposal to establish two graduate specializations in Convergent Systems Engineering in Cyber-Physical Social Systems and in Value Supply Chains.

Proposals for Modifications to Graduate Degree Programs
The Graduate Council considered 14 proposals to modify existing graduate degree programs. 14 proposals were approved.

Modifications to Graduate Degree Programs approved by the Graduate Council:
- UC San Diego Extended Studies and Public Programs’ proposal to update the curriculum for the MAS in Clinical Research degree program.
- Mathematics and Science Education Joint Doctoral Program’s proposal to update curricular requirements for the JDP in Mathematics and Science Education.
- Department of Mechanical and Aerospace Engineering’s proposal to change the name of the Master of Advanced Studies in Architecture based Enterprise Systems Engineering to the Master of Advanced Studies in Convergent Systems Engineering with a specialization in Architecture-based Enterprise Systems.
- Department of Education Studies’ proposal to update the curriculum for the Master of International Affairs program and the Master of Public Policy program.
- Department of Theatre and Dance’s proposal to update the course requirements for the Joint Ph.D. in Theatre and Drama.
- The Department of Astronomy & Astrophysics’ proposal to transfer the Astronomy Graduate Program from the Physics Department to the Department of Astronomy & Astrophysics.
- The Biomedical Sciences Graduate Program’s (BMS) proposed changes to curricular requirements.
- Rady School of Management’s proposals to change the MBA Program of study, to change the modality for the FlexWeekend Master of Business Administration (MBA) program, and to change the units for the FlexEvening and FlexWeekend Master of Business Administration (MBA) programs.
Proposals to Discontinue Graduate Degree Programs
The Graduate Council reviewed one proposal to discontinue a graduate degree program, which was reviewed in accordance with Appendix IV of the Senate Manual, Policy and Procedures on Transfer, Consolidation, Disestablishment, and Discontinuance of Academic Programs and Units. The Graduate Council agreed with the Senate Ad Hoc Review Committee to discontinue the program.

Proposal recommended for discontinuation by the Graduate Council:

Proposals to establish Distance Education Courses
The Graduate Council considered and approved 8 proposals to establish new distance education courses in accordance with the Policy on Distance Education Courses.

Distance education course proposals approved by the Graduate Council:
- Skaggs School of Pharmacy and Pharmaceutical Sciences (DDPM 200R, DDPM 208R, and DDPM 214R)
- Halicioğlu Data Science Institute (DSC 256R, DSC 257R)
- Department of Education Studies (EDS 206R)
- Rady School of Management (MGT 451R)
- Herbert Wertheim School of Public Health and Human Longevity Science (FMPH 417R)

Proposals to waive GRE General or Subject Tests
The Graduate Council considered and approved four proposals from departments and programs to permanently remove the GRE General Test as an admissions requirement and 21 proposals from departments and programs to temporarily waive the GRE for the 2023-2024 Admissions Cycle (Fall 2024 admission).

Reviews of Graduate Degree Programs
Graduate programs are reviewed by the Graduate Council once every eight years. An external committee visits the program or department under review, and submits its findings to the Graduate Council for consideration. The program or department under review has an opportunity to respond to issues raised by the external review committee prior to the Graduate Council’s review. After considering both the external committee report and the department or program’s response, the Graduate Council provides recommendations to the program or department during its initial review. Progress towards achieving those recommendations and goals set forth in the initial review is examined in a follow-up review conducted by the Graduate Council. The following programs and departments were reviewed:

Graduate Program Reviews:
- Department of Cognitive Science (combined review)
- Department of Economics (combined review)
- Department of Electrical and Computer Engineering (combined review)
- Department of Sociology (combined review)
- Joint Doctoral Program in Education Studies
- Joint Doctoral Program in Mathematics and Science Education
- Joint Doctoral Program in Research on Substance Use
- Materials Science and Engineering Program
- Science Studies Program

Three-Year Program Review Guidelines for Self-Supporting Graduate Professional Degree Programs (SSGPDPs)
The Graduate Council developed guidelines to review SSGPDPs three years after establishment, beginning with SSGPDPs due for a three-year review in 2022-20223

SSGPDP Review:
- Master of Advanced Studies in Climate Science and Policy
Other Business
The Graduate Council developed guidelines for Syllabus Guidelines for Directed Research and Teaching Apprenticeship Courses to assist in clarifying the academic and mentorship expectations for directed research and teaching apprenticeship courses.

Respectfully submitted,

Timothy Gentner, Chair
Deborah Spector, Vice Chair
Henry Abarbanel
Stephanie Fraley
Ananda Goldrath
Bobby McElver
Cristian Popescu
Hyoduk Shin
Jennifer Smith
Dean Tullsen

James Antony, Dean of the Division of Graduate Education and Postdoctoral Affairs (ex officio)
The Undergraduate Council of the UC San Diego Academic Senate has a variety of responsibilities regarding the oversight of undergraduate education at UC San Diego (see Divisional Bylaw 210). The majority of the business handled by the Council during the year is divided into the following areas: proposals for new majors and minors, modifications to existing majors and minors, modifications to existing College curriculum, modifications to Senate Regulations, reviews of existing undergraduate programs, and course approvals. In addition, the opinion of the Council was sought on a number of other Systemwide and Divisional issues. A brief enumeration of the issues considered by the Undergraduate Council is presented here.

**Proposals for New Majors and Minors**
The Undergraduate Council considered four requests to establish a new major.

**Proposals for Modifications to Existing Majors and Minors**
The Undergraduate Council considered 11 requests to modify existing majors and minors. 10 proposals were approved by the Council.

**Proposals for R Courses**
The Undergraduate Council considered 23 requests for R courses. 23 proposals were approved by the Council.

**Reviews of Undergraduate Degree Programs**
Undergraduate programs are reviewed by the Undergraduate Council once every seven to eight years. A review committee, including one member of the Council, visits (remotely in 2022-2023) the college, program, or department under review, and submits its findings to the Undergraduate Council for consideration. The college, program, or department under review has an opportunity to respond to issues raised by the review committee prior to the review and recommendation of the Undergraduate Council. After considering both the committee report and the program’s response, the Undergraduate Council provides recommendations to the college, program, or department. Progress towards achieving those recommendations and goals set forth in the initial review is examined in a follow-up review conducted by the Undergraduate Council.

**Undergraduate and Combined Program Reviews conducted in 2022-2023**
- Economics (combined undergraduate and graduate)
- Sociology (combined undergraduate and graduate)
- Cognitive Science (combined undergraduate and graduate)
- Electrical Engineering (combined undergraduate and graduate)
- German Studies (undergraduate only)
- Russian, East European, and Eurasian Studies (undergraduate only)
- Human Development Sciences (undergraduate only)

**Undergraduate Council Review and Recommendations issued in 2021-22:**
- Analytical Writing Program (undergraduate only)
- Environmental Systems (undergraduate only)
- Urban Studies & Planning (undergraduate only)
- Sixth College (undergraduate only)
- Anthropology (combined undergraduate and graduate)
- Academic Internship Program (undergraduate self-study)
- Chicana & Latinx Studies (undergraduate self-study)
• Law & Society (undergraduate self-study)

Course Approvals
The Undergraduate Council approved 71 requests to establish new courses and 575 requests to revise existing courses.

Undergraduate Instructional Assistants
The Undergraduate Council approved approximately 951 undergraduate instructional assistant applications.

Other Activities
The Undergraduate Council established guidelines for securing permeant approval for piloted R courses. The Undergraduate Council, in coordination with the Graduate Council, updated the self-study guidelines and charge letters for combined program reviews and undergraduate program reviews. The Council also provided further review and analysis of the Policy for Distance Education to relevant Senate stakeholders.

Respectfully submitted,
Mirle Rabinowitz Bussell, 2023 UGC Chair
REPORT OF THE GRADUATE COUNCIL

In June 2023, the Graduate Council approved a proposal to establish a new self-supporting graduate professional degree program of study leading to a Master of Advanced Studies in Physician Assistant Studies (MAS-PAS). The degree program is an accreditation requirement for a physician assistant (PA) program.

The Council is supportive of this academic endeavor and recommends that the Representative Assembly approve the proposal.

Arshad Desai, Chair
Graduate Council

The complete proposal is available for review: https://senate.ucsd.edu/media/653921/som-proposed-mas-in-physician-assistant-studies.pdf

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Executive Summary

The University of California, San Diego School of Medicine (UCSD-SOM) proposes a new self-supporting graduate degree program leading to a Master of Advanced Studies in Physician Assistant Studies (MAS-PAS). An important component of the UC San Diego Atkinson Physician Assistant Education Program proposal, the awarding of a Master’s degree is an accreditation requirement for physician assistant (PA) programs nationally. The local and national need for additional qualified medical practitioners who practice as part of a medical team is well recognized, and this would be the second PA program in the University of California system, complementing that of UC Davis. The Program is committed to educating learners from a diverse array of backgrounds, settings, and geographies to address the healthcare needs of the state of California. The goal is to train outstanding practitioners who strive for excellence, collaborate effectively, recognize the needs of diverse populations, and embrace innovation and scientific discovery.

The Program is modelled after those in place across the country and follows the strict requirements of the Accreditation Review Commission on Education for the Physician Assistant (ARC-PA). It will attract a broad array of applicants and will recruit extensively from areas in the southern half of the State that currently are lacking adequate numbers of health care providers. The Program consists of 29 months of study for a cohort of 30 students with 15 months of didactic curriculum and 14 months of supervised clinical practice. To meet the requirements for the MAS degree, there is a capstone scholarly project and there are summative examinations after each phase of study. Upon completion of the Program, and after passing the Physician Assistant National Certification Examination (PANCE), graduates will be eligible to be licensed to practice in the United States. The aim is to train practitioners who are prepared to practice both in tertiary care and primary care settings.

The Program is headed by an experienced, well-qualified Associate Dean/Program Director, who is supported by a cohort of recently recruited senior PA faculty who will direct all PA courses. Primary PA faculty members have all held similar important positions in PA education prior to coming to UC San Diego. The Program’s Medical Director is an experienced physician educator and recently retired as the Dean for Medical Education in the School of Medicine (SOM). Guest lecturers from the SOM and the Skaggs School of Pharmacy will help to teach the didactic courses. During the clinical phase of the program, learners will train in UC San Diego Health and affiliated sites with PA, nurse practitioner, and
physician preceptors in the traditional apprenticeship medical model.

A generous bequest from former UC San Diego Chancellor and UC President Richard C. Atkinson has made this program possible. Until the bequest is realized and tuition and fees become available, the Program is leveraging resources from the University and the School of Medicine.
10b School of Computing, Information and Data Sciences (SCIDS) Full Proposal

Enclosure includes (each document is bookmarked):

- New School or College Review Process Information for Faculty Reviewers
- SCIDS Full Proposal- Revised 9-8-23
  - EVC Cover memo
  - EVC Cover memo appendix
  - SCIDS Full Proposal- clean version
  - SCIDS Full Proposal- highlighted version (highlighting indicates where substantive revisions were made to the proposal)
- SCIDS Proposers Response to Senate Council 10-2-23
- Senate Council Response to revised full proposal 9-22-23
- Senate Council Response to initial review of full proposal 6-15-23
- Senate Committee responses to full proposal
  - Committee on Diversity & Equity response 6-2-23
  - Committee on Planning & Budget response 5-31-23
  - Educational Policy Committee response 5-25-23
  - Graduate Council response 5-31-23
  - Undergraduate Council response 5-23-23
New School or College Review Process Information for Faculty Reviewers
March 2022

The review process to establish a new school or college has two steps or phases: the pre-proposal phase and the full (final) proposal phase. Both phases involve a review by the Divisional Academic Senate, the systemwide Academic Senate, and the UC Provost. Final approval is requested by the UC President of the UC Board of Regents. The Regents have final approval authority. The process normally takes a minimum of two years from the date a proposal is submitted for review to the date the Regents approve it. If the school or college is not established within seven years of approval by the Regents, a post-proposal update is required.

Pre-Proposal
The pre-proposal is not a final proposal. The purpose of a pre-proposal is to provide the Senate and others an opportunity to offer their input before a final proposal is drafted. Feedback from the review of the pre-proposal is taken into consideration in the drafting of the final proposal.

The Divisional Senate Chair distributes the pre-proposal to standing committees for review, including the Undergraduate Council (UGC), the Educational Policy Committee (EPC), the Committee on Planning and Budget (CPB), and the Graduate Council (GC; for proposals that include graduate education). Following committee review, the pre-proposal is discussed at Senate Council. Senate Council places the proposal on a Representative Assembly meeting agenda for a vote. Following the Divisional Senate review process, the Senate Chair reports back to the Chancellor.

If the Divisional Senate approves the pre-proposal, the Chancellor submits the pre-proposal to the UC Provost. The UC Provost submits the pre-proposal for review to the systemwide UC Academic Senate and to UCOP Academic Affairs for feedback. Systemwide Senate committee review includes the University Committee on Educational Policy (UCEP), University Committee on Planning and Budget (UCPB), and the Coordinating Committee on Graduate Affairs (CCGA). Following committee review, the pre-proposal is discussed at Academic Council. Academic Council’s feedback is transmitted to the proposers, the UC Provost, and the Divisional Senate Chair. The feedback from UCOP Academic Affairs is also sent to the proposers, the UC Provost, and the Divisional Senate Chair.

Full (Final) Proposal
A full (final) proposal is then drafted by the proposers, incorporating feedback from the pre-proposal phase. The full proposal is submitted through the same review process as the pre-proposal phase – Divisional Senate review, systemwide Senate review, and UCOP review. The full proposal must ultimately be approved by the systemwide UC Senate Academic Council before it can be submitted by the UC President to the UC Board of Regents for final approval.
September 8, 2023

John Hildebrand, Chair
UC San Diego Academic Senate

Subject: Proposal for the Creation of the School of Computing, Information and Data Sciences

Dear John,

Enclosed, please find the full proposal for the creation of the School of Computing, Information and Data Sciences and our responses to the comments and questions of the standing Senate Committees and Senate Council. These comments were supplied following our initial submission of the full proposal for the creation of the School of Computing, Information and Data Sciences (SCIDS) in late April. I thank you and the Academic Senate for your attention and invaluable contributions to the development of this important and timely proposal for the formation of a new school here at UC San Diego.

As you know, our pre-proposal was reviewed very favorably by the UC Office of the President and its Committees during the last academic year, and on April 5, we were invited to promptly submit the full proposal with the statement that they will look favorably on a proposal that takes into consideration the points they raised. The points raised were minor and mainly requested more clarity in a few areas; no fundamental issues with the pre-proposal were identified. We owe this strongly supportive response to the excellent input from our divisional Academic Senate, which made our pre-proposal robust and complete.

Given the dramatic rise in Schools of Data and Computing across the country amongst our peer institutions and the immense strength SDSC and HDSI represent as the foundational pillars of the proposed School, we sought to submit the Full Proposal as soon as possible. We made relevant revisions based on the systemwide input and presented an initial version of the Full Proposal to your office at the end of April of this year. While we recognize that submission date was too late for formal consideration of the proposal by the Representative Assembly in the last meeting of the 22-23 academic year, we are most appreciative that the standing Senate Committees CDE, CPB, EPC, GC and UGC as well as the Senate Council were able to provide an initial review of the proposal. We are similarly appreciative of the opportunity provided in the letter from Chair Postero on June 15 to respond to the comments and questions raised by these committees. SAVC Continetti, Professor Subramaniam, and Directors Gupta and Wuerthwein have engaged with stakeholders and revised the proposal in response to the Senate’s review. The specific responses are included in the appendix to this letter below, and I note that as evidence of this broader engagement, all of the support letters have been updated at the request of Senate Council, and we have notably added a support letter from the Vice Chancellor for Equity, Diversity and Inclusion.

Enclosed, please find both a clean copy of the full proposal and a version where substantive revisions or additions in response to the comments of Senate Council and the Senate Committees are noted. Our taskforce co-chairs, SAVC Continetti and Professor Subramaniam, look forward to engaging with the Senate and with your
permission presenting this full proposal for consideration by the Representative Assembly at the earliest possible date. It remains our hope that we can shepherd the proposal through to final approval from the UC Office of the President and systemwide Senate during this academic year so that we might launch the school in Fall 2024.

Both the Chancellor and I would be happy to discuss the timelines and/or the full proposal with you. We thank you for your consideration.

With best regards,

Elizabeth H. Simmons
Executive Vice Chancellor

Enclosed: Proposal for the Creation of the School of Computing, Information and Data Sciences

Proposal for the Creation of the School of Computing, Information and Data Sciences with highlighted changes

CC: Chancellor Khosla
Senior Associate Vice Chancellor Continetti
Distinguished Professor Shankar Subramaniam
APPENDIX: Responses to the Senate Council letter of June 15, 2023

Here please find responses to the points raised by Senate Council and the standing committees CDE, CPB, EPC, GC and UGC after their initial review of the full proposal at the end of the Spring Quarter. These responses delineate where changes have been made in the full proposal if applicable.

Senate Council and the GC noted that the support letters had not been updated since the pre-proposal stage over one year ago. As evidence of broad stakeholder engagement we have supplied new support letters appended to the proposal, including a new one from the Vice Chancellor for Equity, Diversity and Inclusion.

Senate Council, CPB, and GC all inquire further about how agreements with other departments will be established, and clarifications to the dotted line relationships proposed for existing departments strongly engaged with SCIDS. We have responded to this by adding a detailed process for creating memoranda of understanding between engaged departments and SCIDS in section 7.1.1. In addition, this section addresses questions regarding the administration of joint appointments as raised by GC, noting that established procedures and joint-appointment template MOUs used in the Chancellor’s Joint FTE program directly address these questions.

Senate Council, CDE, the EPC, GC and UGC all asked for further articulation of the status and plans to address Justice, Equity, Diversity and Inclusion in the practices and policies of the school. These are addressed in section 5. This question was also posed related to outreach and recruitment of transfer students in the building of a diverse student population pipeline, and this is now addressed in Sections 2.2, 3.3, 4.1 and 4.6. These revisions also address elements of the recommendation by UGC for the development of intentional lower division coursework to serve as onramps to better prepare students beginning the major.

Senate Council, CPB, EPC, GC all inquire regarding the resources required to establish and run the school. The proposal addresses these questions in detail in a number of places, and with the context that the campus is going to continue to grow in the coming years to accommodate higher enrollments. Established campus processes will be used to support the growth of the enrollment of the school as they do for other units. Note that we are not proposing to start SCIDS from scratch – HDSI and SDSC are both high-functioning and successful entities. Any time we start something new, however, there may be a need to provide funding in advance of the growth that justifies it, as has been the experience with supporting the growth of HDSI itself. In this regard in the revised proposal the Deans Office Financial Plan has been amended to ramp up staffing the unit more quickly, as outlined in Section 7.2.

CDE inquired regarding the projected enrollment capacity for majors in the undergraduate program. The revised proposal addresses how SCIDS will work within the new framework for dynamically managed enrollment that is being implemented across the university in section 4.1.

CBP commented on the strategy for self-assessment and noted that for a new undertaking like this an independent outside review after five years would be appropriate for the initial review of the new school. We agree, and this is explicitly noted in section 9.

Senate Council and the GC, while not recommending a specific name change from SCIDS, asked if there is a conflict with the use of Computing given that we have CSE and ECE departments. We considered this matter in our Taskforce meetings and came to the conclusion that ‘computing’ is ubiquitous much like ‘data’ and it would not pose a conflict if we called the new school Computing, Information and Data
Sciences. Further, the engagement of the San Diego Supercomputer Center in the school only strengthens this nomenclature.

Senate Council also pointed out the association of the spoken acronym SCIDS with a pathology and/or other negative connotations. We also considered this and the view of the Taskforce was that this term is familiar only the medical community and further that many synonyms have some secondary adverse associations. In our opinion, the use of SCIDS which is easy to pronounce and has clarity of purpose is not contraindicated by the limited use of similar acronyms in other contexts. Most importantly, our proposal to UCOP was submitted using the SCIDS nomenclature and its favorable assessment prompts us to not alter the name at this point. Alternative acronyms, such as SoCIDS, can be considered in the future.
SCHOOL OF COMPUTING, INFORMATION, AND DATA SCIENCES: A PROPOSAL

UC San Diego
September 2023
# Proposal for a School of Computing, Information and Data Sciences

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Executive Summary

UC San Diego proposes the creation of a School of Computing, Information and Data Sciences (SCIDS) to provide leadership in research, learning, and technological developments in the emerging areas of data, information, and computing sciences. The creation of the new school is consistent with the founding paradigm for UC San Diego as a hub of interdisciplinary inquiry and innovation. Each component essential for the success of this school and the broader vision of computing, information, and data science are already present at UC San Diego, such that founding this new school is a natural outcome given the evolution of human inquiry.

In early 2021, UC San Diego constituted a Working Group to explore the creation of a new School of Computing, Information and Data Sciences. In spring of 2021, based on extensive interviews the group conducted with the Deans, Vice-Chancellors, and Unit Heads, it was concluded that there was unanimous and enthusiastic support for the creation of SCIDS. The EVC then constituted a Task Force to develop a Proposal for SCIDS. The membership of the Task Force and the Charge to the group are presented in Appendix 1. The Task Force met regularly over Fall and early Winter and has developed this comprehensive proposal for establishing SCIDS.

The proposed school is envisioned to be UC San Diego’s next leap forward in addressing the most compelling need of modern times – transforming data into knowledge. Every walk of our day-to-day life, from the continuous myriad measurements of wearable sensors to the vast amounts of temporal data collected across the globe documenting climate change, warrant conversion into actionable knowledge and models. Addressing the data deluge is arguably the greatest intellectual challenge of our time and this will motivate the unprecedented integration of diverse disciplines and development of unforeseen technologies. Developing a trained talent pool to address these issues is an exciting challenge for academic institutions and UC San Diego is uniquely equipped to play a key role in addressing this task. Success in this task will play a critical role in the development of our region, our state, and our nation. This proposal outlines the tremendous depth, strengths, and synergies that UC San Diego possesses and provides the framework that will help create a school that will be peerless.

The founding units of SCIDS will be the Halicioğlu Data Science Institute (HDSI) and the San Diego Supercomputer Center (SDSC), supported by joint interactions and affiliations with existing Schools and academic departments, including Computer Science and Engineering (CSE), Electrical and Computer Engineering (ECE), Cognitive Science, and Mathematics. The academic core of the new school will be HDSI. Anticipating the growth in data science, UC San Diego created HDSI with generous philanthropic support. In less than five years, HDSI has established a strong undergraduate program and now has approved graduate degree programs. SDSC will serve as the operational and translational science core, building on its history as one of the four national Supercomputer Centers established by the National Science Foundation nearly four decades ago, leading the development of high-performance computing and more recently big data and cloud computing. In addition, SCIDS will have strong academic interactions involving all UC San Diego departments and schools supporting the goal of transforming data into knowledge through development of data and information science, advancing innovative computing paradigms and developing entirely new contextual learning algorithms and methodologies that can transform society. The educational programs that
will be designed will train an entirely new generation of qualified professionals who will play a key role in this endeavor.

To be competitive on the national landscape with recently created schools of similar scope (for example the recent Berkeley School of Computing, Data and Society or MIT’s new College of Computing), there will be opportunities for academic units to create formal connections with SCIDS. At inception, a formal connection will be established between SCIDS and CSE and between SCIDS and ECE. The framework for this connection will be described in this proposal.

Establishment of the new school is motivated by powerful intellectual and educational goals and will provide an approach to synergize the stand-alone academic and research units of HDSI and SDSC in an auspicious manner in the highly competitive world of computing, information, and data sciences. As stand-alone units, both units are currently overseen by the Senior Associate Vice Chancellor serving in a ‘Dean-designee’ role. The new school will benefit from the appointment of dedicated academic leadership in the form of a new Dean reporting to the Executive Vice Chancellor. This dedicated oversight will position the school to compete successfully in this emerging area. Among our competing institutions, UC Berkeley has a full-time dedicated vice provost and dean for the Division of Computing, Data Science and Society, similar to dedicated deans overseeing such units at Columbia, NYU, MIT, Michigan and other schools. The formation of the school will also regularize how the various bodies of the Academic Senate engage in the review and oversight of the academic programs and student experience. Beyond administrative streamlining, the proposed school will also open multiple possibilities for new academic programs and research initiatives that the faculty and researchers in the school will be able to draw closely together. This will build on recent successes such as the $20M AI Institute TILOS that resulted because of the type of interactions the school will promote. Going forward, we anticipate the combined units to offer training programs for the working professional as well as executive training programs in the areas of big data and artificial intelligence.

The proposal lays the framework for the creation of SCIDS and provides the intellectual, administrative, and capital basis for building SCIDS. The synergies with all campus units and the potential local and national impact are presented in the proposal. The proposal also outlines the impact SCIDS will have in training next generation leaders in computing, information, and data science, and enhancing the standing of UC San Diego nationally and internationally. Letters of support from all the academic deans and relevant departments, and the UC San Diego Innovation and Entrepreneurship Council.

This proposal was reviewed by the Divisional Senate Committees and presented to the Representative Assembly as a pre-proposal under the framework of the Compendium. The proposal was approved by the Divisional Senate for submission to the Office of the President for further consideration, and with minor additions in response to the input from the Divisional Senate Committees and the discussion at the Representative Assembly.

The proposal was submitted to UC Office of President for consideration as a pre-Proposal. We were gratified to find exceptionally strong support from both UCOP and the systemwide Senate. Systemwide reviewers recommended submission of the Full Proposal with a request to clarify some aspects of the proposal. This full proposal addresses these matters as follows:
I. Enrollment projections to better define the future growth of the program are now included in this full proposal. The growth is consistent with the California demand for student enrollments in state universities.

II. We comment on the Senate membership of the SCIDS faculty and clarify that HDSI is already an academic unit with regular FTE faculty and as with any other academic entity on campus, new faculty in Senate titles will be members of the Academic Senate. Similar rules will apply for joint faculty in SCIDS and other Campus Units.

III. The organization structure, owing to its unique nature, warranted more details and we now provide them. In addition to departments/units that are fully part of SCIDS, we have dotted line associations of departments on campus. The nature of this association in the Full Proposal is described in further detail and expands on the existing strong interactions between HDSI and other parts of the campus. Further, we point out the unique nature of SCIDS owing to its truly cross-disciplinary presence through curriculum, joint faculty and academic programs, multidisciplinary research programs, and ability for students across majors to engage in SCIDS curriculum and programs.

IV. We provide more clarity on the organizational structure through the description of the functioning modalities of the administration.

V. The benefits of the integration of SCIDS with the research and educational mission of other units on campus are now expanded. While we had described the association of other units on campus, we now provide additional description of potential synergies.

VI. We discuss the significant impact on Justice, Equity, Diversity and Inclusion (JEDI) that the creation of SCIDS will have. We provide a comprehensive plan that includes and builds upon several ongoing and planned elements of the Strategic Accountability Plans prepared by HDSI and SDSC. We also outline our approach and examine the impact of SDSC and SCIDS on the Cal State University system and California Community Colleges. We outline plans for outreach and provide on-ramp access to our degree programs for a diverse population through innovative means.

VII. In terms of educational impact, we are already witnessing the large impact HDSI and SDSC have on non-STEM major education, with the societal demand for computer and data literacy. We elaborate upon these outreach activities, sustainability plans and how SCIDS will enhance these activities substantially.

VIII. Finally, in response to questions from Senate reviewers, we provide more details on the revenue sources that will sustain SCIDS. While the creation of new Schools in the context of a zero-sum revenue model could pose a serious concern, the context in which SCIDS is being proposed is one of present and future growth. First, given the growth mandate for student enrollment at the undergraduate and Master's levels, educational revenue is consistently increasing. Second, the substantial investments in research, development and industry in computing and data sciences is beginning to result in significant investments in education for the training of the next generation workforce. UC San Diego is uniquely placed to address this demand and benefit from attendant revenue. We provide in this full proposal a very detailed accounting of the revenue model. We also point out how the establishment of the new School, in contrast to taking away from other programs on campus, will actually benefit them in terms of research, student enrollment and engagement in our region. The new School will attract and enable a new constituency of companies or needs within companies of being able to learn and benefit from the talent and products in the areas of Data Sciences including AI, automation and data analysis; needs that cannot be served by any single unit -- including HDSI or SDSC alone -- and necessarily require engagement of faculty and researchers from different domains. Thus, establishment of School will systematically expand the scope of industry and civil organizations who interact with
the university and bring its benefits, including sponsored research projects, to various units on the campus, thus adding to overall volume of research as well as training of our students.

1. INTRODUCTION

1.1. Rationale and Vision

In 2011, the McKinsey Global Institute report stated\(^1\) that Big Data is the next frontier for innovation, competition, and productivity. They calculated the annual US value of big data to be over a trillion dollars and the projected demand for talent in big data to grow exponentially with a talent gap of \(\sim 60\%\) of the demand. In summer 2012 the National Academies convened a Committee on the Analysis of Massive Data and its report\(^2\) served as a blueprint for national change. In 2012, the Obama administration launched the Big Data Research and Development Initiative\(^3\) to “develop Big Data technologies, demonstrate applications of Big Data, and train the next generation of data scientists,” and in 2015 launched the National Strategic Computing Initiative\(^4\) to “maximize the benefits of HPC for economic competitiveness and scientific discovery”. Similarly, the AI Initiative\(^5\) was launched in 2019 motivated by the promise of AI “to drive growth of the United States economy, enhance our economic and national security, and improve our quality of life.” Responding to the growing need for talent and workforce in data analytics, several Universities have responded by creating academic units ranging from departments to schools to train students with expertise in data analytics. Top ranked Data Analytics/Science programs according to US News and World Report rankings 2022 are UC Berkeley, CMU, MIT, U Washington, Cornell, Georgia Tech, Columbia University, University of Illinois, University of Michigan, Caltech, and UC San Diego ranked equally with UCLA. A significant number of the top ten Schools listed above have either institutes, divisions or schools associated with data science. Some institutions, like Michigan (MIDAS – Michigan Institute for Data Science), have faculty from across campus units and offer several educational programs. Berkeley, top ranked in Data Sciences, launched the Division of Computing, Data Science and Society (DCDSS) through a major donation from the Gordon and Betty Moore Foundation and the Alfred P. Sloan Foundation, drawing together faculty from throughout the campus. The University of Virginia has launched a new School of Data Science and the leadership has provided a perspective on launching a new school.\(^6\) MIT launched the Institute for Data, Systems and Society (IDSS), with a mission to advance education and research in state-of-the-art analytical methods in information and decision systems, statistics and data science, and the social sciences, and to apply these methods to address complex societal challenges in a diverse set of areas such as finance, energy systems, urbanization, social networks, and health. Institutions like Cornell, Columbia, NYU, and several others have initiated Data Science


\(^2\) [https://www.nap.edu/read/18374/chapter/1](https://www.nap.edu/read/18374/chapter/1)

\(^3\) [https://obamawhitehouse.archives.gov/blog/2012/03/29/big-data-big-deal](https://obamawhitehouse.archives.gov/blog/2012/03/29/big-data-big-deal)


units on their campus. The number of faculty in these new units ranges from 20 to a few hundred and most offer undergraduate major/minor, Master’s and doctoral degrees in data sciences and allied computing fields.

UC San Diego has a deep and long history in computing and computational sciences. The San Diego Supercomputer Center was one of four major institutions the National Science Foundation (NSF) supported back in the 1980’s that revolutionized academic scientific computing and large-scale simulations and data processing for the national user community in the United States. In fact, the emergence of computing and data sciences have their origins in the funding the NSF invested in these institutions. The Telnet (forerunner of the modern internet), the world wide web and high-performance computing are a direct product of these investments. Throughout its more than 35-year history, SDSC has excelled in transitioning ideas and concepts invented in both industry and academia into practical research and education cyberinfrastructure serving research and education communities across all disciplines. In the academic arena, the engineering departments of Computer Science and Engineering (CSE) and Electrical and Computer Engineering (ECE) have played a major role over several decades in the areas of Artificial Intelligence and Information Theory. ECE faculty led the formation of the California Institute for Telecommunications and Information Technology (CalIT2), a state-funded entity in partnership with UC Irvine. Information Theory (IT) became one of the foundational pillars of this Institute. CSE played a seminal role in the creation of Data Science academic programs at UC San Diego. Owing to generous funding from CSE alumnus Taner Halicioğlu, UC San Diego launched the Halicioğlu Data Science Institute (HDSI), which has had a meteoric growth over the five years of its existence. The formation of HDSI was spearheaded by faculty from several departments including CSE, Mathematics, Cognitive Science and ECE. CSE was the original home for the interdisciplinary Data Science Undergraduate Program, launched in 2017. The program has now moved to HDSI, the first undergraduate students have graduated and the demand for the major is growing dramatically. The recruitment of high-quality faculty across diverse foundations and applications of data sciences in HDSI has been exceptional. The rapidly increasing need for trained data scientists with expertise in computing, the presence here of SDSC, and the launch of HDSI with its strong academic programs, offer an unprecedented opportunity to create a “whole is greater than the sum of its parts” integrated entity that combines all these elements. The realization of the potential synergies between education, training, and research, and the potential for revolutionary applications can be best accomplished through the creation of a School of Computing, Information and Data Sciences (SCIDS) as described in this proposal.

HDSI and SDSC each have a unique structure and potential, and neither would realize their full potential by incorporation into one of our existing schools. HDSI is unique in being the only stand-alone academic unit on our campus and one of the fastest growing. With over 1000 students and increasing enrollment demands, the concomitant rise in number of courses and a growing number of faculty, and a rapidly expanding research and grant portfolio, it is poised for campus-wide impact. Given the interdisciplinary nature of HDSI and its burgeoning cross-interactions, none of our disciplinary schools would be an appropriate home for HDSI. Likewise, SDSC is an Organized Research Unit (ORU) that functions very distinctly from other ORUs on campus. SDSC has both a state and national mandate deriving from its origin as an NSF supercomputing center in addition to playing a role as a strong computational resource for the campus. SDSC increasingly not only supports campus computing and computational sciences, but also provides an intellectual focal point for interdisciplinary applications and collaborations. Given its
cross-interactions with every school on campus, no existing school would be an appropriate home for SDSC.

However, the intellectual power of HDSI and SDSC can be fully realized by uniting their complementary and related strengths to form a new school designed with a clear mission and a flexible, innovative administrative structure supporting interdisciplinary engagement across the campus. This would enable them to lead and excel in education, research, applications, and community impact by creating a shared vision for the future of computing, data, and information sciences throughout UC San Diego. The formation of a new school comes at an optimal time for both units, given HDSI's recent inauguration and explosive growth and SDSC's renewed research portfolio and newly deepened ties throughout the university; both need a pathway to a sustainable structural equilibrium that will meet the needs of faculty, staff, and students while supporting further innovation. As phrased by UC San Diego Academic Senate members, "joining these units together under the umbrella of a school will strengthen the University's research and educational initiatives in these areas and will allow for regular Academic Senate review." Such considerations were the *leitmotif* for the proposal for a new School.

### 1.2. Mission of the Proposed School of Computing, Information, and Data Sciences

The broad mission of the proposed School will include student training and experience, research excellence, and development and sustenance of the next generation data infrastructure. The educational mission is manifold. The new School will provide a home for the increasing student population in the Data Science Undergraduate and Graduate Programs and serve as a nerve center for data and computational science-related educational activities bridging all academic units on campus. SCIDS will help bring all academic units on campus into a modern “big data” era and train next generation domain specialists who efficiently use emerging disciplinary data to engender new knowledge. This cross-fertilization will be accomplished through joint teaching and practical training activities. The school will initiate a “Data Innovation Laboratory” that will provide the students with opportunities to use big data as a playground to learn the tools and techniques that will transform their preparedness for the “big data” world. SCIDS will also serve the new paradigm that no higher learning is complete without a sound training in domain-specific data science knowledge.

On the research front, it is becoming increasingly clear that every discipline of human endeavor, be it Arts and Humanities, Social Sciences, Natural Sciences, Engineering or Medicine, has data at the core. Confronting the future mandates expertise in the world of data analytics. SCIDS will serve as the bridge between disciplinary areas and computing technology through active engagement in cross-disciplinary data science research. The joint recruitment of faculty and research associates across SCIDS and other Schools and Divisions will create a roadmap for cutting-edge research as well as entirely new sources of research funding support. SCIDS will also serve as the nucleus for centers that solve grand challenge problems in data science relating to multiple subjects including human health, environment, climate, and population-driven disciplines.

SCIDS will also play an important role in creating a unique niche at UC San Diego for establishing rich and rewarding collaborations with the thriving local industry in San Diego. It will provide the much-needed data hub that will link the burgeoning regional industries (biotech, communication and other) and provide the information highway. It will link the UC San Diego Rady School of Management with emerging new companies in the
region as well as with established industry partners. In addition to the commercial and entrepreneurial enrichments, SCIDS will also serve the Southern California community with new opportunities for retraining to face the data-rich world.

2. FOUNDATIONS FOR THE PROPOSED SCHOOL

UC San Diego has a long and noteworthy history, in the 62 years since its founding, of serving as the harbinger and paradigm for new and innovative disciplines. The Scripps Institute of Oceanography spearheaded the launch of marine biosciences. The San Diego Supercomputer Center was at the heart of revolutionary technologies including the Telnet. UC San Diego established the first departments of Cognitive Science and Nanoengineering. The list is long and laudatory.

Over a period of three years from 2013 to 2016, various faculty members drawn from Mathematics and Computer Science and Engineering examined the need for a major and/or minor in data science as a subject area. A steering committee of faculty members drawn from CSE, Math, and Bioengineering pulled together a formal proposal for the Data Science undergraduate major that was approved and launched in 2016. Around the same time, CSE and SDSC had also launched a professional Master’s degree program in Data Science and Engineering (DSE). Today both programs continue to thrive. Responding to a challenge by the Chancellor in Winter 2016, the campus held several townhall meetings and empaneled a Senate-administration task force to examine how a campus-wide Data Science Initiative could be organized. These activities led to the formation and launch of the Halicioglu Data Science Institute (HDSI) as the campus hub for Data Science in March 2018. HDSI was approved by the Academic Senate at UC San Diego and Systemwide and accorded status of an academic unit in June 2018. The Data Science major and minor were transferred to the Institute in 2019.

Over the past three years, the Institute has made significant progress in building its academic programs and community. With over 800 students in its major and 200+ students in its minor, the Institute has graduated the first two cohorts of data scientists who have been eagerly absorbed into academic and industry careers. The Institute has recruited 16 new faculty members, while a few faculty members have transferred partial appointments to the Institute thus creating a faculty council of 25 Senate faculty members as its primary governing body. The faculty include a number of jointly appointed faculty with other units on campus, including at the Assistant Professor level. There is broad experience at UC San Diego with managing joint appointments based on our experience with the Chancellor’s Joint FTE program that has supported appointments of some 30 faculty across the campus since 2016. Memoranda of understanding govern these appointments, ensuring that teaching and service obligations are appropriately managed. The Institute has also now launched its approved MS and PhD programs in Data Science as well as an online Master of Data Science program in collaboration with the CSE department.
The presence of the San Diego Supercomputer Center (SDSC) and the newly established Halicioğlu Data Science Institute (HDSI) offers an unprecedented opportunity for UC San Diego to establish a premier School that in addition to bridging the entire campus will serve as an exemplar for institutions of higher education. The founding pillars for this proposed new School are SDSC and HDSI, supported by the existing academic Divisions and Schools, a California Institute for Sciences and Innovation, and a premier University Library. We provide a broad view of existing foundations and potential synergies in the proposed School in the schematic below.

2.1. San Diego Supercomputer Center (SDSC)

The San Diego Supercomputer Center (SDSC) is one of the nation’s premier centers for high-performance and data-intensive computing, and the only center of its kind in the University of California system. The scope in computing and expertise (in scale, nationally, and across domains) at SDSC, backed up by expansive computing infrastructure, ongoing grants and contracts, and funded partnerships with industry will immediately catalyze the collaborative research and experiential learning opportunities in SCIDS.

SDSC was established as one of the nation’s first supercomputer centers under a cooperative agreement by the National Science Foundation (NSF) in collaboration with UC San Diego and General Atomics (GA) Technologies, opening its doors in 1985. Since then, it has grown and stewarded a national reputation as a pioneer and leader in high-performance and data-intensive computing and cyberinfrastructure. Located on the campus of UC San Diego, SDSC provides resources, services and expertise to UC San Diego, the UC System, State of California, the national research community, and the private sector. SDSC supports a wide range of multi-disciplinary programs that engage tens of thousands of individual researchers and users, spanning a wide variety of domains from astrophysics, biology, and earth sciences to bioinformatics and health information technology.
Some important dates in the evolution of SDSC are noted below. An extensive, interactive timeline of SDSC’s history is available at: https://timeline.sdsc.edu.

- **1985**: Founding of SDSC, following award of unsolicited proposal by the Founding Director, Sid Karin, SDSC open its doors under a cooperative agreement with General Atomics and UC San Diego. That same year, a Cray X-MP entered production operations as SDSC’s inaugural supercomputer.

- **1997**: A partnership led by UC San Diego is one of two winners selected in NSF’s Partnerships for Advanced Computational Infrastructure (PACI) competition. As a result, UC San Diego assumes oversight for SDSC, taking over operational responsibility of the center, and transferring all staff from being GA employees to being UC San Diego employees. At this time, the State of California also formalized the broad role of SDSC through line-item funding in the State budget. Over the years, this has evolved from direct funding from the state to funding from UCOP via UC San Diego. Today, UCOP funding makes up roughly half of the core budget of SDSC.

- **2005**: NSF awards funding to SDSC as part of the Extensible Terascale Facility (ETF), also called TeraGrid, TeraGrid which at the time, is the world's largest, most comprehensive distributed cyberinfrastructure for open scientific research.

- **2011**: NSF awards funding to SDSC as part of the Extreme Science and Engineering Discovery Environment (XSEDE), the successor to the TeraGrid project. In 2016, NSF extended XSEDE (XSEDE 2.0) another 5 years, where it remains in operation. Proposals for the XSEDE follow-on are currently under review and we expect SDSC will be part of one or more awards under that program.

- **2013**: UC San Diego and SDSC establish the Triton Shared Computing Cluster (TSCC), a campus computing facility operated via a condominium business model, i.e., researchers buy hardware from a menu of choices offered by SDSC, and SDSC operates the system on behalf of the researchers. UC San Diego provides support for the operating expenses with the understanding that this is more cost effective than researchers deploying hardware in their own buildings. SDSC also offers part of its data center as a UC San Diego-supported co-location facility for hardware owned and operated by UC San Diego researchers, again reducing the overall cost of ownership to the university in terms of space and utilities, while providing better value to the researchers.

- **2016 – present**: In a series of back-to-back awards, SDSC received funding for high-performance computing systems, Gordon, Comet, Expanse, Voyager, and the National Research Platform, ensuring SDSC’s leadership in supercomputing for the next decade (see Appendix 2 for additional details on these and other computing infrastructure at SDSC.)

Today, SDSC has close to 40 PIs who obtain extramural funds with expenditures totaling more than $30M per year supporting more than 200 researchers and staff. SDSC has no faculty lines, and thus no explicit teaching mission within the context of UC San Diego. Nevertheless, SDSC has significant education, outreach, and training activities within its
other scopes that have been growing significantly over the last 5 years or so. This is discussed elsewhere in detail.

SDSC consistently ranks among the top 5 organizational units by grant funding among the 68 such units on the general campus of UC San Diego.

**SDSC in SCIDS:** SDSC will become an integral part of SCIDS; we describe below the multifaceted roles of SDSC and the implications for SCIDS.

Throughout its more than 35-year history, SDSC has had roughly speaking 4 geographic scopes:

- A national or even international scope that is directly responsive to federal agencies, most importantly the National Science Foundation. Example activities within this scope are the national scale HPC systems SDSC operates, its science gateways, and a large variety of other national programs.
- A state scope where SDSC functions as a state asset to support a variety of CA priorities, often directly focused on protecting the CA way of life. Example activities are SDSC’s research and operational support to protect CA from wildfires, predict atmospheric rivers impacting the available water resources, and understand seismic activity with a goal to mitigate earthquake disasters.
- A UC scope where SDSC directly provides research and cyberinfrastructure services to the collective of UCs, as well as UCOP. Example activities here include regulated data services SDSC provides to UCOP, and the large amount of floorspace the UCLA hospital occupies in the UC San Diego data center.
- A UC San Diego scope where SDSC provides services to UC San Diego faculty. These include, most prominently, the Triton Shared Computing Cluster, the condo cluster that faculty can buy into, and the network services (the UC San Diego connection to CENIC and thus the Research & Education networking in CA enters UC San Diego via SDSC).

As a matter of policy, SDSC treats all UC campuses the same as UC San Diego. SDSC’s services are generally available at cost to all UC faculty, staff and students. For example, SDSC offers its universally scalable storage services at the same price to all UC campuses. Researchers may access their data on that storage for processing on any of SDSC’s national HPC systems. UC researchers thus can leverage national HPC system investments for processing data stored on the mass storage systems operated and maintained by SDSC. Similarly, SDSC’s expertise in regulatory data systems, including but not limited to HIPAA, dbGaP, CMMC are available today to the entire UC system without any additional surcharges, whereas organizations outside the UC system pay different prices for all the above. This will not change when SDSC becomes a unit in SCIDS.

At present, SDSC operates some services at below cost, subsidized either from industry gifts and revenue, or subsidized by the UC San Diego administration. An example is the Triton Shared Computing Cluster. This HPC system follows a “condo model,” individual researchers at UCSD may buy hardware from an annually changing menu of hardware SDSC supports, paying a very modest “operations fee” per node. These fees do not cover operations of the cluster, and SDSC subsidizes it from the revenue from its industry program. It is conceivable that there will be other infrastructure and services at SDSC in the future where the Dean of SCIDS will reinvest gifts and/or industry program revenue and this will serve the entire UC San Diego campus.
2.2. Halicioğlu Data Science Institute (HDSI)

In 2015, faculty presented the Chancellor a blueprint for creating a data science and engineering initiative – an activity that encompassed academic, research, and infrastructure components to place UC San Diego on the “big data” map. In 2016, a distinguished alumnus, Taner Halicioğlu, provided significant funding to support the launch of a data sciences institute. With the support of the Academic Senate, the Halicioğlu Data Science Institute was formed as a transdisciplinary academic unit with the ability to appoint faculty and develop undergraduate and graduate academic programs in 2018. The undergraduate major in Data Science was developed as a multidisciplinary program shepherded by the Department of Computer Science and Engineering and was transferred to HDSI. In 2020 HDSI graduated its first class of bachelor’s students and initiated a Master’s and Ph.D. program. Faculty who were 100% in HDSI grew to 12 with over 15 joint and adjunct faculty. HDSI was also successful, owing to its academic excellence, in garnering significant extramural research funding amounting to over $20M. The undergraduate student population has now reached a steady state of 800 Data Science Major students, with demand exceeding capacity. In addition, HDSI also offers a Minor in Data Science, and this population is steadily growing from a current size of 200 students. HDSI is also in the process of offering joint M.S. programs with other units, such as a joint M.S. program with Bioengineering and a M.S.-M.D. program with Health Sciences. This rapid and dramatic growth, while in tune with the growing demand for data scientists, also attests to the pre-eminence of HDSI and UC San Diego. HDSI also has witnessed exceptionally strong collaborations with SDSC leading to exciting and innovative educational initiatives. This explosion in educational and research initiatives warrants a broader umbrella and the creation of SCIDS would enhance the objective, sustenance, and success of the data science initiative at UC San Diego.

The governing faculty council of HDSI consists of faculty drawn from nearly all schools including health and marine sciences. This group has worked together so effectively that over the five-year period since its founding HDSI has successfully recruited 29 new faculty members, out of which 16 faculty members have joint appointments across 11 departments including SIO and Health Sciences. As of this writing, HDSI has an open search or plans to hire in the next year faculty jointly with Social Sciences, GPS, Health Sciences, and Bioengineering, while we are exploring new joint positions with Physical Sciences, Biological Sciences, and Arts and Humanities. In addition, the governing faculty council has 17 faculty members drawn from many departments with a 0% appointment in HDSI. As discussed in this proposal, SCIDS will continue to support joint faculty appointments with many units on campus and develop joint curricula.

At the administrative and operational levels, HDSI functions much like a department, albeit reporting to the Senior Associate Vice Chancellor for Academic Affairs who serves as the Dean Designee overseeing HDSI and SDSC. Given the growth in HDSI and the unique infrastructure supporting computation and applied data science in SDSC, dedicated administrative oversight through formation of a school with an academic dean reporting to the Executive Vice Chancellor will be the optimum way to support the development of these two growing units, providing another strong motivation for the proposed School. The Dean of the proposed School will serve to oversee the activities and growth of HDSI and SDSC in addition to building partnerships with other campus units to build transdisciplinary research and education in Computing, Information and Data Sciences.
HDSI in SCIDS: As described above HDSI will become the primary data science department in SCIDS. It will, in addition to its educational and research mission, function like an interdisciplinary campus unit vis-à-vis bringing data sciences broadly to multiple disciplines on campus. As delineated in the Administrative section, several existing academic departments may establish dotted line relationships to SCIDS. Amongst these, ECE, CSE, Math and Cog Sci are founding departments of the Data Science Program at UC San Diego. The academic connections through the dotted line connections will include,

a. Input on management of the DSC major, minor, and elective courses.
b. Mutual affiliate status of faculty along with associated ability to recommend, recruit and advise doctoral students.
c. Colocation of jointly advised graduate students and post doc scholars in HDSI spaces.
d. Streamlined procedures for offering and managing enrollment in courses that can be attended for credit in degree programs across the departments.
e. Coordinated FTE planning and requests including joint faculty appointments.

It is important to note that dotted line relationships are formally defined and bidirectional in nature. Several of the criteria above also apply to departments on campus that do not have a dotted line affiliation in SCIDS. For instance, SCIDS will continue the tradition of joint faculty hires across other schools on campus (as discussed elsewhere, there are several joint appointments across campus). SCIDS will also develop joint academic curricula in data sciences through cross-listing courses at undergraduate and graduate levels. A description of the process for developing MOUs governing the dotted line relationships between departments and SCIDS is provided in section 7.1.1. below.

2.3. Other Campus Units - Departments and Centers

2.3.1. Department of Computer Science and Engineering

UC San Diego has one of the top-ranked Computer Science departments in the U.S. Besides training a very large cohort of students in computer science, the Department has outstanding research faculty whose expertise spans all areas of computer science and engineering ranging from AI to embedded systems. The department provided a foundation for the establishment of HDSI, with significant shared faculty and research themes. While CSE includes much more than computing, information, and data science research and SCIDS will span multiple areas beyond those covered by CSE, it is important to recognize the significant overlap between the Department of CSE and SCIDS. The two units will unequivocally benefit mutually, and this will enhance the stature and standing of UC San Diego as a leading institution in both computer and data science research and training. Given the overlap and presence of several joint faculty (between CSE and HDSI), it will be beneficial for CSE to have an affiliation with SCIDS, even while retaining its primary status in the Jacobs School of Engineering. We propose this approach in designing the administrative structure of SCIDS and discuss it later in the Proposal.

2.3.2. Department of Electrical and Computer Engineering

The Electrical and Computer Engineering (ECE) department traces its roots back to the establishment of the Applied Electrophysics department in 1965. Through a succession of department realignments today’s ECE emerged in 1987, when the then-combined
Electrical Engineering and Computer Science department was split into two departments. Since then, ECE has earned a world-class reputation for producing top-notch engineers for industry and academia. Information and communication theory, intelligent systems, and robotics and control have been major emphasis areas in ECE. ECE faculty have led national and international projects that have served as the underpinnings of modern information theory with significant applications to data sciences. ECE was instrumental in the formation of the California Institute for Telecommunication and Information Technology and played an important role in the creation of HDSI. The strong existing interactions between ECE and HDSI lead us to propose a formal administrative affiliation, like CSE, that will be addressed in section 7.1 of the proposal.

2.3.3. Department of Cognitive Science

The Department of Cognitive Science is home to faculty and students conducting research over a wide range of scientific disciplines including computation, data science, machine learning, artificial intelligence, education, human animal cognition, psychology, ethnography, neuroscience, genetics, design, human-computer interaction, and linguistics. In all these areas, the application of data science and large-scale computational methodologies is key to the development of modern research programs. Accordingly, many of the faculty currently composing Cognitive Science have been leaders in their fields with respect to the design and execution of large-scale, data and computation intensive research initiatives on an international scale. These areas include work in organization of communities-wide urban planning, computational and statistical approaches to genomic and imaging data, the adaptation of data science practice to neuroscience, the development of widely-distributed instructional practices in data science, the development of media to foster skill-building in programming techniques (e.g., Python Tutor), and machine learning approaches to computer vision and language processing.

Cognitive Science has had, and will continue to have in the future, a close relationship to the work of SCIDS. Several faculty including the late Professor Jeff Elman have been involved in the creation of HDSI and are expected to play an important role in SCIDS. There is a significant overlap in research and educational interests between the Department of Cognitive Science and SCIDS. The two units will unequivocally benefit mutually, and this will enhance the stature and standing of UC San Diego as a leading institution in data science research and training and their applications to the highly diverse set of data types examined and processed in the practice of Cognitive Science. Given the overlap and presence of several joint faculty between Cognitive Science and HDSI, it is likely that Cognitive Science will have a formal affiliation with SCIDS, similar to CSE and ECE, even while retaining its position within the School of Social Sciences.

2.3.4. Department of Mathematics

The constant flow of ideas between various branches of mathematics and various data intensive sciences has been instrumental in advancing both — increasingly so in the modern world where data is becoming ever more abundant, along with the challenges and opportunities associated with it. On the one hand, there is an ever-growing need for computational methods that can handle large amounts of data and model ever-larger and more complex systems. At the same time, the advent of such computational methods often precedes a deep theoretical understanding of their potential and limitations. As
such, mathematics, both pure and applied, will play a critical role in the research mission of SCIDS.

Mathematicians working in Applied and Computational Harmonic Analysis, Approximation Theory, and Functional Analysis, motivated by application areas ranging from seismology to machine learning, are continuing to develop fundamental, rigorous methods that have benefited the scientific community at large. Examples of their successes include Wavelets, with their applications in signal and image processing, in computational methods for solving differential equations, and Compressed Sensing with its insights into reducing the complexity and cost of data acquisition. As another example, the interaction between mathematicians, computational scientists and data scientists has leveraged insights from graph theory and geometry to empower scientists to model, analyze, and understand complex networks. Optimization Theory and Numerical Analysis will continue playing a critical role in developing and analyzing computationally efficient algorithms for solving scientific problems. Indeed, there is no shortage of examples of current and potential future engagements between mathematics, computing, and data, including those aimed at revealing the mathematical underpinnings of novel, powerful computational techniques like deep learning, among others. Statistics also plays a central role in data analysis and acquisition, as has been the case since its consolidation as a field of research for more than a century. Its more mathematical specialties --- some well-represented among the statisticians residing in the Mathematics Department --- play a similar role with respect to the broader field of Statistics in that the developed theory helps bring a deeper understanding of the problems and methods used to solve them. The interaction with Applied Mathematics in the area of Approximation Theory and Optimization has been very fruitful and has led to a tremendous amount of research over the years, including in the aforementioned areas of Wavelet Analysis and Compressed Sensing developed at the intersection of these fields with Statistics. Additionally, Statistics is perhaps uniquely placed to derive inference for data, which is after all its ‘mission statement.’

Given this background on how, for the past many decades, Applied Mathematics and Statistics in their various forms have contributed methods and theory to the betterment of data collection and analysis, it is only natural that these disciplines and the faculty in the Mathematics Department in these specialties will play an important role in the development of SCIDS: Several faculty members in Mathematics have been deeply engaged with the creation of HDSI. Creation of SCIDS will bring some focus to this symbiotic relationship, which will likely manifest as further joint appointments. Ultimately it may make sense for the Department of Mathematics to also engage more formally with SCIDS in a manner similar to CSE and ECE, as discussed in the section on administrative structure (section 7.1).

2.3.5. California Institute for Telecommunication and Information Technology (CalIT2) and the QUALCOMM Institute (QI)

CalIT2 was born as a result of funding from the State of California to support the establishment of leading research institutes at the University of California. Amongst three such funding initiatives, CalIT2 was established jointly between UC San Diego and UC Irvine, and is now being expanded to include UC Riverside. The UC San Diego manifestation of CalIT2 is the Qualcomm Institute and was established to foster work on Telecommunications and Information Technology. Over the last two decades of
operation, it has developed two broad capabilities and collaborative programs the presence of which at UC San Diego will be of significant academic value to SCIDS.

To sustain advances in data science, access to new types and larger amounts of data will be critical. In this regard, QI’s experimental facilities, regionwide deployments and technical expertise in Nanotechnology, Wireless and Photonics will help develop new kinds of sensors that are sure to enhance the impact of research conducted within SCIDS. QI offers SCIDS, a combination of advanced experimental facilities to probe the physical world and technical professionals to foster intellectual collaborations. Furthermore, SCIDS researchers will be able to develop collaborations that could result in the invention of new data sensing modalities.

As the benefits of AI and machine-learning (ML) techniques grow, their use will become more pervasive. There are already growing concerns that the unchecked use of these techniques could lead to undesirable societal consequences. QI’s programs, especially the Gallery@QI and Digital Exploration of Arts and Sciences, have fostered critical engagement between the arts and technology that can help illuminate the new futures that SCIDS faculty may wish to explore. Finally, QI’s experience in developing robust interdisciplinary collaborations could inform planning for the future of SCIDS. QI has shown that sustained investments in facilities, expertise and programming ultimately leads to widely recognized boundary crossing work. There are numerous examples of collaborations that were critically enabled by researchers and technical professionals working in shared use labs in QI.

**2.3.6. The UC San Diego Geisel Library**

The UC San Diego Geisel Library will play an important role in supporting the new school. The Library will build on existing investments in data acquisition and curation, expand on existing collaborations with HDSI and SDSC and consider new investments in staffing, information resources and spaces to meet the expanded needs of undergraduate and graduate students. These investments would create an opportunity for the Library to further act on its vision to serve the emerging forms of scholarship at UC San Diego in computing, information, and data science, and are in harmony with the goal of supporting the student-centered and research-intensive mission of the university.

As a national leader working to advance research and practice in data preservation, open access and data publishing, the Library already has considerable staffing and resources dedicated to supporting data-intensive research. This includes a Research Data Curation Program (RDCP) dedicated to data curation and data science and existing services in data publishing, data sharing, Geographic Information System (GIS) and data visualization. Existing collaborations with HDSI, SDSC, Research IT and other departments include an emerging partnership to build a platform for ‘research ready’ datasets for undergraduate learning, in-library labs to support GIS and Digital Humanities work and investment in data preservation and data sharing services based on SDSC infrastructure. While the Library already dedicates resources to acquiring datasets from publishers, additional investments at the UC San Diego and UC-wide level would be beneficial in ensuring that students and faculty have access to data to support innovative learning and research.

In addition to supporting the school through increased investment in datasets appropriate to undergraduate and graduate student research the Library will be able to build new partnerships that support closer collaboration and support between librarians, faculty and
students. The Library will have a unique leadership role to play in Information Science topical areas including data description, curation, publishing, ethical use of information and socio-political constructs of data and information. This work may include the development of expertise in existing roles that directly support faculty and student needs around research data access, analysis, publishing and management. Additionally, through the present network of nearly sixty librarians the Library will expand on existing work supporting research to include better support for the interdisciplinary goals of SCIDS.

Finally, the physical infrastructure of the Library can play an important role. Recognizing that the students in this newly established school will seek out academically-focused spaces that support their learning and research, the Library plans to better equip spaces to support data-intensive research (e.g. spaces that are connected to data and compute resources through high-speed networks, spaces equipped with tools to support data visualization and collaboration and virtual spaces that enable students to quickly access and share data and code connected to their learning). In other words, the UC San Diego Library will become a living learning laboratory for our students with access to data and information in a seamless and knowledge-driven manner.

2.4. Other Campus Units – Schools, Divisions, and SIO

2.4.1. School of Medicine

Health Sciences has emerged as the largest generator and consumer of “big data” sciences. The School of Medicine (SOM) at UC San Diego has data analytics needs that relate to basic, translational, and clinical research, as well as the quality of patient care and other operational initiatives. Partnership with data scientists from SCIDS will strengthen biomedical data science efforts already underway in various basic science and clinical departments. For example, the Divisions of Biomedical Informatics and Medical Genetics in the Department of Medicine, the Division of Genomic Science in the Department of Pediatrics, the Divisions of Informatics in the Departments of Ophthalmology and Anesthesia, the Epigenomics Center in the Department of Molecular and Cellular Medicine and bioinformatics faculty in various other units are dually trained in specific clinical specialties as well as informatics, data science, or statistics. For basic research, we envision SCIDS partnerships focused on developing algorithms and tools to extract novel biological information from the combined analysis of large and complex omics (genomic, epigenomic, metabolomics) public datasets. For translational and clinical research, SCIDS will benefit from partnerships with the SOM faculty as they will serve as a gateway for access to real clinical data and/or genomic data from human subjects. The regulatory issues surrounding these data are well understood by SOM faculty and will extend to SCIDS collaborators. We envision the partnerships to evolve around solving real problems that serve as motivation for the development of new algorithms and tools to process, harmonize, and ultimately compute with sensitive data using novel approaches that balance data sharing and privacy protection of patient data.

Faculty in the SOM face several challenges in the generation and accessing of large-scale sequence data sets. A large fraction of the SOM faculty generates such datasets for their research and most of this is done at the UC San Diego IGM Genomics Center. Some others generate images or physiologic signals. All these require specific types of pre-processing and analyses. Currently, the Genomics Center is transferring all their system administration responsibilities to the SDSC including data storage, software maintenance, creating customer portals (about 200 customers) and database
management. This will support basic researchers in the SOM and better enable (faster data transfer) them to utilize the SDSC USS storage system. A separate issue faced by many researchers in the SOM is the arduous task of getting permissions and the storage space required to access and download large publicly available data sets (e.g., UK Biobank). These issues faced by the SOM faculty will exponentially increase over the next decade. A service component with oversight from SCIDS could help SOM faculty with these current and upcoming issues. Such a component could simultaneously serve as a large source of revenue (recharge) to support the expansion of computational resources needed by the SCIDS faculty. This component of SCIDS could also serve to train individuals (e.g., Masters programs) in how to efficiently perform system administration of large-scale datasets, currently a skill set in high demand in both academic and industry settings. It is expected that the demand for individuals with such skills will skyrocket over the next five to ten years. Management of HIPAA- and FISMA-compliant environments for research and education would also be an asset to UC San Diego in general.

The research and training needed for the future of health sciences and the School of Medicine strongly warrants the creation of a School that will provide a unique opportunity to serve as the next-generation data-driven health care incubator. An exemplar peer program is the Innovative Joint Program in Computational Precision Health at UC Berkeley and UCSF that promises to improve quality and equity of health care.

2.4.2. Herbert Wertheim School of Public Health and Human Longevity Science

The UC San Diego Herbert Wertheim School of Public Health and Human Longevity Science (SPH) was established in 2019, although UC San Diego has a longstanding activity in public health activities with emphasis on data analytics. Public health has been described as the intersection of epidemiology and social justice. Events of the last year have certainly emphasized this observation. The Master of Public Health Program (MPH) at UC San Diego strives to address these critical aspects of public health with a program of academic rigor and an emphasis on equity and social justice across the MPH program and the SPH. 2020 was a year of firsts for the UC San Diego MPH. The first class graduated in June 2020, and two new concentrations: Public Mental Health and Technology and Precision Health were added. And perhaps most importantly, the MPH is one of the seven initial education programs of the new SPH. Recognizing the need for public health data and analytics, SPH has already partnered with HDSI in joint faculty recruitment.

More than any other time, the COVID pandemic has pointed to the need for vast data analytics in the context of greater San Diego, the border region, and Southern California in the global context of disease transmission. At the local level, UC San Diego has taken leadership in wastewater-based analytics leading to early detection of SARS-CoV-2 and to geographic spread of the infection. Such tracking has largely led to diminished infection rates and pointed to the important need for data gathering, analytics and predictive computing. The establishment of SCIDS will accelerate the efforts to bring data science in a major way to SPH and establish UC San Diego as a leader in Public Health and Human Longevity science.

2.4.3. Skaggs School of Pharmacy and Pharmaceutical Sciences (SSPPS)

The advent of modern genomics has led to precision medicine approaches to pharmacy and pharmacology. Two large initiatives, spearheaded by SSPPS involve systems
pharmacology with a foundation in the deep analyses of multimodal data from human physiology, pathology and precision pharmacology. The key underlying feature in these analyses is the application of data science methods to understand individualized responses to therapeutics studied in humans and human model systems. The data intensive nature of modern pharmacology is already being harnessed by SSPPS as well as sister institutions in California, especially UC San Francisco.

SSPPS already has an extensive data analytics presence through recruitment of outstanding faculty involved in data and computation and are now partnering with HDSI in establishing a data-rich pharmacy program. In addition to the PharmD program, SSPPS is exploring options and opportunities for joining with HDSI and SDSC in establishing data-intensive training programs in Pharmacology. The creation of SCIDS will enhance unique opportunities for creating a premier Pharm-Data Analytics program.

2.4.4. Scripps Institution of Oceanography

The Scripps Institution of Oceanography (SIO) is a world leader in earth environmental sensing; obtaining data to advance basic science and to inform environmental policy and public health. The Keeling Curve, the first data to show the 20th century increase in global CO₂ (the central graphic within the lobby of the National Academy of Sciences) is a prime example. With the ever-increasing amounts of observational data (from ships, gliders, moorings, satellites, pier monitoring, land-based sites) and the rapidly increasing diversity of variables being monitored (ecological, geologic, atmospheric, seismological, hydrological, fire, microbial, genomic, sustainable commercial resources, epidemiological) there is a growing awareness of the interdisciplinary breadth, holistic thinking, and most importantly, the technical expertise required to make breakthroughs that best serve society. We believe that establishing SCIDS will be an enormous benefit to help maintain and accelerate SIO’s mission in basic research and education in environmental and earth science. Moreover, SIO can in turn contribute extensive data resources and connections to critical environmental problems as grist for collaboration within SCIDS. This will be key in areas where data and expertise from other domains (e.g., economics and public health) can open new directions for high profile data-driven research (e.g., understanding complex causal networks that might include economic concerns, industrial climate impacts, fire pollution, respiratory disease, environmental inequity etc.). Identifying specific sets of problems and ambitious signature applications will fulfill a key goal for establishing a UC San Diego brand in data-driven fundamental and applied science.

Several data-centric research themes relevant to SIO and SCIDS are echoed in the first figure in section 6 of this proposal. This includes advances in forecasting (in particular, detecting early warning signs of critical transitions and systems collapse), data assimilation, empirical systems modelling, identifying causal linkage between variables, etc. The ever-growing quantity and quality of hyper-dimensional data (e.g., satellite and ground-based observations), presents an unprecedented opportunity and challenge to engage computational and data-driven assets to advance our understanding of nature and society. Among the many important cross-cutting research themes and problems that can be synergistically pursued, improving data archiving and accessibility is probably paramount, and is essential to all data-driven research. It is nationally and globally important that the highly complex earth and environmental monitoring data are preserved and made easily accessible (and can be synchronized with data streams from other domains). An SIO-SCIDS collaboration could provide important support and attract major
funding for improving data synchronization and accessibility. Institutional incentives could be created to help communities of interested faculty and students coalesce around the growing data hubs. SIO currently has courses in data-driven discovery that could easily be incorporated into an SIO-SCIDS curriculum. The unique data acquisition capabilities of SIO combined with the expertise and focus that SCIDS can bring to these problems could provide an enormous boost to the standing of UC San Diego as a leader in fundamental and applied sciences.

2.4.5. Rady School of Management

High-powered computations and the ability to store, manipulate, and analyze very large data sets play a crucial role in the research and teaching mission at the Rady School of Management. Data are used in research projects in economics, finance, accounting, marketing, and information systems spanning topics such as small business ownership and lending to women and minorities, eye-tracking and consumer choice, mutual fund investment decisions, and predictability of firm-level profits. Computing power is also used to solve complicated non-linear optimization problems in areas such as financial econometrics and dynamic general equilibrium models in economics. Students in the M.S. Business Analytics, Master of Finance and Master of Professional Accountancy programs have been using large data sets in their capstone projects and their training would clearly benefit from access to state-of-the-art computing resources fostered through tight connections between SCIDS and Rady.

A number of faculty at Rady use very large data sets in their research and depend on the ability to conduct state-of-the-art analytics. They will benefit considerably from the advent of SCIDS. Current projects span a range of topics, including the development of a database to examine issues of equity in small business ownership examining the near-universe of small businesses in the U.S. (approximately 65.5 million businesses and 127.5 million owners), including individual owners’ gender and race/ethnicity. A current use of this data set examines inequality in government lending programs during COVID-19 with a focus on the Paycheck Protection Program (PPP). Neuroeconomics and consumer neuroscience is another promising area, using data on neural activity to predict market success and customer needs. This combines non-invasive big data methods such as functional magnetic resonance imaging (fMRI) to correlate neural responses with how individuals make decisions with economic consequences. The application of machine learning methods to understand mutual fund portfolio decisions generates vast temporal data sets that require new methods to analyze and interpret. These are only a few examples of some of the rich opportunities for engagement with the new school that will also have an impact beyond the University. The ability to retrieve, analyze, and store vast amounts of data is fast becoming a key driver of the business models of many new and established firms, and the interaction between the Rady School of Management and SCIDS has the potential to be a pivotal asset in coordinating and furthering many of the associated efforts in the San Diego region and beyond.

2.4.6. School of Global Policy and Strategy

The increasing role data flows and data reduction play in geopolitical events, climate change and development of the global economy provides a strong driver for future interactions with SCIDS. The School of Global Policy and Strategy (GPS) already has joint appointments with SIO in the area of societal impacts of climate change and is currently engaged in a joint faculty search with HDSI on Data Science and Public Policy, focusing on the interconnected fields of economics, political Science, and public policy. It
is anticipated that the existing excellence in quantitative policy analysis, development economics, and measures of the disruptive socioeconomic impacts of innovation in both GPS as well as the Rady School of Management and the Departments of Economics and Political Science in the School of Social Sciences will provide an excellent foundation and synergistic development of both SCIDS and these academic units.

2.4.7. Jacobs School of Engineering

UC San Diego JSOE ranks 9th in the US World and News Report for best Engineering Schools across the U.S. with several top 10 departments/programs. This pre-eminent standing owes to leadership in multiple engineering disciplines including data, computation and information science and engineering. As described previously, HDSI has strong ties to the CSE and ECE departments and the intersections between data, computation, and all engineering departments cannot be understated. While CSE and ECE have established leaders in AI, ML and Information Theory, the department of Bioengineering launched the top ranked bioinformatics program in the U.S. two decades ago, being one of the first institutions in creating a national thrust in this field. The Biological Information Science and Technology Initiative of the National Institutes of Health and establishment of the Computer and Information Science and Engineering directorate at the National Science Foundation had substantial input from JSOE faculty and this has led to pioneering research in data science applications.

The creation of SCIDS has enormous synergies with JSOE and the large number of joint appointments between HDSI, SDSC and JSOE are a testament. We anticipate the development of several opportunities for undergraduate engineering majors to train through joint curricular offerings between JSOE and SCIDS. Further, our industry advisors have enthusiastically endorsed the creation of new interactions between SCIDS and JSOE and they anticipate the growth of industry consequently in the larger San Diego area.

2.4.8. School of Arts and Humanities

An important aspect of the foundation for SCIDS is that UC San Diego is a comprehensive research university with an outstanding School of Arts and Humanities, with highly ranked departments including Theatre and Dance, Music, Philosophy and Visual Arts. Today these programs have increasing overlap with data science and computation. The division has been a pioneer in the establishment of a premier digital arts program and a data-intensive ethics program. In recognizing that our society lives in a digital age with competency in data and analytics guiding our day-to-day lives and enriching our engagement with arts and humanities, it is imperative that we lead the development of educational programs for students in the arts and humanities laced with digital and data knowledge. The need for a humanistic, philosophical understanding of the critical issues of ethics in data science, machine learning and artificial intelligence is already leading to collaboration. HDSI has built a connection with the Department of Philosophy and the Institute for Practical Ethics through a joint faculty appointment, and it is anticipated that this will inevitably be an important component in the future development of SCIDS at UC San Diego, and the fields of computing, information, and data science in the decades to come.

2.4.9. School of Biological Sciences

Data Science is fundamentally an interdisciplinary science whose strengths shine at its interfaces with domain sciences, especially modern life sciences. This opportunity places
SCIDS in a uniquely interdisciplinary domain rather than a traditional, independent and self-sufficient school. Areas like Quantitative Biology and Biostatistics will naturally develop strong interactions with SCIDS that build on existing interactions with both HDSI and SDSC to facilitate research advances in these fields. The rate of data generation by biologists has exploded in the past few decades—neuroscience, genomics, transcriptomics, to name a few. It would be powerful if SCIDS had an entire department/section dedicated to the interface between Biology and Data Science (Section of Data Science of Biology) where a collection of faculty can share knowledge and approaches applied to multiple aspects of biological systems. Each faculty in SCIDS in these sections would have a joint appointment with the partner department. Such an arrangement would benefit from a critical mass to jumpstart the interactive domains and train next generation students. Several institutions like MIT have already embraced this paradigm, and HDSI already has at least one joint appointment with the School of Biological Sciences, so the foundation is already laid here as well.

2.4.10. School of Physical Sciences

Interactions between the Department of Mathematics and SCIDS have already been discussed, but there are also strong interactions with both the Department of Chemistry and Biochemistry and the Department of Physics within the School of Physical Sciences with SDSC as well as HDSI. The new Department of Astronomy and Astrophysics is expected to be strongly involved as well based on the role computing and data sciences play in those fields. It is expected that with the advent of SCIDS, these existing ties will strengthen, and new collaborations will form. Chemistry and Physics are both fields that seek to quantitatively understand natural phenomena over incredible scales of time and space through measurement and rigorous theory. Both these departments already have very strong interactions with SDSC, and faculty from both have also engaged with HDSI as founding members. Both departments also span large swathes of their respective disciplines, from astrophysics to particle physics, biophysics to structural biology and molecular synthesis to manipulation of quantum information from the perspective of both physics and chemistry. Increasingly, machine learning and data science techniques are becoming essential tools for the physical sciences, ranging from large heterogeneous multi-scale simulations to reconstruction of data from complex instruments. Several joint grants with SDSC already exist, and in addition DPS researchers have equipment hosted in the SDSC data center and access large national computational resources through SDSC. The most recent major instrumentation grants at SDSC, Voyager and NRP (see Appendix 1), already are collaborative ventures across the physical sciences, HDSI and SDSC. The opportunity for joint appointments between these units and SCIDS in the future will be an important part of the continued advancement of these disciplines, and their presence on campus contributes to the underlying foundation for SCIDS in a material way.

2.4.11. School of Social Sciences

Modern social sciences, including Communication, Psychology, Linguistics, Sociology, Economics, Urban Studies and Planning, and Political Science, rely on large scale analyses of naturalistic trace data – data that emerges from the internet-mediated interaction of millions of people. With the aid of computational tools, such massive datasets are leveraged by political scientists to identify how conspiracy theories spread in social networks, by linguists to trace the cultural evolution of language, or by economists to estimate the consumer impacts of sector-specific inflation. These
overlapping interests, methods, and approaches form the basis of an interdisciplinary area called Computational Social Science – currently a suite of interdisciplinary programs in the School of Social Science. A formal relationship between Computational Social Science and SCIDS would be a powerful source of interdisciplinary research between social, data, and computational scientists, where jointly appointed faculty could translate between the social science domain knowledge and data sources and computational tools from SCIDS. Ultimately, once joint affiliation of departments across schools becomes feasible, Computational Social Science forms a natural bridge between SCIDS, and an interdisciplinary team of computational researchers throughout the social sciences. The connection with the interdisciplinary Computational Social Science program is in addition to the existing strong interactions between the Department of Cognitive Science and HDSI that will constitute an additional connection to SCIDS.

2.4.12. Division of Extended Studies

As a bridge between campus and community, the Division of Extended Studies plays a key role in both training students and employees for the demands of local industry and informing academic endeavors across the campus. For example, Extended Studies offered courses in the 1990s and early 2000s in bioinformatics, a nascent field at the time, with large enrollments meeting the needs of local industries while campus academic programs were being implemented. Fields such as data science, communications, healthcare, and defense may offer similar potential going forward. Extended Studies is broadly viewed as a literal extension of UC San Diego: its expertise, its resources, and its name. And today that view has been amplified by the establishment of UC San Diego at Park and Market, bringing the University into the heart of the city. There, the Qualcomm Institute provided infrastructure to support high-speed internet delivery to underserved communities. Earlier, as part of the Chancellor's strategic plan to connect the institution to the greater San Diego area, Extended Studies partnered with the San Diego Public Library to provide events, lectures, and courses at over 26 library locations, at no cost to community members or the campus. Library NExT was created in collaboration with the Sally Ride Science program based in Extended Studies, which runs offerings to inspire young people in STEM, in coordination with the Scripps Institution of Oceanography (SIO) and the SDSC. Jacobs School of Engineering and Rady School of Management also support Library NExT. Workshop topics include Messy Science, Introduction to Virtual Reality, and Introduction to Python, and the program also provides test preparation and college counseling for students and their families, with a focus on underserved communities. Interactions between SCIDS and the Division of Extended Studies have the potential to significantly broaden the regional impact of the new school.

Given the imminent need for data and computational literacy among the public, SCIDS will seek to offer courses in collaboration with Extended Studies to the larger San Diego Community. These will include short “learn-by-practice” courses and workshops for the public, summer courses for K-12 and community college students to prepare them for higher education, academic courses to complement SCIDS courses for our undergraduate students, and intensive courses for the local industry participants. The development of a program offering hands on training exercises in data usage and computing will be a rich area for collaboration between SCIDS and Extended Studies.
3. RELATIONSHIP of SCIDS to UC SYSTEM and PEER EDUCATIONAL PROGRAMS, and the COMMUNITY

In creating a new school/college, it is important to consider the national context and national trends. We begin with a view that looks nationally, and then narrow down to universities in the UC system, and finally consider other segments of higher education in California.

3.1. National Context. There are many examples of schools or colleges whose name includes the word Computing, and that focus on Computing and Data. All these schools contain a department of Computer Science; sometimes they contain an Electrical Engineering and Computer Science department; and they always contain a few other departments, most commonly a department of Information Sciences and a department of Statistics (but other examples include departments of Interactive Computing, Artificial Intelligence, Machine Learning, Computational Biology, etc.).

In some of these schools, the membership of the departments is exclusive to the school. This includes:

- UC Irvine: Donald Bren School of Information and Computer Sciences with 3 departments (Computer Science, Informatics and Statistics).
- Carnegie Mellon University: School of Computer Science with 7 departments (Computational Biology, Computer Science, Human-Computer Interaction, Software Research, Language Technologies, Machine Learning, Robotics)
- Georgia Tech: College of Computing with 5 departments (Computing Instruction, Computational Science and Engineering, Computer Science, Cybersecurity and Privacy, Interactive Computing)
- University of Wisconsin-Madison: School of Computer, Data & Information Sciences, with 3 departments (Computer Science, Information School, and Statistics)

However, the more common situation in recent years is that departments have joint membership. In these cases, a department (for example Computer Science or Electrical Engineering and Computer Science) would be affiliated with both the new school and in another academic unit like a school /college of Engineering. Examples of such joint affiliations include:

- UC Berkeley: Division of Computing, Data Science and Society, which includes a department of Electrical Engineering and Computer Science (which is also part of the College of Engineering).
- MIT: Schwarzman College of Computing, which contains a department of Electrical Engineering and Computer Science (which is also part of the College of Engineering)
- Cornell: School of Computing and Information Sciences, which includes a department of Computer Science (which is also part of the School of Engineering)
- The University of Washington: School of Computer Science & Engineering, which is also part of the College of Engineering.
3.2. UC System Initiatives. We now focus more specifically on the two examples in the University of California system that have schools focused on Computing and Data: UC Irvine and UC Berkeley.

**UC Irvine.** UC Irvine has the Donald Bren School of Information and Computer Sciences, consisting of three departments: Computer Science, Informatics and Statistics. The school was created in 2002, when the 35-year-old department of Information and Computer Science was elevated to a school status, and faculty were split into two departments, the Department of Computer Science and the Department of Informatics. The Department of Statistics, also founded in 2002, was included as a third department in the newly created school. Today, both the Computer Science major and the Data Science major are offered through the UC Irvine School of Information and Computer Sciences: data science through the department of Statistics, and computer science through the department of Computer Science.

UC Irvine also has a school of engineering, the Samueli School of Engineering, with a department of Electrical Engineering and Computer Science (all in one department and separate from the Computer Science department in the school of Information and Computer Science). The department of Electrical Engineering and Computer Science offers majors in Electrical Engineering and a separate major in Electrical Engineering and Computer Science, which combines elements of electrical engineering and computer science.

**UC Berkeley.** UC Berkeley has a newly created Division of Computing, Data Science, and Society. The history of the creation process for this division is documented online. The latest incarnation of this unit was announced in 2020, encompassing three units that hold faculty positions:

- The Electrical Engineering and Computer Science (EECS) department, which is jointly affiliated with the new division of Computing, Data Science, and Society and the College of Engineering
- The Information School
- The Department of Statistics

The new division also encompasses two centers that bring faculty together from across campus, but do not hold their own faculty positions: the Berkeley Institute for Data Science, and the Center for Computational Biology.

Berkeley has several majors related to data and computation: a Data Science major offered by faculty in EECS and Statistics; two Computer Science majors offered by EECS faculty; and an Electrical Engineering and Computer Science major offered by EECS faculty.

The Berkeley model is relevant to SCIDS:

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8 [https://www.ics.uci.edu/](https://www.ics.uci.edu/)
9 [https://catalogue.uci.edu/donaldbrenschoolofinformationandcomputersciences/departmentofcomputerscience/computerscience_bs/](https://catalogue.uci.edu/donaldbrenschoolofinformationandcomputersciences/departmentofcomputerscience/computerscience_bs/)
10 [https://catalogue.uci.edu/donaldbrenschoolofinformationandcomputersciences/departmentofstatistics/datascience_bs/](https://catalogue.uci.edu/donaldbrenschoolofinformationandcomputersciences/departmentofstatistics/datascience_bs/)
11 [https://engineering.uci.edu/](https://engineering.uci.edu/)
12 [https://engineering.uci.edu/dept/eecs/academics/undergraduate](https://engineering.uci.edu/dept/eecs/academics/undergraduate)
13 [https://data.berkeley.edu/](https://data.berkeley.edu/)
14 [https://data.berkeley.edu/about/progress](https://data.berkeley.edu/about/progress)
16 [http://guide.berkeley.edu/undergraduate/degree-programs/computer-science/](http://guide.berkeley.edu/undergraduate/degree-programs/computer-science/)
1. The Berkeley division is the most recent example in the UC system of the creation of a school/division/college around Computing and Data (and certainly much more recent than at UC Irvine – 2020 vs 2002).

2. The Berkeley model addresses the issue of how a computing department that already exists in Engineering should be housed on campus: the solution at Berkeley involves joint affiliation, so that the EECS department (which at Berkeley is a single department) belongs to essentially two divisions/colleges: both the college of Engineering, and the new division of Computing, Data Science and Society. This joint affiliation model is also used at other institutions nationally, most recently at MIT (in the recent creation in 2020 of their Schwarzman College of Computing), but also at Cornell and at the University of Washington.

UC San Diego stands in a unique position to build SCIDS as a structure that brings to bear the capabilities of the Halıcıoğlu Data Science Institute and the San Diego Supercomputer Center, while also supporting the broader campus through additional formal connections between existing units and SCIDS, as will be described in further detail in section 7.1.

3.3. Relationship to the California State University and Community Colleges

Both HDSI and SDSC have existing engagements with the CSU and CCC systems that conform to the spirit and requirements of the California Master Plan for Higher Education. Given the scale in terms of number of students (0.5 and 2 Million respectively) compared to UC San Diego (aspiring to grow to 50,000 students), we are meeting the students where they are in CSU and CCC through institutional engagement at the campus leadership and faculty levels. Conceptually, we are working with both the CSU and the CCC system as collaborators to help us understand how to create national programs to achieve systemic change that democratizes access to cyberinfrastructure and computer, information, and data sciences nationwide. There are two components of our current strategy for engagements with CSE and CCC: (a) building transfer pathways for students from Community Colleges to Data Science academic programs for successful and timely completion of our degree programs; (b) building on-ramp mechanisms that enable broadening the talent pool we can draw upon for entrance into our programs. These activities are supported by a combination of HDSI endowment-generated funds as well as funding from national initiatives where we have been very successful in recent years. We will continue pursuing federal funding for such programs in collaboration with CSUs and CCCs as a part of teaming efforts. For more details, see Section “5.1 Current Efforts on JEDI at SDSC and HDSI.”

We have been working on building “transfer pathways” between local community colleges and our data science program, partly with the goal of increasing diversity in our transfer cohort. The transfer pathways from Community Colleges currently face a number of challenges that the faculty and staff in HDSI are intensely engaged in resolving. For instance, HDSI faculty and staff were working closely with MiraCosta College in San Diego and have helped them create a data science program that will prepare students for transfer to UC San Diego. We anticipate that MiraCosta will offer their data science classes in the next year, as we work to reach out to other community colleges and devise plans for a regional summit in the newly inaugurated HDSI building.

When it comes to diversity, a topic that we address in depth in Section 5, our current data on the first two years of transfer students into the Data Science program points to a rather
similar racial and ethnic distribution of transfer and first-year students. More importantly, it points to a significant room for improvement in inclusion of African/American and Hispanic populations. Under the leadership of a full-time outreach coordinator, we have identified the core challenges and devised plans to improve the diversity of the cohort. Briefly, while there is significant demand at University of California campuses for their data science programs, community colleges and CSUs are struggling to recruit students into their corresponding programs, limiting our potential growth. A particular challenge here is that unlike most other data science programs, UC San Diego’s Data Science program consists of courses created “from scratch.” This is a strength when it comes to preparing 4-year students to compete nationally including with students with MS in Data Science degrees from other schools. It also creates challenges for transfer students since much of our lower-division curriculum does not exist at community colleges. We have identified areas of overlap and courses that can serve as a steppingstone for a streamlined pipeline of talent training. For instance, most CC students will be able to take a course in Java or introductory statistics. SCIDS plans in this area will consist of following elements: develop an “adapter" course that can be taught at the community college level and supplements existing community college courses but provides the missing content that is specific to our data science curriculum. Second, develop a summer version of DSC 80 (Practice and Application of Data Science) specifically for community college transfers. This course represents a transition point from our lower division to upper division in Data Science major, which can also serve as an important means to match the impedance of Data Science major upper division coursework and the background and preparation for the entering transfer students. A successful execution of this plan will keep our transfer students on-track for timely progress and graduation. With SCIDS, we will also be better able to institutionalize and support our workshops with teachers drawn from community colleges and work with them to build pipelines.

For the second component of our strategy to engage with the community colleges, we are also creating new pathways via on-ramp courses and bootcamps that expand the flow and preparation of CC students for success in SCIDS degree programs. This will build upon ongoing efforts by HDSI in helping CC in the San Diego area through the process of articulation agreements for courses where credits can be earned by the students joining the Data Science program. This activity is currently being conducted by a temporary contractor enabled by the HDSI endowment resources. The contractor also prepares and offers Python training bootcamps that help our incoming students to be better prepared for success and on-time graduation when entering into the program. With the establishment of the school, we plan to institutionalize this process through permanent leadership and staff support. HDSI also currently engages with the San Diego State University (SDSU) computer science department in joint proposals and recruitment of students in the joint PhD program currently hosted by the Jacobs School of Engineering. SCIDS will explore building on this tradition through expansion of this joint doctoral degree program.

3.4. Relationship to the San Diego Community and Global Partners

We stand on the cusp of a new era in research and education as we scale up the progress in science and technology of the past many decades to population-wide impacts. To be successful, we must address essential issues of equity, diversity, and inclusion. The imperative and need for societal impact is shrinking innovation cycles. While advances in basic research will continue, there is a need for translational research and transition to practice of foundational research. High performance computing (HPC) and big data—
essential to discovery science—are now also necessary for AI and societal impact. The phenomenon of HPC emerged from “big science,” while big data and data science emerged from industry. We are now seeing the need for convergence across computing, information, and data in order to support discovery science as well as translational research.

UC San Diego is on track to becoming a STEM Hispanic-serving Institution (HSI). As Chancellor Khosla has said, the university is “taking meaningful action\(^\text{17}\) so that UC San Diego can better reflect and serve the diverse population of California.” Indeed, attracting and retaining students is essential for a successful HSI—or, for that matter, for any institution interested in serving underrepresented minorities. However, becoming a STEM HSI is more than just about student retention and success. It is, in fact, about a fundamentally new world view—about the types of problems researchers choose to address; the types of solutions they seek out; and the types of collaborators and students they engage in addressing these problems and developing solutions. As a new institution, designed for a new era, SCIDS will employ computing, information, and data to develop solutions for a wide range of complex global issues—from climate change and pandemics to misinformation—and focus on their regional and local impacts by leveraging UC San Diego’s emerging status as a STEM HSI and the unique geo-political location and context of the San Diego region.

Efforts like the Border Solutions Alliance\(^\text{18}\), the Innovative Cultural and Education Hub in downtown San Diego, SDSC’s WiFIRE project on California wildfires, and the COVID-19 K-12 e-Decision Tree for managing COVID outbreaks in San Diego schools are all examples of projects tackling complex problems with a regional flavor. The WiFIRE project is working within NSF’s new Convergence Accelerator program, which focuses on translational research and transition to practice. Experiential learning is essential to translational research. The SCIDS educational agenda will embrace translational research and transition to practice, providing students hands-on learning with real-world data in real-world situations. The NSF Data Science Corps program encourages bringing real-world data sets into the classroom setting and providing student internships for learning in real-world environments and provides a good model.

With its emphasis on foundational as well as translational research at the nexus of computing, information, and data, and the 35-year reputation of SDSC as an organization that provides world-class research, development, and production services, SCIDS will be well-positioned to make important contributions and play a key role in national initiatives including the National Strategic Computing Initiative (NSCI), the National AI Research Resource (NAIRR), and the call for a National Research Cloud—which could be an extension of the NSF-funded CloudBank project based at SDSC. SCIDS can serve as a natural home for such initiatives.

### 4. ACADEMIC CURRICULUM, DEGREE PROGRAMS, and ACADEMIC RIGOR

The convergence of disciplines and interdisciplinary engagements brought about by the SCIDS provides an excellent opportunity to create degree programs that serve the current

\(^\text{17}\) [https://ucsdnews.ucsd.edu/feature/becoming-a-hispanic-serving-institution](https://ucsdnews.ucsd.edu/feature/becoming-a-hispanic-serving-institution)

\(^\text{18}\) [https://mexico.ucsd.edu/initiatives/border-solutions/index.html](https://mexico.ucsd.edu/initiatives/border-solutions/index.html)
and growing need for talent in an information-enabled society. Fulfilling these needs will be accomplished in diverse ways beyond traditional in-residence undergraduate and graduate degree programs. For instance, SCIDS will develop programs that teach skills that enables individuals to access the benefits of information society in their personal or professional lives, help some others make career transition through new training programs, and help senior executives understand the growing role of AI in businesses. Accordingly, the educational mission of SCIDS will span traditional degree programs to outreach and training for diverse talent. This diversity reflects the difference in background and training of the talent drawn to its various degree programs. SCIDS will build upon HDSI’s mechanisms consisting of counseling personnel and on-ramp training boot-camps and courses to build expanded pathways. In the following, we outline degree programs currently offered or in the planning stages as representative of overall offerings by the new School. The outreach will include on-ramp training for incoming and potential future students of our degree programs who are able to explore preparatory topics for later success, as well as professional development opportunities for working professionals in the industry and civic organizations, an area in which the school with coordinate with UC San Diego’s Division of Extended Studies. The school is particularly positioned to support this mission because of the core capabilities it brings from its academic appointees as faculty and affiliates, as well as practicing computing and data science professionals at SDSC. In the following we briefly describe the goals and status of degree programs that will be offered by the SCIDS at its launch. This initial academic structure is provided by the incredible growth of academic programs at HDSI since the launch of the institute in 2018.

4.1. Bachelor of Science in Data Science (BS-DSC)

The HDSI currently offers the BS in Data Science both as a major and minor option. The degree program is designed to essentially replace the current BS (engineering or computer science) + MŚ (data science or artificial intelligence) options available to students. The DSC major is currently capping enrollments due to its legacy as a part of administration within JSOE where all programs limited the number of majors. In fact, as HDSI has recruited more faculty and created additional teaching capacity, it has substantially increased the capped limits (from 175 to 300) and is planning the removal of cap limits altogether under the processes established by the new School. HDSI has already received the permission for engineering majors to double major with Data Science. Further based on recommendations from the SCIDS Working Group a proposal has been developed to include a discussion of Data Science minors in campus undergraduate programs.
The DSC program is designed to be accessible to a broader group of students than current specializations of Data Science offered by alternative MS programs. The program consists of 116 units of course work (56 units for a minor). Required courses include courses in mathematics (especially linear algebra and probability), computer science (programming, data structures and abstractions, data mining), and statistics (estimation, testing, and exploratory data analysis). A 12-unit lower division course sequence in physics, chemistry or biology reinforces a strong background in natural sciences. The
program includes 20 units of elective courses that enable students to embark upon an in-depth exploration of one or more areas in which Data Science can profitably be applied. Alternatively, students can choose to explore the mathematical, statistical, and computational foundations of Data Science in even greater depth. All majors are required to undertake a two-quarter senior project, giving them an opportunity to creatively synthesize much of what they have learned in their courses. There are two notable features of the Data Science program: (a) All required courses are typically completed by the end of third year into the program leaving the senior year for student-directed exploration of topics among many elective courses; (b) every student is required to complete a minimum 2-quarter long capstone project sequence generally in a team of 2 or 3 students. Each team is mentored by a faculty member, sometimes in collaboration with an industry mentor. Besides capstone there are multiple opportunities for students to carry out projects the entire four years of the program starting with HDSI UG research scholarships from the first year of the program. The goal of experiential learning in Data Science major is to ensure that each graduating student completes the program with a portfolio of various projects that expose them to ways methods and tools taught in the required courses can be applied to one or more application domains.

The BS-DSC program was launched in AY 2016. The class of 2025 (admitted in the Fall of 2021) consisted of students with an average GPA of 4.25 (25th percentile at 4.20 and 75th percentile at 4.33), making Data Science among the most sought-after majors. The program was heavily subscribed and beginning AY 2018, the program has been among the capped majors offered by UC San Diego. There are over 800 DSC majors making it the sixth largest major at UC San Diego. The pervasive need for Data Science skills also leads to DSC experiencing a higher than typical fraction of students who are drawn from other majors. Given this demand we have established a minor in Data Science. A significantly enhanced role for the Data Science Minor is an important part of the academic program, ensuring access to Data Science courses and HDSI resources as broadly as possible to all academic programs on campus. Currently the undergraduate courses offered by HDSI are also attended by over 250 students in the Data Science minor, and there are over 5000 students enrolled in Data Science undergraduate classes annually. This number is currently growing commensurate with teaching capacity.

Going forward, the Academic Senate approved in 2022-2023 a transition away from the Capacity-Based Admissions Pilot Program (‘capped major program’) in favor of a more holistic approach to enrollment management. In particular, rather than designating majors as ‘capped,’ Enrollment Management engages in conversations with departments and Deans to ensure that they are aware of enrollment goals. While this, in effect, may limit admissions to particular majors – in a manner similar to the capped major program – it is more dynamic and allows for a nimbler response to demand and resources, and it allows Enrollment Management to monitor the make-up of incoming classes more holistically. And, this helps mitigate the adverse effects of publicly declared capped majors that tended to discourage students, particularly from backgrounds with limited counseling support, from applying to these majors, thus directly affecting the diversity in the pool of applicants. The Data Science major in SCIDS looks forward to embracing this new paradigm of holistic enrollment management. The emphasis will be on right-sizing the incoming class and moving to less reliance on internal intra-major transfers during the first two years. Removing declared impacted status will likely help with improving diversity among the aspiring applicant pool and will also allow the program to better focus on
devising appropriate pathways for transfer students from community colleges to ensure their progress and timely graduation, as discussed earlier in section 3.3.

4.2. Graduate Programs
Data Science is a popular graduate level subject: in 2019, nearly half (1571) of over 3000 applicants to various graduate degree programs in Electrical Engineering, Computer Science and Cognitive Sciences indicated interest in a Data Science program. To serve this growing need, HDSI currently offers three graduate degree programs while two other degree programs are currently in planning. In the following we describe the current and pending graduate programs, for details and updates please check the website at https://datascience.ucsd.edu/academics/graduate/graduate-program-requirements/:

1. Master of Science in Data Science
2. Online Master of Data Science
3. Doctor of Philosophy in Data Science
4. 4+1 BS/MS program in Data Science and Business Analytics
5. MD-MS Degree Program

4.2.1. Master of Science in Data Science (MS-DS)
The MS-DS program was designed together with PhD-DS program (described below) with the goal of attracting top students from around the world to the emerging field of Data Science to pursue the proposed M.S. degree that provides them with the necessary knowledge and skills to pursue a career in Data Science for industry, civil services or academia. To achieve this goal, the program is designed to be broadly accessible to students drawn from a variety of undergraduate backgrounds via well-articulated pathways through courses in the program as well as on-ramp courses with financial support necessary to ensure a diverse talent pool.

The educational objectives of this program are to teach students knowledge and skills that enable them to (a) collect raw data from various sources and convert this raw data into a curated form suitable for computational modeling and analysis (e.g., its use in designing experiments); (b) understand learning algorithms and how to appropriately use them in targeted domains such as in business, health etc. (e.g., in developing effective optimization methods); (c) interpret the results of these algorithms and iteratively drill down into the data, perform analysis, visualize results and carry out scientific enquiry appropriate for the targeted domains.

The curriculum is structured into three groups of courses: foundational courses that cover five critical foundational knowledge and skills that each graduating student from the MS-DS program is expected to receive at a graduate level. These are: programming skills, data organization methods, numerical linear algebra, multivariate calculus, and probability & statistics. We do not expect entering students to have all these skills. Instead, entering students typically fall into three streams: (a) those with background in computing and computer science; (b) those with background in mathematics and statistics; and (c) those with background in an application area of data science with skills in quantitative analysis. HDSI offers five courses in this category; a student can take credit towards an MS degree in a maximum of four foundational courses.
The second group of courses are core courses, areas that are expected to be understood and practiced by our graduating students. Students are required to take at least five core courses, three of which are required for all students: Machine Learning, Statistical Methods and Data Ethics & Fairness.

Finally, the third group of courses are elective courses that explore advanced topics in Data Science or its applications into specific domains. The MS program provides two options: a conventional thesis option that focuses on a technical project implemented and documented into a MS Thesis under the guidance of a 3-person committee; and a course-based comprehensive examination options that enables students to choose from among core courses three courses where the students are examined in that specific subject within a much larger context of application or data science foundations.

The MS-DS program also provides a pathway for students to apply for and transition into a PhD in Data Science degree. The MS-DS program was launched in Fall 2021 with the inaugural class joining the program in Fall 2022. In its inaugural year, over 300 applications were received for the MS program, with an expectation of offering admission to about 60 MS students and matriculating some 20 MS students to start in Fall 2022.

4.2.2. Doctor of Philosophy in Data Science (PhD-DS)

A doctoral program is key to the success of a discipline in defining its intellectual core. Given the transdisciplinary nature of Data Science, such a core must also cultivate talent drawn from diverse intellectual traditions from sciences, engineering to social sciences and humanities. Such a program cannot simply be a collection of diverse existing topics or multiple courses and degrees in sciences and humanities stacked on an individual, or specialization of an existing program. Instead, a streamlined and integrated approach to curriculum is needed that is accessible to students drawn from different undergraduate degree backgrounds.

Over the last two years, the HDSI faculty have successfully addressed the challenge of program accessibility in its Master of Science (MS) program. Building upon the MS-DS program, the doctoral program is structured to cultivate both a generalist’s penchant for persistence in results validated by proofs, and robust experimentation as well as a specialist’s view of practical impact validated by real-world demonstrations, user studies and trials. HDSI faculty started working on designing a PhD program in Data Science in Fall of 2019 after preliminary discussions in the first Faculty retreat in October 2019. Over the next two years, the program evolved into a comprehensive proposal that was formally approved for implementation in Summer 2021. The PhD-DS program was launched in Fall 2021 with the inaugural class joining the program in Fall 2022. In its inaugural year, over 150 applications were received for admission into the PhD program. The plan is to review and make offers to about 20 students with the expectation of 7-10 new entering PhD students starting in Fall 2022. The program will also be opened to transfer from other degree programs in Spring 2022.

The goal of the PhD in Data Science is to serve the need for advanced graduate students in the area, create a talent pipeline that advances the frontiers of knowledge and practice in Data Science. The program is designed to teach students the knowledge, skills and awareness required to perform data-driven tasks in practice and to expand the boundaries of knowledge in Data Science. To achieve these goals, the graduate program
is structured as a set of three key requirements related to coursework, examinations and dissertation compliance. The course preparation consists of breadth and depth requirements of 48 units taken for letter grade and 4 units of satisfactory completion of professional preparation courses. After a required preliminary advisory assessment at the end of first year, the examination requirements consist of research qualifying examination and a dissertation defense examination.

There are three key distinguishing features of the PhD program in Data Science: one, the program features a required one-year rotation program that exposes all students to research culture and methodology in diverse disciplines where data analysis plays an important role. Two, all students are required to take courses on Data Ethics and Fairness (DSC 260) as well as professional development courses that include TA/Tutor training, Faculty Research Seminars and Academia Survival Skills (DSC 295). Three, the dissertation compliance requirement involves approval of a thesis that specifically meets generalizability, reproducibility, and responsibility (GRR) requirements. The primary reason for these additional requirements is the transdisciplinary nature of the nascent discipline that places an additional emphasis on identifying core elements of a research dissertation that forms a basis for it to be considered primarily in data science. Doctoral degree candidates in Data Science are expected to demonstrate evidence of generalization skills, and reproducibility in research results, as well as the ability to responsibly conduct and use data science considering potential ethical and societal implications of the research results. Evidence of these skills may be in the form of -- but not limited to -- generalization of results arrived at across domains, or across applications within a domain, generalization of applicability of method(s) proposed, or generalization of thesis conclusions rooted in formal or mathematical proof or quantitative reasoning supported by robust statistical measures. Reproducibility requirements may be satisfied by supplying additional supplementary material consisting of code, data repository along with evidence of independent external use or adoption. Evidence of responsible use of data science include ability to collaboratively identify and respond to ethical and societal opportunities and risks and adhering to “best practices” in terms of ethical consequences (for example, obtaining appropriate consent for data collection about humans, documenting design and modeling choices etc.).

The GRR requirements will necessarily require a PhD student to be exposed to one or more application domains since understanding data upon which method advances are tried must be understood by the researchers so that the objects of generalization, reproducibility and responsible use are indeed supported by the experimental data. Normally this would be through an advisor or co-advisor who works in an application domain area, or through the rotation program. In addition, HDSI is developing tools to also assist students broadly in discovering potential users and applications of their work, to enable discovery and dialogue among the domain and method experts as one would have with a real-life consultant.

4.2.3. Online Master of Data Science (OMDS)

The online Master of Data Science program (OMDS, https://omds.ucsd.edu/) has been developed and offered jointly with CSE and HDSI starting Fall 2022. The program was designed to serve the needs of working professionals as well as provide easy access to advanced training in data science to talent that would not be normally served by our residential MS programs. The learning goal of the program is to teach students the skills
required to be successful at performing data-driven tasks. This includes the ability to: (1) collect raw data from various sources and convert this raw data into a curated form amenable to algorithmic analysis (2) understand machine learning algorithms and how to run them on large data sets; (3) interpret the results of these algorithms and iteratively drill down into the data, and perform more analysis, to answer questions about the data.

The program is designed to be online using “R” courses approved by the Graduate Council of the Academic Senate. These courses are designed with curricular requirements and review that is identical to regular courses for in-person instruction as shown in the Figure below. In addition, the courses are also subject to feedback and statistical data collection analysis for their performance on the standards related to learning goals and outcome using a process (shown below) devised and orchestrated by the Digital Learning Initiative from Teaching and Learning Commons at UC San Diego. (https://digitallearning.ucsd.edu/instructors/resources/guidelines-for-online.html).

The courses are designed and offered in a manner to enable reaching a broad geographic population and provide educational experience to a community that until now has been underserved. The rising cost of higher education, along with the economic challenges faced in residential education leave behind a large population of students; many of them are our graduates from years or decades ago, who need to keep up with changing technological realities. Many of these students cannot attend residential education at any price due to career constraints or family obligations. Further, emerging areas, such as Data Science, represent a leading edge of technological advances that simply cannot be taught by community colleges or our own extension programs.

The Figure below shows the overall program outline for OMDS degree. The program follows a similar structure of courses as the residential MS-DS and PhD-DS programs consisting of foundation, core and elective groups of courses.
4.3. Growth of Educational Programs

The growth plan for the educational program in data sciences is reviewed in section 7. In the context of ongoing state-mandated growth in undergraduate and graduate enrollments, the projected growth in HDSI degree programs should be understood as purely additive - supplementing our capacity to provide educational experiences in computational and data sciences across the campus.

4.4. Proposed Specializations and Partnerships

4.4.1. 4+1 BS/MS program in Data Science and Business Analytics
The BS/MS 4+1 (or 3+2) programs seek to combine a BS degree with a MS specialization, usually in another discipline, to effectively channel our graduating seniors into interesting graduate programs. The coordination of BS and MS degree program plans not only results in time savings for the graduating seniors who are interested in higher education but also savings in both time and money for the students by coordinated offering and
selection of elective courses in the two programs. Thus, by choosing appropriate domain electives in their senior year, the BS-DSC students can get a head-start in the MS program. Combined with seamless transition from senior year to first year graduate student including use of summer courses,

We describe one such program that channels graduating BS-DSC students into two different MS programs offered by the Rady School of Management. In the future, we anticipate SCIDS will utilize these programs to build stronger ties to other schools on campus.

Our current proposal creates two pathways for HDSI’s Data Science students into the Rady graduate programs: a Master of Finance (MFin) or a Master of Science in Business Analytics (MSBA). Combining HDSI’s robust undergraduate training in data science with domain-specific application and business acumen in either of these two master’s degree programs will create value for firms and lead to successful student outcomes in the job market. HDSI undergraduate students who are considering masters-level study will benefit by saving time and money under this proposed structure.

4+1 Program Basics
Undergraduate Data Science majors in good academic standing will have the opportunity to pursue either the MFin or MSBA graduate programs by taking Rady graduate-level courses, totaling 12-16 units, during their senior year of undergraduate study. These courses will count as major elective units in the DSC program and be waived from the respective graduate program. Students would enroll in these Rady graduate-level courses at their standard undergraduate tuition rate—a savings of just under $20,000 at current tuition levels (varies slightly by program). The students would be able to complete the remainder of the graduate program with just three additional quarters of study, enabling them to get a jumpstart on their employment search sooner than if pursuing masters-level study after their standard DSC education plan. The pathways to two programs (MFin and MSBA) allow students to complete 50-52 units of graduate courses through a combination of capstone and DSC electives chosen from MS programs.

4.4.2. MD-MS program
The HDSI faculty are currently engaged in discussions regarding an MD-MS degree in Biomedical Data Science. The proposed degree is tailored to medical students enrolled in the School of Medicine in the MD degree program. This degree provides a pathway for the physicians who have already completed their terminal medical degree (M.D., D.O. or M.B.B.S.) to receive substantial and practical training in Data Science areas. The proposed program is a joint initiative with the School of Medicine to train the next generation of physicians, particularly those who wish to pursue a career in data analytics in medicine.

Like a residential degree program, the MD-MS program has two tracks: a thesis-based or a course-based comprehensive examination. The proposed program consists of following elements:

- A 36-unit, thesis-based program anticipated to be completed in 1-2 years.
  - Alternately, a 36-unit course and qualifying examination-based program anticipated to be completed in 1-2 years.
• A 6-course requirement followed by successfully completing a qualifying examination to be completed in 1-2 years.
• A required core set of 4 Biomedical Data Science courses (16 units)
• Electives taken from a list of permitted electives (8 units for thesis-based program and 24 units for coursework-based program)
• Thesis research units, (least 8-12 units) supervised by HDSI and SOM faculty designated jointly by the Program.
• HDSI and select Health Sciences research seminars to enrich student experience and provide exposure to potential faculty mentors.

4.5. Experiential Education Programs

The best education happens when research and teaching missions align. Experiential programs provide opportunities for such alignment through integration of students in cutting-edge research and practical settings to apply their learnings from classroom education. A direct impact of such programs will be to increase innovation in both research and education with pathways to direct applications across science, engineering and societal domains.

4.5.1. Translating Data Science from Classroom to Research Scale

The focus of education is to teach concepts. In data and computational sciences, this is typically done at the smallest possible non-trivial scale, for students to be able to focus on the concepts rather than getting lost in technicalities of applying these concepts at the scales required for cutting-edge research. In practice this often means GB datasets for the classroom, and TB datasets for capstone projects, whereas cutting edge research at SDSC often involves PB scale datasets, and beyond. SCIDS provides an opportunity to holistically think through the process of scaling out the application of concepts from the classroom to the research scale, and thus bridging the many orders of magnitudes in between.

In practice, this can be done by connecting the concepts taught in the classroom and capstone projects to doing research at SDSC during summer internships or work study during the school year. SCIDS will facilitate strong linkages between CI professionals at SDSC that are responsible for large cyberinfrastructure projects, and a student workforce at HDSI that is well trained in practical skills of relevance, and thus attractive to hire.

CI professionals at SDSC excel at attracting research grants and contracts for sponsored research, which in turn create specific commitments to funders. It is thus a core mission of SCIDS to develop the processes that scale out the skill sets of our students to meet the needs of large research projects at SDSC. As we accomplish this mission, we are creating a pipeline of students that successfully has translated classroom concepts to research scale. That pipeline will prove extremely valuable to researchers all over campus, and industry beyond, benefitting all stakeholders. The graduates from this pipeline enter their careers with research scale skillsets, and the CI professionals, faculty across campus, and industry beyond campus benefit from a dynamic highly skilled workforce to support their research enterprise.

4.5.2. Convergence Research Experience

In our age of complex societal-scale problems, there exists a growing need for university students and researchers to participate in multi-sector and cross-disciplinary partnerships focused on impact. Advanced computing and data science skills can help, but these skills
need to be combined with effective cross-disciplinary collaboration capabilities and a problem-solving culture. Convergence research in data science and computing requires training in use-inspired research and team science.

Experiential education programs at SCIDS will provide an opportunity for interested students to participate in convergence research projects across campus, applying their data science and computing skills to actionable projects, and, in the process, developing important convergence research skills. These programs will improve the competitiveness and influence of SCIDS graduates as they enter the workforce, positioning our students to contribute to solving the most important problems of our time throughout their careers.

In practice, this would be achieved through programs supporting participation of students at SDSC, HDSI and across UC San Diego. Convergence research programs are growing across the funding agencies exemplified by the various programs under the NSF Office of Integrated Applications. These programs explore the research foundations required by applications with potential societal impact and practical translation of integrated applications at the societal scale. SDSC has several active convergence research and accelerator projects, and this number is projected to grow under the SDSC’s Division for Cyberinfrastructure and Convergence Research and Education (CICoRE), with a vision to “translate cyberinfrastructure research for impact at scale.” As such, the mission of CICoRE is to provide experiential education and training programs for use-inspired research and team science. CICoRE also works with funders and government organizations to increase capacity in this area, e.g., an NSF Convergence Research Winter Institute is planned for February 2023.

4.5.3. Professional Education and Training Programs

One of the biggest challenges facing the workforce today is keeping up with the rapid advances induced by data science and computing, e.g., artificial intelligence, cybersecurity, internet of things, and cloud computing. Without programs to actively boost modern data science skills, a gap between the existing workforce capabilities and the talent needs of companies accelerates. Programs to upskill existing talent through ongoing professional training and education is a growing need.

SDSC has been an active provider of workforce development and professional programs over the last decade through data science bootcamps, weeklong training programs, online professional certificate programs and partnerships with the UC San Diego Division of Extended Studies. In addition, SCIDS will build upon these programs to create functional programs for professional training that can scale via remote instruction and be self-sustained through industrial partnerships.

4.5.4. Rotational Programs at the Digital Continuum

Rotational programs benefit graduate studies and professional development through exploration of skills and knowledge. Although such programs exist in other areas of research, a rotation program for computing and data does not currently exist in UC San Diego, leaving development in this area to the initiative of the students. SCIDS will include a rotation program for graduate students to explore data science, information, and computing as a foundational skill in research.
In practice, this is achievable via 4-6 week rotation programs at SDSC for graduate students in areas including high-performance computing and big data systems, internet of things, research data management, actionable knowledge networks and networking. Such rotation programs provide the students with the background of related skills before they choose a specialized research direction in a multidisciplinary data science area and prepare the students with the hands-on skills applicable in their graduate studies and beyond.

4.6. Impact of SCIDS on Educational Programs at UC San Diego

Creation of new Schools often raise concerns about the impact on extant programs in terms of student enrollment, competing interests and curricular challenges. As we discussed previously SCIDS, unlike any traditional School, will have a unique status in building strong bridges and foundations across all schools on campus. We elaborate this point here. In terms of competition for students across units on campus, we would like to point out that UC San Diego is on a growth path and a number of majors are impacted owing to restrictions on space and instructional capacity. For example, we are losing some very high-quality students who apply for programs in Engineering owing to the impacted status of several engineering majors. And in data sciences, our student applications are from stellar students who will qualify for the most prestigious institutions. Hence, SCIDS will only have beneficial and not adverse impact on undergraduate student enrollment. First and foremost, HDSI as a primary department in SCIDS has already established a premier undergraduate program with enormous enrollment demand and in the 6 years of its existence there is no negative impact on the quality of students admitted to any other program including computer science or other engineering departments.

SCIDS will also play a key role in broadening the access of students across the university to instruction in computational and data sciences. Owing to a lack of enrollment capacity, courses in computing and data analytics have not been available to non-STEM majors. The establishment of SCIDS offers the opportunity to remedy this deficiency through development of courses targeted at non-STEM majors, supplementing existing efforts in CSE and other departments. In addition, as we discuss in section 5, on Justice, Equity, Diversity and Inclusion (JEDI), SCIDS opens a new vista for training and mentoring URM students both at UC San Diego and other institutions across the state.

5. JUSTICE, EQUITY, DIVERSITY and INCLUSION

The formation of SCIDS comes at a time when the academy and society are facing profound challenges and opportunities in building a more just, equitable, diverse, and inclusive (JEDI) society. Computing, information, and data science have the potential to be both a tool to addressing these challenges, and a vehicle through which the university leads by the example of its actions and the programs it undertakes. Thus, the formation of SCIDS is a once-in-a-generation opportunity to build a program where JEDI is part of the fabric of the school, with the principles and central components of its core functions embedded in the institutional infrastructure and throughout its academic programs. A multipronged and multilevel approach will engage all populations of the school to ensure that the hard work of JEDI is acknowledged, celebrated, and rewarded. This will be achieved by integrating a JEDI framework in the school’s mission and all activities from inception.
Helping to build an equitable future where all of society benefits from computing, information, and data science is a strategic goal for the University of California, and in achieving this goal it will be essential to uncover and reward the contributions the faculty, staff, and students of SCIDS will do to promote JEDI. Achieving these goals requires a steadfast commitment by all stakeholders to be inclusive, hold one another accountable, use data to drive decision-making, and ensure that adequate resources are available to carry out the work. Accordingly, it is essential that sufficient funding for programming and staffing be allocated to ensure that the financial commitment is commensurate with the goals and expectations for JEDI.

The core principles of JEDI are instantiated concretely into the activities and programs of SCIDS.

**Justice:** To achieve justice, a recognition of harm and work towards restoration and repair are essential. SCIDS will acknowledge that data and information are controlled and shaped by power and privilege and can be used in harmful ways. The research, teaching, and community engagement in the school will include using a critical lens towards data and information science, examining historical practices that have created disparities within our social systems.

**Equity:** Decision-making processes that lead to equitable outcomes will be prioritized in the development of the policies, practices and procedures of the school. This will require continual tracking, monitoring, evaluating, and iterating to achieve equitable outcomes. The school will establish a structure to carry out independent equity evaluations, and direct resources towards implementing resources. This may include regular analyses of equity in teaching load (e.g., new courses prepared, class sizes, number of leaves, salary, advising/mentoring load, and service).

**Diversity:** The school will take a holistic approach to diversity. Diversity can be found in an individual’s or group’s background, experiences, and perspectives. The school will seek diversity across all groups and over the career life-course, not just at the beginning of the career. This includes a focus on diversity in: Leadership hiring, recruitment, and retention; Faculty hiring, recruitment, and retention; Staff hiring, recruitment, and retention; and Student admissions, recruitment, and retention.

**Inclusion:** To create a welcoming and inclusive environment for all, the school will develop programming that builds tolerance, awareness, and compassion, ensuring that discrimination and harassment are not tolerated. SCIDS will adopt standards that are developed by the community and revisit them annually. Focusing on inclusion can be facilitated through training for faculty, staff and students. Relevant areas for attention include Inclusive Teaching, Employment Equity, Racial Equity Training, Mental Health First Aid, LGBTQ+ Cultural Competency Training, Safe Zone Training, Racial and Cultural Competence, Ally Training, and American Disabilities Act Training.

SCIDS will look forward to participating in the biannual inclusive excellence accountability meetings established by the Vice Chancellor for Equity, Diversity and Inclusion at UC San Diego. These meetings ask unit leaders to address the effectiveness and impact of EDI strategies across all dimensions of students, faculty and staff, as measured by quantitative data, and are an important part of the Strategic Plan for Inclusive Excellence at UC San Diego. The new school will face the same challenge and opportunity that HDSI has faced with building a unit that has JEDI built into the foundation. The nascent state of the school will naturally make interpreting necessary data a challenge, so baseline data
from closely related fields will be used, as well as proactive efforts to engage the faculty, staff and students, as HDSI has done.

Founded as a National Supercomputer Center, SDSC brings a strong focus on national scale infrastructure and problem solving to SCIDS. This also extends to our aspirations for JEDI in SCIDS. E.g., the CSU and CCC programs alone have roughly 0.5 and 2.0 Million students each, compared to the just 50,000 UC San Diego is aspiring to. SCIDS will aspire to impact social mobility and equity, diversity, and inclusion at the full scale of the millions of students at those institutions by engaging these institutions and their faculty through federally funded collaborative activities. As essentially all CSUs and CCCs are HSIs, SCIDS has an opportunity to reach close to a million underrepresented students. By developing programs with these schools that work for them and their students, we can then try to evolve successful programs such that they have similar impact nationwide.

In this regard, it is worth documenting the baseline from which the new school will be starting by highlighting some of the current JEDI efforts at SDSC and HDSI. Accordingly, we start with a detailed description of the approach and plans at HDSI and SDSC, followed by our planned strategy for JEDI in SCIDS.

5.1. Current Efforts on JEDI at SDSC and HDSI

Current JEDI efforts at UC San Diego are coordinated in response to the required plans for Strategic Accountability Plan (SAP) overseen by the Office of the Vice Chancellor, EDI. The SAP plans are reviewed annually against pre-specified quantitative measures for their progress and impact. In the following we describe the current SAPs for the core units of SCIDS: HDSI and SCIDS to set the stage for an overall strategy for SCIDS.

Given HDSI’s overall mission to serve “as the campus hub for data science,” HDSI is specifically challenged to find ways in which it is able to maximally engage the largest set of individuals and departments from across the campus in activities and programs that share a broad interest in the areas of Data Science. To serve this mission in an effective and sustainable way, HDSI must devise initiatives and programs that ultimately and always present a ‘win-win’ proposition to the academic units that it partners with in its various activities from industry liaison to joint degree programs. This charge requires us to think in a fundamentally different way as to how all our academic activities are structured, the incentives and reward system that supports these activities, and how the overall success of HDSI itself is measured. Fortunately, all these considerations directly lead to initiatives that are aligned well with the spirit of the “Strategy for Inclusive Excellence” adopted by the university. In particular, the campus strategy document seeks “dialogue and challenges itself to take bold actions that will ensure learning is accessible and affordable for all.” The core tenets to meet the goals for our campus using the SAP consist of 3 elements: access & success, accountability, and climate. Each of these has a direct reflection on specific initiatives taken by HDSI and SDSC. These are grouped by their primary goals in the following subsections.

Faculty, Leadership, and Workforce Development

HDSI has established a strategy for leadership through active and assertive stewardship of JEDI and broadening participation in computing (BPC) activities. This has included the appointment of a full-time diversity and outreach coordinator as a core position within the
HDSI organization, fully empowered to reach out and represent HDSI to various stakeholders internally and externally to UC San Diego. The incumbent has pulled together a broad committee of participants from HDSI faculty and staff. These efforts are resourced by the novel EDI ‘share pool’ funds that HDSI has established that currently amount to a little over $1M and are derived directly from a set aside earmarked in all our faculty startup packages. This novel approach has the added benefit of ensuring strong faculty engagement in EDI efforts from the very beginning of their career. Deployment of these funds are specifically approved by the diversity and outreach coordinator for designated activities. Furthermore, with the support of the diversity and outreach coordinator, HDSI has been able to formalize and launch several diversity initiatives. An active DEI committee has been formed that has already developed a broadening participation plan that has been reviewed by the National Science Foundation as an approved BPC plan and made publicly available under BPCnet.org. This document now enables faculty to reference this plan for medium and small size NSF grants to CISE division. It is also used as a guide for other broadening participation plans that NSF recommends in their grant solicitations.

The DEI committee has also created a Request for Activities (RFA) to support the faculty in their use of DEI funds. The RFA solicits and creates a portfolio of DEI activities the goals for the overall Inclusive Excellence mission of HDSI. Individual faculty members can then vote for their support of individual activities by volunteering their time and/or a portion of their EDI-sharepool funds. We plan to include these activities as a regular part of our academic review processes as the HDSI faculty council is converging on finishing and formally adopting a working document on “Policies and Procedures for use of EDI share pool funds.”

An important aspect of the HDSI strategy is the development of an open participation model that has proactively sought engagement of diverse faculty among the broad group of founding faculty of the institute, consisting of 68 women and URM out of a total of 186 involved faculty. As the institute has grown, the role played by the large number of founding faculty has evolved, and faculty governance of HDSI is now driven by the Faculty Council. The Faculty Council is the main governing body of HDSI and today consists of 26 faculty with 8 women and LGBTQ members and oversees broad EDI efforts. Inclusion has been a central goal in the governance of HDSI, with gender equity among the Associate Directors and HDSI Faculty Fellows appointed to date. This ensures that a climate and expectation is created where even representation is considered normal.

Turning to the efforts of SDSC, over the past year, SDSC’s EDI working group, chaired by the Center Director, has been engaging with campus to identify ways to build a more diverse workforce. These efforts have included new approaches to ensuring a diverse applicant pool for job opportunities, participation in UC San Diego’s Anti-Racism challenge and inclusion in new SDSC policies, as well as the active support and development of female investigators at the Center. SDSC recently launched a summer development internship program for diversifying the IT pipeline and giving students work experience in developing applications in an intense, real-world, agile development model. This approach is exemplified through the Research Data Services internship program where participants are eligible for Co-Curricular Records (CCRs) at UC San Diego; this program has served dozens of students with 90% persons of color and 41% female. These programs also serve to drive inclusion of early career researchers and incorporate EDI into every activity.
Impact of Investments in EDI

At the founding of HDSI, inclusivity and diversity were explicitly listed as one of its strategic planning goals: “cultivating a diverse and inclusive university community that encourages respectful open dialogue, and challenges itself to take bold actions that will ensure learning is accessible and affordable for all.” Supported by EDI-sharepool funds and HDSI’s direct and substantial investments from its endowment resources, a number of activities have been implemented successfully. These include K-12 Outreach programs such as HDSI Lab 3.0, an outreach program for K-12 students, to support broadening participation in data science and promote data science literacy for everyone. HDSI faculty and staff partner with local K-12 schools to show students how data science intersects with their everyday lives and different fields of study, including the arts, humanities, medicine, engineering and law. HDSI has established an MOU with Sweetwater Union High School District which has over 40,000 students enrolled with a 94% minority enrollment and have piloted 2 activities serving a total of 85 students in that district. In addition, faculty also speak at regional high schools as an outreach to the community, engaging many prospective URM students.

While it is not possible, nor useful to list all activities taken up by the individual faculty, the overall impact of major activities such as Python Bootcamp for DSC 10 on-ramp, IDEAS summer residential program, ClearMind Workshop that targets management of academic stress and anxiety, and participation in 10 different ongoing EDI-related programs led by various units on campus (PATHS, MARC, MAP, STARS, USS, McNair, ERSP, IDEAS, REHS, ENLACE) together account for mentoring and support of hundreds of students: in AY 2022 alone a total of 434 K-12 students participated in such activities under the engagement by HDSI faculty. With our investment into UCTV Data Science Channel, we plan to increase awareness and institutionalize these activities for the future.

HDSI: Ethics in the Undergraduate Curriculum

Ethics is a strong component of the existing UG program in Data Science in two ways: (a) HDSI currently offers DSC 167: Fairness and Algorithmic Decision Making, in addition to courses in Communications and Philosophy that are taught by our jointly appointed faculty and available as electives to Data Science students; (b) Beginning AY 2023, HDSI has restructured its required capstone course offering that includes an Ethics component that is taught to all students as a part of the required DSC 190A class.

HDSI: Growing a Diverse Undergraduate Cohort

One of the most important aspects of the JEDI strategy is the creation of a climate that supports broad participation in the undergraduate data science (DSC) major. The DSC bachelor’s degree program was inherited from a joint CSE+Math leadership in Fall 2018. Among our continuing students, 28.3% (128) students are first generation college attendees. Including our incoming freshmen there are 27% (183) students who identify as women or non-binary. While these numbers do not yet reflect the even gender split, we have experienced in our faculty hires, these numbers are significantly better than the underlying dominant engineering background of students, despite being drawn from 23 different majors.

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These efforts are already bearing fruit. HDSI is attracting diverse students who are excited about contributing to EDI efforts. This is evident by the newly formed Diversity in Data Science (DDS) student organization, with 40 student members, supporting 2 student-led EDI-related Data Science projects, each with a faculty mentor. The leadership of DDS is very diverse – with 6 of the 7 board members identifying as Hispanic/LatinX. As UC San Diego moves towards recognition as a Hispanic Serving Institution (HSI) it will be essential to further support student-led initiatives like this.

**HDSI and SDSC: Broadening Participation Across the University**

Data sciences have grown out of the fields of engineering and mathematics where broad participation of all groups has been a challenge even at the high school level. The formation of SCIDS will provide a new tool to broaden participation across the University. As has been noted earlier, data sciences pervade all disciplines of human endeavor and UC San Diego created data sciences through partnership with departments in Arts, Humanities and Social Sciences, in addition to STEM departments. For instance, HDSI has joint appointments with departments of Philosophy and Communications and is currently exploring joint appointments with the Departments of Linguistics and School of Global Policy & Strategy. The campus efforts to recruitSCIDS and in broad research areas that impact underrepresented groups, coordinated with the Advancing Faculty Diversity cluster hires with impact across UC San Diego also provides strong momentum towards an increased JEDI effort in SCIDS, and has already had an impact on faculty diversity.

SDSC also brings to the table important experience with programs to improve the pipeline. SDSC has well established programs with CSUs and CCCs that focus on offering the institutions and their faculty collaboration opportunities to impact social mobility and equity, diversity, and inclusion at the full scale of the millions of students at those institutions. At present, there are three SDSC programs, all funded by the NSF, engaged in growing collaborations, two with CSU, and one with CCC. The National Research Platform (NSF 2112167) provides a national scale machine learning platform, including engagement with seven CSUs, in addition to all ten UC campuses. NSF 2230127 is a $7M workforce development award with roughly half the effort going to CSUs San Bernardino and San Diego State University for development and 5-year support of Computing Infrastructure Professionals at those institutions. Finally, the NSF-funded CloudBank project, a collaboration led by SDSC, in partnership with UC Berkeley, and the University of Washington, engages with the CCC system. This is done via the UC Berkeley Data8 course and the associated Kubernetes-based infrastructure (“DataHub”) that provides environments for Jupyter, online textbooks, autograding tools, and others. With partial support from CloudBank, the UCB team is engaged in a project to provision infrastructure, onboard and support users for a growing number of community colleges (e.g., Skyline College; City College of San Francisco; El Camino College; Skyline College, Los Angeles Community College, and others). SCIDS has the potential to “turbocharge” activities like these by engaging a large number of faculty within well-run large-scale projects that explicitly target engagement with significant numbers of MSIs all at once. HDSI’s financial incentives for faculty to get involved in EDI activities can be applied to these statewide or national programs, leading to systemic change by pairing up SDSC and HDSI in SCIDS.

**Academic programming**

HDSI is working to create broader awareness among the student cohort through the DSC 167 course, approved for the DEI course requirement, engaging some 50 students per
quarter. HDSI is also working to create awareness among the broader campus community by supporting, planning, and organizing the UC San Diego Health Science Community Fair. The 10-member DEI committee created an extensively researched Diversity Website that identifies resources for both campus-wide and HDSI faculty, staff, and students. Finally, HDSI hosts weekly Diversity Chats that have several regular attendees including a number of URM participants. These chats create a dynamic environment for proliferation of new ideas and serve different purposes thus attracting different audiences: from book reading, discussion of current events to a sounding board for sharing experiences.

**Community Engagement and Experiential Learning**

HDSI is also meaningfully engaging our industry and government partners into EDI activities. Specifically, Intel and Deloitte are each sponsoring multiple student projects (that pay students, as well as their faculty mentors from industry contributions) that have a majority of URM participants. There is no question that diversity and building a climate of inclusion is a work in progress in HDSI and at the broader university. The efforts to date show that a firm foundation has been built to support future efforts both in the institute as well as contributions to the JEDI mission of the new school.

At SDSC, technological innovations have been accompanied by the development of education, outreach, training, and community programs that seek to engage the UC San Diego, local, state, and national communities in a wide range of events, internships, mentoring, and other programs. The goal of these efforts is to bring the benefits of advanced computing to a much broader and more diverse community of stakeholders. There are numerous examples of these active programs including: the UC Women in Technology\(^\text{20}\); the West Big Data Hub’s programs, including partnership with Data 4 Good\(^\text{21}\); SDSC’s HUBzero’s support of the Intercultural Learning Hub\(^\text{22}\) that provides tools for interacting with multicultural students; UC San Diego’s Supercomputing Club\(^\text{23}\); the Science Gateway Community Institute\(^\text{24}\) partnership with Elizabeth City State University, which in the first 4 ½ years had 681 students and faculty participate, 469 of which were from underrepresented groups; collaboration with the HSI Stem Hub\(^\text{25}\) initiative out of New Mexico State; and programs for high school students, including the Mentorship Apprentice Program\(^\text{26}\), REHS\(^\text{27}\) (which pairs students with UC San Diego researchers in intensive summer and academic year programs), and PlantingScience.org\(^\text{28}\) (a HUBzero® supported hub) that facilitates professional development.

**Democratizing access to advanced computing**

SDSC’s vision of democratizing computing for all people and all fields of study provides a strong platform for the JEDI goals of SCIDS. The opportunities provided through SDSC’s programs, and the framework and expertise in place for the development of new ones, will offer a welcoming environment to faculty, students, and staff at all levels and

\(^\text{20}\) [https://www.ucop.edu/uc-women-in-technology/index.html](https://www.ucop.edu/uc-women-in-technology/index.html)

\(^\text{21}\) [https://escience.washington.edu/dssg/](https://escience.washington.edu/dssg/)

\(^\text{22}\) [https://hubicl.org/](https://hubicl.org/)

\(^\text{23}\) [https://studentorg.ucsd.edu/Home/Details/8249](https://studentorg.ucsd.edu/Home/Details/8249)

\(^\text{24}\) [https://sciencegateways.org/](https://sciencegateways.org/)

\(^\text{25}\) [https://hsistemhub.org/](https://hsistemhub.org/)

\(^\text{26}\) [https://innovation.ucsd.edu/events/applications-open-ucsd-mentor-assistance-program-map-2020-2021/](https://innovation.ucsd.edu/events/applications-open-ucsd-mentor-assistance-program-map-2020-2021/)

\(^\text{27}\) [https://summer.ucsd.edu/program-finder/research-experience-for-high-school-students.html](https://summer.ucsd.edu/program-finder/research-experience-for-high-school-students.html)

\(^\text{28}\) [https://plantingscience.org/](https://plantingscience.org/)
from all backgrounds to engage with world-class research, community service, and educational opportunities. Since its founding 35 years ago SDSC has been at the forefront of lowering the barriers to access to these resources and broadening impact through the design of systems, and development of software that support a broad community of users. As a leader in the development of science gateways, (e.g., the Science Gateway Community Institute, West Big Data Hub, WiFire, HUBzero®, and many others), SDSC has provided access to advanced computing to over hundreds of thousands of researchers, students, and users from hundreds of institutions across the country. As a leader in the development of data resources and services based on FAIR principles for data management (Findable, Accessible, Interoperable, and Reusable), SDSC is working to ensure broad access to valuable data and models.

5.2. Our Strategy to Operationalize JEDI in SCIDS

When considering JEDI (Justice, Equity, Diversity, and Inclusion) activities in SCIDS we make a distinction between two sets of questions: (a) What is the impact of the formation of SCIDS on diversity and equity metrics of the academic units? (b) What can the new school do that cannot be done by HDSI, SDSC alone, to advance JEDI goals for the campus, California, and the nation.

Our overall strategy is to operationalize this coherence across SCID’s overall mission and UC San Diego’s Strategic Plan for Inclusive Excellence. Consistent with this, we see following four goals and measures by which each of these goals can be tracked for progress:

1. Align institutional and individual success objectives and metrics.
2. Balance incentives against obligatory actions in SCIDS service activities.
3. Devise reflective and causally-connected metrics to drive success of its JEDI initiatives.
4. Devise access pathways and communications to support overall mission.

We have discussed pathways in some detail earlier and expand upon them later in this section. We briefly discuss other goals and measures that we plan to institutionalize in SCIDS that is possible with the academic support budget of a School. Goal 1 seeks to align the incentive and reward system across individual and institutional goals. Our entire system of incentives and rewards centered around academic review and promotion processes is built as an incentive to achieve individual recognition in a faculty or staff member’s primary responsibilities. For faculty, these responsibilities come in the form of research outcomes and secondarily as teaching activities. Mentoring activities are indirectly accounted for as a part of research activities, although across the University of California there is an increased recognition of mentoring as teaching. Nonetheless, to some extent there exists a gap between the Institutional goal of “inclusive climate and improved learning or job experience” and individual goals. A direct consequence of this gap is that the institutional and individual goals become ownership responsibilities divided neatly amongst administration and faculty/staff. As mentioned earlier, HDSI has taken proactive steps to ensure that the two goals are aligned via our system of incentives. For instance, the EDI sharepool plan makes EDI activities part of the research laboratory setup tasks via accountable third-party oversight of a part of the startup funds we provide
to new faculty hires. We plan to institutionalize the EDI sharepool with the oversight of the assistant dean to build and support a portfolio of projects and services under a well-defined and detailed plan for inclusive excellence. Of course, an active and assertive stewardship of the EDI activities via a full-time endowment-supported diversity and outreach coordinator itself is part of the implementation strategy to achieve this goal.

The second goal seeks to provide financial resources to support efforts including the endowment-supported fulltime activity coordinator and the EDI sharepool funds. Such resources are necessary but not sufficient to ensure an active and sustainable ecosystem for an inclusive climate. Without a built-in sense of moral obligation, coupled with formal job requirements, such activities are unlikely to have long-term impact or become part of the institutional culture. To promote those long-term impacts, we have worked to emphasize consideration of these activities as part of the academic review process and will continue to do so in SCIDS. The nascent nature of HDSI, and when established, SCIDS, with new faculty, programs and processes is an advantage for institutionalizing such efforts. For example, in HDSI, mentoring is built into the academic program via capstone courses, and the expectations of contributions in this area are articulated in the offer letters for our entering faculty. This is important, because mentoring undergraduate students is an integral part of the college experience, and one where students from different backgrounds, minority communities can feel out of place on a large urban campus. Indeed, a major reason for proactively recruiting faculty with a strong potential to make contributions to equity diversity and inclusion through programs such as the Advancing Faculty Diversity projects on the Black Diaspora and Designing Just Futures with a focus on indigenous populations is to recruit new faculty who are better able to mentor and inspire URM students. The capstone courses provide a structured environment where all the faculty contribute to mentoring our students and have been highly successful as shown by the outstanding projects the students present each year.

Metrics are our means of achieving not only accountability but also for establishing a vision for what success looks like, especially for the faculty to measure their own progress. As an institution, our obligation is to ensure that the metrics being used are actually causally-connected to the desired outcomes of our efforts in fostering a climate of inclusion. That is, the outcome of directed efforts is directly reflected in the metrics. For this reason, some metrics are related to outcomes (e.g., number of K-12 students in our programs, number of high-schools reached in disadvantaged communities, etc.) and some are related to inputs without necessarily a similar rise in the corresponding outcomes (e.g., number of offers made faculty candidates across demographics and experiential backgrounds, number of scholarships offered to entering graduates). Statistics associated with metrics are further analyzed for insights into individual processes that may be affecting the outcome. A much harder case is presented by metrics where we have no direct or indirect influence even though these metrics are significant by their obvious presence. This includes the constitution of our entering cohort of undergraduate students. HDSI demographics reflect a baseline of a highly competitive discipline that is relatively unknown outside of elite college advising circles. While we can and are taking measures to get the word out through high schools and community college engagements, including pursuing articulation agreements, we have no real controllable way to affect the outcomes. Therefore, we will focus on building the reputation and accessibility of our program as outlined in the Goal 4 above, focusing on access pathways and addressed in sections 2.2, 3.3, 4.1, and 4.6 of this proposal. SDSC is an integral part of this overall strategy in that it has the operational strength to scale out activities and
We propose the formation of SCIDS as we find ourselves in “the age of complexity,” where problems require integrated cross-disciplinary approaches enabled by information and data science, as shown in the figure above. Changes in knowledge, technology and the environment are having increasingly rapid impacts on society, requiring the development of new integrated systems on a grand scale. From the natural sciences to industry to big tech, challenges exist in not only benefiting from the advances in data science, information, and computing, but also in driving developments through the lens of society in order to solve the challenges of our time. Universities need to acknowledge these challenges and embrace new approaches to research that are focused on problem-solving to transform systems in societal settings as exemplified by the NSF’s focus on
Growing Convergence Research.\textsuperscript{29} SCIDS will be ideally situated to push progress forward on some of the urgent and complex societal problems of our time through integration of data science and computing.

Already our researchers are doing work at the forefront of the most important scientific and societal issues of the day – from climate change to COVID-19. These challenges require progress towards solutions at an unprecedented pace. As a leader in data-intensive computing and cyberinfrastructure, SCIDS will have an important role to play in moving from data, to discovery, to impact at the societal scale. To this end, SCIDS will focus on development of a convergence research agenda and new programs for advancement of responsible and ethical influence of data science, information, and computing within society. In this effort we note that our location at the U.S.-Mexico border means that in our region we experience global challenges locally in a way that most places do not. This results in a living laboratory for discovery in areas critical to our nation and society today. The unique attributes of the border region – a frontier in its own right – provide an unparalleled opportunity for data-driven research, as well as data science-focused education and workforce development. In the following sections we review elements of current research in HDSI, SDSC and the broader community at UC San Diego that combine to provide an excellent foundation for the success of SCIDS as a research innovator, as well as one of the primary goals of convergence research – translating innovation in computing, information, and data sciences into impactful practice.

6.1. HDSI Engagement in SCIDS

UC San Diego has a tradition for interdisciplinary research. The advent of big data across all domains of human knowledge has been long recognized by researchers at UC San Diego and HDSI fostered this environment further. HDSI brings together a large number of faculty and researchers across many departments and schools at UC San Diego with overlapping interests in the discipline of Data Science. HDSI research is organized into clusters of shared interests and domain knowledge ranging from foundational theory to challenging downstream applications in domains such as life sciences and environment. With the establishment of SCIDS, the opportunity to synergize interactions increases manifold. We summarize potential future research directions in SCIDS, several in collaboration with other units on campus, in the schematic below, which will undergo revisions dynamically with the growth of the school.

Focusing on fundamentals, research in SCIDS will build on the work of HDSI on the theoretical foundations of Data Science, design machine learning algorithms with provable guarantees, develop methods and tools for the practitioners that are broadly useful in combating the “deluge” of data caused by ever growing sources of data. In this endeavor, researchers with core expertise in algorithms, mathematics, and statistics work with domain experts in areas where there is a perceived benefit to collecting large amounts of data. The areas of expertise include, computer-intensive and non-parametric statistical methods, methods for time series data analyses, causality and inference, natural language processing, data security, and databases. The application domains that encompass the current research areas of HDSI faculty include life and health sciences, oceanography, material sciences, geosciences, and sensors. Other research areas include cognitive sciences and business analytics. The constant interplay between the

\textsuperscript{29} https://beta.nsf.gov/funding/opportunities/growing-convergence-research-gcr
particulars of a domain and generality of methods is essential to the advances sought in algorithmic data sciences and SCIDS can play a key role in this endeavor.

6.2. SDSC Engagement in SCIDS

UC San Diego is a pioneer in computational infrastructure and sciences. Over the past four decades SDSC has maintained national leadership as a paradigm for Moore’s law in computing and scientific leadership in helping the computing applications community. At this point of the technological evolution of software and computing, we find ourselves in a major transition, driven by two fundamentals. The exponential growth of computational power per dollar has slowed down substantially because of a slowdown in Moore’s law of growth in transistors per unit area. At the same time, instrumentation is still on an exponential growth curve in numbers of electronic channels per instrument, and the rate at which those channels are sampled and digitized. Similarly, growth in network bandwidth, and the number of devices on the network is still exponential. As a result, exponential growth continues in the generation of data, its movement, and the need for its processing. This is leading to an unprecedented hardware innovation landscape. Programmable computational capabilities are being integrated into devices of all kinds, including network interface cards, switch ports, and storage devices with corresponding innovative programming concepts like programmable networks, data flow processing, and computational storage. All these concepts are ready to be integrated into future HPC systems at all scales, from workgroup clusters to exascale supercomputers. SDSC has expertise at all layers of this ‘vertical stack,’ from an Advanced Technology Laboratory where new hardware and systems concepts are explored, to applications where domain scientists work on how to integrate those new concepts into their applications at scale. In the future, we may see increased application also of neuromorphic and quantum computing. Moreover, the deployment of devices with data collection and/or computing capabilities, and the way they are networked with each other continues to grow in both volume and diversity and has led to concepts like “edge computing”, “internet of things”, “wearable computing”, “networked living environments”, and “sensor networks” to mention some examples. The future of wireless communications provides additional opportunities for new types of distributed systems, networks, and radically different applications to exploit their capabilities. SDSC is positioned well to play a major role in driving advances in cyberinfrastructure, and their exploitation in new types of applications.

In parallel, the growth in data science in general, and artificial intelligence and machine learning, are providing additional innovation drivers, leading to hardware innovations on “conventional” CPUs and GPUs, as well as a plethora of hardware architectures dedicated to machine learning. Independently, Blockchain technology, and its use across novel types of applications beyond digital currency provides additional disruptive opportunities. All this heterogeneity in hardware, software, and deployments of both into novel types of systems provides us with exceptional opportunities for SDSC to do what we do best: translate innovations into practical use. SCIDS will provide the right scale and opportunity to execute the new paradigms.

6.3. Translating Innovation into Practice

In addition to advances in basic research, there is a need for translational research and transition to practice of foundational research. As societal challenges grow, there is a need for acceleration of innovation for societal impact. High performance computing
(HPC) and big data—essential to data-integrated discovery science—are now also necessary for AI and societal impact. The phenomenon of HPC emerged from “big science,” while big data and data science emerged from industry. We are now seeing a convergence across computing, information, and data to support discovery science as well as translational research.

This kind of research has been a core competency of SDSC for the last 35 years. One might even argue that SDSC was founded to support translational research in computational science and the transition to practice of innovations in software, hardware, and systems that depend on both, and the processes and procedures to effectively operate and support such.

By choosing HDSI and SDSC as foundational units of SCIDS, we have the opportunity to place a special focus on the translational aspects of research in computing, information, and data sciences. We propose to deliberately recruit faculty that primarily engage in such translational research. We propose to start this as part of HDSI, with a teaching commitment to the HDSI curriculum, but with an expectation that their research will depend on people and systems at SDSC, and their research groups will be housed at SDSC. In fact, we expect tenure for such faculty to be judged additionally on the impact of their research outcomes in form of products and services and their widespread adoption, rather than traditional metrics like publications, citation counts, and alike. There is an expectation that a full professor focused on translational research will have created a well-funded sustainable research group in SDSC that routinely engages with customers of their products and services outside of academia. Example for such groups may come primarily from integrative multidisciplinary endeavors, e.g., hazard management (Wildfire, floods, hurricanes, drought, …), agriculture, manufacturing operations, city, and power grid management, but also computational genomics, computational pharmacology, practical cybersecurity, automated financial fraud detection, self-driving cars, and many more.

6.4. Synergies with UC San Diego Academic Units

The necessary and futuristic synergies between departments with joint affiliations portends the future and this strongly motivates the establishment of the School of Computing, Information and Data Science at UC San Diego. Initial discussions with Deans and Directors of all UC San Diego academic units demonstrated the exceptional synergy that exists between Data Sciences and other disciplines. This is schematically represented in the figure below.

Several grand challenges in science and engineering are dependent on data analytics. The COVID-19 pandemic affected over 400 million humans across the globe with nearly 6 million deaths to date. The epidemiological data alone contributed to petabytes of data and the data analytics helped save significant lives. UC San Diego launched the wastewater detection initiative and the collaboration between the Schools of Medicine, Public Health and HDSI led to our institution becoming one of the forerunners in detecting and preventing more infection. The Cancer Moonshot project that is being revitalized will generate vast amounts of omics data which will yield valuable insights and treatments through detection of germline and somatic mutations and their downstream consequences. We have an unprecedented opportunity to decipher the underlying cancer mechanisms leading to novel treatments. The advent of wearable sensors is causing a
revolution in personalized self-monitoring of humans. The challenge lies in transforming this enormous longitudinal data into actionable outcomes.

The dramatic change in global climate is leading to fundamental changes in all walks of human life. Hurricanes (Cyclones), wildfires, earthquakes, global warming, and a plethora of other changes whose change gradients are reaching unprecedented levels are a testimony to global climate changes. Measuring, documenting, and analyzing the myriad data associated with climate is a daunting task that will involve the marriage of multiple disciplines and very deep analyses of the measurements. This will range from measurements of oceans to land mass to earth’s atmosphere and the immeasurable analyses of the emerging data. Such analyses have the potential to impact policies that will change the nature of life on earth.

The financial and consequentially the fundamental health of the human race will depend on management of earth resources and development of innovative technologies that will transform the utilization of earth resources. While the utilization of resources is depleting the global reserves, management is leading to reduction in the quality of life and standard of living for a sizable global population and such inequality will lead to global instabilities. The data associated with resource management, utilization and conservation is a harbinger of our future and will warrant entire new analytic strategies combined with new policies.

One of the biggest revolutions that has impacted the human race at the turn of the last century is the advent of the internet and social media developments. Information both true and erroneous are available instantaneously with the only major filter being the human, who is communicating, and this has led to enormous challenges in information and computational sciences. While contextual learning methods in data sciences are beginning to aid veracity and comprehension, we are far from establishing standards of communication as well as content management. This is a major challenge for next generation data and information sciences.

Such challenges are at the core of computational, information, and data sciences and SCIDS is well positioned to address these challenges. The major empowerment for
SCIDS addressing these global problems comes from the inherent DNA of being able to work across disciplines and pioneering new paradigms in multi-disciplinary innovation at UC San Diego. The new Dean and thought leaders in SCIDS will frame the global grand challenges that will form the core of intellectual and educational explorations for the coming decade.

7. SCIDS ADMINISTRATION AND FINANCIAL PLANNING

7.1. Administrative Structure

An important characteristic of SCIDS will be its interdisciplinary status having academic, research, and staffing connections with multiple units on campus. While interdisciplinary research is common in many academic units, an integrated academic unit with significant interdisciplinary teaching responsibilities calls for careful planning and meaningful engagement of multiple administrative units with the SCIDS. Fiscally, this task is within the scope of our integrated university financial system. Administratively, SCIDS administration will be organized to directly oversee the operations of the HDSI and SDSC units, while also providing for consultative engagement with academic units that are closely engaged programmatically through joint academic programs and/or joint faculty recruitments. To envision such a framework, we propose the following initial administrative structure.

*Only reflects oversight in relation to SCIDS structure. Total oversight is broader than what is shown here.*
The implications of dotted line affiliations and the unique nature of SCIDS: Traditional Schools in UC campuses have a defined departmental structure, with minimal overlap across Schools of the departmental disciplines. Computing, Information and Data Sciences pervade, as discussed, all major disciplines across Schools and SCIDS will have a unique status in UC San Diego in forming bridges across the entire campus. While there is a core program associated with data sciences, we note the synergies with other departments on campus (presented in an earlier section). We highlight these below:

**Intellectual Synergy**: Computing, Data and Information Sciences are integrally associated with the core discipline of computer science and computer engineering, as well as mathematics and statistics. The intellectual origins of machine learning and AI can be traced to mathematics and computer science, driven by the large application needs of multiple domains. Information theory, originating from Shannon and arguably before, has its foundations in signal processing and noise. Computing, since the origins of national efforts such as the Supercomputer Centers in second half of 20th century, has become integral to all human efforts. Hence it would be entirely consistent for SCIDS to be a unique School with the potential for other departments, especially departments in engineering to have an association. The Dean of Jacobs School of Engineering is highly supportive of SCIDS and has a fundamental understanding of the prospective synergies.

**Academic Synergy**: We live in a digital age and students from every discipline including arts, fine arts, humanities, and social sciences are embracing learning the basics of data and computing. Especially computing has become the *sine qua non* of every engineering design or research project and schools of engineering are significantly burdened in introducing myriad courses associated with computing and data sciences. The formation of SCIDS offers unique opportunities for students in engineering and other STEM Schools to take courses that are taught by professionals who practice computing and data analytics. The Dean of Engineering commented on the immense benefit the academic curriculum in SCIDS brings to the large number of undergraduate students enrolled in engineering departments. Moreover, as mentioned earlier, SCIDS will plan to also
develop courses for students in non-STEM majors to broaden the synergy to all academic Schools at UC San Diego.

**Administrative Synergy:** UC San Diego has in its DNA the strong coupling between all units on campus with few administrative or bureaucratic barriers. The Department Chairs council of SCIDS will include Chairs of departments with dotted line affiliation. This council will decide curricular, hiring, and other important decisions germane to SCIDS. Such practice is common in UC San Diego; for instance, the Chair of Bioengineering attends the School of Medicine Council of Chairs meetings. This has resulted in a new Master’s degree program associated with clinical engineering and a number of joint faculty appointments. We see similar synergy in the dotted line connections of departments in SCIDS.

**Workforce Training:** Data analytics is the fastest growing workforce demand and institutions across the country are ramping up efforts to train students across disciplines in data sciences. UC San Diego has already made significant headway through the San Diego Supercomputer Center in offering informal programs that train students in computing and data analytics. The establishment of SCIDS will only enhance these efforts and the affiliation – dotted line and other – will offer exceptional opportunities for developing the next generation workforce trained to efficiently address the “big data” problems. The External Advisory Committee of the Jacobs School of Engineering has identified the San Diego Supercomputer Center as a unique resource for training engineering students given the demand in industry. The Dean of Engineering considers this recommendation as significant.

**The current administrative structure of HDSI and SDSC:** At present, HDSI is an academic unit that reports to the Senior Associate Vice Chancellor for Academic Affairs on academic matters; this is a sub-optimal structure especially given the exponential growth of HDSI over the past two years. Additionally, HDSI has innumerable links with other Schools through joint appointments, curricula, and research funding. Reaping the full benefit of this growth and connectivity will require a new and carefully designed administrative structure. SDSC has an established administrative structure with a Director who reports to the Senior Associate Vice Chancellor for Academic Affairs, but with its increasing integration into the UC San Diego campus, greater administrative support for strong collaborations is needed. Further development of data and computing activities spanning the university warrant strong strategic planning, academic coordination, and participatory governance and only a school with an interdisciplinary focus can accommodate these needs. HDSI will acquire Department status in the new school with the required staffing and SDSC initially will continue as currently constituted. As proposed, the SCIDS Dean and the Dean’s office will provide joint oversight for HDSI (as a department), SDSC, and a host of units that will have affiliations at diverse levels.

The Dean of SCIDS will report to the Executive Vice Chancellor and will be responsible for the administration of the school. They will be assisted by an Associate Dean, a faculty member who will report to the Dean and share the overall administrative responsibility. They will also be supported by an Assistant Dean, who will be in charge of strategic planning and administrative operations and another Senior Director who will be in charge of development, industry outreach, and DEI. Each of these senior positions will have appropriate staff who will help with the administrative operations. At the initiation of SCIDS, two units, namely HDSI and SDSC, will have a direct reporting line to the Dean.
of SCIDS. The faculty and staff academic lines and resources and the operational and fiscal components will be orchestrated through the Dean of SCIDS.

In addition, campus units like CSE, ECE, Cog Sci, Mathematics and QI that have significant intellectual overlap with SCIDS will have the opportunity for forming a joint affiliation with SCIDS to support a variety of collaborative activities. Primary oversight of these units will remain the responsibility of their parent Schools. All negotiations and coordination of joint activities will be carried out by the respective Deans, Chairs and Directors of the respective units, to ensure that the joint activities are aligned with the units’ strategic visions and missions. This joint affiliation framework will also offer an opportunity for other existing academic programs (e.g., Bioinformatics or Health Informatics) or potential future programs (such as Information Science) to be a part of SCIDS.

As stated previously HDSI will be de facto the data sciences department in SCIDS. Given its academic status with associated faculty and degree programs, all faculty in HDSI will be members of the academic senate. This is already the case with both full-time and joint appointment tenure-track and tenured faculty being members of the academic senate. SDSC personnel who will have faculty status in SCIDS will also be members of the academic senate.

7.1.1. SCIDS Process for creating MOUs with Partner Departments

SCIDS will be a cross-disciplinary school that embraces educational and research interests of faculty across departments in all Schools. To envision such a School, we anticipate creating a non-traditional School organization. We present below the modalities of SCIDS links to other units of campus and articulate a process by which such links will be achieved administratively and academically.

**Units primarily associated with SCIDS:** As discussed in the proposal, HDSI and SDSC will be the founding units of SCIDS with the anticipation of future departments/units created to be part of the School. The proposal discusses in detail the engagement of HDSI and SDSC in SCIDS.

**Units with dotted line affiliation to SCIDS:** Several departments on campus have played a key role in the nucleation of the proposed School including units that are associated integrally with computing and data sciences. These include departments like CSE, ECE, Math, and Cog Sci, among others. We propose here a process by which such departments can develop a dotted line association with HDSI and the implications of such dotted line associations.

- The departmental faculty assess and vote if a dotted line affiliation will be beneficial to the department and SCIDS. Such considerations of suitability could include identifying a critical mass of faculty engaged in computing and data sciences research, student demand for curricula embracing computing and data sciences, and large faculty interest in participating with SCIDS. After the process of faculty approval (based on the departmental by-laws), the Chair can communicate with the cognizant Dean to initiate the process for dotted line affiliation.
- The Dean and the Department Chair develop a dotted-line MOU in consultation with the SCIDS Dean and the Directors of HDSI and SDSC, which spells out the particulars of the formal dotted-line affiliation:
  - The dotted-line MOU should include a process for identifying departmental faculty who would be cross-listed as SCIDS faculty with appropriate percentage appointment (ranging from 0% to 50%) and assessment of mutual obligations of such faculty between SCIDS and the Department.
  - The dotted-line MOU should also include a process for identifying SCIDS faculty who would be cross-appointed in the Department (ranging from 0 to 50%) and assessment of mutual obligations of such faculty between SCIDS and the Department.
  - The dotted-line MOU between the department (through the Chair and cognizant Dean) and SCIDS could include specific understandings including the mechanisms for appointment of new joint faculty members, creation of joint curricula, exploration of joint fund-raising efforts, and a clear understanding of the administrative connections between the Department and SCIDS. These administrative connections, for example, could include the Department Chair or the Chair’s designee, joining the SCIDS Dean’s Council of Chairs. A symmetric arrangement would include the Director of HDSI or SDSC joining the Dean’s Council in the relevant other school.

**Units who share faculty appointments with SCIDS:** By its very nature SCIDS will have a significant number of joint appointments with Departments that have a dotted line affiliation as well as Departments with mutual academic interests that do not have a dotted line affiliation. As an exemplar, HDSI, which will be the initial academic department in SCIDS already has joint faculty with CSE and ECE, as well as with Math, Cog Sci, Political Science, Linguistics, Communication, Neurobiology and Bioengineering. Beyond the general campus, there are joint appointees with SIO, the School of Public Health, and the Department of Medicine in the School of Medicine. All of these units have overlapping academic interests with SCIDS. The MOUs for joint appointments like these have been refined for appointments across the campus through the Chancellor’s Joint FTE Program and have proven to be very successful. In addition to joint advertisements for recruitments, the norm is for both departments to independently assess the suitability of applicants and agree upon the appointment rank, salary, and start-up funding. Even in the case of a 50-50 appointment, one department will be identified as the major department for ease of administration. The joint appointment MOU will also agree upon expectations for tenure and promotion considerations, recognizing that the tenure decision for joint appointees is at Chancellor authority and only needs to be achieved in one of the departments.

**Units engaged in joint curricula:** Given the large role of data in multiple disciplines ranging from humanities to medicine, SCIDS is expected to play a major role in the development of future curricula that will serve the campus broadly, in addition to the curricula that are specific to SCIDS units. Such developments will involve the engagement of the participating units. To achieve the strongest synergies, it is recommended that a curricular MOU be developed outlining the specific teaching responsibilities, teaching credits and TA appointments. This is done routinely on campus between multiple units –
e.g., joint courses between CSE and ECE, MAE and BE, BE and CMM, to name a few. The units are expected to develop a curricular MOU with SCIDS outlining the above. Management of grades, evaluations and other activities will follow the norm of being assigned to the instructor’s home unit.

Units participating in joint Graduate Programs: We anticipate significant cross-initiatives in Masters and Ph.D. programs between SCIDS units and other campus units. For instance, there is a program under development to offer M.S.-M.D. degrees to interested students in the medical school, as discussed earlier in the proposal. Such associations will involve developing a joint degree MOU between the units participating in the joint degree program proposal for approval submission to the divisional and system wide Academic Senate, which clarifies teaching and curricular responsibilities of the units, criteria for admission of students, and allocation of resources.

7.1.2. Initial Affiliation of CSE and ECE with SCIDS

Given the strong connections between HDSI, CSE, ECE, and the data science and applied data science that will be the focus of SCIDS, a more formal connection between the CSE and ECE departments and SCIDS is proposed during the formation of the school. The context for this connection is based on the central role CSE and ECE have played over the last 30 years leading San Diego’s ascension as a world-class hub for research, education, and practice of computing and information sciences. The UC San Diego CSE department appears near the top of all major rankings. CS Rankings30 an open, metrics-based ranking, ranks UC San Diego 4th in Computer Science research. CSE plays a key role in preparing large numbers of UC San Diego students for their careers: each year, nearly a quarter of all students at UC San Diego (undergrad and grad) take a CSE class, and over a third of all graduating students at UC San Diego have taken at least one lower division CSE course. This level of campus-wide impact is unparalleled by any other computing-related research or educational unit on campus. ECE is also a highly ranked department that has spawned a large part of the communication industry in the San Diego area and offers significant academic programs in artificial intelligence and robotics at all levels.

At all universities that have a school/division/college with the word "computing" in it, Computer Science and Engineering is an integral part of this structure with a well-defined formal connection. In many cases, Electrical and Computer Engineering is also a part of this structure with a well-defined formal connection. At some universities, CSE is housed solely in the School of Computing, for example at Carnegie Mellon and Georgia Tech. At other universities, CSE, ECE and/or EECS are part of both the school/division/college of computing and other structures like a school/division/college of Engineering. This is the case at Berkeley, MIT, and Cornell. Creation of a School of Computing, Information and Data Sciences without establishing a formal connection to CSE/ECE could prevent UC San Diego from being competitive with the top universities for talent at all levels, students, faculty, and staff.

30 https://csrankings.org/
The task force, hence, proposes that a formal connection be established between CSE, ECE, and SCIDS at inception to ensure that externally the new school starts off aligned with national trends. While details will be memorialized in MOU’s, the task force anticipates that the connection will involve the following kinds of collaboration that will benefit CSE, ECE, SCIDS and the university as a whole:

- **Faculty Hiring**: There is significant intellectual overlap in the academic and research programs of SCIDS and CSE/ECE. We expect that SCIDS and CSE/ECE will make coordinated plans to each hire some faculty in these areas of overlap; having more faculty on campus who work in these areas will benefit SCIDS and the campus. We also anticipate the units may decide to undertake some joint appointment hires together to strengthen their academic portfolios.

- **Teaching**: CSE and ECE have committed to the undergraduate educational mission of SCIDS by continuing to offer introductory computing classes to increase computer literacy amongst all students on campus. CSE also currently runs the campus Computing Pathways Program which provides pathways to computing for all UC San Diego students. CSE will continue this program in collaboration with units in SCIDS. Furthermore, a formal structure will be established through the MOU process described above to coordinate the educational missions of SCIDS, CSE, ECE, with appropriate leadership roles.

- **Philanthropy**: CSE, ECE and JSOE will continue to engage with philanthropists around computing education and research and will coordinate where appropriate with SCIDS in these efforts to improve the campus footprint of computing research and education. In turn, new philanthropic outreach by SCIDS around computing should coordinate with CSE/ECE and JSOE where appropriate. To facilitate this, a set of shared development coordinators will be arranged between the new school and the Jacobs School.

- **Governance**: The governance structure of SCIDS should be developed to include pathways for CSE/ECE to be incorporated into decision making roles, for example by including chairs of departments with formal connections to SCIDS chairs/dean meetings. In turn, CSE and ECE will ensure that faculty who have appointments in SCIDS continue to hold key governance positions within CSE and ECE respectively.

Given the transdisciplinary nature of the research and educational programs in SCIDS it is likely that similar close collaborations with other existing academic departments may develop as the School grows. The task force envisions a structure where the leadership of units including the academic departments of Mathematics and Cognitive Science, as well as the Library and the Qualcomm Institute engage with the SCIDS Dean on a routine basis to coordinate new research and teaching initiatives, as shown schematically in the organizational chart with respect to Computer Science and Electrical and Computer Engineering. This flexibility is a central part of our expansive vision for the role that SCIDS will play as a transdisciplinary academic unit.

### 7.2. Financial Structure and Viability of SCIDS

As a new school, SCIDS financial viability is rooted in three key elements each of which strictly adds to the financial resources generated by the academic units at UC San Diego:

[31](https://computingpaths.ucsd.edu)
instructional activities, research activities, and operational infrastructure activities. The activities at the school level will supplement these three legs with well-designed outreach and philanthropic development initiatives to supplement and expand (particularly, capital investments) the size and scope of the envisioned school. The establishment of SCIDS is expected to be nearly simultaneous with the initiation of the next major fundraising campaign at UC San Diego in 2023, and SCIDS will be among the leading campus priorities. Instructional activities play a key role in the sustainability of the new school. In this regard, HDSI via its undergraduate major and minor and five graduate degree programs will be leading the core instructional activities. The educational section of this proposal outlines the status and planned growth in these programs over the next five years. The research activities of SCIDS are amongst its biggest highlight and a distinguishing feature of the proposed school compared to its peers across the nation. This is because in addition to the faculty and researchers in the academic department of HDSI, SDSC brings to SCIDS a tremendous capability for operationalizing and conducting at-scale research activities that explore scientific, societal, environmental, and health challenges that typically require significant investments and multi-disciplinary research teams.

SDSC with its 35-year history of carrying out large-scale scientific computational projects tied to national, state and UC research priorities presents a compelling organization of nearly 200 research staff that is highly capable of making expeditions to our future in the world of computation and data. Such research and its underlying infrastructure are necessarily, and have been, supported by extra-mural funding that SDSC has become adept at successfully competing nationally. This capability will complement HDSI’s academic core to catalyze and expand the overall research portfolio of SCIDS that would be far above what each of these two units can achieve individually. HDSI’s launch and growth were supported by its founding donor as well as campus investments into building the new academic unit. Going forward, the catalysis of new research through SDSC, and new educational and outreach programs through participation of HDSI personnel, we envision a multiplicative effect that contributes to the growth of SCIDS and its partners. With HDSI and SDSC at its core, the new school will also feature a diversity of income streams, which notably includes service agreements with the private sector and other external organizations. These service agreements are often rooted in the computational and data analysis infrastructure built and maintained by SDSC.

In this proposal, we present a 5-year growth plan for SCIDS as an initial point in the larger planning process, primarily based on current trajectories over the three-year faculty growth plan currently in effect. We present here an outline of the plan in fiscal terms. While this fiscal outlay restricts itself to standard expenses, it is not meant to capture the investments in potentially paradigm changing research investments. Plans for such investments and strategic planning will be within the purview of the Dean of the new School in consultation with the EVC and Chancellor. We present a brief outline of the projected fiscal plan for HDSI, SDSC and the SCIDS Dean’s Office. The hardware and computing infrastructure, present and future, are listed in Appendix 2.

7.3. SCIDS Revenue Model

The financial plan of the new school is built upon three main elements: (a) growth in enrollments and sponsored research programs; (b) new revenue generating programs; (c) new opportunities for industry contributions and philanthropic contributions. We describe first the growth plans in academic activities (teaching and research) followed by
a description of new revenue streams that the new School will rely upon. We do not anticipate resources would shift to SCIDS from other programs.

Growth:
The University of California System is on a steep growth path in undergraduate education given the growing demands based on the population growth amongst the younger generation and the imminent need for training the next generation workforce. Amongst the UC Campuses only San Diego, Riverside, Merced, and Santa Barbara have the real estate footprint. Specifically, UC San Diego is anticipating an enrollment target of 50,000 students. To achieve this growth, it is essential that we introduce necessary and new disciplines of education and as recognized across the world “computing and data literacy” is considered a necessity. Computing and Data Science continue to see extraordinary growth in our applicant pools for both undergraduate and graduate degree programs. The figure below shows the size of the applicant pool for Data Science majors, along with 5-, 3- and 1-year growth rates of the fastest rising programs. In five years since launch, the Data Science program is already among the top-15 most sought after majors. The demand from transfer students is even higher. Together computing and data science already constitute the most-in-demand major at UC San Diego, ahead of perennially in demand majors like Biology, Bioengineering, Economics and Psychology and enroll less than 3% of the applicant pool. At the graduate level, HDSI received 1285 applications in its inaugural year with over a thousand applicants for the MS degree programs. Recognizing these trends as early as a decade ago, UC San Diego launched the Halicioglu Data Science Institute with the mandate of undergraduate and graduate education, sowing the seeds for the creation of SCIDS.

In this context, an important question that needs to be addressed is the accessibility to resources that will make the new School a success without affecting any existing campus entity. The foundation for the new school emerges from the concept of “growing the fiscal pie” and not dividing the existing pie further. We outline below the new revenue that will accrue from the launching of SCIDS benefitting both the new school and broadly the UC San Diego campus.

1. The foundations of the School begin with the generous gift of $75M which helped launch the Data Sciences Institute which serves as the academic pillar of SCIDS and the decades-old San Diego Supercomputer Center, a national treasure, which serves as the pre-existing infrastructure that brings uniqueness to SCIDS. The philanthropic gift provides $3M in annual endowment income that has enabled the university to make one-time investments in launching the HDSI as an academic unit, and established industry liaison, alumni relations, communications, development, career services, professional
training, and online master’s degree programs. These elements will now become part of the SCIDS school-wide activities that will benefit from synergies with HDSI and SDSC.

2. Master’s Programs Revenue: Given the large demand for data and computing sciences, we expect a very large demand for the M.S. degree program, evidenced by the 3 years of MS enrollment statistics. Given in-state and out-of-state tuition average of $40,000 and with a modest enrollment of 100 students each year in the 2-year M.S. degree, we expect circa $8M in tuition revenue. The campus will provide a significant portion of the net revenue to the SCIDS Dean and HDSI Director, according to the standard campus models, to support SCIDS programs and faculty recruitment.

3. Enrollment Growth and Academic Support Model: The table below shows the current and planned trajectory of important parameters that are input into the academic

<table>
<thead>
<tr>
<th>Projected Growth in HDSI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>UG Majors</td>
</tr>
<tr>
<td>UG Minors</td>
</tr>
<tr>
<td>UG class enrollments</td>
</tr>
<tr>
<td>UG courses/sections offered</td>
</tr>
<tr>
<td>MS Majors</td>
</tr>
<tr>
<td>OMDS Majors</td>
</tr>
<tr>
<td>MD-MS Majors</td>
</tr>
<tr>
<td>Exec. Training Prg.</td>
</tr>
<tr>
<td>DSC Ph.D. Majors (does not include non-DSC PhD advised by HDSI faculty)</td>
</tr>
<tr>
<td>Grad Enrollments (includes non-DSC students)</td>
</tr>
<tr>
<td>Grad courses offered</td>
</tr>
<tr>
<td>Faculty FTE (Core)</td>
</tr>
<tr>
<td>Annual Research</td>
</tr>
<tr>
<td>UG majors/FTE</td>
</tr>
<tr>
<td>UG instructional FTE / faculty FTE</td>
</tr>
</tbody>
</table>

support model deployed by the campus. The Academic Support Model provides for a core budget of the school that is directly tied to the enrollments and IDC generated by the school.
Industry Participation and Funding: SCIDS will build an expanded industry liaison program (ILP) with an annual membership cost of $50K. This will build upon HDSI and SDSC success in building their industry programs, focused on companies that are not served by other academic units such as engineering. The figure below shows the growth of HDSI's industry liaison program, currently generating approximately $0.5M in subscription fees. With participation of SDSC into a unified industry relationship we expect this program to grow and generate a revenue of $4M-$6M/year in annual subscription fees and industry engagement activities. Among the activities here are (a) access to students for internships and projects, b) collaborative data science research, c) access to data and computing resources at cost from SDSC and d) potential future for incubation of new projects.

Extra-mural Research from funding agencies, government and private organizations are beginning to invest heavily into data-rich programs and projects. For instance, the National Institutes of Health has committed several billion dollars each year towards generation, maintenance, and support of biomedical data. We anticipate the presence of SCIDS will help UC San Diego garner tens of million dollars of new funding. In its first 5 years, HDSI has already succeeded in landing two major Center-scale research grants at $20M each as well as several research contracts currently at $7.8M/year. We anticipate research revenue (and corresponding IDC) to grow by an average of $200K-$300K/faculty/year, or in between the national average for Computer Science and Engineering faculty.

Data in Health Sciences: SCIDS can help human health services in a manner unforeseen. The ultimate goal for each human subject is “to know themselves from their measurements, i.e., the data largesse from myriad measurements.” This will require both the conversion of data to knowledge in a short time and creating new paradigms for data analytics. SCIDS will serve as an exemplar for cross-training health professionals in data paradigms beginning with the proposed MD-MS program. We anticipate both savings and revenue for the campus health system from electronic health will be in tens if not hundreds of millions. This will be a benefit to UC San Diego.

Formation of the School will provide an excellent platform for raising new philanthropic funds from traditional supporters of UC San Diego (from industry and from the community) as well our own alumni, as well as opportunities for attracting philanthropy from a broader suite of donors given the broad interest in data science, AI, and their impacts on society. The School will pursue unique opportunities for philanthropy through strategic partnerships with other entities on campus. We anticipate a target raise of $25M to support the establishment of the School in the first 2-3 years after launch.
HDSI Current Financial Status:

HDSI has been supported by institutional resources in concert with philanthropic Foundation resources during the formative years since 2018. While the initial endowment helped launch the Institute, HDSI is financially supported in all the usual ways for an academic unit – faculty recruitment, start-up costs, retentions, building infrastructure and administrative structure – by the campus. The establishment of SCIDS will create the optimal academic structure for HDSI to become a department with a concomitant fiscal structure. Past and projected finances for HDSI from FY20 through FY25 are given in the table below. HDSI’s current budget consists of $5.8M in core operations and $3M in activities in form of fellowships, postdoctoral support, infrastructure, outreach, and industry liaison programs. The core budget is directly tied to the growth of enrollments, programs, faculty and staff appointments and is currently on a growth path as we continue to recruit faculty, and add courses and programs. Included in $5.8M is $3M in faculty and $1.2M in staff salary and benefits. Based on the recruiting plan and programs already in progress, we anticipate the core budget to increase to $8M in FY23. The graduate programs will see enrollments starting Fall 2022 and will also add to the graduate support as well as income from the two MS programs being launched starting Fall 2022. Faculty FTE resources will flow to HDSI and SCIDS commensurate with the growth of the educational mission, consistent with standard campus practice. Given the commitment of the University of California to increase the number of bachelor’s graduates through 2030, we expect this to be an ideal time to establish the new school. The planned growth in various parameters that determine the core budget are listed in the table below. The sponsored research is currently ahead of the projected growth due to a number of large-scale projects and proposals in the pipeline. Over the long term, we anticipate HDSI to reach an average of $200K/faculty/year of extramural research funding. However, unlike many traditional disciplinary academic units, we are likely to see a much larger variation in extramural research support across faculty given a very wide range of disciplines and training of its faculty. A closer engagement with SDSC researchers will enable higher levels of extramural research funding by improving the average size and competitiveness of the research project proposals fielded by the SCIDS researchers working together.

SDSC Current Financial Status:
Past and projected finances for HDSI from FY20 through FY25 are given in the table below. In the most recent fiscal year, SDSC reported $35M in contract and grant revenue, and $14M in service agreement and recharge revenue. This can fluctuate significantly due to high performance computing acquisition awards, for example the recent Expanse system, which represents a $10M procurement. Conservative estimates for growth are 4% per year without SCIDS, and 8% per year with a well-resourced, well executed SCIDS. The difference comes to a non-negligible part from the “translation of innovation into practice” focus discussed in Section 5. To achieve growth near 8% per year, we must recruit faculty focused on translational computer, information, and data sciences as part of a focus area in SCIDS. Those faculty are revenue drivers that will expand the scope of research, lead to partnerships with industry, and develop new experiential learning programs. A growing portion of SDSC’s revenue comprises service agreements with the private sector and other external entities. Service agreements provide a mechanism to increase discretionary revenue through differential income (DI). DI is an important mechanism for creating additional resources to invest in new strategic initiatives and can help offset year-to-year budget fluctuations. In a normal year, the DI is roughly what SDSC can invest. The budget model here assumes 4% growth throughout. To support an 8% growth in revenue, we expect to require a 5% growth in SDSC research staff, in particular a growth in the number of PIs. This assumes that a 3% revenue growth is needed to maintain existing staff levels of 200-250 people. In short, SDSC comes to SCIDS in exceptional financial condition and will thus be a net contributor to the overall financial viability of SCIDS, further reducing risk.

### SCIDS Dean’s Office Financial Plan:

#### SDSC Financials

<table>
<thead>
<tr>
<th>Operating Funds - Core, Differential Income, Education</th>
<th>FY20</th>
<th>FY21</th>
<th>FY22</th>
<th>FY23</th>
<th>FY24</th>
<th>FY25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resources</td>
<td>3,229,747</td>
<td>2,609,596</td>
<td>2,463,302</td>
<td>2,355,332</td>
<td>2,348,581</td>
<td>2,272,401</td>
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<tr>
<td>Resource Allocations - UCSD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resource Allocations - UCOP</td>
<td>2,550,000</td>
<td>2,550,000</td>
<td>2,550,000</td>
<td>2,550,000</td>
<td>2,550,000</td>
<td>2,550,000</td>
</tr>
<tr>
<td>Differential Income</td>
<td>1,038,072</td>
<td>968,311</td>
<td>1,007,045</td>
<td>1,047,325</td>
<td>1,131,111</td>
<td>1,221,060</td>
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<tr>
<td>Other Allocations - Education</td>
<td>330,218</td>
<td>368,093</td>
<td>305,000</td>
<td>300,000</td>
<td>300,000</td>
<td>305,000</td>
</tr>
<tr>
<td>Total Resources</td>
<td>7,887,937</td>
<td>6,290,404</td>
<td>6,327,145</td>
<td>6,257,467</td>
<td>6,184,693</td>
<td>6,949,902</td>
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<tr>
<td>Expenses</td>
<td>430,909</td>
<td>412,312</td>
<td>424,681</td>
<td>437,422</td>
<td>430,344</td>
<td>464,061</td>
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<tr>
<td>Academic Salaries and Wages</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Benefits</td>
<td>1,789,320</td>
<td>1,525,647</td>
<td>1,540,903</td>
<td>1,556,312</td>
<td>1,573,875</td>
<td>1,587,594</td>
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<tr>
<td>Non Academic Salaries and Wages</td>
<td>3,329,447</td>
<td>2,765,630</td>
<td>2,846,559</td>
<td>2,941,950</td>
<td>3,015,914</td>
<td>3,110,512</td>
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<td>Non Compensation Expense</td>
<td>2,227,745</td>
<td>2,245,844</td>
<td>1,217,292</td>
<td>1,259,860</td>
<td>1,182,564</td>
<td>1,042,850</td>
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<td>Total Expenses</td>
<td>7,887,415</td>
<td>5,946,432</td>
<td>6,069,436</td>
<td>6,195,555</td>
<td>6,278,898</td>
<td>6,205,856</td>
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</tbody>
</table>

#### Supporting - Contracts and Grants

<table>
<thead>
<tr>
<th>Net Operating Funds</th>
<th>(399,748)</th>
<th>343,888</th>
<th>257,709</th>
<th>61,902</th>
<th>59,794</th>
<th>143,945</th>
</tr>
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<tbody>
<tr>
<td>Supporting - Contracts and Grants</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Resources</td>
<td>6,907,137</td>
<td>7,270,988</td>
<td>8,029,828</td>
<td>8,351,021</td>
<td>9,015,102</td>
<td>9,740,630</td>
</tr>
</tbody>
</table>

#### Supporting - Recharge/Service Agreement Activity

<table>
<thead>
<tr>
<th>Supporting - Recharge/Service Agreement Activity</th>
<th>12,235,937</th>
<th>14,085,259</th>
<th>13,475,331</th>
<th>13,878,339</th>
<th>14,572,429</th>
<th>15,313,723</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resources</td>
<td>5,131,975</td>
<td>6,438,322</td>
<td>6,675,060</td>
<td>6,942,062</td>
<td>7,197,427</td>
<td>8,097,222</td>
</tr>
<tr>
<td>External Revenue</td>
<td>7,129,962</td>
<td>7,666,942</td>
<td>6,913,617</td>
<td>6,968,937</td>
<td>7,578,010</td>
<td>7,716,502</td>
</tr>
<tr>
<td>Total Resources</td>
<td>12,235,937</td>
<td>14,085,259</td>
<td>13,475,331</td>
<td>13,878,339</td>
<td>14,572,429</td>
<td>15,313,723</td>
</tr>
<tr>
<td>Expenses</td>
<td>10,336,890</td>
<td>10,385,791</td>
<td>11,009,223</td>
<td>11,414,592</td>
<td>11,907,575</td>
<td>12,883,878</td>
</tr>
<tr>
<td>Operating Expense</td>
<td>2,210,153</td>
<td>1,931,756</td>
<td>1,989,709</td>
<td>2,049,400</td>
<td>2,192,858</td>
<td>2,346,358</td>
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<tr>
<td>Non Operating Expenses (DM/Depreciation Transfers)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Expenses</td>
<td>12,547,043</td>
<td>12,317,547</td>
<td>12,998,931</td>
<td>13,498,991</td>
<td>14,100,433</td>
<td>14,730,236</td>
</tr>
</tbody>
</table>

#### Supporting - GPs

<table>
<thead>
<tr>
<th>Supporting - GPs</th>
<th>435,745</th>
<th>311,281</th>
<th>300,000</th>
<th>300,000</th>
<th>300,000</th>
<th>300,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Resources</td>
<td>550,835</td>
<td>638,794</td>
<td>652,494</td>
<td>677,478</td>
<td>682,392</td>
<td>697,703</td>
</tr>
</tbody>
</table>
Given the excellent fiscal health of both HDSI and SDSC, the proposed initial budget for the SCIDS Dean’s Office, shown in the Table below, is focused on essential operations and a small number of programmatic investments essential for the successful operation of the school. The initial budget below includes key administrative positions, including the Dean, Assistant Dean, Dean’s assistant, academic personnel, and financial analyst. This is a natural path forward in the development of the administrative structure of the school as two established units are brought together under this new umbrella. As the synergism in research, education and development activity grows there will be an opportunity for the new Dean to develop an efficient administrative structure.

In addition to these core functions, the budget includes a Senior Director for Development, development support, and a communications specialist. These positions will initially work closely with their campus counterparts and those in HDSI and SDSC on a wide range of start-up activities, including the development of a website, newsletter, community relations and outreach, and others. The communications specialist will be especially important to coordinate strategies and investments across HDSI and SDSC to engage the rest of the UC San Diego campus as well as the UC system. It is anticipated as the school grows that communications and development will become increasingly centered in the Dean's office supporting the diverse needs of SDSC, HDSI and the broader mission of SCIDS.

### 8. CAPITAL REQUIREMENTS – INFRASTRUCTURE

The establishment of a new school will provide an important opportunity for UC San Diego to identify a new state-of-the-art home for SCIDS. Initially SDSC will remain housed in the purpose-built building it has resided in for nearly 40 years. HDSI was collocated with SDSC; however, this summer HDSI has relocated to the renovated Data Science Building in the Warren College area. This new home provides relevant space for HDSI, and then, SCIDS to grow the academic program in the near term. In the longer term, the new dean for SCIDS should work with the EVC and the Chancellor to identify philanthropic support for a new home for the academic center of the new school. This should be an important priority in the early years of SCIDS.
This priority also needs to be considered in the context of a more urgent need for both the new school and the campus at large, and that is an expansion of the SDSC data center. SDSC presently operates a 19k square feet data center for UC San Diego, housing 515 computer racks. After a multi-year campaign to consolidate inefficient and often dangerous closet server racks spread across campus, the data center at SDSC is presently saving campus roughly $4.4M per year in energy savings compared to operations prior to the consolidation. At this point, the data center is full, and SDSC is preparing to submit a proposal for an expansion of at least 10,000 square feet. Past growth indicates that such an expansion would be filled within 10 years. To be prepared for additional growth inherent in the creation of SCIDS, we envision a 15-20k square feet expansion, including cooling infrastructure to host the kind of high-power density equipment necessary for today’s top of the line AI/ML computing hardware.

<table>
<thead>
<tr>
<th>Classroom Laboratory Size Cat</th>
<th>Description of Instructional Activity</th>
<th>ASF/Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Includes simple computer station laboratories, case study and group project laboratories.</td>
<td>40</td>
</tr>
<tr>
<td>2</td>
<td>Includes mix of computer laboratories, behavior science laboratories, simple wet laboratories.</td>
<td>50</td>
</tr>
<tr>
<td>3</td>
<td>Includes wet laboratories, significant material storage requirements.</td>
<td>60</td>
</tr>
<tr>
<td>4</td>
<td>Includes complex wet laboratories with extensive service space, complex design laboratories, CAD/CAM, project studios.</td>
<td>75</td>
</tr>
<tr>
<td>5</td>
<td>Includes complex wet and dry laboratories, equipment intensive areas, extensive storage and shop requirements, increasing code requirements for life-safety.</td>
<td>90</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Research Size Cat</th>
<th>Description of Research Activity</th>
<th>ASF/Faculty FTE</th>
<th>ASF/Grad HC</th>
<th>ASF/Postdoc HC</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Office-based research activities with limited service and support rooms. May include group project rooms, reading study areas, computer support.</td>
<td>50</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>B</td>
<td>Combination office- and laboratory-based activities. Laboratories, project rooms, or observational/practice facilities often are shared among several research teams.</td>
<td>150</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>C</td>
<td>Small individual studios, and shared rehearsal facilities, production studios and project areas. Accommodates both solo and group activities. Specialized facilities often used on a shared basis for teaching, research and performance activities. Special storage facilities required.</td>
<td>150</td>
<td>150</td>
<td>150</td>
</tr>
<tr>
<td>D</td>
<td>Laboratories requiring service and support areas ranging from 10% to 25% of core laboratory area. Includes bench space for individual work stations. Some proportion of the core lab area may be shared among research teams, often housing bulky or infrequently used experimental apparatus.</td>
<td>350</td>
<td>175</td>
<td>175</td>
</tr>
<tr>
<td>E</td>
<td>Large &quot;individual&quot; studios for faculty, graduate student and postdoc creative activity, usually occurring on a solo basis. Specialized support areas may be required for specific equipment-based techniques, such as photography, computing arts or media editing.</td>
<td>500</td>
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<tr>
<td>F</td>
<td>Complex wet and dry laboratories, typically assigned to &quot;research teams.&quot; High density of utility services, fume hoods, other built-in equipment, bench space, and movable equipment. Requires service areas and support space ranging from 25% to 50% of core laboratories.</td>
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data center space dedicated for SCIDS, and its future computing and data needs would allow for an expansion in systems that facilitate collaborations with industry, foundations, other UC campuses, and federally funded research. As an example, the existing data center includes investments by the Simons Foundation, the NSF, the State of California, and several million dollars of industry supported hardware. The industry investments are particularly noteworthy as they provide physical infrastructure that facilitates faculty - industry collaborations, most notably between health sciences and the pharma industry. Having the data center space to grow such initiatives will be aided by the creation of SCIDS.

SCIDS space growth plans will follow the General Campus mandate on office, laboratory, and research space. In the master plan for space allocation related to instruction and research for campus in the tables shown above, SCIDS will follow the current HDSI plan of opting for 5D, similar to the Computer Science and Engineering model. Based on this formula, the proposed plan anticipates the need for an additional 20-30,000 sq. ft. of space by 2030 when SCIDS is expected to achieve a steady state in terms of faculty, staff, and student strengths.

9. METRICS FOR REVIEW AND ASSESSMENT OF SCIDS

The Task Force discussed the metrics for review and assessment of SCIDS over short, intermediate, and extended time periods. In terms of prior assessment of HDSI, SDSC, and the affiliated departments, i.e., CSE, ECE, Cog Sci and Math, academic achievements highlight the immense success of the units. Within a very short period of existence HDSI and the data science components of closely affiliated departments have achieved the US World and News Report academic ranking of 10th in Data Analytics and Science programs, and SDSC has been a nationally funded and highly recognized supercomputer center.

The success of Schools in institutions of higher education are assessed by multiple metrics, the principal ones being the US World and News Report Annual Rankings at the national level, and the Times Higher Education Rankings internationally. These rankings are based on peer assessments, extramural funding and publications that highlight the research accomplishments and education and training assessed through student placements and alumni reviews. SCIDS administration will gather pertinent data from inception and will review annual progress and propose improvements as needed. We detail specific metrics of assessment and the concomitant timelines below.

In Research, the most significant metrics as associated with extramural research funding, publications, recruitments of quality faculty and students, and peer standing. It is a tradition cutting across academic schools at UC San Diego to obtain exceptional extramural funding from federal agencies, Foundations, and industrial partnerships. SCIDS administration will ensure the extension of this success to departments and units in SCIDS. The Dean will collaborate actively with the campus advancement office and the faculty in SCIDS to enhance endowment funding. The scientific leadership in SCIDS will assess annually the most important areas of growth in computing, information, and data sciences for solving imminent societal problems and advancing data analytics. The Dean, in collaboration with department chairs, will carry out annual assessments of faculty research progress and advise on mechanisms to enhance research and funding. Success in research is traditionally echoed by the training of Master’s and Ph.D. students, postdoctoral associates, and publication of high-quality research papers while advancing new methods and technologies. The latter is often reflected by disclosures and patents
that are licensable for private sector developments. The Dean’s office and administration will monitor and assess the units in SCIDS for these measures. Concrete steps for improvements will be advocated and supported.

A key metric of success of a School lies in training Undergraduate Students who will form the next generation workforce for the nation. The emergence of computing and data sciences and important public-private sector employment needs mandates that SCIDS should play an effective role in educating students. SCIDS will assess the employment statistics of our graduates annually in addition to actively collaborating with local industry in assessing their needs and tuning our training to address the needs. Most importantly, SCIDS will build an internship corridor with industry in the San Diego region and California more broadly to provide a continuous movement of students for training in industry in preparation for successful employment. The Dean’s office and administration will assess this success on an annual basis and provide necessary adjustments. The latter will include periodic assessments of curricula, engagements of students in research training, and ability of students translate learning to practice. SCIDS will form an external advisory committee consisting of academic and industry leaders who will review the success of the program on a 5-year review basis.

SCIDS will also assess in collaboration with other campus units the extent of involvement and affiliation of other campus units with SCIDS. We anticipate in the future departments in other Schools on campus to have stronger affiliations in terms of joint faculty appointments, new educational programs, and creation of joint organized research units (ORUs). These plans and programs will be assessed periodically, as per the campus norm. A five-year review to better guide the development of the undergraduate and graduate programs of the school will initiate the review process going forward.

10. SUMMARY

This proposal is the product of the work of the SCIDS Proposal Task Force and engagement with a broad range of campus and regional stakeholders. In addition, it benefits from the feedback from the UC San Diego Academic Senate and recommendations from UC Office of President and the systemwide Senate in response to submission of the Pre-Proposal. We are pleased to now present this full proposal for the establishment of a new School of Computing, Information, and Data Sciences. The proposal outlines the compelling need for UC San Diego to launch a School of Computing, Information, and Data Sciences and provides a detailed administrative, intellectual, and academic framework. Given that data and computer literacy is the sine qua non of any modern and future society, SCIDS will play an important role in training the next generation workforce and providing solutions to challenging societal problems involving data and information. In the intervening time since the pre-proposal was forwarded, we have already seen broader recognition of the impact of artificial intelligence in the public sphere. We look forward to engaging the Divisional Academic Senate at UC San Diego in refining this full proposal for consideration by the Systemwide Senate and UC Office of the President in preparation for launching this exciting new school.
APPENDIX 1 TASK FORCE MEMBERSHIP and CHARGE LETTER

Task Force Members:

Faculty Representatives
Shankar Subramaniam, Distinguished Professor, Bioengineering, Co-Chair
Virginia de Sa, Professor, Cognitive Science, Associate Director, HDSI
Kelly Frazer, Professor, Pediatrics
Javier Garay, Professor, Mechanical and Aerospace Engineering
Takaki Komiyama, Professor, Neurosciences
Lucila Ohno-Machado, Distinguished Professor, Medicine
Dimitris Politis, Distinguished Professor, Mathematics, Associate Director, HDSI
Alex Snoeren, Professor, Computer Science and Engineering
George Sugihara, Distinguished Professor, Scripps Institution of Oceanography
Allan Timmermann, Distinguished Professor, Rady School of Management
Edward Vul, Associate Professor, Psychology
Yusu Wang, Professor, HDSI

Administration
Robert Continetti, SAVC-AA and Dean Designee for HDSI, SDSC, Co-Chair
Ilkay Altintas, Chief Data Science Officer, SDSC
Cheryl Anderson, Dean, School of Public Health
Chaitan Baru, Distinguished Scientist, SDSC
Rajesh K. Gupta, Director, HDSI
Jessica Kuhrt, Business Officer, Dean Designee’s Office
Sorin Lerner, Professor and Chair, Computer Science and Engineering
Bill Lin, Professor and Chair, Electrical and Computer Engineering
Amit Majumdar, Division Director, Data Enabled Scientific Computing, SDSC
James McKernan, Distinguished Professor and Chair, Mathematics
Douglas Nitz, Professor and Chair, Cognitive Science
Mai Nguyen, Director, Design Lab
Lisa Ordóñez, Dean, Rady School of Management
Shawn Strande, Deputy Director, SDSC
Frank Wuerthwein, Professor, Physics, Interim Director, SDSC

UC San Diego Foundation Board of Trustees
Steve Hart, Co-founder, Executive Vice-President and Chief Technical Officer, Viasat
Matt Newsome, Senior Vice President, Cubic Transportation Systems
Pelin Thorogood, Executive Chairman and Co-founder, Radicle Science
October 4, 2021

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Allan Timmermann, Distinguished Professor, Rady School of Management
Edward Vul, Associate Professor, Psychology
Yusu Wang, Professor, HDSI
Frank Wuerthwein, Professor, Physics, Interim Director, SDSC

Subject: School of Computing, Information and Data Science Proposal Task Force Charge

Dear Colleagues,

Thank you for agreeing to serve as members of the School of Computing, Information and Data Science (SCIDS) Proposal Task Force. This task force is being formed as a senate-administration task force following adoption of the report of a Workgroup on the feasibility of SCIDS submitted earlier in the summer of 2021. I am pleased that Senior Associate Vice Chancellor for Academic Affairs (SAVCAA) Robert Continetti and Distinguished Professor Shankar Subramaniam from the Department of Bioengineering have agreed to serve as co-chairs for the task force, and the office of the Senior Associate Vice Chancellor will provide administrative staff support.
SCIDS Vision: As outlined in the report by the Workgroup, the School of Computing, Information and Data Science (SCIDS) will be an enduring academic unit that leverages the intellectual and operational resources of the Halicioğlu Data Science Institute (HDSI) and the San Diego Supercomputer Center (SDSC). SCIDS is envisioned to be a transdisciplinary school that serves as a hub of research, teaching, and translational practice in broad areas of data science and its impact on the society. At the core of SCIDS will be HDSI and SDSC that together will serve to attract and engage a broad community of researchers on campus and externally. Organizationally, the two units will not only retain their existing external identities but also build upon the SCIDS personnel, academic and operational resources to expand their reach and impact.

The SCIDS Proposal Task Force: In view of the broad and transdisciplinary nature of the scope of the proposed school, based on the recommendations of the Senate Committee on Committees, we have assembled a broad representative task force with members drawn from across the General Campus, SIO and Health Sciences to ensure rich and informed discussions on developing the proposal for creation of the new School.

Proposal Background:

The Task Force is coming together at a key moment in the evolution of the role computing, information and data science play in society and on our campus. The increasing focus on data-driven approaches across the breadth of human inquiry was one of the motivations for the establishment of the interdisciplinary Halicioğlu Data Science Institute (HDSI) proposed in 2017 and launched in 2018. The San Diego Supercomputer Center (SDSC) has been on campus now for more than 35 years, with notable external roles and recognition as well as an essential role in supporting interdisciplinary computational science on campus. The two organizations, HDSI and SDSC, have significant interactions, with SDSC researchers serving on HDSI faculty council and in key leadership positions in HDSI. SDSC has appointed 8 HDSI faculty members as SDSC fellows, while SDSC’s chief data scientist is appointed as an HDSI Fellow. The synergy between HDSI research and SDSC’s operational excellence in cyberinfrastructure and large-scale data science projects have raised the possibility of creating a compelling integrated institution at the intersection of computing, information and data sciences. Together, the presence of these two vital organizations on campus provides an outstanding opportunity to leverage complementary strengths of academic and operational success in building a School that takes the lead in not only establishing new academic programs and talent pools but also carrying out exploration to meet the needs of an information society in the decades ahead. As the new School builds new academic programs, supports and expands campus-wide activities, it will catalyze new research communities and efforts while enabling UC San Diego’s unified presence in the emerging area among peer schools.

To assess the prospects for developing a new school, a preliminary Workgroup consisting of faculty and researchers drawn from SDSC, HDSI and other divisions and was convened to examine the question in January of this year. That workgroup met with a wide range of academic leaders, including all academic deans, and produced a report that strongly supported the establishment of a new School. The report noted that to be successful, the School will have to be dynamic and promote collaborations with established programs across the campus, particularly with established departments such as Computer Science and Engineering, Electrical and Computer Engineering and the applied mathematicians in Mathematics. Similarly, the School will need to establish an environment to enhance the breadth of interactions HDSI has and is developing through joint appointments across the general campus, including with the arts and humanities, social sciences, the professional schools, SIO and the health sciences. The educational programs of the School will benefit from the strong momentum HDSI has already generated, and will contribute to broadening the opportunities for students at all levels to benefit from interdisciplinary studies in computational and data science.

Scope and Charter of the SCIDS Proposal Task Force:
As you examine the opportunities presented by the new School, it will be essential to proceed in a way that preserves the existing strengths and roles of HDSI and SDSC, while laying the foundation for a larger and permanent presence for computing, information and data sciences in the research and educational mission of UC San Diego. These include partnerships with the full range of existing schools/divisions.

The next step in this envisioning process is to develop a formal proposal for the School for review, refinement and approval through the established shared governance process with the San Diego Division of the Academic Senate and the Administration, leading to approval by the Divisional Academic Senate and submission to the Office of the President for further review.

The process for approving new schools is described in the Compendium of the University of California. This is typically a two-step process consisting of a preproposal and a full proposal. We will be in consultation with the Academic Senate to consider the possibility of this SCIDS Proposal to be the preliminary or full proposal. Regardless, this task force’s proposal will form the basis of the final proposal submitted for the systemwide review.

The compendium notes that the proposal will need to address four primary elements: (1) academic rigor, (2) financial viability, (3) the need for the program, and (4) the fit of the school within the UC system and within the segments of higher education in the State of California. Furthermore, the compendium specifies that the consideration of financial viability will need to address FTE requirements to support the school, capital requirements and sources of revenue. Writing a proposal responsive to these four required elements is thus the central charge for this workgroup. The report from the preliminary workgroup provides a starting point for embarking on this process, and it will also be valuable for this workgroup to consider the following specific points as you respond to the requirements of the compendium:

I. What organizational structure of the School will contribute most effectively to the success of transdisciplinary research and education across the campus? What are the synergistic programs and activities enabled by the new academic unit, and how will they interact with the full spectrum of existing schools/divisions?

II. Develop a plan for the growth of the academic programs, research thrusts, and the faculty. This should specifically address how the extramurally supported research mission of SDSC can benefit through involvement with the broader educational mission of the School and campus.

III. Consider the potential contributions the programs of the School could make towards understanding the ethics and societal impacts of computation and data across all disciplines.

IV. Identify infrastructure needs for a successful implementation of the School.

V. Assess societal needs and the placement of graduates (at all degree levels) from the programs offered by the School.

VI. Develop metrics to assess the success and future evolution of the School, as well as a process for review and assessment of those metrics.

VII. Consider how the School could support UC San Diego’s goals for diversity, equity and inclusion, and the effort to be recognized as a Hispanic-Serving Institution.

VIII. Consider a transition plan for HDSI and SDSC to the School, as well as potential avenues for expansion of the School in the future.
IX. Assess the potential place and uniqueness of the school in the context of similar endeavors in peer institutions.

The success of HDSI and the engagement of SDSC offer UC San Diego a unique and synergistic opportunity to establish a premier School that embraces computing, information and data science for establishing a leadership position in academic education, research and operational infrastructure.

I ask that the Task Force work to prepare a proposal for presentation to the senior leadership sometime before the end of Fall Quarter 2021 and target submission of a draft report by mid-January 2022.

I appreciate your willingness to participate in this endeavor and look forward to receiving the full proposal for the School of Computing, Information and Data Science. Please direct any questions or comments to Lisa Riolo (lriolo@ucsd.edu).

With best regards,

Elizabeth H. Simmons
Executive Vice Chancellor
APPENDIX 2

SDSC COMPUTATIONAL INFRASTRUCTURE

SDSC is a well-established production facility with many computational and storage resources. Of the current production compute systems, Expanse and the upcoming Voyager and National Research Platform (NRP) are funded by the National Science Foundation (NSF) and are available to the national academic and nonprofit user community of the US. 90% of the cycles of Expanse are allocated via the Extreme Science and Engineering Discovery (XSEDE) organization which coordinates the NSF-funded large scale HPC machines; Voyager and NRP will have three years of “testbed” phase and then two years of allocated phase for the national user community. The Comet machine, originally funded by NSF for about 5 years for the national user community, is now operated by SDSC on behalf of the Center for Western Weather and Water Extreme (CW3E), Scripps Institute of Oceanography, UC San Diego. The Popeye machine is operated on behalf of the Flatiron Institute of Simons foundation by SDSC. The Triton Shared Computing Cluster (TSCC) is funded by UC San Diego, SDSC and UC San Diego faculties. TSCC is operated as a condo cluster where researchers purchase a certain number of nodes, based on their needs and available funding, and SDSC manages the machine as a single cluster. In addition, SDSC staff play leadership roles in the “Pacific Research Platform” and the OSG, two distributed platforms that together have built federated cyberinfrastructure across hundreds of institutions globally.

Expanse

SDSC Expanse is a Dell cluster organized into 13 SDSC Scalable Compute Units (SSCUs), comprising 56 standard nodes and four GPU nodes, connected with 100 GB/s HDR InfiniBand. 13 of Expanse racks are funded by NSF and are allocated to the academic research community through NSF’s XSEDE project. Another rack is funded by UC San Diego and is available to industrial users. Every Expanse node has access to a 12 PB Lustre parallel file system (provided by Aeon Computing) and a 7 PB Ceph Object Store system. Expanse's standard compute nodes are each powered by two 64-core AMD EPYC 7742 processors and contain 256 GB of DDR4 memory, while each GPU node contains four NVIDIA V100s (32 GB SMX2), connected via NVLINK, and dual 20-core Intel Xeon 6248 CPUs. Expanse also has four 2 TB large memory nodes. The Expanse cluster is managed using the Bright Computing HPC Cluster management system and uses the SLURM workload manager for job scheduling. While the system is suited for modest-scale jobs as few as tens of cores to several hundred cores, Expanse also handles high-throughput computing jobs via integration with the Open Science Grid, which can have tens of thousands of single-core jobs and provides connectivity to commercial clouds via the job queuing system. A low-latency interconnect based on Mellanox High Data Rate (HDR) InfiniBand supports a fabric topology optimized for jobs of one to a few thousand cores that require medium-scale parallelism. One of the key innovations of Expanse is its ability to support composable systems, allowing researchers to create a virtual 'tool set' of resources, such as Kubernetes, for a specific project and then re-compose it as needed. Expanse will also feature direct scheduler-integration with
the major cloud providers, leveraging high-speed networks to ease data movement to/from the cloud.

**Comet**

SDSC Comet is the predecessor to Expanse, a Peta scale resource that consists of 1,944 compute nodes, each equipped with Intel Haswell dual socket processors, 12 cores/socket, 2.5 GHz clock, AVX2. Each node has 128 GB of DDR4 memory and 320 GB of flash memory; large memory nodes contain 1.5 TB of DRAM. Each rack of 72 nodes has full bisection InfiniBand FDR interconnects, with a 4:1 bisection interconnect across the racks. In addition, 72 nodes with GPU accelerators, 36 nodes with 2 Nvidia K80 cards and 36 nodes with 4 Nvidia P100 cards. Comet users have access to 7 PB of Lustre-based high-performance storage and 6 PB of durable storage for data reliability, both of which are part of SDSC's evolving Data Oasis storage system.

**Voyager**

SDSC Voyager is an NSF funded AI resource scheduled to begin operation in late 2021. Based on AI processors of Habana/Intel optimized for deep learning (DL) operations for training (using Habana Gaudi processors) and inference (using Habana Goya processors), Voyager will be one of the first-of-its-kind systems available in the NSF resource portfolio. This will give researchers the opportunity to explore Voyager's unique hardware and software using well-established deep learning frameworks like TensorFlow and PyTorch to implement deep learning techniques such as convolutional neural networks (CNNs) and generative adversarial networks (GANs). Researchers will also be able to develop their own AI techniques using software tools and libraries built specifically for Voyager's innovative AI architecture.

**NRP and related projects**

SDSC lead National Research Platform (NRP) is a distributed infrastructure with computer hardware on the west coast, Midwest, and east coast, and a content delivery system with caches in the national network backbone of Internet2 in five additional locations. The 8 locations were chosen to achieve coverage of the continental USA. Any location in the continental USA can reach a cache within roughly 500 miles. The project includes a “Bring Your Own Resources” program that builds on concepts developed by the Pacific Research Platform (PRP), as well as OSG. The larger vision is to work towards federating cyberinfrastructure across all 3,900 accredited degree-granting institutions of higher education. We see this as the next logical step beyond the expansion of high-speed internet in California (funded by CA State government at the tune of $6.25B) and nationwide (part of the Biden infrastructure package to the tune of $76B). We are focused on education and research being an application driver of these networking investments, in addition to YouTube, Netflix, and social media. Our collection of funded projects comprises close to 1,000 GPUs, ranging from gaming GPUs to top of the line NVIDIA data center systems with low latency high bandwidth networking, close to 40 FPGAs, and a mix of low latency parallel as well as distributed high throughput computing infrastructure. In addition, these projects include regional storage pools, with special focus on expanding data infrastructure in EPSCOR states, and at minority serving institutions.
Popeye

The Popeye supercomputer is hosted by SDSC for researchers at the Flatiron Institute of the Simons Foundation. Popeye is a heterogeneous cluster that has been upgraded several times. The CPU and GPU racks are from Lenovo, the InfiniBand switches are from Mellanox, and most of the disk storage is from Aeon. Currently there are 11 CPU racks with a total of 41,472 Intel cores that have a peak speed of 3.67 Pflop/s plus two GPU racks with a total of 1,280 Intel cores and 128 NVIDIA V100s that have a combined peak speed of 1.0 Pflop/s. Six CPU racks are liquid-cooled; all the other racks are air-cooled. The operating system is CentOS, the cluster management system is Bright, and the scheduler is Slurm. The compute nodes and the file systems are connected via an EDR InfiniBand network. The primary file system is managed by Ceph and consists of 25 PB raw disk of which about 15 PB should be usable. However, not all the storage is online yet, since it has not been needed.

Triton Shared Computing Cluster (TSCC)

TSCC is a medium-scale, high performance computing cluster primarily for campus researchers. The system is housed in a secure, energy-efficient data center on the UC San Diego campus. Designed to facilitate rapid access to computing resources, TSCC features flexible usage and business models and professional system administration and user support. The primary business model for TSCC is the “condo computing model,” in which research groups use grant, startup, gift, or other funds to purchase computer servers (“nodes”) which are installed in the cluster and are available to all users on a fair-share basis. Condo participants and the campus administration cost-share the annual operating costs for the cluster. In addition to the condo computing partition, TSCC has a “hotel node” partition which is available to condo owners and to other researchers on an ad hoc (“pay as you go”) recharge basis. The condo and hotel configurations contain both standard two-socket, x86 compute nodes and Graphics Processing Unit (GPU) nodes. The hotel configuration also features one or more large-memory nodes. The cluster contains several generations of x86 compute nodes (16-36 cores, 64-384GB memory), several generations of NVIDIA GPU nodes, and a mixed interconnect including EDR InfiniBand for closely coupled simulations and 10/25GbE Ethernet for high performance communications and I/O. The system has a 2 petabyte, high performance Lustre parallel file system for staging of input data and temporary storage of results data.

SDSC Cloud (Compute)

The SDSC Cloud also offers Compute and block storage utilizing the same Openstack underpinnings with Swift Cloud Storage, such as common identity management. The Compute functionality provides an elastic resource for small or non-parallel compute jobs not requiring or well suited to high performance computing (HPC).

Storage Infrastructure

SDSC Universal Scale Storage (High Performance, Large-Scale Storage)

SDSC’s Universal Scale Storage (USS) provides researchers and research partners with a flexible, scalable, and affordable storage cluster for any storage purpose, including high
performance computational workloads, departmental user data storage, and long-term archival.

Housed within the SDSC data center with multiple high-speed 80Gb links to the internal SDSC network and internet at large, USS can be mounted directly on SDSC high performance computing (HPC) systems (Comet, Expanse and TSCC), in addition to most UC San Diego campus systems. Erasure encoding striped across clustered storage devices ensures effective data durability. A daily snapshot option creates the opportunity to restore recently accidentally deleted data or recover after disasters. An SSD cache on top of spinning disk storage within each device in the cluster achieves maximum system I/O performance. Users may request a copy of data to be pushed to a separate archival object storage system for additional redundancy.

While the typical use case is a 200+ TB share mounted on collocated systems or SDSC HPC systems, users can request shares greater than 1 PB and can access the data from anywhere when pairing USS with local file servers, such as an SDSC VMware VM, or 3rd party interfaces. Experienced SDSC storage engineers are available to architect solutions tailored to research needs and provide ongoing support.

**SDSC Cloud (Storage)**

SDSC's Cloud Storage provides academic and research partners with a convenient and affordable way to store, share, and archive data, including extremely large data sets. The object-based storage system and multiple interface methods make the SDSC Cloud easy to use for the average user, but also provide a flexible, configurable, and expandable solution to meet the needs of more demanding applications.

Utilizing the OpenStack Swift Object Storage software across 3 PB of hardware, objects are written to multiple physical storage arrays simultaneously, ensuring at least three verified copies always exist on different servers. Continuous, automatic data verification provides unparalleled durability, which equates to peace-of-mind for you and your data. Optional off-site replication to our partner facility provides additional durability and protection against data loss.

Files of any size can be stored in the cloud, from small personal document collections to multi-terabyte backup sets routed directly to the cloud by Rackspace or S3 API compliant applications. Cloud Backup package solutions are also available, using SDSC's CommVault Backup service. With on-demand storage, researchers never have to worry about running out of space – storage scales as needed.

**SDSC Project Storage (High Performance NFS and CIFS Storage)**

SDSC's Project Storage provides academic and research partners a network-based storage service that offers CIFS/Samba and NFS to UC San Diego. Leveraging Oasis with a dual 10 Gbps network connection and boasting a raw capacity of 4.4 PB (1,900+ disks), Project Storage is an excellent option for interactive access and use as a traditional mounted file system. Project Storage is a popular option with HPC users as it allows for the fastest transfer of large data to and from the supercomputers at SDSC, as well as easy access through mount points. Nightly ZFS snapshot replications ensure dual-copy data durability. By choosing to add historical backups utilizing SDSC CommVault
services, users can perform point-in-time file recovery. Additionally, users can invest in project storage hardware housed in a condo function, allowing the users to trade steeper up-front fees for lower long-term costs. The user is responsible for investing in hardware while SDSC typically handles the hardware procurement, setup, and maintenance.

Global scale data federation
SDSC is collaborating across multiple projects (OSG, PRP, NRP, NSDF, OSN) towards a vision of a global scale data federation. Different projects pursue this vision with different technology foci. All have in common the vision of federating data into a global namespace that allows for fine grained access controls, distributed across many storage systems owned by many different organizations, and data accessed from anywhere at any time via a content delivery network (CDN). Several of these projects have a strong focus on democratization of access to data, thus deploying hardware in minority serving institutions nationwide. Some are focused mostly on "Bring Your Own Resource," i.e., integrating existing data on existing storage systems at institutions other than UC San Diego. The largest of these systems today includes 18 caches across 4 continents, most of them located in the USA, plus 9 data origins that feed the CDN for a wide range of communities. One of the projects (NSDF) includes funding to integrate the USS mentioned above into this global scale data federation as an origin.

Additional Resources
SDSC Datacenter
All equipment is housed in the SDSC colocation facility. SDSC’s 19,000-square foot climate-controlled and secure datacenter is fully equipped with 13 Megawatts of power, 100 gigabit and multi-10-gigabit network connectivity, and a 24/7 operations staff. Staff constantly monitor the room environment and are available as ‘remote hands. Options for highest uptime use cases include emergency power, UPS, and generator-backed racks. Equipment is dual-powered by two PDUs per rack. All racks are installed on isobase, floating foundations for earthquake protection.

EarthCube Office (ECO)
The EarthCube Office serves as the backbone organization for the community driven, NSF-funded EarthCube Initiative. ECO is a collaboration between SDSC, the National Center for Supercomputing Applications at University of Illinois Urbana Champaign, the Scripps Institution of Oceanography at UC San Diego, the University of Hawaii at Manoa, the Earth Science Information Partners (ESIP), and the US Geoscience Information Network (USGIN). ECO’s science engagement and technical activities include data FAIRs and data help desks at geoscience community meetings, and consultation on best practices for interoperability between geosciences/EarthCube projects.

National Data Service
Resources offered through the National Data Service (NDS) are available for pilots via NDS Labs and for larger or production scale data needs via NDS Share. SDSC makes available portions of its storage and compute platforms on SDSC Cloud to the NDS.
Projects needing multiple sites utilize tools such as Globus to move between federated resources at the nation's major academic supercomputing centers.

**West Big Data Innovation Hub**

With a focus on thematic ‘verticals’ such as metro/urban data science, and natural resource management, especially water, as well as cross-cutting ‘horizontals’ such as open science, workforce development, and data ethics, the West Hub enables creative cross-pollination and resource-sharing. Our initiatives convene a diverse and inclusive community, bringing together scientists and technologists, policy enthusiasts and decision makers, local innovators, and the broader public to identify common goals and opportunities. Fueled by outcomes-focused partnerships, the West Hub facilitates the development of collaborative pilot projects addressing regional needs, while connecting and scaling efforts as part of a larger global network. The WBDIH connect, convene, curate, and communicate across our network with an emphasis on enabling interoperable, scalable, and sustainable solutions.

The West Big Data Innovation Hub (WBDIH) is one of four regional hubs funded by NSF to build and strengthen partnerships across industry, academia, nonprofits, and government to address scientific and societal challenges, spur economic development, and foster a big data innovation ecosystem. Launched in November 2015, the West Hub has recruited a diverse community of contributors across disciplines, backgrounds, and geographies to enable translational research projects that have the potential for wide-reaching societal impact.

By spanning 13 states and sparking national as well as global engagement, the West Hub can leverage a broad collection of physical facilities as well as online infrastructure. The West Hub has hosted in-person and virtual community convenings at many campuses including: (University of California - Berkeley, Los Angeles, Davis, San Diego, University of Washington, University of Colorado - Boulder, Boise State University, Portland State University, University of Wyoming, University of Utah, New Mexico State University, and others), Federally Funded Research and Development Centers, industry sites (from small startups to large corporations), co-working innovation spaces, local government venues, large technical conferences, and community facilities, often open to the public and captured online to broaden access and participation.

**Go FAIR (US)**

Research Data Services division of the San Diego Supercomputer Center (SDSC) at the University of California San Diego, hosts the U.S. GO FAIR Coordination Office. GO (Global Open) FAIR is a ‘bottom up’ initiative aimed at implementing the FAIR principles to ensure that data is findable, accessible, interoperable, and reusable. GO FAIR’s main goal is to kick-start the development of a global data commons for research and innovation. The GO FAIR US office serves as a coordination entity to develop and facilitate community engagement, capacity building and training, decision-making and other activities related to the adoption the FAIR principles within the U.S. and its territories. GO FAIR US works to support all knowledge domains and leads efforts toward the general goal of increasing FAIR data stewardship.
Cyberinfrastructure and SCIDS

Infrastructure for computing and data has become an essential component of every institution of higher learning. UC San Diego has a larger mandate in this domain given the presence of a national supercomputing center. The establishment of SCIDS would enhance the presence of this advanced infrastructure and can help launch UC San Diego as the paradigm for the next generation cyberinfrastructure (we define cyberinfrastructure (CI) as hardware, software, research networking, and a team of technical and domain experts.) Here we present the exceptional scope of cyberinfrastructure available at SDSC and how it provides a central role in the success of SCIDS.

Cyberinfrastructure must be a foundational element of SCIDS, providing the computing, data resources, and expertise to advance its research, teaching, and service missions. To be successful, SCIDS will require a scale and complexity of CI that goes well beyond the department or campus research computing function. Today, SDSC provides a wide range of these services and resources to campus, with well-developed cost recovery and funding models. While some additional growth is possible, what SDSC can provide to campus is bounded by available funding, people, and the limitations inherent in current organization structure. The advent of SCIDS will provide new opportunities for the growth of SDSC and through careful stewardship of existing resources, using well-established service and business models, SDSC can build out its existing services and resources, and develop the new ones that will be needed.

The table below describes SDSC’s current portfolio of CI solutions, current support model, how they are relevant to SCIDS, and suggests what will be needed for SCIDS and how they can be capitalized. In addition, there are two proposed services suggested that would be of value to SCIDS. Capital investment will be targeted and wherever possible, leverage existing cost-recovery models, or direct grant funding. There are two notable exceptions to this as noted in the table. First, and regardless of SCIDS, there is an urgent need for a data center expansion to meet existing needs. Planning work is underway now to assess the required funding and potential impacts to campus. SCIDS may provide new opportunities for funding such an effort, for example, if it were done in conjunction with a new SCIDS building, one can envision a showcase building with a state-of-the-art data center, technology innovation lab, teaching space, lab space, and collaboration spaces. Second, SDSC has for many years operated the campus research computing cluster (TSCC). With some investment from campus and some from SDSC, TSCC has reached a point of stability and success that is marked by widespread support from PIs. However, investment is needed for growth.

Table I Campus Cyberinfrastructure Resources Relevant to SCIDS

<table>
<thead>
<tr>
<th>Cyberinfrastructure</th>
<th>Function/Service</th>
<th>Funding model</th>
<th>Relevance to SCIDS</th>
<th>SCIDS funding model and Capital requirement</th>
</tr>
</thead>
</table>


<table>
<thead>
<tr>
<th>Facility</th>
<th>Description</th>
<th>Availability</th>
<th>Capital Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Campus Colocation facility</td>
<td>Space, power, cooling, R&amp;E networking (<a href="https://www.sdsc.edu/services/ci/colocation.html">https://www.sdsc.edu/services/ci/colocation.html</a>)</td>
<td>SDSC Data Center Colo model in place and supporting researchers from UC San Diego and across the UC system in 507 racks, but essentially out of space for new systems. Campus covers fees for UCSD researchers. External (including UC) customers pay full rate. Full range of services provided.</td>
<td>Mixed model of campus support, donor, fee-for-service recharge including revenue from industry partners.</td>
</tr>
<tr>
<td>Expanse high-performance computing system</td>
<td>5 petaflop CPU and GPU compute system. SDSC’s largest HPS systems. (<a href="https://www.sdsc.edu/services/hpc/expansse/">https://www.sdsc.edu/services/hpc/expansse/</a>)</td>
<td>13 of the scalable units were funded by NSF and operated on behalf of the national community. An additional Scalable Unit was purchased by SDSC and is operated for UCSD as a recharge</td>
<td>No additional capital required beyond data center space and power. Anticipated operating for an additional 5 years once it goes out of NSF service via a model like Comet, which is now operated on behalf of SIO.</td>
</tr>
<tr>
<td>Comet HPC system</td>
<td>2.5 petaflop CPU and GPU system. Previously an NSF system, now operated by SDSC on behalf of the Center for Western Weather and Water Extremes (CW3E) at Scripps Institute of Oceanography. (<a href="https://www.sdsc.edu/support/user_guides/comet.html">https://www.sdsc.edu/support/user_guides/comet.html</a>)</td>
<td>Maintenance and support are covered by SIO.</td>
<td>No additional capital required beyond data center space and power.</td>
</tr>
<tr>
<td>Popeye HPC System</td>
<td>~5 petaflops CPU and GPU system operated on behalf of the Flatiron Institute at the Simons Foundation</td>
<td>Hardware purchased by the Simons Foundation, which also provides funding for SDSC staff to operate the system, and for data center colocation space and power. Simons had previously assumed operational expenses for SDSC’s Gordon HPC system when it was run under NSF support. UCSD has multiple research collaborations with the Simons Foundation; there is also differential income provided by the arrangement. More recently Simons has provided computing time.</td>
<td>No capital required other than space in the data center.</td>
</tr>
<tr>
<td><strong>Voyager AI supercomputer</strong></td>
<td>Specialized HPC system for machine learning and artificial intelligence research</td>
<td>Funded by NSF, Voyager enters production in 2022 and will operate for 5 years.</td>
<td>UCSD researchers Rommie Amaro and Javier Duarte are co-PIs. Voyager put UCSD at the forefront of innovation in AI/ML architectures and provides a platform for research in this important area.</td>
</tr>
<tr>
<td>-------------------------------</td>
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<td>---------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| **National Research Platform (NRP)** | National, distributed resource for data-intensive science and engineering.  
(https://www.sdsc.edu/News%20Items/PR20200701_voyager.html) | Funded by NSF, NRP enters production in 2022 and will operate for 5 years. | UCSD researchers Tajana Rosing and Tom DeFanti are co-PIs. NRP will allow exploration of emerging interconnect and computing technologies and help advance research in many domains. | No capital requirements other than continued data center space and power. |
| **Triton Shared Computing Cluster (TSCC)** | Campus computing cluster for research, education, capstone projects. Owned by and operated on behalf of campus researchers | TSCC supports 30+ labs, hundreds of researchers. Mix of condo and hotel nodes purchased by PIs with operational subsidy covered via SDSC and UCSD | Scale-out to support growth of SCIDS education and research portfolio | Campus support for racks and labor sufficient to ensure long-term sustainability and growth. Seek partnerships with industry.  
**Capital requirement:**  
$500K - $1M/year |
| **Storage and Data:** Spectrum of high-capacity, high-performance storage, including Universal Scale Storage, SDSC Cloud | On premise and distributed data storage. TB to multi-PB scale | Primarily a fee-for-service recharge model.  
Currently supports many researchers across campus. Solutions and support | An essential element in nearly all SCIDS data-driven research and education activities. | Primarily cost recovery.  
School makes financial commitment to cover |
<table>
<thead>
<tr>
<th>Program</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Center for Applied Internet Data Analysis (CAIDA)</td>
<td>Conducts network research and builds research infrastructure to support large-scale data collection, curation, and data distribution to the scientific research community. <a href="https://www.caida.org">https://www.caida.org</a></td>
</tr>
<tr>
<td>CloudBank</td>
<td>A cloud access entity that helps the computer science community access and use public clouds for research and education by delivering a set of managed services designed to simplify access to public clouds. <a href="https://www.cloudbank.org/about">https://www.cloudbank.org/about</a></td>
</tr>
<tr>
<td>EarthCube Coordination Office</td>
<td>The EarthCube Office serves as the backbone organization for the community driven, NSF-funded EarthCube Initiative. <a href="https://www.earthcube.org">https://www.earthcube.org</a></td>
</tr>
<tr>
<td>Open Science Grid</td>
<td>The OSG is a consortium of research collaborations, campuses, national laboratories and software providers dedicated to the advancement of all open science via the practice of distributed High Throughput Computing (dHTC), and...</td>
</tr>
<tr>
<td>Pacific Research Platform</td>
<td>The Pacific Research Platform (PRP) is a multi-institutional extensible deployment that establishes a science-driven high-capacity data-centric ‘freeway system.’ The PRP spans all 10 campuses of the University of California, as well as the major California private research universities, four supercomputer centers, and several universities outside California. <a href="https://pacificresearchplatform.org">https://pacificresearchplatform.org</a></td>
</tr>
<tr>
<td>US GO FAIR Coordination Office</td>
<td>GO (Global Open) FAIR is a ‘bottom up’ initiative aimed at implementing the FAIR principles to ensure that data is findable, accessible, interoperable, and reusable. <a href="https://www.go-fair.org/go-fair-initiative/go-fair-offices/go-fair-us-office/">https://www.go-fair.org/go-fair-initiative/go-fair-offices/go-fair-us-office/</a></td>
</tr>
<tr>
<td>West Big Data Innovation Hub</td>
<td>The West Big Data Innovation Hub (WBDIH) is one of four regional hubs funded by NSF to build and strengthen partnerships across industry, academia, nonprofits, and government to address scientific and societal challenges, spur economic development, and foster a big data innovation ecosystem. <a href="https://www.westbigdatahub.org">https://www.westbigdatahub.org</a></td>
</tr>
<tr>
<td>Workflows for Data Science Center of Excellence (WoRDS)</td>
<td>WoRDS is a hub for the development, promotion, and delivery of workflow services for a wide range of applications. The mission is to support data analysis projects, data scientists and software engineers in their computational practices involving process management. <a href="https://words.sdsc.edu">https://words.sdsc.edu</a></td>
</tr>
</tbody>
</table>
APPENDIX 3

LETTERS OF SUPPORT

Albert Pisano, Dean, Irwin and Joan Jacobs School of Engineering
Carol Padden, Dean, School of Social Sciences
Steven E. Boggs, Dean, School of Physical Sciences
Kit Pogliano, Dean, School of Biological Sciences
Margaret Leinen, Dean and Vice Chancellor, School of Marine Sciences, Scripps Institution of Oceanography
Caroline Freund, Dean, School of Global Policy and Strategy
Lisa Ordóñez, Dean, Rady School of Management
Brookie Best, Dean, Skaggs School of Pharmacy and Pharmaceutical Sciences
Steven Garfin, Interim Dean, UC San Diego School of Medicine
Cheryl Anderson, Dean, Herbert Wertheim School of Public Health and Human Longevity Science
Cristina Della Coletta, Dean, School of Arts and Humanities
John Moore, Dean, Division of Undergraduate Education
Judy Kim, Senior Associate Dean, Division of Graduate Education and Postdoctoral Affairs
Hugo O. Villar, Dean, Division of Extended Studies
Bill Lin, Professor and Chair, Department of Electrical and Computer Engineering
Sorin Lerner, Professor and Chair, Department of Computer Science and Engineering
Michael Holst, Chair, Department of Mathematics
Douglas A. Nitz, Professor and Chair, Department of Cognitive Science
Ramesh Rao, Director, Qualcomm Institute
Erik Mitchell, The Audrey Geisel University Librarian
UC San Diego Innovation and Entrepreneurship Council
Becky Petitt, Vice Chancellor, Equity, Diversity and Inclusion
Chancellor Pradeep
Khosla University of
California San Diego

RE: Jacobs School of Engineering Support for establishing
the School of Computing, Information and Data Sciences

(SCIDS) Dear Chancellor Khosla:

I would like to express my strongest support for establishing SCIDS, the School of Computing, Information and Data Sciences, which I expect to benefit the entire UC San Diego campus as well as the Jacobs School of Engineering in particular.

The Jacobs School is the largest school of engineering on the west coast and is highly ranked in the nation for the excellence of its research programs. The departments of engineering also enjoy outstanding and high rankings, among these being Computer Science and Engineering, Electrical and Computer Engineering, and Bioengineering. During my tenure as the Dean of JSOE, I encouraged, resourced, and supported the growth of Information Theory, Machine Learning, and a host of other innovative research activities in Engineering, many of which laid the groundwork that led to the creation of the Halicioglu Data Sciences Institute. The Jacobs School has a history of launching extraordinarily successful partnerships across the campus and the foundation of SCIDS will be a crown jewel in our efforts.

Given the strong constructive collaboration between educational and research activities in the Jacobs School and the proposed School, the Chairs of CSE and ECE, along with myself, felt that it would be natural for these foundational departments to have a dotted line affiliation with SCIDS. I have worked closely with the Taskforce which created the SCIDS proposal in defining the implications of the dotted line. CSE and ECE, which have provided the intellectual foundations for the proposed School will have joint faculty, curriculum, and research partnerships. These departments and their faculty, while formally belonging to the Jacobs School, will provide valuable input into SCIDS administration now and the future. I am strongly supportive of this model, and I look forward to working closely with SCIDS leadership for mutual benefit as well as the benefit of the campus.

I am excited that the San Diego Supercomputer Center (SDSC), a true national treasure, will be a part of SCIDS and will play a significant role in shaping the infrastructure for computing and data science research of the future. The Jacobs School has had substantial interactions with SDSC since its inception four decades
ago and has substantial joint appointments and projects today. The foundation of SCIDS will facilitate such interactions even further, as we develop new research projects that require the combined intellectual powers of the Jacobs School of Engineering and SCIDS, made possible by the special contributions only SDSC can provide. I also anticipate a strong constructive collaboration between SDSC and the Qualcomm Institute, a premier Collaboratory at UC San Diego.

I support the creation of SCIDS and the dotted line affiliation of the Departments of CSE and ECE (both of which are Jacobs School of Engineering Departments) in the strongest terms and I look forward to the synergistic growth of the new School.

Sincerely,

Albert P. Pisano, Dean
Irwin and Joan Jacobs School of Engineering Walter J. Zable
Distinguished Professor
Professor, Mechanical and Aero
Engineering Professor, Electrical
and Computer Engineering
Member, National Academy of
Engineering Member, National
Academy of Inventors
August 28, 2023

TO: Robert Continetti, SVCAA
    Academic Affairs

    Shankar Subramaniam, Professor Computer Science and Engineering

RE: Proposal for a new School of Computing, Information and Data Sciences

I am writing to express support for the proposed new School of Computing, Information and Data Sciences. The School of Social Sciences has had representation throughout the process of putting this proposal together and I am pleased to see that many of our ideas are incorporated.

We have a growing number of faculty who work in data science and with big data and we are continuing to hire new faculty in this area. Some of these hires have been carried out jointly with HDSI, and some are wholly within our departments. Moreover, a number of our faculty have joint appointments or other types of affiliations with HDSI. Our faculty and their graduate students rely on the services of the Supercomputer Center and we continue to hire new faculty whose startup packages and appointment letters include support from SDSCC. The Supercomputer Center is an extraordinary benefit in terms of recruiting new faculty, and I am pleased to see the proposal discuss the ways that SCIDS can directly and indirectly support our faculty.

I want to recognize two units in particular who will be partnering in the future of SCIDS: the Cognitive Science Department and the Computational Social Science Program. Prof. Jeffrey Elman from the Cognitive Science Department worked with Prof. Rajesh Gupta to develop the current framework of HDSI, which is now becoming fully realized. The Computational Social Science Program (CSS) which was led by Prof. Edward Vul (a member of the exploratory committee to develop SCIDS, before he took a leave of absence to work in industry), offers a minor, a masters’ program and a PhD specialization. There are no plans as of yet for a major in CSS. The program offers courses by participating Social Sciences faculty from many of our departments and programs in the School.

I appreciate the SCIDS proposal outlining types of relationships that the new School might have with affiliate faculty and affiliate Schools. We are open to all, including other ways to involve Schools as well as individual faculty and research staff. Thank you for outlining each of these options, and inviting deeper involvement with SCIDS over time.

Thank you for your effort and that of the committee. As Dean, I look forward to being your partner in realizing and building a new School, SCIDS.
Sincerely,

[Signature]

Carol Padden
Dean, Division of Social Sciences
August 15, 2023

To: UC San Diego Division of the Academic Senate

I am writing to provide my strong and enthusiastic support for the proposal to create the new School of Information and Data Sciences (SCIDS) at UC San Diego. SCIDS represents both the culmination of a natural progression in the evolution of data sciences on campus and the much-needed foundation for expanding our endeavors in computing, information, and data sciences going forward. Physical Sciences has played a driving role in this evolution, both through our historical and ongoing connections and leadership of the San Diego Supercomputer Center (SDSC), and through our foundational role in partnering to create the Halicioğlu Data Sciences Institute (HDSI). All four of the departments in Physical Sciences – Mathematics, Physics, Astronomy & Astrophysics, and Chemistry & Biochemistry – maintain close and productive connections with both SDSC and HDSI. The establishment of SCIDS will serve to enhance these connections to Physical Sciences. I anticipate strong collaborations between the schools, and many possibilities to explore exciting new research directions in partnership. The mutual areas of overlap in computing and data science are enormous, and the applications affect nearly every field of physical and mathematical sciences. I am particularly interested in seeing how the establishment of SCIDS could help in expanding the visibility and impact of both statistics and applied mathematics at UC San Diego, fields that are largely concentrated in our department of Mathematics. We will be eager to explore more formal engagement between Physical Sciences and SCIDS once the school is established.

Sincerely,

Steven E. Boggs
Dean of Physical Sciences
Chancellor’s Associates Endowed Chair in Physics
University of California, San Diego
He/him
August 29, 2023

To: Robert E. Continetti  
Sr. Associate Vice Chancellor  
Academic Affairs

RE: Proposal for a new School of Computing, Information and Data Sciences  

Dear Sr. Associate Vice Chancellor Continetti,

On behalf of the School of Biological Sciences, I am pleased to support the proposal for a new School of Computing, Information and Data Sciences. The proposal was reviewed by the chairs and Biological Sciences Executive Committee, and we find the plan to be robust and well-articulated. There is clearly a strong opportunity for growth in Data Sciences research and education, and for collaboration with many disciplines. The proposed new School will be well-positioned to capitalize on these research opportunities, while delivering high value curricula for our students. We have no specific concerns, and look forward to collaborating with the new school.

Sincerely,

Kit Pogliano, PhD
August 14, 2023

Dr. Robert Continetti
Senior Associate Vice Chancellor
UC San Diego

Dear AVC Continetti,

It is my pleasure to write in support of the creation of the proposed new School of Computing Information and Data Science at UC San Diego. Over the past five or six years the University has discussed how best to educate students and do research in the rapidly developing areas of computing information and data science. From the beginning we envisioned a mechanism to partner the scholarship of the university with the tools and techniques in computing information and data science. The emergence of the new Halicioglu Data Science Institute and its focus on joint faculty with other parts of the University brings that vision to reality. The addition of Computing Information built on the foundation of the San Diego Supercomputer Center, which has transformed our national capabilities in how to generate information from data is most welcome. Our new leadership in these areas is also firmly focused on generating new ways of thinking about data and information. I am enthusiastic about the potential for UC San Diego that the new School offers and I know that faculty and researchers at Scripps Institution of Oceanography join me in looking forward to working with the new School.

Sincerely,

Margaret Leinen
Dean, School of Marine Sciences and Vice Chancellor for Marine Sciences.
To: Divisional Senate
From: Caroline Freund
Dean, School of Global Policy and Strategy

RE: Creation of a School of Computing, Information and Data Sciences (SCIDS)

The School of Global Policy and Strategy (GPS) supports the creation of a School of Computing, Information and Data Sciences (SCIDS). There are many synergies with GPS, given the emphasis in our curriculum on data and analysis and our faculty’s research, which increasingly uses big data, AI, and new methodologies.

Our programs provide training in quantitative and qualitative domains of International Affairs and Public Policy. Our programs are known for providing the strongest training in computational and data work of any policy school, and the new school would help us continue to deliver on that goal. We believe that the proposed school would complement the programs at GPS and there would be great potential for interdisciplinary research. Evidence of the potential is the ongoing search for a Chancellor’s joint faculty position with Halicioğlu Data Science Institute (HDSI).

The search process itself has highlighted the many complementarities, as our members have gotten to know each other throughout the interview process. For GPS, this new joint position will bring additional teaching resources on data science and a potential collaborator for our faculty, who is highly skilled technically and interested in policy analysis. We look forward to many more such interactions.

GPS is highly interdisciplinary, with economists, political scientists, and scientists all working on pressing policy issues. The new school will provide GPS with an additional resource on which to draw on as they search for the best method to analyze a policy issue. It will also support our students in providing the most advanced quantitative skills of any policy school. We look forward to working collegially, collaboratively, and cooperatively with the leadership of the new school.
August 15, 2023

Dear Prof. Robert Continetti and Prof. Shankar Subramaniam,

I have been honored to serve on the task force that prepared the “School of Computing, Information, and Data Sciences” proposal. This new school, if approved, will be an exciting hub for the campus in terms of research and teaching in these areas. The Rady School faculty and MS in Business Analytics would clearly benefit from the activities and faculty in this new school.

Thus, I am pleased to write this letter in support of the SCIDS proposal dated 4/27/23. We at the Rady School are eager for this new school to be approved.

Sincerely,

Lisa D. Ordóñez, PhD
Dean, Rady School of Management
Stanley and Pauline Foster Endowed Chair
August 16th, 2023

Senior Associate Vice Chancellor Robert Continetti
Distinguished Professor Shankar Subramaniam

Dear Drs. Subramaniam and Continetti,

The leadership of the Skaggs School of Pharmacy and Pharmaceutical Sciences (SSPPS) is pleased to support the launch of the new UC San Diego School of Computing, Information, and Data Sciences. This new school is a critical step forward that will address compelling societal needs across every discipline. The foundational pillars (HDSI and SDSC) and existing and future potential synergies at UC San Diego and across the region ensure that this new school will continue our tradition of excellence and benefit our community.

SSPPS expects to partner with faculty, research and training programs in the new School in several areas, including but not limited to:

- High performance computing (HPC). Our computational pharmaceutical sciences faculty are heavily engaged in HPC related to drug discovery, drug design, predicting potential drug targets, and managing massive datasets.
- Our faculty and trainees are advancing science at the interface of chemical informatics, structural biology, and molecular simulations with artificial intelligence and machine learning, including partnerships with the San Diego Supercomputer Center.
- Pharmacomicrobiomics, pharmacogenomics and precision medicine, metabolomics and proteomics are major areas of focus for our faculty and trainees, using machine learning and generative AI to help collect, manage, interpret, visualize and deploy these data for improved health.
- Several new faculty are experts in pharmacy informatics, utilizing large scale clinical datasets, machine learning and AI to answer medication-related public health questions, and optimize medication utilization via disease and therapy prediction and monitoring.

The formation of this new school provides a unique opportunity to synergize with our pharmacy school to improve the health of our communities. The formation of this new school at UC San Diego has the wholehearted support of SSPPS.

Sincerely,

Brookie M. Best, PharmD, MAS
Dean, Skaggs School of Pharmacy and Pharmaceutical Sciences
Professor of Clinical Pharmacy and Pediatrics

Skaggs School of Pharmacy & Pharmaceutical Sciences
School of Medicine, Pediatrics Department – Rady Children’s Hospital San Diego
UC San Diego • 9255 Pharmacy Lane, MC 0657 • La Jolla, CA 92039-0657
T: 858-822-5550 • Email: brookie@ucsd.edu • pharmacy.ucsd.edu
Dear Dr. Continetti:

Please convey to the Divisional Senate my strongest support for the proposed School of Computing Information and Data Sciences (SCIDS). The School of Medicine sees SCIDS as a bridge between multiple medical and scientific disciplines and computing technology which is a growing necessity for effective and timely cross-disciplinary data science research.

The School of Medicine has data analytics needs that relate to basic, translational, and clinical research, as well as the quality of patient care and other operational initiatives. Partnership with data scientists from SCIDS will strengthen biomedical data science efforts already underway in various basic science and clinical departments. For basic research, SCIDS partnerships focused on developing algorithms and tools to extract novel biological information from the combined analysis of large and complex omics (genomic, epigenomic, metabolomics) public datasets will be hugely beneficial. For translational and clinical research, SOM faculty will offer SCIDS partnerships creating a gateway for access to real clinical data and/or genomic data from human subjects.

The research and training needed for the future of the School of Medicine strongly warrants the creation of a School that will provide a unique opportunity to serve as the next-generation data-driven health care incubator. The proposed program can be a leader in training the next generation of physicians, particularly those who wish to pursue a career in data analytics in medicine.

Please do not hesitate to contact me if I can provide additional support for this transformational proposal.

Sincerely,

Steven R. Garfin, MD
Interim Dean, UC San Diego School of Medicine
Robert E. Continetti, Ph.D.
Senior Associate Vice Chancellor-Academic Affairs Distinguished Professor of Chemistry and Biochemistry University of California San Diego
Academic Affairs, 105 University Center 9500 Gilman Drive # 0001
La Jolla, CA 92093-0001

August 28, 2023

Dear Dr. Continetti:

I am pleased to provide this letter of support for the creation of a School of Computing, Information and Data Sciences (SCIDS) at UC San Diego. In the realm of public health, data science is integral to data gathering, analytics, predictive computing, and devising interventions to advance public health outcomes. The establishment of SCIDS will accelerate efforts to bring data science to the Herbert Wertheim School of Public Health and Human Longevity Science (HWSPH), which was recently established and is positioning itself as an outstanding place for education and research into 21st century public health challenges. We are excited about the proposal for a new School of Computing, Information, and Data Sciences as it is highly complementary with the strategic areas of focus for our school. These areas include global and border health, health services and learning healthcare systems, climate and public health, health equity, mental health and addiction, and longevity sciences. In addition, our educational core will be enhanced by strong data science support from SCIDS.

The local, state, and global impact of our school of public health will be heightened by the presence of, and partnership with, the School of Computing, Information, and Data Sciences. Recognizing the many intersections between data science and public health, the HWSPH currently partners with HDSI in data science as well as joint faculty recruitment. We look forward to additional interdisciplinary teaching and research, and to the creation of community programs that employ data science techniques in addressing longstanding public health challenges.

We are excited about the potential transformational impact of this new school and offer our strongest support.

Sincerely,

Cheryl Anderson, PhD, MPH, MS
Professor and Dean
Hood Family Endowed Dean’s Chair in Public Health
August 29, 2023

Dear Colleagues:

I write in very strong support of the proposal to create the UC San Diego School of Computing, Information and Data Sciences (SCIDS).

UC San Diego is well-positioned to provide critical leadership and innovation in the rapidly evolving and interconnected fields of data, information, and computing sciences. As detailed in the proposal submitted by the SCIDS task force, “the proposed school is envisioned to be UC San Diego’s next leap forward in addressing the most compelling need of modern times – transforming data into knowledge. Every walk of our day-to-day life, from the continuous myriad measurements of wearable sensors to the vast amounts of temporal data collected across the globe documenting climate change, warrant conversion into actionable knowledge and models. Addressing the data deluge is arguably the greatest intellectual challenge of our time and this will motivate the unprecedented integration of diverse disciplines and development of unforeseen technologies.”

SCIDS will provide the intellectual core where these issues will be addressed, and connect meaningfully with other units, thus enhancing synergistic and interdisciplinary strengths and opportunities. In this context, the School of Arts & Humanities will both benefit from and support SCIDS through initiatives such as those pioneered by the Institute for Practical Ethics (IPE). The IPE engages with research big data, for example, in order to understand the ethical implications involved in the interpretation and dissemination of these data, fostering deliberation amongst ethicists, scientists, and policy makers.

SCIDS will play an important role in training the next generation of leaders in computing, information and data science. These leaders will have the tools to transform data into knowledge, as well as understand the nature of this knowledge within the framework of ethical reflection. In this framework, the national and international standing of UC San Diego will not only grow, but also benefit the common good.

With best regards,

Cristina Della Coletta  
Chancellor’s Associates Chair in Italian Literature  
Dean of Arts and Humanities

Cristina Della Coletta
Chancellor’s Associates Chair in Italian Literature  
Dean of Arts and Humanities
August 27, 2023

Dear Senior Associate Vice Chancellor Continetti:

It is my pleasure to write in support of the proposed establishment of the School of Computing, Information, and Data Sciences. The proposal would create structures that will enhance the educational and research missions of the university in the areas of data science and related disciplines. It has the potential to make our campus a world leader in this growing area. It would also strengthen a number of inter-disciplinary connections – very much in line with the campus’ innovative academic mission. From the point of view of the Division of Undergraduate Education, the school will strengthen undergraduate programs and research in these areas. I do suggest that connections with the undergraduate colleges be explored; the emphasis on experiential learning, including undergraduate research, represents a shared goal between the colleges and the proposal.

Sincerely,

John C. Moore
Dean, Undergraduate Education
Bob Continetti  
Senior Associate Vice Chancellor – Academic Affairs

Shankar Subramaniam  
Distinguished Professor

Dear Bob and Shankar,

Thank you for sending me the proposal for the new School of Computing Information and Data Sciences (SCIDS) at UC San Diego. It was a pleasure to read. It is my view that the establishment of a new School of Computing Information and Data Sciences (SCIDS) at UC San Diego will have a positive impact on graduate students and postdocs across the university.

The most immediate positive impact would be the creation of a substantial school-based infrastructure to house the exciting, and compelling, new degree programs in data science. Such a housing gives students and postdoctoral scholars an important intellectual home within which to engage in the exciting work of data science, and from which both can launch cross-campus collaborations. The school structure also dramatically clarifies the ways in which we, as a university, advertise and promote the presence of graduate program offerings to the external world, which is important because it signals to all that UC San Diego is a global leader in the multifaceted research areas addressed by the broad moniker of data science.

The existence of this school will also bring intellectual energy around all data science issues and allow my team to work closely with an easy-to-identify collection of scholars when it comes to brainstorming about broader campus-wide initiatives. An example would be the creation of data science oriented professional development initiatives that would benefit all graduate students, not just those majoring in data science. Our world is increasingly data dependent, and most intellectual work in any discipline benefits from a deeper understanding of how to work with data. I envision a future in which UC San Diego has data science professional development opportunities for all graduate students, regardless of disciplines; I see the same opportunities for our postdoctoral scholars. A new School of Computing Information and Data Sciences (SCIDS) would facilitate these kinds of forward-thinking conversations at UC San Diego.

In short, a new School of Computing Information and Data Sciences (SCIDS) at UC San Diego is a brilliant idea. The synergies possible are many, and—in sum—the existence of this new school will have great potential to benefit all graduate and professional students, as well as all postdoctoral scholars. I look forward to the possibilities.

Sincerely,

Judy Kim, PhD  
Dean Designate  
Senior Associate Dean, Division of Graduate Education and Postdoctoral Affairs  
University of California San Diego
August 14, 2023

Academic Senate
University of California San Diego Mail
Code 0002
9500 Gilman Drive
La Jolla, CA 92093-0002

RE: Support for the Creation of School of Computing, Information, and Data Sciences (SCIDS)

Dear Members:

This letter expresses our enthusiastic support for the proposal to create a School of Computing, Information, and Data Sciences at UC San Diego.

The Division of Extended Studies (DES) constantly monitors the community's needs specifically to ensure a vibrant workforce that sustains the economy in our State. For many years, we have witnessed a continued increased interest on the part of employers on topics that relate to information technologies, data capture, and analysis. Employers seek professionals with a sophisticated understanding of issues that surround data streams to inform decisions or create insights. Challenges in data management, visualization, research, machine learning techniques, or other artificial intelligence methods to gain insights have revolutionized the most diverse endeavors, from marketing to defense and social services, to urban planning, health, or environmental sciences. Today, data science is an integral and core component of most areas of human endeavor knowledge systems. Thus, they have become crucial for organizations, regardless of the mission.

At the Division of Extended Studies, we have witnessed an increased demand for all data and analytics offerings for over a decade. Our non-matriculated students come from leading organizations in their fields. These are not purely in the STEM industries but also in social benefit organizations, healthcare, government, and particularly individuals in the social sciences keen on exploring the social data collected at different levels by various individual organizations.

Our offerings at DES have provided new or updated skills to thousands of individuals who came seeking some level of credentialing. However, our efforts reach only a certain level of complexity. There is a substantial, unmet need to offer programs beyond skill-building. Curricula that teach learners to develop data-driven solutions by collating data into information they can synthesize into knowledge to create truly impactful programs to address the most varied sets of issues. Indeed, few areas of activity have not been rethought or impacted by new information technologies and data analytics.
In this way, UC San Diego can provide a complete range of educational opportunities, from cutting-edge technologies to the primary workers needed to support a data-driven, information-rich environment.

Furthermore, a truly collaborative, multidisciplinary environment, such as the School of Computing, Information, and Data Sciences is proposing, can open new avenues of research into innovative and broadly applicable methodologies. We believe that establishing this new School will provide a highly valued resource that will have a transformational impact on our global community.

Sincerely,

Hugo O. Villar, PhD, MBA
Dean
UC San Diego Division of Extended Studies
August 27, 2023

Dear Executive Vice Chancellor Simmons,

I have reviewed the proposal for the creation of a new School of Computing, Information and Data Sciences (SCIDS), and I am pleased to provide my support. My department is delighted to see that the proposal recognizes that ECE (Electrical and Computer Engineering) has played an instrumental role in the creation of HDSI that forms the foundation of SCIDS, that the formation of similar new schools at our peer institutions have involved formal connections with their ECE/EECS departments, and that establishing a formal connection between SCIDS and ECE from inception is important to ensure that externally the new school starts off aligned with national trends. I am also pleased to see that we already have an example of the type of benefits that the formal connection will bring in the establishment of the recent $20M AI Institute TILOS where the ECE faculty represents about one-third of the TILOS faculty and serves in key leadership roles.

As indicated in the proposal, the details of the formal connection between ECE and SCIDS are to be memorialized in an MOU. Note that other universities in similar situations all have clearly developed MOUs. While there has not been any progress made on this MOU since the initial proposal, ECE looks forward to actively engaging in this next phase of discussion to develop a partnership that will be mutually beneficial to all parties involved and maximize the impact that UC San Diego will make on the world stage. I look forward to the successful formation of the new school and our partnership with SCIDS in coordination with the Jacobs School of Engineering.

Sincerely,

Bill Lin
Professor and Chair
Department of Electrical and Computer Engineering
University of California San Diego
DATE: August 28, 2023

TO: Elizabeth Simmons, Executive Vice-Chancellor

FROM: Sorin Lerner, Professor and Chair of Computer Science and Engineering RE: School of Computing, Information and Data Sciences

I am pleased to provide my support for the establishment of a School of Computing, Information and Data Sciences (SCIDS) with a formal connection to the department of Computer Science and Engineering (CSE), reflecting CSE’s leadership in defining computing at UC San Diego over the last 40 years, its position at the core of computing education and research at the university, and the role it will play in making SCIDS an international leader in research and education.

Computing, information and data have fundamentally transformed our modern society, affecting every aspect of our daily lives, either directly or indirectly. Communication, health, scientific discovery, entertainment, there is not a single part of the modern world that has not been touched by computing and data. Fully unlocking the potential of computers, software and the data they process, in a safe and impactful way, with all its societal implications, is one of the central intellectual endeavors of our time. The CSE department has seen this intellectual endeavor as central to its mission for many years now. We see a new School of Computing, Information and Data Sciences as a next step toward the broader fulfillment of this intellectual endeavor. The interdisciplinary nature of the school will lead to strengthened collaborations across the campus. CSE looks forward to engaging, contributing and taking part in the creation of this new school.

CSE has supported the campus efforts toward Data Science and the mission of the Halıcıoğlu Data Science Institute (HDSI) from the very beginning:

- CSE was the administrative home of the Data Science undergraduate program for several years before HDSI was created as an academic unit.
- CSE hired two Teaching Professors to teach in the Data Science undergraduate program before HDSI was able to hire its own faculty (these Teaching Professors were then transferred to HDSI when it became an academic unit capable of holding faculty lines)
- CSE has given all HDSI faculty affiliate status in CSE so that they can admit PhD students from the CSE PhD pool.
- CSE faculty have led a variety of faculty searches in HDSI, and are leading several proposals that are put together in HDSI.
CSE and HDSI have a joint educational program, an online Master of Data Science
CSE and HDSI have five joint faculty appointments.

Many top universities are re-imagining a future that brings computing, data and applications into focus with a new school, division, or college. This includes Berkeley, MIT, Carnegie Mellon University, Cornell, University of Washington, and University of Wisconsin. As the proposal states, at all universities that have a school/division/college with the word Computing in the name, Computer Science and Engineering is in the School. In some cases, CSE is housed solely in the School of Computing, for example at Carnegie Mellon and Georgia Tech. In other cases CSE is part of both the school/division/college of computing and other structures like a school/division/college of Engineering. This is the case at Berkeley, MIT, and Cornell.

For SCIDS to be competitive at the national and international level, the SCIDS task force recommended that a formal connection be established between CSE and SCIDS at the time of inception. Indeed, the CSE faculty agree with this, and cannot envision SCIDS without a deep and substantial formal connection with CSE.

Thus, building on the existing strong relationship between CSE, JSOE, HDSI and SDSC, the CSE department is looking forward to engaging in the process of defining this formal connection. There are varying views in the CSE department about what this formal connection should look like, but there is broad agreement, both from our faculty and the SCIDS taskforce, that this connection needs to be there. In defining the MOUs for this formal connection, it will be important to look at recent examples of joint department membership of CSE in similarly scoped new schools/divisions/colleges, for example those at Berkeley, MIT and Cornell.

The SCIDS taskforce explicitly states in the proposal that an MOU needs to be developed to formalize the relationship between CSE and SCIDS. Other universities with similar schools have such MOUs. However, there has been little-to-no progress on this front since the original proposal was submitted. We look forward to a more vigorous discussion to finalize the nature of the formal connection between CSE and SCIDS.

In summary, I am pleased to support the establishment of SCIDS with a formal connection to CSE. The CSE department looks forward to continued engagement to define this formal connection. We are excited to establish a deep and strong partnership with SCIDS in coordination with the Jacobs School of Engineering.

Sincerely,

Sorin Lerner
Professor and Chair, Department of Computer Science and Engineering Jacobs School of Engineering, University of California, San Diego
Robert E. Continetti
Sr. Associate Vice Chancellor–Academic Affairs
University of California, San Diego

Subject: Proposal to Establish the School of Computing, Information and Data Science (SCIDS)

Dear Sr. AVC Continetti,

The Department of Mathematics at UCSD would like to express our strong support for the establishment of the School of Computing, Information and Data Science (SCIDS) with a productive and well-structured relationship with the Department of Mathematics. This view reflects our department’s longstanding dedication to fostering strong Statistics and Applied Mathematics groups since its inception in 1964, its position as a cornerstone of statistical and mathematical education and research within the university, and the role it will play forming foundational bedrocks for the growing field of Data Science and propelling SCIDS towards global eminence in both research and education. We believe that the creation of this institution will mark a significant advancement in the realm of data-intensive sciences and will further solidify UCSD’s role as a global leader in this domain.

The constant flow of ideas between various branches of mathematics and statistics with the data-intensive sciences has been instrumental in advancing all fields involved. In recent years, the transformation brought about by computing, information, and data has deeply shaped our contemporary society, leaving an enduring imprint on every aspect of our everyday existence. Creating foundational mathematical and statistical theories for modern data science algorithms is a crucial requirement. Achieving insight into these algorithms, implementation intricacies, and the subsequent impact on decision making, is made possible by skillfully leveraging statistical, probabilistic, and optimization tools. Modern computing, operating at unprecedented speeds, intricately depends on numerical analysis and optimization principles for efficient execution. Rigorous data analysis, through statistical algorithms, forms the bedrock for all data-derived decisions, while ensuring their correctness relies on a robust comprehension of statistical theory. Such rigorous groundwork is necessary not only to unlock their complete potential but also to effectively mitigate risks, especially as our society adopts this technology on a larger scale. This has been a core tenant of the Department of Mathematics for many years now.

We perceive the emergence of a new School of Computing, Information, and Data Sciences as the next progressive stride towards the wider realization of this intellectual endeavor. The inherently interdisciplinary nature of the school promises to foster and fortify collaborative initiatives across the entirety of the campus. The Department of Mathematics eagerly anticipates its involvement, contribution, and active engagement in the establishment of this innovative academic venture.

August 29, 2023
Mathematics has been a steadfast supporter of the university’s endeavors in the realm of Data Science and the overarching mission of the Halıcıoğlu Data Science Institute (HDSI) from its inception:

- Mathematics faculty played a pivotal role in shaping the Data Science undergraduate minor and major programs well before HDSI’s establishment as an academic unit. Specifically, a dedicated mathematics course, Math 189, was designed for this purpose and is a core requirement of the DSC major. Similarly, Math 173AB was created as one of the first DSC electives.

- A number of Mathematics faculty members hold joint appointments with HDSI, contributing significantly to its initial establishment and the subsequent development of its faculty cohort.

- Mathematics faculty have taken the lead in various faculty searches within HDSI, underscoring the collaborative partnership between the two entities.

- Mathematics has admitted and housed a number of graduate students that are co-advised by HDSI faculty.

- The synergy between Mathematics and HDSI has also led to the formulation of impactful academic offerings, underscoring the university’s commitment to cutting-edge education and research. This collaboration has further extended to the formulation of new undergraduate and graduate courses that serve both units.

We believe that the creation of SCIDS is vital to provide a hub for HDSI and the San Diego Supercomputer Center (SDSC). Its establishment is also timely, especially in light of similar institutions being formed by esteemed institutions such as UC Berkeley, MIT, and many others. It is essential to remain at the forefront of such advancements. Notably, many of these initiatives underscore the integration of Statistics within the realm of Data Science. For instance, at Berkeley, the initiative encapsulates Statistics, while at universities like Carnegie Mellon and Cornell, Data Science initiatives are directly accommodated within the Statistics departments, prompting the transformation of department names to Statistics and Data Science departments. For SCIDS to achieve competitiveness at the national and international levels, Mathematics faculty envision SCIDS with a profound, substantial, and clearly understood relationship with the Department of Mathematics, considering it an indispensable component of SCIDS’ foundation.

In conclusion, the Department of Mathematics eagerly looks forward to the formation of the new school and the opportunities it presents. We believe SCIDS will further enrich the academic and research ecosystem at UCSD and are excited about the collaborative possibilities it will bring.

Sincerely,

Michael Holst, Chair

Department of Mathematics
Chancellor’s Associates Endowed Chair
August 29, 2023

To: Robert Continetti, SVCAA Academic Affairs
   Shankar Subramaniam, Professor
   Computer Science and Engineering

From: Douglas Nitz, Professor and Chair
      Department of Cognitive Science

RE: Proposal for a new School of Computing, Information, and Data Sciences

On behalf of the Cognitive Science Department, I write to express support for the new School of Computing, Information, and Data Sciences. The Department has had representation on the campus-wide committee working to outline the structure of the new School and I am pleased to see that many of the ideas put forth by members of the Cognitive Science Department have been adopted in the first complete draft of the proposal document. Having met and discussed those aspects of the proposal relevant to Cognitive Science, the Department voted, nearly unanimously, to support the new School’s development and to coordinate our efforts with the new School to the mutual benefit of both. Specifically, the Department’s support is contingent upon incorporation into the School plan of a “dotted line” relationship between Cognitive Science and SCIDS that is equivalent to that formulated for the Departments of Computer Science and Engineering and Electrical and Computer Engineering. With this more formal relationship in place, we are excited to support the new School and to coordinate activities related to curricula, research, governance, outreach, and fund-raising. This more formal relationship is seen by the Department as reflecting extensive current and past efforts in helping to develop the Data Science program at UCSD, as reflecting the extensive overlap in research interests and expertise between Cognitive Science and the new School, and as reflecting the need for consistent communication and transparency concerning issues of mutual interest.

The Department of Cognitive Science is home to faculty and students conducting research under a wide range of scientific disciplines including computation, data science, machine learning, artificial intelligence, education, human animal cognition, psychology, ethnography, neuroscience, genetics, design, human-computer interaction, and linguistics. In all of these areas, the application of data science and large-scale computational methodologies is key to the development of modern research programs. Accordingly, many of the faculty currently composing Cognitive Science have been leaders in their fields with respect to the design and execution of large-scale, data and computation intensive research initiatives on an international scale. Not the least of these include work in organization of communities-wide urban planning, computational and statistical approaches to genomic and imaging data, the adaptation of data science practice to neuroscience, the development of widely-distributed instructional practices in data science, the development of media to foster skill-building in programming techniques (e.g., Python Tutor), and machine learning approaches to computer vision and language processing.
Specific, existing contributions to the development of data science at UCSD include the contributions of Jeff Elman as a co-leader of the Halıcıoğlu Data Science Institute’s (HDSI) inception. Equally impactful have been the contributions of several faculty acting in executive positions with HDSI, including Shannon Ellis, Virginia de Sa, and Bradley Voytek, who substantively contributed to the design, development, and execution of HDSI’s diversity equity and inclusion, industry liaison, and internship program initiatives as well as the structuring and delivery of curricula. Finally, Cognitive Science is home to multiple lower and upper division courses in data science and machine learning that are open to students of data science and important components to its curriculum.

Thus, Cognitive Science has had, and will continue to have in the future, a close relationship to the work of SCIDS. Cognitive Science includes much more than its contributions to data science, machine learning, computation, human-computer interaction, and statistical approaches. In turn, information and data science research and SCIDS will span multiple areas beyond those covered by Cognitive Science, and so it is important to recognize the significant overlap between the Department of Cognitive Science and SCIDS. The two units will unequivocally benefit mutually, and this will enhance the stature and standing of UC San Diego as a leading institution in data science research and training and their applications to the highly diverse set of data types examined and processed in the practice of Cognitive Science. Given the overlap and presence of several joint faculty between Cognitive Science and HDSI, it will be beneficial for Cognitive Science to have a formal affiliation with SCIDS, even while retaining its position with the Division of Social Sciences. Given the strong connections between HDSI, CSE, ECE, Cognitive Science and the data science and applied data science that will be the focus of SCIDS, a more formal connection between the Cognitive Science, CSE and ECE departments and SCIDS is proposed at the formation of the school.

Finally, we congratulate the leaders of the new School’s development plan on the building of an exciting new enterprise at UCSD. The Cognitive Science Department is excited to see UCSD build upon a solid foundation in this area of research and instruction and will continue its efforts to help make this initiative take final shape in the months and years to come.

Sincerely,

Doug Nitz
Douglas A. Nitz, PhD
Professor & Chair, Dept. of Cognitive Science
University of California, San Diego
August 15, 2023

RE: SCIDS Letter of Support

Dear Divisional Senate:

The comprehensive proposal for the establishment of the new School of Computing Information and Data Sciences (SCIDS) is very persuasive. Kudos to the team that put it together. The Qualcomm Institute looks forward to developing new collaborations with SCIDS above and beyond the ones already underway. As a trans-disciplinary entity, QI serves as a unique place to explore and develop new ideas. We are confident that SCIDS, like the other schools at UC San Diego, will engage with and enrich the larger campus community. We look forward to its speedy establishment.

Sincerely,

Ramesh Rao, PhD
Professor, Electrical and Computer Engineering
Director, Qualcomm Institute
Interim Director, California Institute for Telecommunications and Information Technology Qualcomm Endowed Chair in Telecommunications and Information Technology
August 18, 2023

Elizabeth Simmons
Executive Vice Chancellor
UC San Diego

Dear Elizabeth,

I am writing in my role as the University Librarian to express the Library’s support for the proposed School of Computing, Information and Data Sciences.

The Library is committed to supporting all educational and research programs at UC San Diego and I have been excited to see the development of data science and trans-disciplinary areas of research connected to the Halıcıoğlu Data Science Institute. I am especially excited about the vision of the new school - to take the “next leap forward in addressing the most compelling need of modern times - transforming data into knowledge.”

As this school takes shape the Library will work to support the school’s emerging programs, research areas and learning support needs. This will require some investment and adjustments in focus as we increase our capacity to support students and faculty engaged in data science but I believe that this shift is well aligned with the overall direction of the Library.

I expect that as we support the work of this new school the Library itself will benefit by being able to draw on the expertise of the students and faculty in exploring pressing Information Science questions. I’m excited to think that we will have new collaborators interested in pursuing the pressing questions around the democratization of information, equitable access to and critical assessment of knowledge and the ethical and societal impact of big data research.

The library already has a number of experts on staff who closely collaborate with the existing partners who will come together to form the proposed school and I am excited to extend these collaborations and bring more expertise to bear from the Library. I believe that we could contribute to and benefit from the schools’ investment in experiential education, in working on data science at classroom and research scales and in developing professional education and training programs.

Sincerely,

Erik Mitchell
The Audrey Geisel University Librarian
UC San Diego
August 29, 2023

Chancellor Pradeep K. Khosla
Office of the Chancellor
UC San Diego
9500 Gilman Drive
La Jolla, CA 92093

Dear Chancellor Khosla,

We write to you in our capacity as members of the UC San Diego Innovation and Entrepreneurship Council (IEC) to reaffirm our unequivocal endorsement for the launch of the UC San Diego School of Computing, Information and Data Sciences (referred to as SCIDS). The IEC, composed of entrepreneurs, industry partners and alumni, is an advisory group to the Chancellor, and is deeply committed to establishing UC San Diego as a premier institution for scientific and societal impact through innovation.

UC San Diego has a deep history in computing and computational sciences. With the global Big Data explosion of the past decade, and given the unprecedented acceleration in users and use cases within this past year, we have entered the next frontier for innovation, competition, and productivity. The advent of this new frontier justifies the urgency of the SCIDS initiative. As an enduring academic unit, SCIDS will be uniquely positioned to effectively leverage the existing intellectual and operational resources of the Halıcıoğlu Data Science Institute (HDSI) and the San Diego Supercomputer Center (SDSC) to serve the rapidly increasing need to train the next generation workforce in data sciences and computation. This transdisciplinary school will also serve as a much-needed hub of research, teaching, and translational practice in broad areas of data science and its impact on society.

The view of the IEC, shared by campus academic unit leaders, is that the SCIDS will expand upon UC San Diego’s Vision for Innovation to drive social and economic prosperity in the following ways:

- Attract and engage a broad community of researchers on campus and externally.
- Develop and train highly qualified students for the data workforce and create a unique niche for interdisciplinary training across multiple disciplines and data sciences. SCIDS will help students accomplish experiential learning with data and computing, while realizing the synergies between education, training and ground-breaking research through collaborations with faculty and researchers across campus.
- Advance exciting and novel opportunities for fundamental and applied research in the interdisciplinary areas of data science and computing.
- Enable broad practical applications of research topics spearheaded by renowned domain science departments and schools across UC San Diego.

This is truly a pivotal moment in the evolution of the role computing, information and data science play in society - and our campus. We respectfully encourage you to approve UC San Diego’s proposal for the
School of Computing, Information and Data Sciences, which is an unprecedented opportunity to make a meaningful difference for our students, faculty and the diverse communities we serve for generations to come.

Sincerely,

Pelin Thorogood, Chair
Cofounder and Executive
Chairwoman, Radicle Science
Treasurer, UC San Diego Foundation

Leo Spiegel ’83
Managing Partner, Spiegel
Capital Management Chair, UC
San Diego Foundation

Jeff Belk ’83
CEO, Ocreati Advisors, LLC
Past President, UC San Diego Alumni Board of Directors

Taner Halıcıoğlu ’96
Founder, Halıcıoğlu
Data Science Institute
Trustee, UC San Diego
Foundation

Sabrina Johnson
President and CEO, Daré Bioscience, Inc

Drew Senyei
Chairman, CEO and
Founder, NoniGIEx
Trustee, UC San Diego
Foundation

Deborah Bronston-Culp ’80
Managing Partner,
Samothrace Partners
Trustee, UC San Diego
Foundation

Steve Hart, MA ’80
Executive Vice
President and CTO,
Viasat Chair Emeritus,
UC San Diego
Foundation
Matthew Newsome ’91  
Vice President and General Manager, Cubic  
Transportation Systems Trustee, UC San Diego Foundation

Jeff Silberman  
President and CEO, Carlton  
Management Immediate Past Chair, UC San Diego Foundation
September 1, 2023

Dr. Elizabeth H. Simmons

Executive Vice Chancellor for Academic Affairs

University of California, San Diego
evc@ucsd.edu

Dear Executive Vice Chancellor Simmons:

On behalf of the University of California San Diego, Office of the Vice Chancellor for Equity, Diversity, and Inclusion, I wish to express our full support for the proposed School of Computing, Information, and Data Sciences (SCIDS).

As a public institution, UC San Diego’s commitment to diversity is demonstrated in and executed through the institution’s Strategic Plan for Inclusive Excellence and Accountability Process. The UC San Diego Strategic Plan for Inclusive Excellence, deeply connected to the UC San Diego Strategic Plan, is a roadmap to fulfill our vision and collective commitment to academic and institutional excellence through strategic diversity, equity, and inclusion efforts. Led by my office (Office of the Vice Chancellor for Equity, Diversity, and Inclusion), the plan—involving input solicited from the entire campus community—is structured around three core tenets:

- **Access and Success:** Attract, retain, and support a diverse faculty, staff, and student body with the goal of reflecting California demographics and achieving institutional excellence.
- **Climate:** Create and foster a positive and welcoming climate where we value, include, and support all.
- **Accountability:** Ensure institutional accountability through processes and structures that strengthen our clear and continuous commitment to equity, diversity, and inclusion.

The aim of SCIDS aligns with our institution’s Strategic Plan for Inclusive Excellence and advances our collective efforts to advance the equity, diversity, and inclusion mission of our university. This includes efforts described in the proposal specifically structured around the three core tenets cited above: Access and Success, Climate, and Accountability.
This collaborative effort addresses the advancement of equity, diversity, and inclusion in all of its operations. The SCIDS proposal describes specific plans and support mechanisms to bring justice, equity, diversity, and inclusion gains to the research, mentorship, and teaching activities of faculty. Staff support for efforts include the appointment and empowerment of a diversity and outreach coordinator, and the establishment of funding mechanisms (including within faculty startup packages). Outreach to K-12 schools and already established relationships with school districts promises to broaden pathways to the SCIDS for a broad swath of Californians. This is a small sample of the intentional efforts built into the design of SCIDS that holds great promise for advancing justice, equity, diversity, and inclusion for our students, faculty, staff, and the broader community that the school will enrich.

Utilizing a collective impact framework, UC San Diego will leverage institutional resources and initiatives to support the success of SCIDS. The proposal specifically cites coordination with our office’s Strategic Plan for Inclusive Excellence and Strategic Accountability Processes, demonstrating that the leadership of SCIDS are committed to our structured processes for data-driven change, and holding all segments of academic activity accountable to the DEI goals of the university.

The UC San Diego Office of the Vice Chancellor for Equity, Diversity, and Inclusion enthusiastically supports the funding of this proposal and looks forward to our ongoing work and collaboration with SCIDS.

Sincerely,

Becky R. Petitt, Ph.D.
Vice Chancellor for Equity, Diversity, and Inclusion
SCHOOL OF COMPUTING, INFORMATION, AND DATA SCIENCES: A PROPOSAL

UC San Diego
September 2023
# Proposal for a School of Computing, Information and Data Sciences

## EXECUTIVE SUMMARY

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1.2. Mission of the Proposed School of Computing, Information and Data Sciences

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2.3.2. Department of Electrical and Computer Engineering (ECE)

2.3.3. Department of Cognitive Science

2.3.4. Department of Mathematics

2.3.5. California Institute for Telecommunication and Information Technology (CALIT2) and the Qualcomm Institute (QI)

2.3.6. The UC San Diego Geisel Library

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2.4.10. School of Physical Sciences

2.4.11. School of Social Sciences

2.4.12. Division of Extended Studies

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Executive Summary

UC San Diego proposes the creation of a School of Computing, Information and Data Sciences (SCIDS) to provide leadership in research, learning, and technological developments in the emerging areas of data, information, and computing sciences. The creation of the new school is consistent with the founding paradigm for UC San Diego as a hub of interdisciplinary inquiry and innovation. Each component essential for the success of this school and the broader vision of computing, information, and data science are already present at UC San Diego, such that founding this new school is a natural outcome given the evolution of human inquiry.

In early 2021, UC San Diego constituted a Working Group to explore the creation of a new School of Computing, Information and Data Sciences. In spring of 2021, based on extensive interviews the group conducted with the Deans, Vice-Chancellors, and Unit Heads, it was concluded that there was unanimous and enthusiastic support for the creation of SCIDS. The EVC then constituted a Task Force to develop a Proposal for SCIDS. The membership of the Task Force and the Charge to the group are presented in Appendix 1. The Task Force met regularly over Fall and early Winter and has developed this comprehensive proposal for establishing SCIDS.

The proposed school is envisioned to be UC San Diego’s next leap forward in addressing the most compelling need of modern times – transforming data into knowledge. Every walk of our day-to-day life, from the continuous myriad measurements of wearable sensors to the vast amounts of temporal data collected across the globe documenting climate change, warrant conversion into actionable knowledge and models. Addressing the data deluge is arguably the greatest intellectual challenge of our time and this will motivate the unprecedented integration of diverse disciplines and development of unforeseen technologies. Developing a trained talent pool to address these issues is an exciting challenge for academic institutions and UC San Diego is uniquely equipped to play a key role in addressing this task. Success in this task will play a critical role in the development of our region, our state, and our nation. This proposal outlines the tremendous depth, strengths, and synergies that UC San Diego possesses and provides the framework that will help create a school that will be peerless.

The founding units of SCIDS will be the Halicioğlu Data Science Institute (HDSI) and the San Diego Supercomputer Center (SDSC), supported by joint interactions and affiliations with existing Schools and academic departments, including Computer Science and Engineering (CSE), Electrical and Computer Engineering (ECE), Cognitive Science, and Mathematics. The academic core of the new school will be HDSI. Anticipating the growth in data science, UC San Diego created HDSI with generous philanthropic support. In less than five years, HDSI has established a strong undergraduate program and now has approved graduate degree programs. SDSC will serve as the operational and translational science core, building on its history as one of the four national Supercomputer Centers established by the National Science Foundation nearly four decades ago, leading the development of high-performance computing and more recently big data and cloud computing. In addition, SCIDS will have strong academic interactions involving all UC San Diego departments and schools supporting the goal of transforming data into knowledge through development of data and information science, advancing innovative computing paradigms and developing entirely new contextual learning algorithms and methodologies that can transform society. The educational programs that
will be designed will train an entirely new generation of qualified professionals who will play a key role in this endeavor.

To be competitive on the national landscape with recently created schools of similar scope (for example the recent Berkeley School of Computing, Data and Society or MIT’s new College of Computing), there will be opportunities for academic units to create formal connections with SCIDS. At inception, a formal connection will be established between SCIDS and CSE and between SCIDS and ECE. The framework for this connection will be described in this proposal.

Establishment of the new school is motivated by powerful intellectual and educational goals and will provide an approach to synergize the stand-alone academic and research units of HDSI and SDSC in an auspicious manner in the highly competitive world of computing, information, and data sciences. As stand-alone units, both units are currently overseen by the Senior Associate Vice Chancellor serving in a 'Dean-designee' role. The new school will benefit from the appointment of dedicated academic leadership in the form of a new Dean reporting to the Executive Vice Chancellor. This dedicated oversight will position the school to compete successfully in this emerging area. Among our competing institutions, UC Berkeley has a full-time dedicated vice provost and dean for the Division of Computing, Data Science and Society, similar to dedicated deans overseeing such units at Columbia, NYU, MIT, Michigan and other schools. The formation of the school will also regularize how the various bodies of the Academic Senate engage in the review and oversight of the academic programs and student experience. Beyond administrative streamlining, the proposed school will also open multiple possibilities for new academic programs and research initiatives that the faculty and researchers in the school will be able to draw closely together. This will build on recent successes such as the $20M AI Institute TILOS that resulted because of the type of interactions the school will promote. Going forward, we anticipate the combined units to offer training programs for the working professional as well as executive training programs in the areas of big data and artificial intelligence.

The proposal lays the framework for the creation of SCIDS and provides the intellectual, administrative, and capital basis for building SCIDS. The synergies with all campus units and the potential local and national impact are presented in the proposal. The proposal also outlines the impact SCIDS will have in training next generation leaders in computing, information, and data science, and enhancing the standing of UC San Diego nationally and internationally. Letters of support from all the academic deans and relevant departments, and the UC San Diego Innovation and Entrepreneurship Council.

This proposal was reviewed by the Divisional Senate Committees and presented to the Representative Assembly as a pre-proposal under the framework of the Compendium. The proposal was approved by the Divisional Senate for submission to the Office of the President for further consideration, and with minor additions in response to the input from the Divisional Senate Committees and the discussion at the Representative Assembly.

The proposal was submitted to UC Office of President for consideration as a pre-Proposal. We were gratified to find exceptionally strong support from both UCOP and the systemwide Senate. Systemwide reviewers recommended submission of the Full Proposal with a request to clarify some aspects of the proposal. This full proposal addresses these matters as follows:
I. Enrollment projections to better define the future growth of the program are now included in this full proposal. The growth is consistent with the California demand for student enrollments in state universities.

II. We comment on the Senate membership of the SCIDS faculty and clarify that HDSI is already an academic unit with regular FTE faculty and as with any other academic entity on campus, new faculty in Senate titles will be members of the Academic Senate. Similar rules will apply for joint faculty in SCIDS and other Campus Units.

III. The organization structure, owing to its unique nature, warranted more details and we now provide them. In addition to departments/units that are fully part of SCIDS, we have dotted line associations of departments on campus. The nature of this association in the Full Proposal is described in further detail and expands on the existing strong interactions between HDSI and other parts of the campus. Further, we point out the unique nature of SCIDS owing to its truly cross-disciplinary presence through curriculum, joint faculty and academic programs, multidisciplinary research programs, and ability for students across majors to engage in SCIDS curriculum and programs.

IV. We provide more clarity on the organizational structure through the description of the functioning modalities of the administration.

V. The benefits of the integration of SCIDS with the research and educational mission of other units on campus are now expanded. While we had described the association of other units on campus, we now provide additional description of potential synergies.

VI. We discuss the significant impact on Justice, Equity, Diversity and Inclusion (JEDI) that the creation of SCIDS will have. We provide a comprehensive plan that includes and builds upon several ongoing and planned elements of the Strategic Accountability Plans prepared by HDSI and SDSC. We also outline our approach and examine the impact of SDSC and SCIDS on the Cal State University system and California Community Colleges. We outline plans for outreach and provide on-ramp access to our degree programs for a diverse population through innovative means.

VII. In terms of educational impact, we are already witnessing the large impact HDSI and SDSC have on non-STEM major education, with the societal demand for computer and data literacy. We elaborate upon these outreach activities, sustainability plans and how SCIDS will enhance these activities substantially.

VIII. Finally, in response to questions from Senate reviewers, we provide more details on the revenue sources that will sustain SCIDS. While the creation of new Schools in the context of a zero-sum revenue model could pose a serious concern, the context in which SCIDS is being proposed is one of present and future growth. First, given the growth mandate for student enrollment at the undergraduate and Master’s levels, educational revenue is consistently increasing. Second, the substantial investments in research, development and industry in computing and data sciences is beginning to result in significant investments in education for the training of the next generation workforce. UC San Diego is uniquely placed to address this demand and benefit from attendant revenue. We provide in this full proposal a very detailed accounting of the revenue model. We also point out how the establishment of the new School, in contrast to taking away from other programs on campus, will actually benefit them in terms of research, student enrollment and engagement in our region. The new School will attract and enable a new constituency of companies or needs within companies of being able to learn and benefit from the talent and products in the areas of Data Sciences including AI, automation and data analysis; needs that cannot be served by any single unit -- including HDSI or SDSC alone -- and necessarily require engagement of faculty and researchers from different domains. Thus, establishment of School will systematically expand the scope of industry and civil organizations who interact with
the university and bring its benefits, including sponsored research projects, to various units on the campus, thus adding to overall volume of research as well as training of our students.

1. INTRODUCTION

1.1 Rationale and Vision

In 2011, the McKinsey Global Institute report stated\(^1\) that Big Data is the next frontier for innovation, competition, and productivity. They calculated the annual US value of big data to be over a trillion dollars and the projected demand for talent in big data to grow exponentially with a talent gap of \(\sim 60\%\) of the demand. In summer 2012 the National Academies convened a Committee on the Analysis of Massive Data and its report\(^2\) served as a blueprint for national change. In 2012, the Obama administration launched the Big Data Research and Development Initiative\(^3\) to “develop Big Data technologies, demonstrate applications of Big Data, and train the next generation of data scientists,” and in 2015 launched the National Strategic Computing Initiative\(^4\) to “maximize the benefits of HPC for economic competitiveness and scientific discovery”. Similarly, the AI Initiative\(^5\) was launched in 2019 motivated by the promise of AI “to drive growth of the United States economy, enhance our economic and national security, and improve our quality of life.” Responding to the growing need for talent and workforce in data analytics, several Universities have responded by creating academic units ranging from departments to schools to train students with expertise in data analytics. Top ranked Data Analytics/Science programs according to US News and World Report rankings 2022 are UC Berkeley, CMU, MIT, U Washington, Cornell, Georgia Tech, Columbia University, University of Illinois, University of Michigan, Caltech, and UC San Diego ranked equally with UCLA. A significant number of the top ten Schools listed above have either institutes, divisions or schools associated with data science. Some institutions, like Michigan (MIDAS – Michigan Institute for Data Science), have faculty from across campus units and offer several educational programs. Berkeley, top ranked in Data Sciences, launched the Division of Computing, Data Science and Society (DCDSS) through a major donation from the Gordon and Betty Moore Foundation and the Alfred P. Sloan Foundation, drawing together faculty from throughout the campus. The University of Virginia has launched a new School of Data Science and the leadership has provided a perspective on launching a new school.\(^6\) MIT launched the Institute for Data, Systems and Society (IDSS), with a mission to advance education and research in state-of-the-art analytical methods in information and decision systems, statistics and data science, and the social sciences, and to apply these methods to address complex societal challenges in a diverse set of areas such as finance, energy systems, urbanization, social networks, and health. Institutions like Cornell, Columbia, NYU, and several others have initiated Data Science

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2. [https://www.nap.edu/read/18374/chapter/1](https://www.nap.edu/read/18374/chapter/1)
3. [https://obamawhitehouse.archives.gov/blog/2012/03/29/big-data-big-deal](https://obamawhitehouse.archives.gov/blog/2012/03/29/big-data-big-deal)
units on their campus. The number of faculty in these new units ranges from 20 to a few hundred and most offer undergraduate major/minor, Master’s and doctoral degrees in data sciences and allied computing fields.

UC San Diego has a deep and long history in computing and computational sciences. The San Diego Supercomputer Center was one of four major institutions the National Science Foundation (NSF) supported back in the 1980’s that revolutionized academic scientific computing and large-scale simulations and data processing for the national user community in the United States. In fact, the emergence of computing and data sciences have their origins in the funding the NSF invested in these institutions. The Telnet (forerunner of the modern internet), the world wide web and high-performance computing are a direct product of these investments. Throughout its more than 35-year history, SDSC has excelled in transitioning ideas and concepts invented in both industry and academia into practical research and education cyberinfrastructure serving research and education communities across all disciplines. In the academic arena, the engineering departments of Computer Science and Engineering (CSE) and Electrical and Computer Engineering (ECE) have played a major role over several decades in the areas of Artificial Intelligence and Information Theory. ECE faculty led the formation of the California Institute for Telecommunications and Information Technology (CalIT2), a state-funded entity in partnership with UC Irvine. Information Theory (IT) became one of the foundational pillars of this Institute. CSE played a seminal role in the creation of Data Science academic programs at UC San Diego. Owing to generous funding from CSE alumnus Taner Halicioğlu, UC San Diego launched the Halicioğlu Data Science Institute (HDSI), which has had a meteoric growth over the five years of its existence. The formation of HDSI was spearheaded by faculty from several departments including CSE, Mathematics, Cognitive Science and ECE. CSE was the original home for the interdisciplinary Data Science Undergraduate Program, launched in 2017. The program has now moved to HDSI, the first undergraduate students have graduated and the demand for the major is growing dramatically. The recruitment of high-quality faculty across diverse foundations and applications of data sciences in HDSI has been exceptional. The rapidly increasing need for trained data scientists with expertise in computing, the presence here of SDSC, and the launch of HDSI with its strong academic programs, offer an unprecedented opportunity to create a “whole is greater than the sum of its parts” integrated entity that combines all these elements. The realization of the potential synergies between education, training, and research, and the potential for revolutionary applications can be best accomplished through the creation of a School of Computing, Information and Data Sciences (SCIDS) as described in this proposal.

HDSI and SDSC each have a unique structure and potential, and neither would realize their full potential by incorporation into one of our existing schools. HDSI is unique in being the only stand-alone academic unit on our campus and one of the fastest growing. With over 1000 students and increasing enrollment demands, the concomitant rise in number of courses and a growing number of faculty, and a rapidly expanding research and grant portfolio, it is poised for campus-wide impact. Given the interdisciplinary nature of HDSI and its burgeoning cross-interactions, none of our disciplinary schools would be an appropriate home for HDSI. Likewise, SDSC is an Organized Research Unit (ORU) that functions very distinctly from other ORUs on campus. SDSC has both a state and national mandate deriving from its origin as an NSF supercomputing center in addition to playing a role as a strong computational resource for the campus. SDSC increasingly not only supports campus computing and computational sciences, but also provides an intellectual focal point for interdisciplinary applications and collaborations. Given its
cross-interactions with every school on campus, no existing school would be an appropriate home for SDSC.

However, the intellectual power of HDSI and SDSC can be fully realized by uniting their complementary and related strengths to form a new school designed with a clear mission and a flexible, innovative administrative structure supporting interdisciplinary engagement across the campus. This would enable them to lead and excel in education, research, applications, and community impact by creating a shared vision for the future of computing, data, and information sciences throughout UC San Diego. The formation of a new school comes at an optimal time for both units, given HDSI's recent inauguration and explosive growth and SDSC's renewed research portfolio and newly deepened ties throughout the university; both need a pathway to a sustainable structural equilibrium that will meet the needs of faculty, staff, and students while supporting further innovation. As phrased by UC San Diego Academic Senate members, "joining these units together under the umbrella of a school will strengthen the University’s research and educational initiatives in these areas and will allow for regular Academic Senate review." Such considerations were the leitmotif for the proposal for a new School.

1.2. Mission of the Proposed School of Computing, Information, and Data Sciences

The broad mission of the proposed School will include student training and experience, research excellence, and development and sustenance of the next generation data infrastructure. The educational mission is manifold. The new School will provide a home for the increasing student population in the Data Science Undergraduate and Graduate Programs and serve as a nerve center for data and computational science-related educational activities bridging all academic units on campus. SCIDS will help bring all academic units on campus into a modern "big data" era and train next generation domain specialists who efficiently use emerging disciplinary data to engender new knowledge. This cross-fertilization will be accomplished through joint teaching and practical training activities. The school will initiate a “Data Innovation Laboratory” that will provide the students with opportunities to use big data as a playground to learn the tools and techniques that will transform their preparedness for the “big data” world. SCIDS will also serve the new paradigm that no higher learning is complete without a sound training in domain-specific data science knowledge.

On the research front, it is becoming increasingly clear that every discipline of human endeavor, be it Arts and Humanities, Social Sciences, Natural Sciences, Engineering or Medicine, has data at the core. Confronting the future mandates expertise in the world of data analytics. SCIDS will serve as the bridge between disciplinary areas and computing technology through active engagement in cross-disciplinary data science research. The joint recruitment of faculty and research associates across SCIDS and other Schools and Divisions will create a roadmap for cutting-edge research as well as entirely new sources of research funding support. SCIDS will also serve as the nucleus for centers that solve grand challenge problems in data science relating to multiple subjects including human health, environment, climate, and population-driven disciplines.

SCIDS will also play an important role in creating a unique niche at UC San Diego for establishing rich and rewarding collaborations with the thriving local industry in San Diego. It will provide the much-needed data hub that will link the burgeoning regional industries (biotech, communication and other) and provide the information highway. It will link the UC San Diego Rady School of Management with emerging new companies in the
region as well as with established industry partners. In addition to the commercial and entrepreneurial enrichments, SCIDS will also serve the Southern California community with new opportunities for retraining to face the data-rich world.

2. FOUNDATIONS FOR THE PROPOSED SCHOOL

UC San Diego has a long and noteworthy history, in the 62 years since its founding, of serving as the harbinger and paradigm for new and innovative disciplines. The Scripps Institute of Oceanography spearheaded the launch of marine biosciences. The San Diego Supercomputer Center was at the heart of revolutionary technologies including the Telnet. UC San Diego established the first departments of Cognitive Science and Nanoengineering. The list is long and laudatory.

Over a period of three years from 2013 to 2016, various faculty members drawn from Mathematics and Computer Science and Engineering examined the need for a major and/or minor in data science as a subject area. A steering committee of faculty members drawn from CSE, Math, and Bioengineering pulled together a formal proposal for the Data Science undergraduate major that was approved and launched in 2016. Around the same time, CSE and SDSC had also launched a professional Master’s degree program in Data Science and Engineering (DSE). Today both programs continue to thrive. Responding to a challenge by the Chancellor in Winter 2016, the campus held several townhall meetings and empaneled a Senate-administration task force to examine how a campus-wide Data Science Initiative could be organized. These activities led to the formation and launch of the Halicioglu Data Science Institute (HDSI) as the campus hub for Data Science in March 2018. HDSI was approved by the Academic Senate at UC San Diego and Systemwide and accorded status of an academic unit in June 2018. The Data Science major and minor were transferred to the Institute in 2019.

Over the past three years, the Institute has made significant progress in building its academic programs and community. With over 800 students in its major and 200+ students in its minor, the Institute has graduated the first two cohorts of data scientists who have been eagerly absorbed into academic and industry careers. The Institute has recruited 16 new faculty members, while a few faculty members have transferred partial appointments to the Institute thus creating a faculty council of 25 Senate faculty members as its primary governing body. The faculty include a number of jointly appointed faculty with other units on campus, including at the Assistant Professor level. There is broad experience at UC San Diego with managing joint appointments based on our experience with the Chancellor’s Joint FTE program that has supported appointments of some 30 faculty across the campus since 2016. Memoranda of understanding govern these appointments, ensuring that teaching and service obligations are appropriately managed. The Institute has also now launched its approved. MS and PhD programs in Data Science as well as an online Master of Data Science program in collaboration with the CSE department.
The presence of the San Diego Supercomputer Center (SDSC) and the newly established Halıcıoğlu Data Science Institute (HDSI) offers an unprecedented opportunity for UC San Diego to establish a premier School that in addition to bridging the entire campus will serve as an exemplar for institutions of higher education. The founding pillars for this proposed new School are SDSC and HDSI, supported by the existing academic Divisions and Schools, a California Institute for Sciences and Innovation, and a premier University Library. We provide a broad view of existing foundations and potential synergies in the proposed School in the schematic below.

### 2.1. San Diego Supercomputer Center (SDSC)

The San Diego Supercomputer Center (SDSC) is one of the nation’s premier centers for high-performance and data-intensive computing, and the only center of its kind in the University of California system. The scope in computing and expertise (in scale, nationally, and across domains) at SDSC, backed up by expansive computing infrastructure, ongoing grants and contracts, and funded partnerships with industry will immediately catalyze the collaborative research and experiential learning opportunities in SCIDS.

SDSC was established as one of the nation’s first supercomputer centers under a cooperative agreement by the National Science Foundation (NSF) in collaboration with UC San Diego and General Atomics (GA) Technologies, opening its doors in 1985. Since then, it has grown and stewarded a national reputation as a pioneer and leader in high-performance and data-intensive computing and cyberinfrastructure. Located on the campus of UC San Diego, SDSC provides resources, services and expertise to UC San Diego, the UC System, State of California, the national research community, and the private sector. SDSC supports a wide range of multi-disciplinary programs that engage tens of thousands of individual researchers and users, spanning a wide variety of domains from astrophysics, biology, and earth sciences to bioinformatics and health information technology.
Some important dates in the evolution of SDSC are noted below. An extensive, interactive timeline of SDSC’s history is available at: https://timeline.sdsc.edu.

- **1985**: Founding of SDSC, following award of unsolicited proposal by the Founding Director, Sid Karin, SDSC open its doors under a cooperative agreement with General Atomics and UC San Diego. That same year, a Cray X-MP entered production operations as SDSC’s inaugural supercomputer.

- **1997**: A partnership led by UC San Diego is one of two winners selected in NSF’s Partnerships for Advanced Computational Infrastructure (PACI) competition. As a result, UC San Diego assumes oversight for SDSC, taking over operational responsibility of the center, and transferring all staff from being GA employees to being UC San Diego employees. At this time, the State of California also formalized the broad role of SDSC through line-item funding in the State budget. Over the years, this has evolved from direct funding from the state to funding from UCOP via UC San Diego. Today, UCOP funding makes up roughly half of the core budget of SDSC.

- **2005**: NSF awards funding to SDSC as part of the Extensible Terascale Facility (ETF), also called TeraGrid, TeraGrid which at the time, is the world's largest, most comprehensive distributed cyberinfrastructure for open scientific research.

- **2011**: NSF awards funding to SDSC as part of the Extreme Science and Engineering Discovery Environment (XSEDE), the successor to the TeraGrid project. In 2016, NSF extended XSEDE (XSEDE 2.0) another 5 years, where it remains in operation. Proposals for the XSEDE follow-on are currently under review and we expect SDSC will be part of one or more awards under that program.

- **2013**: UC San Diego and SDSC establish the Triton Shared Computing Cluster (TSCC), a campus computing facility operated via a condominium business model, i.e., researchers buy hardware from a menu of choices offered by SDSC, and SDSC operates the system on behalf of the researchers. UC San Diego provides support for the operating expenses with the understanding that this is more cost effective than researchers deploying hardware in their own buildings. SDSC also offers part of its data center as a UC San Diego-supported co-location facility for hardware owned and operated by UC San Diego researchers, again reducing the overall cost of ownership to the university in terms of space and utilities, while providing better value to the researchers.

- **2016 – present**: In a series of back-to-back awards, SDSC received funding for high-performance computing systems, Gordon, Comet, Expanse, Voyager, and the National Research Platform, ensuring SDSC’s leadership in supercomputing for the next decade (see Appendix 2 for additional details on these and other computing infrastructure at SDSC.)

Today, SDSC has close to 40 PIs who obtain extramural funds with expenditures totaling more than $30M per year supporting more than 200 researchers and staff. SDSC has no faculty lines, and thus no explicit teaching mission within the context of UC San Diego. Nevertheless, SDSC has significant education, outreach, and training activities within its

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[7](https://timeline.sdsc.edu)
other scopes that have been growing significantly over the last 5 years or so. This is discussed elsewhere in detail.

SDSC consistently ranks among the top 5 organizational units by grant funding among the 68 such units on the general campus of UC San Diego.

**SDSC in SCIDS:** SDSC will become an integral part of SCIDS; we describe below the multifaceted roles of SDSC and the implications for SCIDS.

Throughout its more than 35-year history, SDSC has had roughly speaking 4 geographic scopes:

- **A national or even international scope** that is directly responsive to federal agencies, most importantly the National Science Foundation. Example activities within this scope are the national scale HPC systems SDSC operates, its science gateways, and a large variety of other national programs.

- **A state scope** where SDSC functions as a state asset to support a variety of CA priorities, often directly focused on protecting the CA way of life. Example activities are SDSC’s research and operational support to protect CA from wildfires, predict atmospheric rivers impacting the available water resources, and understand seismic activity with a goal to mitigate earthquake disasters.

- **A UC scope** where SDSC directly provides research and cyberinfrastructure services to the collective of UCs, as well as UCOP. Example activities here include regulated data services SDSC provides to UCOP, and the large amount of floorspace the UCLA hospital occupies in the UC San Diego data center.

- **A UC San Diego scope** where SDSC provides services to UC San Diego faculty. These include, most prominently, the Triton Shared Computing Cluster, the condo cluster that faculty can buy into, and the network services (the UC San Diego connection to CENIC and thus the Research & Education networking in CA enters UC San Diego via SDSC).

As a matter of policy, SDSC treats all UC campuses the same as UC San Diego. SDSC’s services are generally available at cost to all UC faculty, staff and students. For example, SDSC offers its universally scalable storage services at the same price to all UC campuses. Researchers may access their data on that storage for processing on any of SDSC’s national HPC systems. UC researchers thus can leverage national HPC system investments for processing data stored on the mass storage systems operated and maintained by SDSC. Similarly, SDSC’s expertise in regulatory data systems, including but not limited to HIPAA, dbGaP, CMMC are available today to the entire UC system without any additional surcharges, whereas organizations outside the UC system pay different prices for all the above. This will not change when SDSC becomes a unit in SCIDS.

At present, SDSC operates some services at below cost, subsidizes either from industry gifts and revenue, or subsidized by the UC San Diego administration. An example is the Triton Shared Computing Cluster. This HPC system follows a “condo model,” individual researchers at UCSD may buy hardware from an annually changing menu of hardware SDSC supports, paying a very modest “operations fee” per node. These fees do not cover operations of the cluster, and SDSC subsidizes it from the revenue from its industry program. It is conceivable that there will be other infrastructure and services at SDSC in the future where the Dean of SCIDS will reinvest gifts and/or industry program revenue and this will serve the entire UC San Diego campus.
2.2. Halicioğlu Data Science Institute (HDSI)

In 2015, faculty presented the Chancellor a blueprint for creating a data science and engineering initiative – an activity that encompassed academic, research, and infrastructure components to place UC San Diego on the “big data” map. In 2016, a distinguished alumnus, Taner Halicioğlu, provided significant funding to support the launch of a data sciences institute. With the support of the Academic Senate, the Halicioğlu Data Science Institute was formed as a transdisciplinary academic unit with the ability to appoint faculty and develop undergraduate and graduate academic programs in 2018. The undergraduate major in Data Science was developed as a multidisciplinary program shepherded by the Department of Computer Science and Engineering and was transferred to HDSI. In 2020 HDSI graduated its first class of bachelor’s students and initiated a Master’s and Ph.D. program. Faculty who were 100% in HDSI grew to 12 with over 15 joint and adjunct faculty. HDSI was also successful, owing to its academic excellence, in garnering significant extramural research funding amounting to over $20M. The undergraduate student population has now reached a steady state of 800 Data Science Major students, with demand exceeding capacity. In addition, HDSI also offers a Minor in Data Science, and this population is steadily growing from a current size of 200 students. HDSI is also in the process of offering joint M.S. programs with other units, such as a joint M.S. program with Bioengineering and a M.S.-M.D. program with Health Sciences. This rapid and dramatic growth, while in tune with the growing demand for data scientists, also attests to the pre-eminence of HDSI and UC San Diego. HDSI also has witnessed exceptionally strong collaborations with SDSC leading to exciting and innovative educational initiatives. This explosion in educational and research initiatives warrants a broader umbrella and the creation of SCIDS would enhance the objective, sustenance, and success of the data science initiative at UC San Diego.

The governing faculty council of HDSI consists of faculty drawn from nearly all schools including health and marine sciences. This group has worked together so effectively that over the five-year period since its founding HDSI has successfully recruited 29 new faculty members, out of which 16 faculty members have joint appointments across 11 departments including SIO and Health Sciences. As of this writing, HDSI has an open search or plans to hire in the next year faculty jointly with Social Sciences, GPS, Health Sciences, and Bioengineering, while we are exploring new joint positions with Physical Sciences, Biological Sciences, and Arts and Humanities. In addition, the governing faculty council has 17 faculty members drawn from many departments with a 0% appointment in HDSI. As discussed in this proposal, SCIDS will continue to support joint faculty appointments with many units on campus and develop joint curricula.

At the administrative and operational levels, HDSI functions much like a department, albeit reporting to the Senior Associate Vice Chancellor for Academic Affairs who serves as the Dean Designee overseeing HDSI and SDSC. Given the growth in HDSI and the unique infrastructure supporting computation and applied data science in SDSC, dedicated administrative oversight through formation of a school with an academic dean reporting to the Executive Vice Chancellor will be the optimum way to support the development of these two growing units, providing another strong motivation for the proposed School. The Dean of the proposed School will serve to oversee the activities and growth of HDSI and SDSC in addition to building partnerships with other campus units to build transdisciplinary research and education in Computing, Information and Data Sciences.
HDSI in SCIDS: As described above HDSI will become the primary data science department in SCIDS. It will, in addition to its educational and research mission, function like an interdisciplinary campus unit vis-à-vis bringing data sciences broadly to multiple disciplines on campus. As delineated in the Administrative section, several existing academic departments may establish dotted line relationships to SCIDS. Amongst these, ECE, CSE, Math and Cog Sci are founding departments of the Data Science Program at UC San Diego. The academic connections through the dotted line connections will include,

a. Input on management of the DSC major, minor, and elective courses.
b. Mutual affiliate status of faculty along with associated ability to recommend, recruit and advise doctoral students.
c. Colocation of jointly advised graduate students and post doc scholars in HDSI spaces.
d. Streamlined procedures for offering and managing enrollment in courses that can be attended for credit in degree programs across the departments.
e. Coordinated FTE planning and requests including joint faculty appointments.

It is important to note that dotted line relationships are formally defined and bidirectional in nature. Several of the criteria above also apply to departments on campus that do not have a dotted line affiliation in SCIDS. For instance, SCIDS will continue the tradition of joint faculty hires across other schools on campus (as discussed elsewhere, there are several joint appointments across campus). SCIDS will also develop joint academic curricula in data sciences through cross-listing courses at undergraduate and graduate levels. A description of the process for developing MOUs governing the dotted line relationships between departments and SCIDS is provided in section 7.1.1. below.

2.3. Other Campus Units - Departments and Centers

2.3.1. Department of Computer Science and Engineering

UC San Diego has one of the top-ranked Computer Science departments in the U.S. Besides training a very large cohort of students in computer science, the Department has outstanding research faculty whose expertise spans all areas of computer science and engineering ranging from AI to embedded systems. The department provided a foundation for the establishment of HDSI, with significant shared faculty and research themes. While CSE includes much more than computing, information, and data science research and SCIDS will span multiple areas beyond those covered by CSE, it is important to recognize the significant overlap between the Department of CSE and SCIDS. The two units will unequivocally benefit mutually, and this will enhance the stature and standing of UC San Diego as a leading institution in both computer and data science research and training. Given the overlap and presence of several joint faculty (between CSE and HDSI), it will be beneficial for CSE to have an affiliation with SCIDS, even while retaining its primary status in the Jacobs School of Engineering. We propose this approach in designing the administrative structure of SCIDS and discuss it later in the Proposal.

2.3.2. Department of Electrical and Computer Engineering

The Electrical and Computer Engineering (ECE) department traces its roots back to the establishment of the Applied Electrophysics department in 1965. Through a succession of department realignments today’s ECE emerged in 1987, when the then-combined
Electrical Engineering and Computer Science department was split into two departments. Since then, ECE has earned a world-class reputation for producing top-notch engineers for industry and academia. Information and communication theory, intelligent systems, and robotics and control have been major emphasis areas in ECE. ECE faculty have led national and international projects that have served as the underpinnings of modern information theory with significant applications to data sciences. ECE was instrumental in the formation of the California Institute for Telecommunication and Information Technology and played an important role in the creation of HDSI. The strong existing interactions between ECE and HDSI lead us to propose a formal administrative affiliation, like CSE, that will be addressed in section 7.1 of the proposal.

2.3.3. Department of Cognitive Science

The Department of Cognitive Science is home to faculty and students conducting research over a wide range of scientific disciplines including computation, data science, machine learning, artificial intelligence, education, human animal cognition, psychology, ethnography, neuroscience, genetics, design, human-computer interaction, and linguistics. In all these areas, the application of data science and large-scale computational methodologies is key to the development of modern research programs. Accordingly, many of the faculty currently composing Cognitive Science have been leaders in their fields with respect to the design and execution of large-scale, data and computation intensive research initiatives on an international scale. These areas include work in organization of communities-wide urban planning, computational and statistical approaches to genomic and imaging data, the adaptation of data science practice to neuroscience, the development of widely-distributed instructional practices in data science, the development of media to foster skill-building in programming techniques (e.g., Python Tutor), and machine learning approaches to computer vision and language processing.

Cognitive Science has had, and will continue to have in the future, a close relationship to the work of SCIDS. Several faculty including the late Professor Jeff Elman have been involved in the creation of HDSI and are expected to play an important role in SCIDS. There is a significant overlap in research and educational interests between the Department of Cognitive Science and SCIDS. The two units will unequivocally benefit mutually, and this will enhance the stature and standing of UC San Diego as a leading institution in data science research and training and their applications to the highly diverse set of data types examined and processed in the practice of Cognitive Science. Given the overlap and presence of several joint faculty between Cognitive Science and HDSI, it is likely that Cognitive Science will have a formal affiliation with SCIDS, similar to CSE and ECE, even while retaining its position within the School of Social Sciences.

2.3.4. Department of Mathematics

The constant flow of ideas between various branches of mathematics and various data intensive sciences has been instrumental in advancing both — increasingly so in the modern world where data is becoming ever more abundant, along with the challenges and opportunities associated with it. On the one hand, there is an ever-growing need for computational methods that can handle large amounts of data and model ever-larger and more complex systems. At the same time, the advent of such computational methods often precedes a deep theoretical understanding of their potential and limitations. As
such, mathematics, both pure and applied, will play a critical role in the research mission of SCIDS.

Mathematicians working in Applied and Computational Harmonic Analysis, Approximation Theory, and Functional Analysis, motivated by application areas ranging from seismology to machine learning, are continuing to develop fundamental, rigorous methods that have benefited the scientific community at large. Examples of their successes include Wavelets, with their applications in signal and image processing, in computational methods for solving differential equations, and Compressed Sensing with its insights into reducing the complexity and cost of data acquisition. As another example, the interaction between mathematicians, computational scientists and data scientists has leveraged insights from graph theory and geometry to empower scientists to model, analyze, and understand complex networks. Optimization Theory and Numerical Analysis will continue playing a critical role in developing and analyzing computationally efficient algorithms for solving scientific problems. Indeed, there is no shortage of examples of current and potential future engagements between mathematics, computing, and data, including those aimed at revealing the mathematical underpinnings of novel, powerful computational techniques like deep learning, among others. Statistics also plays a central role in data analysis and acquisition, as has been the case since its consolidation as a field of research for more than a century. Its more mathematical specialties --- some well-represented among the statisticians residing in the Mathematics Department --- play a similar role with respect to the broader field of Statistics in that the developed theory helps bring a deeper understanding of the problems and methods used to solve them. The interaction with Applied Mathematics in the area of Approximation Theory and Optimization has been very fruitful and has led to a tremendous amount of research over the years, including in the aforementioned areas of Wavelet Analysis and Compressed Sensing developed at the intersection of these fields with Statistics. Additionally, Statistics is perhaps uniquely placed to derive inference for data, which is after all its ‘mission statement.’

Given this background on how, for the past many decades, Applied Mathematics and Statistics in their various forms have contributed methods and theory to the betterment of data collection and analysis, it is only natural that these disciplines and the faculty in the Mathematics Department in these specialties will play an important role in the development of SCIDS: Several faculty members in Mathematics have been deeply engaged with the creation of HDSI. Creation of SCIDS will bring some focus to this symbiotic relationship, which will likely manifest as further joint appointments. Ultimately it may make sense for the Department of Mathematics to also engage more formally with SCIDS in a manner similar to CSE and ECE, as discussed in the section on administrative structure (section 7.1).

2.3.5. California Institute for Telecommunication and Information Technology (CalIT2) and the QUALCOMM Institute (QI)

CalIT2 was born as a result of funding from the State of California to support the establishment of leading research institutes at the University of California. Amongst three such funding initiatives, CalIT2 was established jointly between UC San Diego and UC Irvine, and is now being expanded to include UC Riverside. The UC San Diego manifestation of CalIT2 is the Qualcomm Institute and was established to foster work on Telecommunications and Information Technology. Over the last two decades of
operation, it has developed two broad capabilities and collaborative programs the presence of which at UC San Diego will be of significant academic value to SCIDS.

To sustain advances in data science, access to new types and larger amounts of data will be critical. In this regard, QI’s experimental facilities, regionwide deployments and technical expertise in Nanotechnology, Wireless and Photonics will help develop new kinds of sensors that are sure to enhance the impact of research conducted within SCIDS. QI offers SCIDS, a combination of advanced experimental facilities to probe the physical world and technical professionals to foster intellectual collaborations. Furthermore, SCIDS researchers will be able to develop collaborations that could result in the invention of new data sensing modalities.

As the benefits of AI and machine-learning (ML) techniques grow, their use will become more pervasive. There are already growing concerns that the unchecked use of these techniques could lead to undesirable societal consequences. QI’s programs, especially the Gallery@QI and Digital Exploration of Arts and Sciences, have fostered critical engagement between the arts and technology that can help illuminate the new futures that SCIDS faculty may wish to explore. Finally, QI’s experience in developing robust interdisciplinary collaborations could inform planning for the future of SCIDS. QI has shown that sustained investments in facilities, expertise and programming ultimately leads to widely recognized boundary crossing work. There are numerous examples of collaborations that were critically enabled by researchers and technical professionals working in shared use labs in QI.

2.3.6. The UC San Diego Geisel Library

The UC San Diego Geisel Library will play an important role in supporting the new school. The Library will build on existing investments in data acquisition and curation, expand on existing collaborations with HDSI and SDSC and consider new investments in staffing, information resources and spaces to meet the expanded needs of undergraduate and graduate students. These investments would create an opportunity for the Library to further act on its vision to serve the emerging forms of scholarship at UC San Diego in computing, information, and data science, and are in harmony with the goal of supporting the student-centered and research-intensive mission of the university.

As a national leader working to advance research and practice in data preservation, open access and data publishing, the Library already has considerable staffing and resources dedicated to supporting data-intensive research. This includes a Research Data Curation Program (RDCP) dedicated to data curation and data science and existing services in data publishing, data sharing, Geographic Information System (GIS) and data visualization. Existing collaborations with HDSI, SDSC, Research IT and other departments include an emerging partnership to build a platform for ‘research ready’ datasets for undergraduate learning, in-library labs to support GIS and Digital Humanities work and investment in data preservation and data sharing services based on SDSC infrastructure. While the Library already dedicates resources to acquiring datasets from publishers, additional investments at the UC San Diego and UC-wide level would be beneficial in ensuring that students and faculty have access to data to support innovative learning and research.

In addition to supporting the school through increased investment in datasets appropriate to undergraduate and graduate student research the Library will be able to build new partnerships that support closer collaboration and support between librarians, faculty and
students. The Library will have a unique leadership role to play in Information Science topical areas including data description, curation, publishing, ethical use of information and socio-political constructs of data and information. This work may include the development of expertise in existing roles that directly support faculty and student needs around research data access, analysis, publishing and management. Additionally, through the present network of nearly sixty librarians the Library will expand on existing work supporting research to include better support for the interdisciplinary goals of SCIDS.

Finally, the physical infrastructure of the Library can play an important role. Recognizing that the students in this newly established school will seek out academically-focused spaces that support their learning and research, the Library plans to better equip spaces to support data-intensive research (e.g. spaces that are connected to data and compute resources through high-speed networks, spaces equipped with tools to support data visualization and collaboration and virtual spaces that enable students to quickly access and share data and code connected to their learning). In other words, the UC San Diego Library will become a living learning laboratory for our students with access to data and information in a seamless and knowledge-driven manner.

2.4. Other Campus Units – Schools, Divisions, and SIO

2.4.1. School of Medicine

Health Sciences has emerged as the largest generator and consumer of “big data” sciences. The School of Medicine (SOM) at UC San Diego has data analytics needs that relate to basic, translational, and clinical research, as well as the quality of patient care and other operational initiatives. Partnership with data scientists from SCIDS will strengthen biomedical data science efforts already underway in various basic science and clinical departments. For example, the Divisions of Biomedical Informatics and Medical Genetics in the Department of Medicine, the Division of Genomic Science in the Department of Pediatrics, the Divisions of Informatics in the Departments of Ophthalmology and Anesthesia, the Epigenomics Center in the Department of Molecular and Cellular Medicine and bioinformatics faculty in various other units are dually trained in specific clinical specialties as well as informatics, data science, or statistics. For basic research, we envision SCIDS partnerships focused on developing algorithms and tools to extract novel biological information from the combined analysis of large and complex omics (genomic, epigenomic, metabolomics) public datasets. For translational and clinical research, SCIDS will benefit from partnerships with the SOM faculty as they will serve as a gateway for access to real clinical data and/or genomic data from human subjects. The regulatory issues surrounding these data are well understood by SOM faculty and will extend to SCIDS collaborators. We envision the partnerships to evolve around solving real problems that serve as motivation for the development of new algorithms and tools to process, harmonize, and ultimately compute with sensitive data using novel approaches that balance data sharing and privacy protection of patient data.

Faculty in the SOM face several challenges in the generation and accessing of large-scale sequence data sets. A large fraction of the SOM faculty generates such datasets for their research and most of this is done at the UC San Diego IGM Genomics Center. Some others generate images or physiologic signals. All these require specific types of pre-processing and analyses. Currently, the Genomics Center is transferring all their system administration responsibilities to the SDSC including data storage, software maintenance, creating customer portals (about 200 customers) and database
management. This will support basic researchers in the SOM and better enable (faster data transfer) them to utilize the SDSC USS storage system. A separate issue faced by many researchers in the SOM is the arduous task of getting permissions and the storage space required to access and download large publicly available data sets (e.g., UK Biobank). These issues faced by the SOM faculty will exponentially increase over the next decade. A service component with oversight from SCIDS could help SOM faculty with these current and upcoming issues. Such a component could simultaneously serve as a large source of revenue (recharge) to support the expansion of computational resources needed by the SCIDS faculty. This component of SCIDS could also serve to train individuals (e.g., Masters programs) in how to efficiently perform system administration of large-scale datasets, currently a skill set in high demand in both academic and industry settings. It is expected that the demand for individuals with such skills will skyrocket over the next five to ten years. Management of HIPAA- and FISMA-compliant environments for research and education would also be an asset to UC San Diego in general.

The research and training needed for the future of health sciences and the School of Medicine strongly warrants the creation of a School that will provide a unique opportunity to serve as the next-generation data-driven health care incubator. An exemplar peer program is the Innovative Joint Program in Computational Precision Health at UC Berkeley and UCSF that promises to improve quality and equity of health care.

2.4.2. Herbert Wertheim School of Public Health and Human Longevity Science

The UC San Diego Herbert Wertheim School of Public Health and Human Longevity Science (SPH) was established in 2019, although UC San Diego has a longstanding activity in public health activities with emphasis on data analytics. Public health has been described as the intersection of epidemiology and social justice. Events of the last year have certainly emphasized this observation. The Master of Public Health Program (MPH) at UC San Diego strives to address these critical aspects of public health with a program of academic rigor and an emphasis on equity and social justice across the MPH program and the SPH. 2020 was a year of firsts for the UC San Diego MPH. The first class graduated in June 2020, and two new concentrations: Public Mental Health and Technology and Precision Health were added. And perhaps most importantly, the MPH is one of the seven initial education programs of the new SPH. Recognizing the need for public health data and analytics, SPH has already partnered with HDSI in joint faculty recruitment.

More than any other time, the COVID pandemic has pointed to the need for vast data analytics in the context of greater San Diego, the border region, and Southern California in the global context of disease transmission. At the local level, UC San Diego has taken leadership in wastewater-based analytics leading to early detection of SARS-CoV-2 and to geographic spread of the infection. Such tracking has largely led to diminished infection rates and pointed to the important need for data gathering, analytics and predictive computing. The establishment of SCIDS will accelerate the efforts to bring data science in a major way to SPH and establish UC San Diego as a leader in Public Health and Human Longevity science.

2.4.3. Skaggs School of Pharmacy and Pharmaceutical Sciences (SSPPS)

The advent of modern genomics has led to precision medicine approaches to pharmacy and pharmacology. Two large initiatives, spearheaded by SSPPS involve systems
pharmacology with a foundation in the deep analyses of multimodal data from human physiology, pathology and precision pharmacology. The key underlying feature in these analyses is the application of data science methods to understand individualized responses to therapeutics studied in humans and human model systems. The data intensive nature of modern pharmacology is already being harnessed by SSPPS as well as sister institutions in California, especially UC San Francisco.

SSPPS already has an extensive data analytics presence through recruitment of outstanding faculty involved in data and computation and are now partnering with HDSI in establishing a data-rich pharmacy program. In addition to the PharmD program, SSPPS is exploring options and opportunities for joining with HDSI and SDSC in establishing data-intensive training programs in Pharmacology. The creation of SCIDS will enhance unique opportunities for creating a premier Pharm-Data Analytics program.

2.4.4. Scripps Institution of Oceanography

The Scripps Institution of Oceanography (SIO) is a world leader in earth environmental sensing; obtaining data to advance basic science and to inform environmental policy and public health. The Keeling Curve, the first data to show the 20th century increase in global CO₂ (the central graphic within the lobby of the National Academy of Sciences) is a prime example. With the ever-increasing amounts of observational data (from ships, gliders, moorings, satellites, pier monitoring, land-based sites) and the rapidly increasing diversity of variables being monitored (ecological, geologic, atmospheric, seismological, hydrological, fire, microbial, genomic, sustainable commercial resources, epidemiological) there is a growing awareness of the interdisciplinary breadth, holistic thinking, and most importantly, the technical expertise required to make breakthroughs that best serve society. We believe that establishing SCIDS will be an enormous benefit to help maintain and accelerate SIO’s mission in basic research and education in environmental and earth science. Moreover, SIO can in turn contribute extensive data resources and connections to critical environmental problems as grist for collaboration within SCIDS. This will be key in areas where data and expertise from other domains (e.g., economics and public health) can open new directions for high profile data-driven research (e.g., understanding complex causal networks that might include economic concerns, industrial climate impacts, fire pollution, respiratory disease, environmental inequity etc.). Identifying specific sets of problems and ambitious signature applications will fulfill a key goal for establishing a UC San Diego brand in data-driven fundamental and applied science.

Several data-centric research themes relevant to SIO and SCIDS are echoed in the first figure in section 6 of this proposal. This includes advances in forecasting (in particular, detecting early warning signs of critical transitions and systems collapse), data assimilation, empirical systems modelling, identifying causal linkage between variables, etc. The ever-growing quantity and quality of hyper-dimensional data (e.g., satellite and ground-based observations), presents an unprecedented opportunity and challenge to engage computational and data-driven assets to advance our understanding of nature and society. Among the many important cross-cutting research themes and problems that can be synergistically pursued, improving data archiving and accessibility is probably paramount, and is essential to all data-driven research. It is nationally and globally important that the highly complex earth and environmental monitoring data are preserved and made easily accessible (and can be synchronized with data streams from other domains). An SIO-SCIDS collaboration could provide important support and attract major
funding for improving data synchronization and accessibility. Institutional incentives could be created to help communities of interested faculty and students coalesce around the growing data hubs. SIO currently has courses in data-driven discovery that could easily be incorporated into an SIO-SCIDS curriculum. The unique data acquisition capabilities of SIO combined with the expertise and focus that SCIDS can bring to these problems could provide an enormous boost to the standing of UC San Diego as a leader in fundamental and applied sciences.

2.4.5. Rady School of Management

High-powered computations and the ability to store, manipulate, and analyze very large data sets play a crucial role in the research and teaching mission at the Rady School of Management. Data are used in research projects in economics, finance, accounting, marketing, and information systems spanning topics such as small business ownership and lending to women and minorities, eye-tracking and consumer choice, mutual fund investment decisions, and predictability of firm-level profits. Computing power is also used to solve complicated non-linear optimization problems in areas such as financial econometrics and dynamic general equilibrium models in economics. Students in the M.S. Business Analytics, Master of Finance and Master of Professional Accountancy programs have been using large data sets in their capstone projects and their training would clearly benefit from access to state-of-the-art computing resources fostered through tight connections between SCIDS and Rady.

A number of faculty at Rady use very large data sets in their research and depend on the ability to conduct state-of-the-art analytics. They will benefit considerably from the advent of SCIDS. Current projects span a range of topics, including the development of a database to examine issues of equity in small business ownership examining the near-universe of small businesses in the U.S. (approximately 65.5 million businesses and 127.5 million owners), including individual owners’ gender and race/ethnicity. A current use of this data set examines inequality in government lending programs during COVID-19 with a focus on the Paycheck Protection Program (PPP). Neuroeconomics and consumer neuroscience is another promising area, using data on neural activity to predict market success and customer needs. This combines non-invasive big data methods such as functional magnetic resonance imaging (fMRI) to correlate neural responses with how individuals make decisions with economic consequences. The application of machine learning methods to understand mutual fund portfolio decisions generates vast temporal data sets that require new methods to analyze and interpret. These are only a few examples of some of the rich opportunities for engagement with the new school that will also have an impact beyond the University. The ability to retrieve, analyze, and store vast amounts of data is fast becoming a key driver of the business models of many new and established firms, and the interaction between the Rady School of Management and SCIDS has the potential to be a pivotal asset in coordinating and furthering many of the associated efforts in the San Diego region and beyond.

2.4.6. School of Global Policy and Strategy

The increasing role data flows and data reduction play in geopolitical events, climate change and development of the global economy provides a strong driver for future interactions with SCIDS. The School of Global Policy and Strategy (GPS) already has joint appointments with SIO in the area of societal impacts of climate change and is currently engaged in a joint faculty search with HDSI on Data Science and Public Policy, focusing on the interconnected fields of economics, political Science, and public policy. It
is anticipated that the existing excellence in quantitative policy analysis, development economics, and measures of the disruptive socioeconomic impacts of innovation in both GPS as well as the Rady School of Management and the Departments of Economics and Political Science in the School of Social Sciences will provide an excellent foundation and synergistic development of both SCIDS and these academic units.

2.4.7. Jacobs School of Engineering

UC San Diego JSOE ranks 9th in the US World and News Report for best Engineering Schools across the U.S. with several top 10 departments/programs. This pre-eminent standing owes to leadership in multiple engineering disciplines including data, computation and information science and engineering. As described previously, HDSI has strong ties to the CSE and ECE departments and the intersections between data, computation, and all engineering departments cannot be understated. While CSE and ECE have established leaders in AI, ML and Information Theory, the department of Bioengineering launched the top ranked bioinformatics program in the U.S. two decades ago, being one of the first institutions in creating a national thrust in this field. The Biological Information Science and Technology Initiative of the National Institutes of Health and establishment of the Computer and Information Science and Engineering directorate at the National Science Foundation had substantial input from JSOE faculty and this has led to pioneering research in data science applications.

The creation of SCIDS has enormous synergies with JSOE and the large number of joint appointments between HDSI, SDSC and JSOE are a testament. We anticipate the development of several opportunities for undergraduate engineering majors to train through joint curricular offerings between JSOE and SCIDS. Further, our industry advisors have enthusiastically endorsed the creation of new interactions between SCIDS and JSOE and they anticipate the growth of industry consequently in the larger San Diego area.

2.4.8. School of Arts and Humanities

An important aspect of the foundation for SCIDS is that UC San Diego is a comprehensive research university with an outstanding School of Arts and Humanities, with highly ranked departments including Theatre and Dance, Music, Philosophy and Visual Arts. Today these programs have increasing overlap with data science and computation. The division has been a pioneer in the establishment of a premier digital arts program and a data-intensive ethics program. In recognizing that our society lives in a digital age with competency in data and analytics guiding our day-to-day lives and enriching our engagement with arts and humanities, it is imperative that we lead the development of educational programs for students in the arts and humanities laced with digital and data knowledge. The need for a humanistic, philosophical understanding of the critical issues of ethics in data science, machine learning and artificial intelligence is already leading to collaboration. HDSI has built a connection with the Department of Philosophy and the Institute for Practical Ethics through a joint faculty appointment, and it is anticipated that this will inevitably be an important component in the future development of SCIDS at UC San Diego, and the fields of computing, information, and data science in the decades to come.

2.4.9. School of Biological Sciences

Data Science is fundamentally an interdisciplinary science whose strengths shine at its interfaces with domain sciences, especially modern life sciences. This opportunity places
SCIDS in a uniquely interdisciplinary domain rather than a traditional, independent and self-sufficient school. Areas like Quantitative Biology and Biostatistics will naturally develop strong interactions with SCIDS that build on existing interactions with both HDSI and SDSC to facilitate research advances in these fields. The rate of data generation by biologists has exploded in the past few decades—neuroscience, genomics, transcriptomics, to name a few. It would be powerful if SCIDS had an entire department/section dedicated to the interface between Biology and Data Science (Section of Data Science of Biology) where a collection of faculty can share knowledge and approaches applied to multiple aspects of biological systems. Each faculty in SCIDS in these sections would have a joint appointment with the partner department. Such an arrangement would benefit from a critical mass to jumpstart the interactive domains and train next generation students. Several institutions like MIT have already embraced this paradigm, and HDSI already has at least one joint appointment with the School of Biological Sciences, so the foundation is already laid here as well.

2.4.10. School of Physical Sciences

Interactions between the Department of Mathematics and SCIDS have already been discussed, but there are also strong interactions with both the Department of Chemistry and Biochemistry and the Department of Physics within the School of Physical Sciences with SDSC as well as HDSI. The new Department of Astronomy and Astrophysics is expected to be strongly involved as well based on the role computing and data sciences play in those fields. It is expected that with the advent of SCIDS, these existing ties will strengthen, and new collaborations will form. Chemistry and Physics are both fields that seek to quantitatively understand natural phenomena over incredible scales of time and space through measurement and rigorous theory. Both these departments already have very strong interactions with SDSC, and faculty from both have also engaged with HDSI as founding members. Both departments also span large swathes of their respective disciplines, from astrophysics to particle physics, biophysics to structural biology and molecular synthesis to manipulation of quantum information from the perspective of both physics and chemistry. Increasingly, machine learning and data science techniques are becoming essential tools for the physical sciences, ranging from large heterogeneous multi-scale simulations to reconstruction of data from complex instruments. Several joint grants with SDSC already exist, and in addition DPS researchers have equipment hosted in the SDSC data center and access large national computational resources through SDSC. The most recent major instrumentation grants at SDSC, Voyager and NRP (see Appendix 1), already are collaborative ventures across the physical sciences, HDSI and SDSC. The opportunity for joint appointments between these units and SCIDS in the future will be an important part of the continued advancement of these disciplines, and their presence on campus contributes to the underlying foundation for SCIDS in a material way.

2.4.11. School of Social Sciences

Modern social sciences, including Communication, Psychology, Linguistics, Sociology, Economics, Urban Studies and Planning, and Political Science, rely on large scale analyses of naturalistic trace data – data that emerges from the internet-mediated interaction of millions of people. With the aid of computational tools, such massive datasets are leveraged by political scientists to identify how conspiracy theories spread in social networks, by linguists to trace the cultural evolution of language, or by economists to estimate the consumer impacts of sector-specific inflation. These
overlapping interests, methods, and approaches form the basis of an interdisciplinary area called Computational Social Science – currently a suite of interdisciplinary programs in the School of Social Science. A formal relationship between Computational Social Science and SCIDS would be a powerful source of interdisciplinary research between social, data, and computational scientists, where jointly appointed faculty could translate between the social science domain knowledge and data sources and computational tools from SCIDS. Ultimately, once joint affiliation of departments across schools becomes feasible, Computational Social Science forms a natural bridge between SCIDS, and an interdisciplinary team of computational researchers throughout the social sciences. The connection with the interdisciplinary Computational Social Science program is in addition to the existing strong interactions between the Department of Cognitive Science and HDSI that will constitute an additional connection to SCIDS.

2.4.12. Division of Extended Studies

As a bridge between campus and community, the Division of Extended Studies plays a key role in both training students and employees for the demands of local industry and informing academic endeavors across the campus. For example, Extended Studies offered courses in the 1990s and early 2000s in bioinformatics, a nascent field at the time, with large enrollments meeting the needs of local industries while campus academic programs were being implemented. Fields such as data science, communications, healthcare, and defense may offer similar potential going forward. Extended Studies is broadly viewed as a literal extension of UC San Diego: its expertise, its resources, and its name. And today that view has been amplified by the establishment of UC San Diego at Park and Market, bringing the University into the heart of the city. There, the Qualcomm Institute provided infrastructure to support high-speed internet delivery to underserved communities. Earlier, as part of the Chancellor's strategic plan to connect the institution to the greater San Diego area, Extended Studies partnered with the San Diego Public Library to provide events, lectures, and courses at over 26 library locations, at no cost to community members or the campus. Library NExT was created in collaboration with the Sally Ride Science program based in Extended Studies, which runs offerings to inspire young people in STEM, in coordination with the Scripps Institution of Oceanography (SIO) and the SDSC. Jacobs School of Engineering and Rady School of Management also support Library NExT. Workshop topics include Messy Science, Introduction to Virtual Reality, and Introduction to Python, and the program also provides test preparation and college counseling for students and their families, with a focus on underserved communities. Interactions between SCIDS and the Division of Extended Studies have the potential to significantly broaden the regional impact of the new school.

Given the imminent need for data and computational literacy among the public, SCIDS will seek to offer courses in collaboration with Extended Studies to the larger San Diego Community. These will include short “learn-by-practice” courses and workshops for the public, summer courses for K-12 and community college students to prepare them for higher education, academic courses to complement SCIDS courses for our undergraduate students, and intensive courses for the local industry participants. The development of a program offering hands on training exercises in data usage and computing will be a rich area for collaboration between SCIDS and Extended Studies.
3. RELATIONSHIP of SCIDS to UC SYSTEM and PEER EDUCATIONAL PROGRAMS, and the COMMUNITY

In creating a new school/college, it is important to consider the national context and national trends. We begin with a view that looks nationally, and then narrow down to universities in the UC system, and finally consider other segments of higher education in California.

3.1. National Context. There are many examples of schools or colleges whose name includes the word Computing, and that focus on Computing and Data. All these schools contain a department of Computer Science; sometimes they contain an Electrical Engineering and Computer Science department; and they always contain a few other departments, most commonly a department of Information Sciences and a department of Statistics (but other examples include departments of Interactive Computing, Artificial Intelligence, Machine Learning, Computational Biology, etc.).

In some of these schools, the membership of the departments is exclusive to the school. This includes:

- UC Irvine: Donald Bren School of Information and Computer Sciences with 3 departments (Computer Science, Informatics and Statistics).
- Carnegie Mellon University: School of Computer Science with 7 departments (Computational Biology, Computer Science, Human-Computer Interaction, Software Research, Language Technologies, Machine Learning, Robotics)
- Georgia Tech: College of Computing with 5 departments (Computing Instruction, Computational Science and Engineering, Computer Science, Cybersecurity and Privacy, Interactive Computing)
- University of Wisconsin-Madison: School of Computer, Data & Information Sciences, with 3 departments (Computer Science, Information School, and Statistics)

However, the more common situation in recent years is that departments have joint membership. In these cases, a department (for example Computer Science or Electrical Engineering and Computer Science) would be affiliated with both the new school and in another academic unit like a school /college of Engineering. Examples of such joint affiliations include:

- UC Berkeley: Division of Computing, Data Science and Society, which includes a department of Electrical Engineering and Computer Science (which is also part of the College of Engineering).
- MIT: Schwarzman College of Computing, which contains a department of Electrical Engineering and Computer Science (which is also part of the College of Engineering)
- Cornell: School of Computing and Information Sciences, which includes a department of Computer Science (which is also part of the School of Engineering)
- The University of Washington: School of Computer Science & Engineering, which is also part of the College of Engineering.
3.2. UC System Initiatives. We now focus more specifically on the two examples in the University of California system that have schools focused on Computing and Data: UC Irvine and UC Berkeley.

UC Irvine. UC Irvine has the Donald Bren School of Information and Computer Sciences\(^8\), consisting of three departments: Computer Science, Informatics and Statistics. The school was created in 2002, when the 35-year-old department of Information and Computer Science was elevated to a school status, and faculty were split into two departments, the Department of Computer Science and the Department of Informatics. The Department of Statistics, also founded in 2002, was included as a third department in the newly created school. Today, both the Computer Science major\(^9\) and the Data Science major\(^10\) are offered through the UC Irvine School of Information and Computer Sciences: data science through the department of Statistics, and computer science through the department of Computer Science.

UC Irvine also has a school of engineering\(^11\), the Samueli School of Engineering, with a department of Electrical Engineering and Computer Science (all in one department and separate from the Computer Science department in the school of Information and Computer Science). The department of Electrical Engineering and Computer Science offers majors in Electrical Engineering and a separate major in Electrical Engineering and Computer Science\(^12\), which combines elements of electrical engineering and computer science.

UC Berkeley. UC Berkeley has a newly created Division of Computing, Data Science, and Society\(^13\). The history of the creation process for this division is documented online\(^14\). The latest incarnation of this unit was announced in 2020, encompassing three units that hold faculty positions:

- The Electrical Engineering and Computer Science (EECS) department, which is jointly affiliated with the new division of Computing, Data Science, and Society and the College of Engineering
- The Information School
- The Department of Statistics

The new division also encompasses two centers that bring faculty together from across campus, but do not hold their own faculty positions: the Berkeley Institute for Data Science, and the Center for Computational Biology.

Berkeley has several majors related to data and computation: a Data Science major\(^15\) offered by faculty in EECS and Statistics; two Computer Science majors\(^16\) offered by EECS faculty; and an Electrical Engineering and Computer Science major offered by EECS faculty.

The Berkeley model is relevant to SCIDS:

\(^{8}\) https://www.ics.uci.edu/
\(^{9}\) https://catalogue.uci.edu/donaldbrenschoolorinformationandcomputersciences/departmentofcomputerscience/computerscience_bs/
\(^{10}\) https://catalogue.uci.edu/donaldbrenschoolorinformationandcomputersciences/departmentofstatistics/datascience_bs/
\(^{11}\) https://engineering.uci.edu/
\(^{12}\) https://engineering.uci.edu/dept/eecs/academics/undergraduate
\(^{13}\) https://data.berkeley.edu/
\(^{14}\) https://data.berkeley.edu/about/progress
\(^{15}\) https://data.berkeley.edu/academics/data-science-undergraduate-studies/data-science-major
\(^{16}\) http://guide.berkeley.edu/undergraduate/degree-programs/computer-science/
1. The Berkeley division is the most recent example in the UC system of the creation of a school/division/college around Computing and Data (and certainly much more recent than at UC Irvine – 2020 vs 2002)
2. The Berkeley model addresses the issue of how a computing department that already exists in Engineering should be housed on campus: the solution at Berkeley involves joint affiliation, so that the EECS department (which at Berkeley is a single department) belongs to essentially two divisions/colleges: both the college of Engineering, and the new division of Computing, Data Science and Society. This joint affiliation model is also used at other institutions nationally, most recently at MIT (in the recent creation in 2020 of their Schwarzman College of Computing), but also at Cornell and at the University of Washington.

UC San Diego stands in a unique position to build SCIDS as a structure that brings to bear the capabilities of the Halıcıoğlu Data Science Institute and the San Diego Supercomputer Center, while also supporting the broader campus through additional formal connections between existing units and SCIDS, as will be described in further detail in section 7.1.

3.3. Relationship to the California State University and Community Colleges

Both HDSI and SDSC have existing engagements with the CSU and CCC systems that conform to the spirit and requirements of the California Master Plan for Higher Education. Given the scale in terms of number of students (0.5 and 2 Million respectively) compared to UC San Diego (aspiring to grow to 50,000 students), we are meeting the students where they are in CSU and CCC through institutional engagement at the campus leadership and faculty levels. Conceptually, we are working with both the CSU and the CCC system as collaborators to help us understand how to create national programs to achieve systemic change that democratizes access to cyberinfrastructure and computer, information, and data sciences nationwide. There are two components of our current strategy for engagements with CSE and CCC: (a) building transfer pathways for students from Community Colleges to Data Science academic programs for successful and timely completion of our degree programs; (b) building on-ramp mechanisms that enable broadening the talent pool we can draw upon for entrance into our programs. These activities are supported by a combination of HDSI endowment-generated funds as well as funding from national initiatives where we have been very successful in recent years. We will continue pursuing federal funding for such programs in collaboration with CSUs and CCCs as a part of teaming efforts. For more details, see Section “5.1 Current Efforts on JEDI at SDSC and HDSI.”

We have been working on building “transfer pathways” between local community colleges and our data science program, partly with the goal of increasing diversity in our transfer cohort. The transfer pathways from Community Colleges currently face a number of challenges that the faculty and staff in HDSI are intensely engaged in resolving. For instance, HDSI faculty and staff are working closely with MiraCosta College in San Diego and have helped them create a data science program that will prepare students for transfer to UC San Diego. We anticipate that MiraCosta will offer their data science classes in the next year, as we work to reach out to other community colleges and devise plans for a regional summit in the newly inaugurated HDSI building.

When it comes to diversity, a topic that we address in depth in Section 5, our current data on the first two years of transfer students into the Data Science program points to a rather
similar racial and ethnic distribution of transfer and first-year students. More importantly, it points to a significant room for improvement in inclusion of African-American and Hispanic populations. Under the leadership of a full-time outreach coordinator, we have identified the core challenges and devised plans to improve the diversity of the cohort.

Briefly, while there is significant demand at University of California campuses for their data science programs, community colleges and CSUs are struggling to recruit students into their corresponding programs, limiting our potential growth. A particular challenge here is that unlike most other data science programs, UC San Diego’s Data Science program consists of courses created “from scratch.” This is a strength when it comes to preparing 4-year students to compete nationally including with students with MS in Data Science degrees from other schools. It also creates challenges for transfer students since much of our lower-division curriculum does not exist at community colleges. We have identified areas of overlap and courses that can serve as a steppingstone for a streamlined pipeline of talent training. For instance, most CC students will be able to take a course in Java or introductory statistics. SCIDS plans in this area will consist of following elements: develop an “adapter” course that can be taught at the community college level and supplements existing community college courses but provides the missing content that is specific to our data science curriculum. Second, develop a summer version of DSC 80 (Practice and Application of Data Science) specifically for community college transfers. This course represents a transition point from our lower division to upper division in Data Science major, which can also serve as an important means to match the impedance of Data Science major upper division coursework and the background and preparation for the entering transfer students. A successful execution of this plan will keep our transfer students on-track for timely progress and graduation. With SCIDS, we will also be better able to institutionalize and support our workshops with teachers drawn from community colleges and work with them to build pipelines.

For the second component of our strategy to engage with the community colleges, we are also creating new pathways via on-ramp courses and bootcamps that expand the flow and preparation of CC students for success in SCIDS degree programs. This will build upon ongoing efforts by HDSI in helping CC in the San Diego area through the process of articulation agreements for courses where credits can be earned by the students joining the Data Science program. This activity is currently being conducted by a temporary contractor enabled by the HDSI endowment resources. The contractor also prepares and offers Python training bootcamps that help our incoming students to be better prepared for success and on-time graduation when entering into the program. With the establishment of the school, we plan to institutionalize this process through permanent leadership and staff support. HDSI also currently engages with the San Diego State University (SDSU) computer science department in joint proposals and recruitment of students in the joint PhD program currently hosted by the Jacobs School of Engineering. SCIDS will explore building on this tradition through expansion of this joint doctoral degree program.

3.4. Relationship to the San Diego Community and Global Partners

We stand on the cusp of a new era in research and education as we scale up the progress in science and technology of the past many decades to population-wide impacts. To be successful, we must address essential issues of equity, diversity, and inclusion. The imperative and need for societal impact is shrinking innovation cycles. While advances in basic research will continue, there is a need for translational research and transition to practice of foundational research. High performance computing (HPC) and big data—
essential to discovery science—are now also necessary for AI and societal impact. The phenomenon of HPC emerged from “big science,” while big data and data science emerged from industry. We are now seeing the need for convergence across computing, information, and data in order to support discovery science as well as translational research.

UC San Diego is on track to becoming a STEM Hispanic-serving Institution (HSI). As Chancellor Khosla has said, the university is “taking meaningful action\(^\text{17}\) so that UC San Diego can better reflect and serve the diverse population of California.” Indeed, attracting and retaining students is essential for a successful HSI—or, for that matter, for any institution interested in serving underrepresented minorities. However, becoming a STEM HSI is more than just about student retention and success. It is, in fact, about a fundamentally new world view—about the types of problems researchers choose to address; the types of solutions they seek out; and the types of collaborators and students they engage in addressing these problems and developing solutions. As a new institution, designed for a new era, SCIDS will employ computing, information, and data to develop solutions for a wide range of complex global issues—from climate change and pandemics to misinformation—and focus on their regional and local impacts by leveraging UC San Diego’s emerging status as a STEM HSI and the unique geo-political location and context of the San Diego region.

Efforts like the Border Solutions Alliance\(^\text{18}\), the Innovative Cultural and Education Hub in downtown San Diego, SDSC’s WiFIRE project on California wildfires, and the COVID-19 K-12 e-Decision Tree for managing COVID outbreaks in San Diego schools are all examples of projects tackling complex problems with a regional flavor. The WiFIRE project is working within NSF’s new Convergence Accelerator program, which focuses on translational research and transition to practice. Experiential learning is essential to translational research. The SCIDS educational agenda will embrace translational research and transition to practice, providing students hands-on learning with real-world data in real-world situations. The NSF Data Science Corps program encourages bringing real-world data sets into the classroom setting and providing student internships for learning in real-world environments and provides a good model.

With its emphasis on foundational as well as translational research at the nexus of computing, information, and data, and the 35-year reputation of SDSC as an organization that provides world-class research, development, and production services, SCIDS will be well-positioned to make important contributions and play a key role in national initiatives including the National Strategic Computing Initiative (NSCI), the National AI Research Resource (NAIRR), and the call for a National Research Cloud—which could be an extension of the NSF-funded CloudBank project based at SDSC. SCIDS can serve as a natural home for such initiatives.

### 4. ACADEMIC CURRICULUM, DEGREE PROGRAMS, and ACADEMIC RIGOR

The convergence of disciplines and interdisciplinary engagements brought about by the SCIDS provides an excellent opportunity to create degree programs that serve the current

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\(^{17}\) [https://ucsdnews.ucsd.edu/feature/becoming-a-hispanic-serving-institution](https://ucsdnews.ucsd.edu/feature/becoming-a-hispanic-serving-institution)

\(^{18}\) [https://mexico.ucsd.edu/initiatives/border-solutions/index.html](https://mexico.ucsd.edu/initiatives/border-solutions/index.html)
and growing need for talent in an information-enabled society. Fulfilling these needs will be accomplished in diverse ways beyond traditional in-residence undergraduate and graduate degree programs. For instance, SCIDS will develop programs that teach skills that enables individuals to access the benefits of information society in their personal or professional lives, help some others make career transition through new training programs, and help senior executives understand the growing role of AI in businesses. Accordingly, the educational mission of SCIDS will span traditional degree programs to outreach and training for diverse talent. This diversity reflects the difference in background and training of the talent drawn to its various degree programs. SCIDS will build upon HDSI’s mechanisms consisting of counseling personnel and on-ramp training boot-camps and courses to build expanded pathways. In the following, we outline degree programs currently offered or in the planning stages as representative of overall offerings by the new School. The outreach will include on-ramp training for incoming and potential future students of our degree programs who are able to explore preparatory topics for later success, as well as professional development opportunities for working professionals in the industry and civic organizations, an area in which the school will coordinate with UC San Diego’s Division of Extended Studies. The school is particularly positioned to support this mission because of the core capabilities it brings from its academic appointees as faculty and affiliates, as well as practicing computing and data science professionals at SDSC. In the following we briefly describe the goals and status of degree programs that will be offered by the SCIDS at its launch. This initial academic structure is provided by the incredible growth of academic programs at HDSI since the launch of the institute in 2018.

4.1. Bachelor of Science in Data Science (BS-DSC)
The HDSI currently offers the BS in Data Science both as a major and minor option. The degree program is designed to essentially replace the current BS (engineering or computer science) + M$\text{S}$ (data science or artificial intelligence) options available to students. The DSC major is currently capping enrollments due to its legacy as a part of administration within JSOE where all programs limited the number of majors. In fact, as HDSI has recruited more faculty and created additional teaching capacity, it has substantially increased the capped limits (from 175 to 300) and is planning the removal of cap limits altogether under the processes established by the new School. HDSI has already received the permission for engineering majors to double major with Data Science. Further based on recommendations from the SCIDS Working Group a proposal has been developed to include a discussion of Data Science minors in campus undergraduate programs.
The DSC program is designed to be accessible to a broader group of students than current specializations of Data Science offered by alternative MS programs. The program consists of 116 units of course work (56 units for a minor). Required courses include courses in mathematics (especially linear algebra and probability), computer science (programming, data structures and abstractions, data mining), and statistics (estimation, testing, and exploratory data analysis). A 12-unit lower division course sequence in physics, chemistry or biology reinforces a strong background in natural sciences. The
program includes 20 units of elective courses that enable students to embark upon an in-depth exploration of one or more areas in which Data Science can profitably be applied. Alternatively, students can choose to explore the mathematical, statistical, and computational foundations of Data Science in even greater depth. All majors are required to undertake a two-quarter senior project, giving them an opportunity to creatively synthesize much of what they have learned in their courses. There are two notable features of the Data Science program: (a) All required courses are typically completed by the end of third year into the program leaving the senior year for student-directed exploration of topics among many elective courses; (b) every student is required to complete a minimum 2-quarter long capstone project sequence generally in a team of 2 or 3 students. Each team is mentored by a faculty member, sometimes in collaboration with an industry mentor. Besides capstone there are multiple opportunities for students to carry out projects the entire four years of the program starting with HDSI UG research scholarships from the first year of the program. The goal of experiential learning in Data Science major is to ensure that each graduating student completes the program with a portfolio of various projects that expose them to ways methods and tools taught in the required courses can be applied to one or more application domains.

The BS-DSC program was launched in AY 2016. The class of 2025 (admitted in the Fall of 2021) consisted of students with an average GPA of 4.25 (25th percentile at 4.20 and 75th percentile at 4.33), making Data Science among the most sought-after majors. The program was heavily subscribed and beginning AY 2018, the program has been among the capped majors offered by UC San Diego. There are over 800 DSC majors making it the sixth largest major at UC San Diego. The pervasive need for Data Science skills also leads to DSC experiencing a higher than typical fraction of students who are drawn from other majors. Given this demand we have established a minor in Data Science. A significantly enhanced role for the Data Science Minor is an important part of the academic program, ensuring access to Data Science courses and HDSI resources as broadly as possible to all academic programs on campus. Currently the undergraduate courses offered by HDSI are also attended by over 2500 students in the Data Science minor, and there are over 5000 students enrolled in Data Science undergraduate classes annually. This number is currently growing commensurate with teaching capacity.

Going forward, the Academic Senate approved in 2022-2023 a transition away from the Capacity-Based Admissions Pilot Program (‘capped major program’) in favor of a more holistic approach to enrollment management. In particular, rather than designating majors as ‘capped,’ Enrollment Management engages in conversations with departments and Deans to ensure that they are aware of enrollment goals. While this, in effect, may limit admissions to particular majors – in a manner similar to the capped major program – it is more dynamic and allows for a nimbler response to demand and resources, and it allows Enrollment Management to monitor the make-up of incoming classes more holistically. And, this helps mitigate the adverse effects of publicly declared capped majors that tended to discourage students, particularly from backgrounds with limited counseling support, from applying to these majors, thus directly affecting the diversity in the pool of applicants. The Data Science major in SCIDS looks forward to embracing this new paradigm of holistic enrollment management. The emphasis will be on right-sizing the incoming class and moving to less reliance on internal intra-major transfers during the first two years. Removing declared impacted status will likely help with improving diversity among the aspiring applicant pool and will also allow the program to better focus on
4.2 Graduate Programs

Data Science is a popular graduate level subject: in 2019, nearly half (1571) of over 3000 applicants to various graduate degree programs in Electrical Engineering, Computer Science and Cognitive Sciences indicated interest in a Data Science program. To serve this growing need, HDSI currently offers three graduate degree programs while two other degree programs are currently in planning. In the following we describe the current and pending graduate programs, for details and updates please check the website at https://datascience.ucsd.edu/academics/graduate/graduate-program-requirements/:

1. Master of Science in Data Science
2. Online Master of Data Science
3. Doctor of Philosophy in Data Science
4. 4+1 BS/MS program in Data Science and Business Analytics
5. MD-MS Degree Program

4.2.1. Master of Science in Data Science (MS-DS)

The MS-DS program was designed together with PhD-DS program (described below) with the goal of attracting top students from around the world to the emerging field of Data Science to pursue the proposed M.S. degree that provides them with the necessary knowledge and skills to pursue a career in Data Science for industry, civil services or academia. To achieve this goal, the program is designed to be broadly accessible to students drawn from a variety of undergraduate backgrounds via well-articulated pathways through courses in the program as well as on-ramp courses with financial support necessary to ensure a diverse talent pool.

The educational objectives of this program are to teach students knowledge and skills that enable them to (a) collect raw data from various sources and convert this raw data into a curated form suitable for computational modeling and analysis (e.g., its use in designing experiments); (b) understand learning algorithms and how to appropriately use them in targeted domains such as in business, health etc. (e.g., in developing effective optimization methods); (c) interpret the results of these algorithms and iteratively drill down into the data, perform analysis, visualize results and carry out scientific enquiry appropriate for the targeted domains.

The curriculum is structured into three groups of courses: foundational courses that cover five critical foundational knowledge and skills that each graduating student from the MS-DS program is expected to receive at a graduate level. These are: programming skills, data organization methods, numerical linear algebra, multivariate calculus, and probability & statistics. We do not expect entering students to have all these skills. Instead, entering students typically fall into three streams: (a) those with background in computing and computer science; (b) those with background in mathematics and statistics; and (c) those with background in an application area of data science with skills in quantitative analysis. HDSI offers five courses in this category; a student can take credit towards an MS degree in a maximum of four foundational courses.
The second group of courses are *core* courses, areas that are expected to be understood and practiced by our graduating students. Students are required to take at least five core courses, three of which are required for all students: Machine Learning, Statistical Methods and Data Ethics & Fairness.

Finally, the third group of courses are *elective* courses that explore advanced topics in Data Science or its applications into specific domains. The MS program provides two options: a conventional thesis option that focuses on a technical project implemented and documented into a MS Thesis under the guidance of a 3-person committee; and a course-based comprehensive examination options that enables students to choose from among core courses three courses where the students are examined in that specific subject within a much larger context of application or data science foundations.

The MS-DS program also provides a pathway for students to apply for and transition into a PhD in Data Science degree. The MS-DS program was launched in Fall 2021 with the inaugural class joining the program in Fall 2022. In its inaugural year, over 300 applications were received for the MS program, with an expectation of offering admission to about 60 MS students and matriculating some 20 MS students to start in Fall 2022.

### 4.2.2. Doctor of Philosophy in Data Science (PhD-DS)

A doctoral program is key to the success of a discipline in defining its intellectual core. Given the transdisciplinary nature of Data Science, such a core must also cultivate talent drawn from diverse intellectual traditions from sciences, engineering to social sciences and humanities. Such a program cannot simply be a collection of diverse existing topics or multiple courses and degrees in sciences and humanities stacked on an individual, or specialization of an existing program. Instead, a streamlined and integrated approach to curriculum is needed that is accessible to students drawn from different undergraduate degree backgrounds.

Over the last two years, the HDSI faculty have successfully addressed the challenge of program accessibility in its Master of Science (MS) program. Building upon the MS-DS program, the doctoral program is structured to cultivate both a generalist’s penchant for persistence in results validated by proofs, and robust experimentation as well as a specialist’s view of practical impact validated by real-world demonstrations, user studies and trials. HDSI faculty started working on designing a PhD program in Data Science in Fall of 2019 after preliminary discussions in the first Faculty retreat in October 2019. Over the next two years, the program evolved into a comprehensive proposal that was formally approved for implementation in Summer 2021. The PhD-DS program was launched in Fall 2021 with the inaugural class joining the program in Fall 2022. In its inaugural year, over 150 applications were received for admission into the PhD program. The plan is to review and make offers to about 20 students with the expectation of 7-10 new entering PhD students starting in Fall 2022. The program will also be opened to transfer from other degree programs in Spring 2022.

The goal of the PhD in Data Science is to serve the need for advanced graduate students in the area, create a talent pipeline that advances the frontiers of knowledge and practice in Data Science. The program is designed to teach students the knowledge, skills and *awareness* required to perform data-driven tasks in practice and to expand the boundaries of knowledge in Data Science. To achieve these goals, the graduate program
is structured as a set of three key requirements related to coursework, examinations and dissertation compliance. The course preparation consists of breadth and depth requirements of 48 units taken for letter grade and 4 units of satisfactory completion of professional preparation courses. After a required preliminary advisory assessment at the end of first year, the examination requirements consist of research qualifying examination and a dissertation defense examination.

There are three key distinguishing features of the PhD program in Data Science: one, the program features a required one-year rotation program that exposes all students to research culture and methodology in diverse disciplines where data analysis plays an important role. Two, all students are required to take courses on Data Ethics and Fairness (DSC 260) as well as professional development courses that include TA/Tutor training, Faculty Research Seminars and Academia Survival Skills (DSC 295). Three, the dissertation compliance requirement involves approval of a thesis that specifically meets generalizability, reproducibility, and responsibility (GRR) requirements. The primary reason for these additional requirements is the transdisciplinary nature of the nascent discipline that places an additional emphasis on identifying core elements of a research dissertation that forms a basis for it to be considered primarily in data science. Doctoral degree candidates in Data Science are expected to demonstrate evidence of generalization skills, and reproducibility in research results, as well as the ability to responsibly conduct and use data science considering potential ethical and societal implications of the research results. Evidence of these skills may be in the form of -- but not limited to -- generalization of results arrived at across domains, or across applications within a domain, generalization of applicability of method(s) proposed, or generalization of thesis conclusions rooted in formal or mathematical proof or quantitative reasoning supported by robust statistical measures. Reproducibility requirements may be satisfied by supplying additional supplementary material consisting of code, data repository along with evidence of independent external use or adoption. Evidence of responsible use of data science include ability to collaboratively identify and respond to ethical and societal opportunities and risks and adhering to “best practices” in terms of ethical consequences (for example, obtaining appropriate consent for data collection about humans, documenting design and modeling choices etc.).

The GRR requirements will necessarily require a PhD student to be exposed to one or more application domains since understanding data upon which method advances are tried must be understood by the researchers so that the objects of generalization, reproducibility and responsible use are indeed supported by the experimental data. Normally this would be through an advisor or co-advisor who works in an application domain area, or through the rotation program. In addition, HDSI is developing tools to also assist students broadly in discovering potential users and applications of their work, to enable discovery and dialogue among the domain and method experts as one would have with a real-life consultant.

4.2.3. Online Master of Data Science (OMDS)

The online Master of Data Science program (OMDS, https://omds.ucsd.edu/) has been developed and offered jointly with CSE and HDSI starting Fall 2022. The program was designed to serve the needs of working professionals as well as provide easy access to advanced training in data science to talent that would not be normally served by our residential MS programs. The learning goal of the program is to teach students the skills
required to be successful at performing data-driven tasks. This includes the ability to: (1) collect raw data from various sources and convert this raw data into a curated form amenable to algorithmic analysis (2) understand machine learning algorithms and how to run them on large data sets; (3) interpret the results of these algorithms and iteratively drill down into the data, and perform more analysis, to answer questions about the data.

The program is designed to be online using “R” courses approved by the Graduate Council of the Academic Senate. These courses are designed with curricular requirements and review that is identical to regular courses for in-person instruction as shown in the Figure below. In addition, the courses are also subject to feedback and statistical data collection analysis for their performance on the standards related to learning goals and outcome using a process (shown below) devised and orchestrated by the Digital Learning Initiative from Teaching and Learning Commons at UC San Diego. ([https://digitallearning.ucsd.edu/instructors/resources/guidelines-for-online.html](https://digitallearning.ucsd.edu/instructors/resources/guidelines-for-online.html)).

The courses are designed and offered in a manner to enable reaching a broad geographic population and provide educational experience to a community that until now has been underserved. The rising cost of higher education, along with the economic challenges faced in residential education leave behind a large population of students; many of them are our graduates from years or decades ago, who need to keep up with changing technological realities. Many of these students cannot attend residential education at any price due to career constraints or family obligations. Further, emerging areas, such as Data Science, represent a leading edge of technological advances that simply cannot be taught by community colleges or our own extension programs.

The Figure below shows the overall program outline for OMDS degree. The program follows a similar structure of courses as the residential MS-DS and PhD-DS programs consisting of foundation, core and elective groups of courses.
4.3. Growth of Educational Programs

The growth plan for the educational program in data sciences is reviewed in section 7. In the context of ongoing state-mandated growth in undergraduate and graduate enrollments, the projected growth in HDSI degree programs should be understood as purely additive - supplementing our capacity to provide educational experiences in computational and data sciences across the campus.

4.4. Proposed Specializations and Partnerships

4.4.1. 4+1 BS/MS program in Data Science and Business Analytics
The BS/MS 4+1 (or 3+2) programs seek to combine a BS degree with a MS specialization, usually in another discipline, to effectively channel our graduating seniors into interesting graduate programs. The coordination of BS and MS degree program plans not only results in time savings for the graduating seniors who are interested in higher education but also savings in both time and money for the students by coordinated offering and
selection of elective courses in the two programs. Thus, by choosing appropriate domain electives in their senior year, the BS-DSC students can get a head-start in the MS program. Combined with seamless transition from senior year to first year graduate student including use of summer courses,

We describe one such program that channels graduating BS-DSC students into two different MS programs offered by the Rady School of Management. In the future, we anticipate SCIDS will utilize these programs to build stronger ties to other schools on campus.

Our current proposal creates two pathways for HDSI’s Data Science students into the Rady graduate programs: a Master of Finance (MFin) or a Master of Science in Business Analytics (MSBA). Combining HDSI’s robust undergraduate training in data science with domain-specific application and business acumen in either of these two master’s degree programs will create value for firms and lead to successful student outcomes in the job market. HDSI undergraduate students who are considering masters-level study will benefit by saving time and money under this proposed structure.

4+1 Program Basics
Undergraduate Data Science majors in good academic standing will have the opportunity to pursue either the MFin or MSBA graduate programs by taking Rady graduate-level courses, totaling 12-16 units, during their senior year of undergraduate study. These courses will count as major elective units in the DSC program and be waived from the respective graduate program. Students would enroll in these Rady graduate-level courses at their standard undergraduate tuition rate—a savings of just under $20,000 at current tuition levels (varies slightly by program). The students would be able to complete the remainder of the graduate program with just three additional quarters of study, enabling them to get a jumpstart on their employment search sooner than if pursuing masters-level study after their standard DSC education plan. The pathways to two programs (MFin and MSBA) allow students to complete 50-52 units of graduate courses through a combination of capstone and DSC electives chosen from MS programs.

4.4.2. MD-MS program
The HDSI faculty are currently engaged in discussions regarding an MD-MS degree in Biomedical Data Science. The proposed degree is tailored to medical students enrolled in the School of Medicine in the MD degree program. This degree provides a pathway for the physicians who have already completed their terminal medical degree (M.D., D.O. or M.B.B.S.) to receive substantial and practical training in Data Science areas. The proposed program is a joint initiative with the School of Medicine to train the next generation of physicians, particularly those who wish to pursue a career in data analytics in medicine.

Like a residential degree program, the MD-MS program has two tracks: a thesis-based or a course-based comprehensive examination. The proposed program consists of following elements:

- A 36-unit, thesis-based program anticipated to be completed in 1-2 years.
  - Alternately, a 36-unit course and qualifying examination-based program anticipated to be completed in 1-2 years.
4. A 6-course requirement followed by successfully completing a qualifying examination to be completed in 1-2 years.
5. A required core set of 4 Biomedical Data Science courses (16 units)
6. Electives taken from a list of permitted electives (8 units for thesis-based program and 24 units for coursework-based program)
7. Thesis research units, (least 8-12 units) supervised by HDSI and SOM faculty designated jointly by the Program.
8. HDSI and select Health Sciences research seminars to enrich student experience and provide exposure to potential faculty mentors.

4.5. Experiential Education Programs

The best education happens when research and teaching missions align. Experiential programs provide opportunities for such alignment through integration of students in cutting-edge research and practical settings to apply their learnings from classroom education. A direct impact of such programs will be to increase innovation in both research and education with pathways to direct applications across science, engineering and societal domains.

4.5.1. Translating Data Science from Classroom to Research Scale

The focus of education is to teach concepts. In data and computational sciences, this is typically done at the smallest possible non-trivial scale, for students to be able to focus on the concepts rather than getting lost in technicalities of applying these concepts at the scales required for cutting-edge research. In practice this often means GB datasets for the classroom, and TB datasets for capstone projects, whereas cutting edge research at SDSC often involves PB scale datasets, and beyond. SCIDS provides an opportunity to holistically think through the process of scaling out the application of concepts from the classroom to the research scale, and thus bridging the many orders of magnitudes in between.

In practice, this can be done by connecting the concepts taught in the classroom and capstone projects to doing research at SDSC during summer internships or work study during the school year. SCIDS will facilitate strong linkages between CI professionals at SDSC that are responsible for large cyberinfrastructure projects, and a student workforce at HDSI that is well trained in practical skills of relevance, and thus attractive to hire.

CI professionals at SDSC excel at attracting research grants and contracts for sponsored research, which in turn create specific commitments to funders. It is thus a core mission of SCIDS to develop the processes that scale out the skill sets of our students to meet the needs of large research projects at SDSC. As we accomplish this mission, we are creating a pipeline of students that successfully has translated classroom concepts to research scale. That pipeline will prove extremely valuable to researchers all over campus, and industry beyond, benefiting all stakeholders. The graduates from this pipeline enter their careers with research scale skillsets, and the CI professionals, faculty across campus, and industry beyond campus benefit from a dynamic highly skilled workforce to support their research enterprise.

4.5.2. Convergence Research Experience

In our age of complex societal-scale problems, there exists a growing need for university students and researchers to participate in multi-sector and cross-disciplinary partnerships focused on impact. Advanced computing and data science skills can help, but these skills
need to be combined with effective cross-disciplinary collaboration capabilities and a problem-solving culture. Convergence research in data science and computing requires training in use-inspired research and team science.

Experiential education programs at SCIDS will provide an opportunity for interested students to participate in convergence research projects across campus, applying their data science and computing skills to actionable projects, and, in the process, developing important convergence research skills. These programs will improve the competitiveness and influence of SCIDS graduates as they enter the workforce, positioning our students to contribute to solving the most important problems of our time throughout their careers.

In practice, this would be achieved through programs supporting participation of students at SDSC, HDSI and across UC San Diego. Convergence research programs are growing across the funding agencies exemplified by the various programs under the NSF Office of Integrated Applications. These programs explore the research foundations required by applications with potential societal impact and practical translation of integrated applications at the societal scale. SDSC has several active convergence research and accelerator projects, and this number is projected to grow under the SDSC’s Division for Cyberinfrastructure and Convergence Research and Education (CICoRE), with a vision to “translate cyberinfrastructure research for impact at scale.” As such, the mission of CICoRE is to provide experiential education and training programs for use-inspired research and team science. CICoRE also works with funders and government organizations to increase capacity in this area, e.g., an NSF Convergence Research Winter Institute is planned for February 2023.

4.5.3. Professional Education and Training Programs

One of the biggest challenges facing the workforce today is keeping up with the rapid advances induced by data science and computing, e.g., artificial intelligence, cybersecurity, internet of things, and cloud computing. Without programs to actively boost modern data science skills, a gap between the existing workforce capabilities and the talent needs of companies accelerates. Programs to upskill existing talent through ongoing professional training and education is a growing need.

SDSC has been an active provider of workforce development and professional programs over the last decade through data science bootcamps, weeklong training programs, online professional certificate programs and partnerships with the UC San Diego Division of Extended Studies. In addition, SCIDS will build upon these programs to create functional programs for professional training that can scale via remote instruction and be self-sustained through industrial partnerships.

4.5.4. Rotational Programs at the Digital Continuum

Rotational programs benefit graduate studies and professional development through exploration of skills and knowledge. Although such programs exist in other areas of research, a rotation program for computing and data does not currently exist in UC San Diego, leaving development in this area to the initiative of the students. SCIDS will include a rotation program for graduate students to explore data science, information, and computing as a foundational skill in research.
In practice, this is achievable via 4-6 week rotation programs at SDSC for graduate students in areas including high-performance computing and big data systems, internet of things, research data management, actionable knowledge networks and networking. Such rotation programs provide the students with the background of related skills before they choose a specialized research direction in a multidisciplinary data science area and prepare the students with the hands-on skills applicable in their graduate studies and beyond.

4.6. Impact of SCIDS on Educational Programs at UC San Diego

Creation of new Schools often raise concerns about the impact on extant programs in terms of student enrollment, competing interests and curricular challenges. As we discussed previously SCIDS, unlike any traditional School, will have a unique status in building strong bridges and foundations across all schools on campus. We elaborate this point here. In terms of competition for students across units on campus, we would like to point out that UC San Diego is on a growth path and a number of majors are impacted owing to restrictions on space and instructional capacity. For example, we are losing some very high-quality students who apply for programs in Engineering owing to the impacted status of several engineering majors. And in data sciences, our student applications are from stellar students who will qualify for the most prestigious institutions. Hence, SCIDS will only have beneficial and not adverse impact on undergraduate student enrollment. First and foremost, HDSI as a primary department in SCIDS has already established a premier undergraduate program with enormous enrollment demand and in the 6 years of its existence there is no negative impact on the quality of students admitted to any other program including computer science or other engineering departments.

SCIDS will also play a key role in broadening the access of students across the university to instruction in computational and data sciences. Owing to a lack of enrollment capacity, courses in computing and data analytics have not been available to non-STEM majors. The establishment of SCIDS offers the opportunity to remedy this deficiency through development of courses targeted at non-STEM majors, supplementing existing efforts in CSE and other departments. In addition, as we discuss in section 5, on Justice, Equity, Diversity and Inclusion (JEDI), SCIDS opens a new vista for training and mentoring URM students both at UC San Diego and other institutions across the state.

5. JUSTICE, EQUITY, DIVERSITY and INCLUSION

The formation of SCIDS comes at a time when the academy and society are facing profound challenges and opportunities in building a more just, equitable, diverse, and inclusive (JEDI) society. Computing, information, and data science have the potential to be both a tool to addressing these challenges, and a vehicle through which the university leads by the example of its actions and the programs it undertakes. Thus, the formation of SCIDS is a once-in-a-generation opportunity to build a program where JEDI is part of the fabric of the school, with the principles and central components of its core functions embedded in the institutional infrastructure and throughout its academic programs. A multipronged and multilevel approach will engage all populations of the school to ensure that the hard work of JEDI is acknowledged, celebrated, and rewarded. This will be achieved by integrating a JEDI framework in the school’s mission and all activities from inception.
Helping to build an equitable future where all of society benefits from computing, information, and data science is a strategic goal for the University of California, and in achieving this goal it will be essential to uncover and reward the contributions the faculty, staff, and students of SCIDS will do to promote JEDI. Achieving these goals requires a steadfast commitment by all stakeholders to be inclusive, hold one another accountable, use data to drive decision-making, and ensure that adequate resources are available to carry out the work. Accordingly, it is essential that sufficient funding for programming and staffing be allocated to ensure that the financial commitment is commensurate with the goals and expectations for JEDI.

The core principles of JEDI are instantiated concretely into the activities and programs of SCIDS.

**Justice:** To achieve justice, a recognition of harm and work towards restoration and repair are essential. SCIDS will acknowledge that data and information are controlled and shaped by power and privilege and can be used in harmful ways. The research, teaching, and community engagement in the school will include using a critical lens towards data and information science, examining historical practices that have created disparities within our social systems.

**Equity:** Decision-making processes that lead to equitable outcomes will be prioritized in the development of the policies, practices and procedures of the school. This will require continual tracking, monitoring, evaluating, and iterating to achieve equitable outcomes. The school will establish a structure to carry out independent equity evaluations, and direct resources towards implementing resources. This may include regular analyses of equity in teaching load (e.g., new courses prepared, class sizes, number of leaves, salary, advising/mentoring load, and service).

**Diversity:** The school will take a holistic approach to diversity. Diversity can be found in an individual's or group's background, experiences, and perspectives. The school will seek diversity across all groups and over the career life-course, not just at the beginning of the career. This includes a focus on diversity in: Leadership hiring, recruitment, and retention; Faculty hiring, recruitment, and retention; Staff hiring, recruitment, and retention; and Student admissions, recruitment, and retention.

**Inclusion:** To create a welcoming and inclusive environment for all, the school will develop programming that builds tolerance, awareness, and compassion, ensuring that discrimination and harassment are not tolerated. SCIDS will adopt standards that are developed by the community and revisit them annually. Focusing on inclusion can be facilitated through training for faculty, staff and students. Relevant areas for attention include Inclusive Teaching, Employment Equity, Racial Equity Training, Mental Health First Aid, LGBTQ+ Cultural Competency Training, Safe Zone Training, Racial and Cultural Competence, Ally Training, and American Disabilities Act Training.

SCIDS will look forward to participating in the biannual inclusive excellence accountability meetings established by the Vice Chancellor for Equity, Diversity and Inclusion at UC San Diego. These meetings ask unit leaders to address the effectiveness and impact of EDI strategies across all dimensions of students, faculty and staff, as measured by quantitative data, and are an important part of the Strategic Plan for Inclusive Excellence at UC San Diego. The new school will face the same challenge and opportunity that HDSI has faced with building a unit that has JEDI built into the foundation. The nascent state of the school will naturally make interpreting necessary data a challenge, so baseline data
from closely related fields will be used, as well as proactive efforts to engage the faculty, staff and students, as HDSI has done.

Founded as a National Supercomputer Center, SDSC brings a strong focus on national scale infrastructure and problem solving to SCIDS. This also extends to our aspirations for JEDI in SCIDS. E.g., the CSU and CCC programs alone have roughly 0.5 and 2.0 Million students each, compared to the just 50,000 UC San Diego is aspiring to. SCIDS will aspire to impact social mobility and equity, diversity, and inclusion at the full scale of the millions of students at those institutions by engaging these institutions and their faculty through federally funded collaborative activities. As essentially all CSUs and CCCs are HSIs, SCIDS has an opportunity to reach close to a million underrepresented students. By developing programs with these schools that work for them and their students, we can then try to evolve successful programs such that they have similar impact nationwide.

In this regard, it is worth documenting the baseline from which the new school will be starting by highlighting some of the current JEDI efforts at SDSC and HDSI. Accordingly, we start with a detailed description of the approach and plans at HDSI and SDSC, followed by our planned strategy for JEDI in SCIDS.

### 5.1. Current Efforts on JEDI at SDSC and HDSI

Current JEDI efforts at UC San Diego are coordinated in response to the required plans for Strategic Accountability Plan (SAP) overseen by the Office of the Vice Chancellor, EDI. The SAP plans are reviewed annually against pre-specified quantitative measures for their progress and impact. In the following we describe the current SAPs for the core units of SCIDS: HDSI and SCIDS to set the stage for an overall strategy for SCIDS.

Given HDSI’s overall mission to serve “as the campus hub for data science,” HDSI is specifically challenged to find ways in which it is able to maximally engage the largest set of individuals and departments from across the campus in activities and programs that share a broad interest in the areas of Data Science. To serve this mission in an effective and sustainable way, HDSI must devise initiatives and programs that ultimately and always present a ’win-win’ proposition to the academic units that it partners with in its various activities from industry liaison to joint degree programs. This charge requires us to think in a fundamentally different way as to how all our academic activities are structured, the incentives and reward system that supports these activities, and how the overall success of HDSI itself is measured. Fortunately, all these considerations directly lead to initiatives that are aligned well with the spirit of the “Strategy for Inclusive Excellence” adopted by the university. In particular, the campus strategy document seeks “dialogue and challenges itself to take bold actions that will ensure learning is accessible and affordable for all.” The core tenets to meet the goals for our campus using the SAP consist of 3 elements: access & success, accountability, and climate. Each of these has a direct reflection on specific initiatives taken by HDSI and SDSC. These are grouped by their primary goals in the following subsections.

**Faculty, Leadership, and Workforce Development**

HDSI has established a strategy for leadership through active and assertive stewardship of JEDI and broadening participation in computing (BPC) activities. This has included the appointment of a full-time diversity and outreach coordinator as a core position within the
The DEI committee has also created a Request for Activities (RFA) to support the faculty in their use of DEI funds. The RFA solicits and creates a portfolio of DEI activities the goals for the overall Inclusive Excellence mission of HDSI. Individual faculty members can then vote for their support of individual activities by volunteering their time and/or a portion of their EDI-sharepool funds. We plan to include these activities as a regular part of our academic review processes as the HDSI faculty council is converging on finishing and formally adopting a working document on “Policies and Procedures for use of EDI share pool funds.”

An important aspect of the HDSI strategy is the development of an open participation model that has proactively sought engagement of diverse faculty among the broad group of founding faculty of the institute, consisting of 68 women and URM out of a total of 186 involved faculty. As the institute has grown, the role played by the large number of founding faculty has evolved, and faculty governance of HDSI is now driven by the Faculty Council. The Faculty Council is the main governing body of HDSI and today consists of 26 faculty with 8 women and LGBTQ members and oversees broad EDI efforts. Inclusion has been a central goal in the governance of HDSI, with gender equity among the Associate Directors and HDSI Faculty Fellows appointed to date. This ensures that a climate and expectation is created where even representation is considered normal.

Turning to the efforts of SDSC, over the past year, SDSC’s EDI working group, chaired by the Center Director, has been engaging with campus to identify ways to build a more diverse workforce. These efforts have included new approaches to ensuring a diverse applicant pool for job opportunities, participation in UC San Diego’s Anti-Racism challenge and inclusion in new SDSC policies, as well as the active support and development of female investigators at the Center. SDSC recently launched a summer development internship program for diversifying the IT pipeline and giving students work experience in developing applications in an intense, real-world, agile development model. This approach is exemplified through the Research Data Services internship program where participants are eligible for Co-Curricular Records (CCRs) at UC San Diego; this program has served dozens of students with 90% persons of color and 41% female. These programs also serve to drive inclusion of early career researchers and incorporate EDI into every activity.
Impact of Investments in EDI
At the founding of HDSI, inclusivity and diversity were explicitly listed as one of its strategic planning goals: “cultivating a diverse and inclusive university community that encourages respectful open dialogue, and challenges itself to take bold actions that will ensure learning is accessible and affordable for all.” Supported by EDI-sharepool funds and HDSI’s direct and substantial investments from its endowment resources, a number of activities have been implemented successfully. These include K-12 Outreach programs such as HDSI Lab 3.0, an outreach program for K-12 students, to support broadening participation in data science and promote data science literacy for everyone. HDSI faculty and staff partner with local K-12 schools to show students how data science intersects with their everyday lives and different fields of study, including the arts, humanities, medicine, engineering and law. HDSI has established an MOU with Sweetwater Union High School District which has over 40,000 students enrolled with a 94% minority enrollment\textsuperscript{19} and have piloted 2 activities serving a total of 85 students in that district. In addition, faculty also speak at regional high schools as an outreach to the community, engaging many prospective URM students.

While it is not possible, nor useful to list all activities taken up by the individual faculty, the overall impact of major activities such as Python Bootcamp for DSC 10 on-ramp, IDEAS summer residential program, ClearMind Workshop that targets management of academic stress and anxiety, and participation in 10 different ongoing EDI-related programs led by various units on campus (PATHS, MARC, MAP, STARS, USS, McNair, ERSP, IDEAS, REHS, ENLACE) together account for mentoring and support of hundreds of students: in AY 2022 alone a total of 434 K-12 students participated in such activities under the engagement by HDSI faculty. With our investment into UCTV Data Science Channel, we plan to increase awareness and institutionalize these activities for the future.

HDSI: Ethics in the Undergraduate Curriculum
Ethics is a strong component of the existing UG program in Data Science in two ways: (a) HDSI currently offers DSC 167: Fairness and Algorithmic Decision Making, in addition to courses in Communications and Philosophy that are taught by our jointly appointed faculty and available as electives to Data Science students; (b) Beginning AY 2023, HDSI has restructured its required capstone course offering that includes an Ethics component that is taught to all students as a part of the required DSC 190A class.

HDSI: Growing a Diverse Undergraduate Cohort
One of the most important aspects of the JEDI strategy is the creation of a climate that supports broad participation in the undergraduate data science (DSC) major. The DSC bachelor’s degree program was inherited from a joint CSE+Math leadership in Fall 2018. Among our continuing students, 28.3% (128) students are first generation college attendees. Including our incoming freshmen there are 27% (183) students who identify as women or non-binary. While these numbers do not yet reflect the even gender split, we have experienced in our faculty hires, these numbers are significantly better than the underlying dominant engineering background of students, despite being drawn from 23 different majors.

\textsuperscript{19} \url{https://www.publicschoolreview.com/california/sweetwater-union-high-school-district/638640-school-district}
These efforts are already bearing fruit. HDSI is attracting diverse students who are excited about contributing to EDI efforts. This is evident by the newly formed Diversity in Data Science (DDS) student organization, with 40 student members, supporting 2 student-led EDI-related Data Science projects, each with a faculty mentor. The leadership of DDS is very diverse – with 6 of the 7 board members identifying as Hispanic/LatinX. As UC San Diego moves towards recognition as a Hispanic Serving Institution (HSI) it will be essential to further support student-led initiatives like this.

HDSI and SDSC: Broadening Participation Across the University

Data sciences have grown out of the fields of engineering and mathematics where broad participation of all groups has been a challenge even at the high school level. The formation of SCIDS will provide a new tool to broaden participation across the University. As has been noted earlier, data sciences pervade all disciplines of human endeavor and UC San Diego created data sciences through partnership with departments in Arts, Humanities and Social Sciences, in addition to STEM departments. For instance, HDSI has joint appointments with departments of Philosophy and Communications and is currently exploring joint appointments with the Departments of Linguistics and School of Global Policy & Strategy. The campus efforts to recruitSCIDS and in broad research areas that impact underrepresented groups, coordinated with the Advancing Faculty Diversity cluster hires with impact across UC San Diego also provides strong momentum towards an increased JEDI effort in SCIDS, and has already had an impact on faculty diversity.

SDSC also brings to the table important experience with programs to improve the pipeline. SDSC has well established programs with CSUs and CCCs that focus on offering the institutions and their faculty collaboration opportunities to impact social mobility and equity, diversity, and inclusion at the full scale of the millions of students at those institutions. At present, there are three SDSC programs, all funded by the NSF, engaged in growing collaborations, two with CSU, and one with CCC. The National Research Platform (NSF 2112167) provides a national scale machine learning platform, including engagement with seven CSUs, in addition to all ten UC campuses. NSF 2230127 is a $7M workforce development award with roughly half the effort going to CSUs San Bernardino and San Diego State University for development and 5-year support of Computing Infrastructure Professionals at those institutions. Finally, the NSF-funded CloudBank project, a collaboration led by SDSC, in partnership with UC Berkeley, and the University of Washington, engages with the CCC system. This is done via the UC Berkeley Data8 course and the associated Kubernetes-based infrastructure ("DataHub") that provides environments for Jupyter, online textbooks, autograding tools, and others. With partial support from CloudBank, the UCB team is engaged in a project to provision infrastructure, onboard and support users for a growing number of community colleges (e.g., Skyline College; City College of San Francisco; El Camino College; Skyline College, Los Angeles Community College, and others). SCIDS has the potential to “turbocharge” activities like these by engaging a large number of faculty within well-run large-scale projects that explicitly target engagement with significant numbers of MSIs all at once. HDSI’s financial incentives for faculty to get involved in EDI activities can be applied to these statewide or national programs, leading to systemic change by pairing up SDSC and HDSI in SCIDS.

Academic programming

HDSI is working to create broader awareness among the student cohort through the DSC 167 course, approved for the DEI course requirement, engaging some 50 students per
quarter. HDSI is also working to create awareness among the broader campus community by supporting, planning, and organizing the UC San Diego Health Science Community Fair. The 10-member DEI committee created an extensively researched Diversity Website that identifies resources for both campus-wide and HDSI faculty, staff, and students. Finally, HDSI hosts weekly Diversity Chats that have several regular attendees including a number of URM participants. These chats create a dynamic environment for proliferation of new ideas and serve different purposes thus attracting different audiences: from book reading, discussion of current events to a sounding board for sharing experiences.

**Community Engagement and Experiential Learning**

HDSI is also meaningfully engaging our industry and government partners into EDI activities. Specifically, Intel and Deloitte are each sponsoring multiple student projects (that pay students, as well as their faculty mentors from industry contributions) that have a majority of URM participants. There is no question that diversity and building a climate of inclusion is a work in progress in HDSI and at the broader university. The efforts to date show that a firm foundation has been built to support future efforts both in the institute as well as contributions to the JEDI mission of the new school.

At SDSC, technological innovations have been accompanied by the development of education, outreach, training, and community programs that seek to engage the UC San Diego, local, state, and national communities in a wide range of events, internships, mentoring, and other programs. The goal of these efforts is to bring the benefits of advanced computing to a much broader and more diverse community of stakeholders. There are numerous examples of these active programs including: the UC Women in Technology\(^\text{20}\); the West Big Data Hub’s programs, including partnership with Data 4 Good\(^\text{21}\); SDSC’s HUBzero’s support of the Intercultural Learning Hub\(^\text{22}\) that provides tools for interacting with multicultural students; UC San Diego’s Supercomputing Club\(^\text{23}\); the Science Gateway Community Institute\(^\text{24}\) partnership with Elizabeth City State University, which in the first 4 ½ years had 681 students and faculty participate, 469 of which were from underrepresented groups; collaboration with the HSI Stem Hub\(^\text{25}\) initiative out of New Mexico State; and programs for high school students, including the Mentorship Apprentice Program\(^\text{26}\), REHS\(^\text{27}\) (which pairs students with UC San Diego researchers in intensive summer and academic year programs), and PlantingScience.org\(^\text{28}\) (a HUBzero® supported hub) that facilitates professional development.

**Democratizing access to advanced computing**

SDSC’s vision of democratizing computing for all people and all fields of study provides a strong platform for the JEDI goals of SCIDS. The opportunities provided through SDSC’s programs, and the framework and expertise in place for the development of new ones, will offer a welcoming environment to faculty, students, and staff at all levels and

\(^{20}\) [https://www.ucop.edu/uc-women-in-technology/index.html](https://www.ucop.edu/uc-women-in-technology/index.html)

\(^{21}\) [https://escience.washington.edu/dssg/](https://escience.washington.edu/dssg/)

\(^{22}\) [https://hubicl.org/](https://hubicl.org/)

\(^{23}\) [https://studentorg.ucsd.edu/Home/Details/8249](https://studentorg.ucsd.edu/Home/Details/8249)

\(^{24}\) [https://sciencegateways.org/](https://sciencegateways.org/)

\(^{25}\) [https://hsistemhub.org/](https://hsistemhub.org/)

\(^{26}\) [https://innovation.ucsd.edu/events/applications-open-ucsd-mentor-assistance-program-map-2020-2021/](https://innovation.ucsd.edu/events/applications-open-ucsd-mentor-assistance-program-map-2020-2021/)

\(^{27}\) [https://summer.ucsd.edu/program-finder/research-experience-for-high-school-students.html](https://summer.ucsd.edu/program-finder/research-experience-for-high-school-students.html)

\(^{28}\) [https://plantingscience.org/](https://plantingscience.org/)
from all backgrounds to engage with world-class research, community service, and educational opportunities. Since its founding 35 years ago SDSC has been at the forefront of lowering the barriers to access to these resources and broadening impact through the design of systems, and development of software that support a broad community of users. As a leader in the development of science gateways, (e.g., the Science Gateway Community Institute, West Big Data Hub, WiFire, HUBzero®, and many others), SDSC has provided access to advanced computing to over hundreds of thousands of researchers, students, and users from hundreds of institutions across the country. As a leader in the development of data resources and services based on FAIR principles for data management (Findable, Accessible, Interoperable, and Reusable), SDSC is working to ensure broad access to valuable data and models.

5.2. Our Strategy to Operationalize JEDI in SCIDS

When considering JEDI (Justice, Equity, Diversity, and Inclusion) activities in SCIDS we make a distinction between two sets of questions: (a) What is the impact of the formation of SCIDS on diversity and equity metrics of the academic units? (b) What can the new school do that cannot be done by HDSI, SDSC alone, to advance JEDI goals for the campus, California, and the nation.

Our overall strategy is to operationalize this coherence across SCID’s overall mission and UC San Diego’s Strategic Plan for Inclusive Excellence. Consistent with this, we see following four goals and measures by which each of these goals can be tracked for progress:

1. Align institutional and individual success objectives and metrics.
2. Balance incentives against obligatory actions in SCIDS service activities.
3. Devise reflective and causally-connected metrics to drive success of its JEDI initiatives.
4. Devise access pathways and communications to support overall mission.

We have discussed pathways in some detail earlier and expand upon them later in this section. We briefly discuss other goals and measures that we plan to institutionalize in SCIDS that is possible with the academic support budget of a School. Goal 1 seeks to align the incentive and reward system across individual and institutional goals. Our entire system of incentives and rewards centered around academic review and promotion processes is built as an incentive to achieve individual recognition in a faculty or staff member’s primary responsibilities. For faculty, these responsibilities come in the form of research outcomes and secondarily as teaching activities. Mentoring activities are indirectly accounted for as a part of research activities, although across the University of California there is an increased recognition of mentoring as teaching. Nonetheless, to some extent there exists a gap between the Institutional goal of “inclusive climate and improved learning or job experience” and individual goals. A direct consequence of this gap is that the institutional and individual goals become ownership responsibilities divided neatly amongst administration and faculty/staff. As mentioned earlier, HDSI has taken proactive steps to ensure that the two goals are aligned via our system of incentives. For instance, the EDI sharepool plan makes EDI activities part of the research laboratory setup tasks via accountable third-party oversight of a part of the startup funds we provide.
to new faculty hires. We plan to institutionalize the EDI sharepool with the oversight of the assistant dean to build and support a portfolio of projects and services under a well-defined and detailed plan for inclusive excellence. Of course, an active and assertive stewardship of the EDI activities via a full-time endowment-supported diversity and outreach coordinator itself is part of the implementation strategy to achieve this goal.

The second goal seeks to provide financial resources to support efforts including the endowment-supported fulltime activity coordinator and the EDI sharepool funds. Such resources are necessary but not sufficient to ensure an active and sustainable ecosystem for an inclusive climate. Without a built-in sense of moral obligation, coupled with formal job requirements, such activities are unlikely to have long-term impact or become part of the institutional culture. To promote those long-term impacts, we have worked to emphasize consideration of these activities as part of the academic review process and will continue to do so in SCIDS. The nascent nature of HDSI, and when established, SCIDS, with new faculty, programs and processes is an advantage for institutionalizing such efforts. For example, in HDSI, mentoring is built into the academic program via capstone courses, and the expectations of contributions in this area are articulated in the offer letters for our entering faculty. This is important, because mentoring undergraduate students is an integral part of the college experience, and one where students from different backgrounds, minority communities can feel out of place on a large urban campus. Indeed, a major reason for proactively recruiting faculty with a strong potential to make contributions to equity diversity and inclusion through programs such as the Advancing Faculty Diversity projects on the Black Diaspora and Designing Just Futures with a focus on indigenous populations is to recruit new faculty who are better able to mentor and inspire URM students. The capstone courses provide a structured environment where all the faculty contribute to mentoring our students and have been highly successful as shown by the outstanding projects the students present each year.

Metrics are our means of achieving not only accountability but also for establishing a vision for what success looks like, especially for the faculty to measure their own progress. As an institution, our obligation is to ensure that the metrics being used are actually causally-connected to the desired outcomes of our efforts in fostering a climate of inclusion. That is, the outcome of directed efforts is directly reflected in the metrics. For this reason, some metrics are related to outcomes (e.g., number of K-12 students in our programs, number of high-schools reached in disadvantaged communities, etc.) and some are related to inputs without necessarily a similar rise in the corresponding outcomes (e.g., number of offers made faculty candidates across demographics and experiential backgrounds, number of scholarships offered to entering graduates). Statistics associated with metrics are further analyzed for insights into individual processes that may be affecting the outcome. A much harder case is presented by metrics where we have no direct or indirect influence even though these metrics are significant by their obvious presence. This includes the constitution of our entering cohort of undergraduate students. HDSI demographics reflect a baseline of a highly competitive discipline that is relatively unknown outside of elite college advising circles. While we can and are taking measures to get the word out through high schools and community college engagements, including pursuing articulation agreements, we have no real controllable way to affect the outcomes. Therefore, we will focus on building the reputation and accessibility of our program as outlined in the Goal 4 above, focusing on access pathways and addressed in sections 2.2, 3.3, 4.1, and 4.6 of this proposal. SDSC is an integral part of this overall strategy in that it has the operational strength to scale out activities and
faculty initiatives state- and nationwide. SDSC's platforms and programs made possible by a staff of currently 200 professionals will be available as resources to expand the impact of SCIDS faculty initiatives beyond just UCSD and the UC system.

Finally, we note that SCIDS will be closely allied with other schools’ departments on campus as discussed further below in Section 7.1. This will be advantageous, as the new JEDI work in SCIDS will extend beyond HDSI and SDSC to integrate with work in the other schools, contributing to the strengthening of JEDI efforts across the university.

6. RESEARCH in SCIDS

We propose the formation of SCIDS as we find ourselves in “the age of complexity,” where problems require integrated cross-disciplinary approaches enabled by information and data science, as shown in the figure above. Changes in knowledge, technology and the environment are having increasingly rapid impacts on society, requiring the development of new integrated systems on a grand scale. From the natural sciences to industry to big tech, challenges exist in not only benefiting from the advances in data science, information, and computing, but also in driving developments through the lens of society in order to solve the challenges of our time. Universities need to acknowledge these challenges and embrace new approaches to research that are focused on problem-solving to transform systems in societal settings as exemplified by the NSF’s focus on
Growing Convergence Research.29 SCIDS will be ideally situated to push progress forward on some of the urgent and complex societal problems of our time through integration of data science and computing.

Already our researchers are doing work at the forefront of the most important scientific and societal issues of the day – from climate change to COVID-19. These challenges require progress towards solutions at an unprecedented pace. As a leader in data-intensive computing and cyberinfrastructure, SCIDS will have an important role to play in moving from data, to discovery, to impact at the societal scale. To this end, SCIDS will focus on development of a convergence research agenda and new programs for advancement of responsible and ethical influence of data science, information, and computing within society. In this effort we note that our location at the U.S.-Mexico border means that in our region we experience global challenges locally in a way that most places do not. This results in a living laboratory for discovery in areas critical to our nation and society today. The unique attributes of the border region – a frontier in its own right – provide an unparalleled opportunity for data-driven research, as well as data science-focused education and workforce development. In the following sections we review elements of current research in HDSI, SDSC and the broader community at UC San Diego that combine to provide an excellent foundation for the success of SCIDS as a research innovator, as well as one of the primary goals of convergence research – translating innovation in computing, information, and data sciences into impactful practice.

6.1. HDSI Engagement in SCIDS

UC San Diego has a tradition for interdisciplinary research. The advent of big data across all domains of human knowledge has been long recognized by researchers at UC San Diego and HDSI fostered this environment further. HDSI brings together a large number of faculty and researchers across many departments and schools at UC San Diego with overlapping interests in the discipline of Data Science. HDSI research is organized into clusters of shared interests and domain knowledge ranging from foundational theory to challenging downstream applications in domains such as life sciences and environment. With the establishment of SCIDS, the opportunity to synergize interactions increases manifold. We summarize potential future research directions in SCIDS, several in collaboration with other units on campus, in the schematic below, which will undergo revisions dynamically with the growth of the school.

Focusing on fundamentals, research in SCIDS will build on the work of HDSI on the theoretical foundations of Data Science, design machine learning algorithms with provable guarantees, develop methods and tools for the practitioners that are broadly useful in combating the “deluge” of data caused by ever growing sources of data. In this endeavor, researchers with core expertise in algorithms, mathematics, and statistics work with domain experts in areas where there is a perceived benefit to collecting large amounts of data. The areas of expertise include, computer-intensive and non-parametric statistical methods, methods for time series data analyses, causality and inference, natural language processing, data security, and databases. The application domains that encompass the current research areas of HDSI faculty include life and health sciences, oceanography, material sciences, geosciences, and sensors. Other research areas include cognitive sciences and business analytics. The constant interplay between the

29 https://beta.nsf.gov/funding/opportunities/growing-convergence-research-gcr
particulars of a domain and generality of methods is essential to the advances sought in algorithmic data sciences and SCIDS can play a key role in this endeavor.

6.2. SDSC Engagement in SCIDS

UC San Diego is a pioneer in computational infrastructure and sciences. Over the past four decades SDSC has maintained national leadership as a paradigm for Moore’s law in computing and scientific leadership in helping the computing applications community. At this point of the technological evolution of software and computing, we find ourselves in a major transition, driven by two fundamentals. The exponential growth of computational power per dollar has slowed down substantially because of a slowdown in Moore’s law of growth in transistors per unit area. At the same time, instrumentation is still on an exponential growth curve in numbers of electronic channels per instrument, and the rate at which those channels are sampled and digitized. Similarly, growth in network bandwidth, and the number of devices on the network is still exponential. As a result, exponential growth continues in the generation of data, its movement, and the need for its processing. This is leading to an unprecedented hardware innovation landscape. Programmable computational capabilities are being integrated into devices of all kinds, including network interface cards, switch ports, and storage devices with corresponding innovative programming concepts like programmable networks, data flow processing, and computational storage. All these concepts are ready to be integrated into future HPC systems at all scales, from workgroup clusters to exascale supercomputers. SDSC has expertise at all layers of this ‘vertical stack,’ from an Advanced Technology Laboratory where new hardware and systems concepts are explored, to applications where domain scientists work on how to integrate those new concepts into their applications at scale. In the future, we may see increased application also of neuromorphic and quantum computing. Moreover, the deployment of devices with data collection and/or computing capabilities, and the way they are networked with each other continues to grow in both volume and diversity and has led to concepts like “edge computing”, “internet of things”, “wearable computing”, “networked living environments”, and “sensor networks” to mention some examples. The future of wireless communications provides additional opportunities for new types of distributed systems, networks, and radically different applications to exploit their capabilities. SDSC is positioned well to play a major role in driving advances in cyberinfrastructure, and their exploitation in new types of applications.

In parallel, the growth in data science in general, and artificial intelligence and machine learning, are providing additional innovation drivers, leading to hardware innovations on “conventional” CPUs and GPUs, as well as a plethora of hardware architectures dedicated to machine learning. Independently, Blockchain technology, and its use across novel types of applications beyond digital currency provides additional disruptive opportunities. All this heterogeneity in hardware, software, and deployments of both into novel types of systems provides us with exceptional opportunities for SDSC to do what we do best: translate innovations into practical use. SCIDS will provide the right scale and opportunity to execute the new paradigms.

6.3. Translating Innovation into Practice

In addition to advances in basic research, there is a need for translational research and transition to practice of foundational research. As societal challenges grow, there is a need for acceleration of innovation for societal impact. High performance computing
(HPC) and big data—essential to data-integrated discovery science—are now also necessary for AI and societal impact. The phenomenon of HPC emerged from “big science,” while big data and data science emerged from industry. We are now seeing a convergence across computing, information, and data to support discovery science as well as translational research.

This kind of research has been a core competency of SDSC for the last 35 years. One might even argue that SDSC was founded to support translational research in computational science and the transition to practice of innovations in software, hardware, and systems that depend on both, and the processes and procedures to effectively operate and support such.

By choosing HDSI and SDSC as foundational units of SCIDS, we have the opportunity to place a special focus on the translational aspects of research in computing, information, and data sciences. We propose to deliberately recruit faculty that primarily engage in such translational research. We propose to start this as part of HDSI, with a teaching commitment to the HDSI curriculum, but with an expectation that their research will depend on people and systems at SDSC, and their research groups will be housed at SDSC. In fact, we expect tenure for such faculty to be judged additionally on the impact of their research outcomes in form of products and services and their widespread adoption, rather than traditional metrics like publications, citation counts, and alike. There is an expectation that a full professor focused on translational research will have created a well-funded sustainable research group in SDSC that routinely engages with customers of their products and services outside of academia. Example for such groups may come primarily from integrative multidisciplinary endeavors, e.g., hazard management (Wildfire, floods, hurricanes, drought, …), agriculture, manufacturing operations, city, and power grid management, but also computational genomics, computational pharmacology, practical cybersecurity, automated financial fraud detection, self-driving cars, and many more.

6.4. Synergies with UC San Diego Academic Units

The necessary and futuristic synergies between departments with joint affiliations portends the future and this strongly motivates the establishment of the School of Computing, Information and Data Science at UC San Diego. Initial discussions with Deans and Directors of all UC San Diego academic units demonstrated the exceptional synergy that exists between Data Sciences and other disciplines. This is schematically represented in the figure below.

Several grand challenges in science and engineering are dependent on data analytics. The COVID-19 pandemic affected over 400 million humans across the globe with nearly 6 million deaths to date. The epidemiological data alone contributed to petabytes of data and the data analytics helped save significant lives. UC San Diego launched the wastewater detection initiative and the collaboration between the Schools of Medicine, Public Health and HDSI led to our institution becoming one of the forerunners in detecting and preventing more infection. The Cancer Moonshot project that is being revitalized will generate vast amounts of omics data which will yield valuable insights and treatments through detection of germline and somatic mutations and their downstream consequences. We have an unprecedented opportunity to decipher the underlying cancer mechanisms leading to novel treatments. The advent of wearable sensors is causing a
revolution in personalized self-monitoring of humans. The challenge lies in transforming this enormous longitudinal data into actionable outcomes.

The dramatic change in global climate is leading to fundamental changes in all walks of human life. Hurricanes (Cyclones), wildfires, earthquakes, global warming, and a plethora of other changes whose change gradients are reaching unprecedented levels are a testimony to global climate changes. Measuring, documenting, and analyzing the myriad data associated with climate is a daunting task that will involve the marriage of multiple disciplines and very deep analyses of the measurements. This will range from measurements of oceans to land mass to earth’s atmosphere and the immeasurable analyses of the emerging data. Such analyses have the potential to impact policies that will change the nature of life on earth.

The financial and consequentially the fundamental health of the human race will depend on management of earth resources and development of innovative technologies that will transform the utilization of earth resources. While the utilization of resources is depleting the global reserves, management is leading to reduction in the quality of life and standard of living for a sizable global population and such inequality will lead to global instabilities. The data associated with resource management, utilization and conservation is a harbinger of our future and will warrant entire new analytic strategies combined with new policies.

One of the biggest revolutions that has impacted the human race at the turn of the last century is the advent of the internet and social media developments. Information both true and erroneous are available instantaneously with the only major filter being the human, who is communicating, and this has led to enormous challenges in information and computational sciences. While contextual learning methods in data sciences are beginning to aid veracity and comprehension, we are far from establishing standards of communication as well as content management. This is a major challenge for next generation data and information sciences.

Such challenges are at the core of computational, information, and data sciences and SCIDS is well positioned to address these challenges. The major empowerment for
SCIDS addressing these global problems comes from the inherent DNA of being able to work across disciplines and pioneering new paradigms in multi-disciplinary innovation at UC San Diego. The new Dean and thought leaders in SCIDS will frame the global grand challenges that will form the core of intellectual and educational explorations for the coming decade.

7. SCIDS ADMINISTRATION AND FINANCIAL PLANNING

7.1. Administrative Structure

An important characteristic of SCIDS will be its interdisciplinary status having academic, research, and staffing connections with multiple units on campus. While interdisciplinary research is common in many academic units, an integrated academic unit with significant interdisciplinary teaching responsibilities calls for careful planning and meaningful engagement of multiple administrative units with the SCIDS. Fiscally, this task is within the scope of our integrated university financial system. Administratively, SCIDS administration will be organized to directly oversee the operations of the HDSI and SDSC units, while also providing for consultative engagement with academic units that are closely engaged programmatically through joint academic programs and/or joint faculty recruitments. To envision such a framework, we propose the following initial administrative structure.

*Only reflects oversight in relation to SCIDS structure. Total oversight is broader than what is shown here.
The implications of dotted line affiliations and the unique nature of SCIDS: Traditional Schools in UC campuses have a defined departmental structure, with minimal overlap across Schools of the departmental disciplines. Computing, Information and Data Sciences pervade, as discussed, all major disciplines across Schools and SCIDS will have a unique status in UC San Diego in forming bridges across the entire campus. While there is a core program associated with data sciences, we note the synergies with other departments on campus (presented in an earlier section). We highlight these below:

**Intellectual Synergy:** Computing, Data and Information Sciences are integrally associated with the core discipline of computer science and computer engineering, as well as mathematics and statistics. The intellectual origins of machine learning and AI can be traced to mathematics and computer science, driven by the large application needs of multiple domains. Information theory, originating from Shannon and arguably before, has its foundations in signal processing and noise. Computing, since the origins of national efforts such as the Supercomputer Centers in second half of 20th century, has become integral to all human efforts. Hence it would be entirely consistent for SCIDS to be a unique School with the potential for other departments, especially departments in engineering to have an association. The Dean of Jacobs School of Engineering is highly supportive of SCIDS and has a fundamental understanding of the prospective synergies.

**Academic Synergy:** We live in a digital age and students from every discipline including arts, fine arts, humanities, and social sciences are embracing learning the basics of data and computing. Especially computing has become the *sine qua non* of every engineering design or research project and schools of engineering are significantly burdened in introducing myriad courses associated with computing and data sciences. The formation of SCIDS offers unique opportunities for students in engineering and other STEM Schools to take courses that are taught by professionals who practice computing and data analytics. The Dean of Engineering commented on the immense benefit the academic curriculum in SCIDS brings to the large number of undergraduate students enrolled in engineering departments. Moreover, as mentioned earlier, SCIDS will plan to also
develop courses for students in non-STEM majors to broaden the synergy to all academic Schools at UC San Diego.

**Administrative Synergy:** UC San Diego has in its DNA the strong coupling between all units on campus with few administrative or bureaucratic barriers. The Department Chairs council of SCIDS will include Chairs of departments with dotted line affiliation. This council will decide curricular, hiring, and other important decisions germane to SCIDS. Such practice is common in UC San Diego; for instance, the Chair of Bioengineering attends the School of Medicine Council of Chairs meetings. This has resulted in a new Master’s degree program associated with clinical engineering and a number of joint faculty appointments. We see similar synergy in the dotted line connections of departments in SCIDS.

**Workforce Training:** Data analytics is the fastest growing workforce demand and institutions across the country are ramping up efforts to train students across disciplines in data sciences. UC San Diego has already made significant headway through the San Diego Supercomputer Center in offering informal programs that train students in computing and data analytics. The establishment of SCIDS will only enhance these efforts and the affiliation – dotted line and other – will offer exceptional opportunities for developing the next generation workforce trained to efficiently address the “big data” problems. The External Advisory Committee of the Jacobs School of Engineering has identified the San Diego Supercomputer Center as a unique resource for training engineering students given the demand in industry. The Dean of Engineering considers this recommendation as significant.

**The current administrative structure of HDSI and SDSC:** At present, HDSI is an academic unit that reports to the Senior Associate Vice Chancellor for Academic Affairs on academic matters; this is a sub-optimal structure especially given the exponential growth of HDSI over the past two years. Additionally, HDSI has innumerable links with other Schools through joint appointments, curricula, and research funding. Reaping the full benefit of this growth and connectivity will require a new and carefully designed administrative structure. SDSC has an established administrative structure with a Director who reports to the Senior Associate Vice Chancellor for Academic Affairs, but with its increasing integration into the UC San Diego campus, greater administrative support for strong collaborations is needed. Further development of data and computing activities spanning the university warrant strong strategic planning, academic coordination, and participatory governance and only a school with an interdisciplinary focus can accommodate these needs. HDSI will acquire Department status in the new school with the required staffing and SDSC initially will continue as currently constituted. As proposed, the SCIDS Dean and the Dean’s office will provide joint oversight for HDSI (as a department), SDSC, and a host of units that will have affiliations at diverse levels.

The Dean of SCIDS will report to the Executive Vice Chancellor and will be responsible for the administration of the school. They will be assisted by an Associate Dean, a faculty member who will report to the Dean and share the overall administrative responsibility. They will also be supported by an Assistant Dean, who will be in charge of strategic planning and administrative operations and another Senior Director who will be in charge of development, industry outreach, and DEI. Each of these senior positions will have appropriate staff who will help with the administrative operations. At the initiation of SCIDS, two units, namely HDSI and SDSC, will have a direct reporting line to the Dean.
of SCIDS. The faculty and staff academic lines and resources and the operational and fiscal components will be orchestrated through the Dean of SCIDS.

In addition, campus units like CSE, ECE, Cog Sci, Mathematics and QI that have significant intellectual overlap with SCIDS will have the opportunity for forming a joint affiliation with SCIDS to support a variety of collaborative activities. Primary oversight of these units will remain the responsibility of their parent Schools. All negotiations and coordination of joint activities will be carried out by the respective Deans, Chairs and Directors of the respective units, to ensure that the joint activities are aligned with the units’ strategic visions and missions. This joint affiliation framework will also offer an opportunity for other existing academic programs (e.g., Bioinformatics or Health Informatics) or potential future programs (such as Information Science) to be a part of SCIDS.

As stated previously HDSI will be de facto the data sciences department in SCIDS. Given its academic status with associated faculty and degree programs, all faculty in HDSI will be members of the academic senate. This is already the case with both full-time and joint appointment tenure-track and tenured faculty being members of the academic senate. SDSC personnel who will have faculty status in SCIDS will also be members of the academic senate.

7.1.1. SCIDS Process for creating MOUs with Partner Departments

SCIDS will be a cross-disciplinary school that embraces educational and research interests of faculty across departments in all Schools. To envision such a School, we anticipate creating a non-traditional School organization. We present below the modalities of SCIDS links to other units of campus and articulate a process by which such links will be achieved administratively and academically.

Units primarily associated with SCIDS: As discussed in the proposal, HDSI and SDSC will be the founding units of SCIDS with the anticipation of future departments/units created to be part of the School. The proposal discusses in detail the engagement of HDSI and SDSC in SCIDS.

Units with dotted line affiliation to SCIDS: Several departments on campus have played a key role in the nucleation of the proposed School including units that are associated integrally with computing and data sciences. These include departments like CSE, ECE, Math, and Cog Sci, among others. We propose here a process by which such departments can develop a dotted line association with HDSI and the implications of such dotted line associations.

- The departmental faculty assess and vote if a dotted line affiliation will be beneficial to the department and SCIDS. Such considerations of suitability could include identifying a critical mass of faculty engaged in computing and data sciences research, student demand for curricula embracing computing and data sciences, and large faculty interest in participating with SCIDS. After the process of faculty approval (based on the departmental by-laws), the Chair can communicate with the cognizant Dean to initiate the process for dotted line affiliation.
- The Dean and the Department Chair develop a dotted-line MOU in consultation with the SCIDS Dean and the Directors of HDSI and SDSC, which spells out the particulars of the formal dotted-line affiliation.
- The dotted-line MOU should include a process for identifying departmental faculty who would be cross-listed as SCIDS faculty with appropriate percentage appointment (ranging from 0% to 50%) and assessment of mutual obligations of such faculty between SCIDS and the Department.
- The dotted-line MOU should also include a process for identifying SCIDS faculty who would be cross-appointed in the Department (ranging from 0 to 50%) and assessment of mutual obligations of such faculty between SCIDS and the Department.
- The dotted-line MOU between the department (through the Chair and cognizant Dean) and SCIDS could include specific understandings including the mechanisms for appointment of new joint faculty members, creation of joint curricula, exploration of joint fund-raising efforts, and a clear understanding of the administrative connections between the Department and SCIDS. These administrative connections, for example, could include the Department Chair or the Chair’s designee, joining the SCIDS Dean’s Council of Chairs. A symmetric arrangement would include the Director of HDSI or SDSC joining the Dean’s Council in the relevant other school.

**Units who share faculty appointments with SCIDS:** By its very nature SCIDS will have a significant number of joint appointments with Departments that have a dotted line affiliation as well as Departments with mutual academic interests that do not have a dotted line affiliation. As an exemplar, HDSI, which will be the initial academic department in SCIDS already has joint faculty with CSE and ECE, as well as with Math, Cog Sci, Political Science, Linguistics, Communication, Neurobiology and Bioengineering. Beyond the general campus, there are joint appointees with SIO, the School of Public Health, and the Department of Medicine in the School of Medicine. All of these units have overlapping academic interests with SCIDS. The MOUs for joint appointments like these have been refined for appointments across the campus through the Chancellor’s Joint FTE Program and have proven to be very successful. In addition to joint advertisements for recruitments, the norm is for both departments to independently assess the suitability of applicants and agree upon the appointment rank, salary, and start-up funding. Even in the case of a 50-50 appointment, one department will be identified as the major department for ease of administration. The joint appointment MOU will also agree upon expectations for tenure and promotion considerations, recognizing that the tenure decision for joint appointees is at Chancellor authority and only needs to be achieved in one of the departments.

**Units engaged in joint curricula:** Given the large role of data in multiple disciplines ranging from humanities to medicine, SCIDS is expected to play a major role in the development of future curricula that will serve the campus broadly, in addition to the curricula that are specific to SCIDS units. Such developments will involve the engagement of the participating units. To achieve the strongest synergies, it is recommended that a curricular MOU be developed outlining the specific teaching responsibilities, teaching credits and TA appointments. This is done routinely on campus between multiple units –
e.g., joint courses between CSE and ECE, MAE and BE, BE and CMM, to name a few. The units are expected to develop a curricular MOU with SCIDS outlining the above. Management of grades, evaluations and other activities will follow the norm of being assigned to the instructor’s home unit.

**Units participating in joint Graduate Programs:** We anticipate significant cross-initiatives in Masters and Ph.D. programs between SCIDS units and other campus units. For instance, there is a program under development to offer M.S.-M.D. degrees to interested students in the medical school, as discussed earlier in the proposal. Such associations will involve developing a joint degree MOU between the units participating in the joint degree program proposal for approval submission to the divisional and system wide Academic Senate, which clarifies teaching and curricular responsibilities of the units, criteria for admission of students, and allocation of resources.

### 7.1.2. Initial Affiliation of CSE and ECE with SCIDS

Given the strong connections between HDSI, CSE, ECE, and the data science and applied data science that will be the focus of SCIDS, a more formal connection between the CSE and ECE departments and SCIDS is proposed during the formation of the school. The context for this connection is based on the central role CSE and ECE have played over the last 30 years leading San Diego’s ascension as a world-class hub for research, education, and practice of computing and information sciences. The UC San Diego CSE department appears near the top of all major rankings. CS Rankings\(^\text{30}\) an open, metrics-based ranking, ranks UC San Diego 4th in Computer Science research. CSE plays a key role in preparing large numbers of UC San Diego students for their careers: each year, nearly a quarter of all students at UC San Diego (undergrad and grad) take a CSE class, and over a third of all graduating students at UC San Diego have taken at least one lower division CSE course. This level of campus-wide impact is unparalleled by any other computing-related research or educational unit on campus. ECE is also a highly ranked department that has spawned a large part of the communication industry in the San Diego area and offers significant academic programs in artificial intelligence and robotics at all levels.

At all universities that have a school/division/college with the word "computing" in it, Computer Science and Engineering is an integral part of this structure with a well-defined formal connection. In many cases, Electrical and Computer Engineering is also a part of this structure with a well-defined formal connection. At some universities, CSE is housed solely in the School of Computing, for example at Carnegie Mellon and Georgia Tech. At other universities, CSE, ECE and/or EECS are part of both the school/division/college of computing and other structures like a school/division/college of Engineering. This is the case at Berkeley, MIT, and Cornell. Creation of a School of Computing, Information and Data Sciences without establishing a formal connection to CSE/ECE could prevent UC San Diego from being competitive with the top universities for talent at all levels, students, faculty, and staff.

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\(^{30}\) [https://csrankings.org/](https://csrankings.org/)
The task force, hence, proposes that a formal connection be established between CSE, ECE, and SCIDS at inception to ensure that externally the new school starts off aligned with national trends. While details will be memorialized in MOU’s, the task force anticipates that the connection will involve the following kinds of collaboration that will benefit CSE, ECE, SCIDS and the university as a whole:

- **Faculty Hiring:** There is significant intellectual overlap in the academic and research programs of SCIDS and CSE/ECE. We expect that SCIDS and CSE/ECE will make coordinated plans to each hire some faculty in these areas of overlap; having more faculty on campus who work in these areas will benefit SCIDS and the campus. We also anticipate the units may decide to undertake some joint appointment hires together to strengthen their academic portfolios.

- **Teaching:** CSE and ECE have committed to the undergraduate educational mission of SCIDS by continuing to offer introductory computing classes to increase computer literacy amongst all students on campus. CSE also currently runs the campus Computing Pathways Program[^31] which provides pathways to computing for all UC San Diego students. CSE will continue this program in collaboration with units in SCIDS. Furthermore, a formal structure will be established through the MOU process described above to coordinate the educational missions of SCIDS, CSE, ECE, with appropriate leadership roles.

- **Philanthropy:** CSE, ECE and JSOE will continue to engage with philanthropists around computing education and research and will coordinate where appropriate with SCIDS in these efforts to improve the campus footprint of computing research and education. In turn, new philanthropic outreach by SCIDS around computing should coordinate with CSE/ECE and JSOE where appropriate. To facilitate this, a set of shared development coordinators will be arranged between the new school and the Jacobs School.

- **Governance:** The governance structure of SCIDS should be developed to include pathways for CSE/ECE to be incorporated into decision making roles, for example by including chairs of departments with formal connections to SCIDS chairs/dean meetings. In turn, CSE and ECE will ensure that faculty who have appointments in SCIDS continue to hold key governance positions within CSE and ECE respectively.

Given the transdisciplinary nature of the research and educational programs in SCIDS it is likely that similar close collaborations with other existing academic departments may develop as the School grows. The task force envisions a structure where the leadership of units including the academic departments of Mathematics and Cognitive Science, as well as the Library and the Qualcomm Institute engage with the SCIDS Dean on a routine basis to coordinate new research and teaching initiatives, as shown schematically in the organizational chart with respect to Computer Science and Electrical and Computer Engineering. This flexibility is a central part of our expansive vision for the role that SCIDS will play as a transdisciplinary academic unit.

### 7.2. Financial Structure and Viability of SCIDS

As a new school, SCIDS financial viability is rooted in three key elements each of which strictly adds to the financial resources generated by the academic units at UC San Diego:

[^31]: https://computingpaths.ucsd.edu
instructional activities, research activities, and operational infrastructure activities. The activities at the school level will supplement these three legs with well-designed outreach and philanthropic development initiatives to supplement and expand (particularly, capital investments) the size and scope of the envisioned school. The establishment of SCIDS is expected to be nearly simultaneous with the initiation of the next major fundraising campaign at UC San Diego in 2023, and SCIDS will be among the leading campus priorities. Instructional activities play a key role in the sustainability of the new school. In this regard, HDSI via its undergraduate major and minor and five graduate degree programs will be leading the core instructional activities. The educational section of this proposal outlines the status and planned growth in these programs over the next five years. The research activities of SCIDS are amongst its biggest highlight and a distinguishing feature of the proposed school compared to its peers across the nation. This is because in addition to the faculty and researchers in the academic department of HDSI, SDSC brings to SCIDS a tremendous capability for operationalizing and conducting at-scale research activities that explore scientific, societal, environmental, and health challenges that typically require significant investments and multi-disciplinary research teams.

SDSC with its 35-year history of carrying out large-scale scientific computational projects tied to national, state and UC research priorities presents a compelling organization of nearly 200 research staff that is highly capable of making expeditions to our future in the world of computation and data. Such research and its underlying infrastructure are necessarily, and have been, supported by extra-mural funding that SDSC has become adept at successfully competing nationally. This capability will complement HDSI’s academic core to catalyze and expand the overall research portfolio of SCIDS that would be far above what each of these two units can achieve individually. HDSI’s launch and growth were supported by its founding donor as well as campus investments into building the new academic unit. Going forward, the catalysis of new research through SDSC, and new educational and outreach programs through participation of HDSI personnel, we envision a multiplicative effect that contributes to the growth of SCIDS and its partners. With HDSI and SDSC at its core, the new school will also feature a diversity of income streams, which notably includes service agreements with the private sector and other external organizations. These service agreements are often rooted in the computational and data analysis infrastructure built and maintained by SDSC.

In this proposal, we present a 5-year growth plan for SCIDS as an initial point in the larger planning process, primarily based on current trajectories over the three-year faculty growth plan currently in effect. We present here an outline of the plan in fiscal terms. While this fiscal outlay restricts itself to standard expenses, it is not meant to capture the investments in potentially paradigm changing research investments. Plans for such investments and strategic planning will be within the purview of the Dean of the new School in consultation with the EVC and Chancellor. We present a brief outline of the projected fiscal plan for HDSI, SDSC and the SCIDS Dean’s Office. The hardware and computing infrastructure, present and future, are listed in Appendix 2.

7.3. SCIDS Revenue Model

The financial plan of the new school is built upon three main elements: (a) growth in enrollments and sponsored research programs; (b) new revenue generating programs; (c) new opportunities for industry contributions and philanthropic contributions. We describe first the growth plans in academic activities (teaching and research) followed by
a description of new revenue streams that the new School will rely upon. We do not anticipate resources would shift to SCIDS from other programs.

**Growth:**
The University of California System is on a steep growth path in undergraduate education given the growing demands based on the population growth amongst the younger generation and the imminent need for training the next generation workforce. Amongst the UC Campuses only San Diego, Riverside, Merced, and Santa Barbara have the real estate footprint. Specifically, UC San Diego is anticipating an enrollment target of 50,000 students. To achieve this growth, it is essential that we introduce necessary and new disciplines of education and as recognized across the world “computing and data literacy” is considered a necessity. Computing and Data Science continue to see extraordinary growth in our applicant pools for both undergraduate and graduate degree programs. The figure below shows the size of the applicant pool for Data Science majors, along with 5-, 3- and 1-year growth rates of the fastest rising programs. In five years since launch, the Data Science program is already among the top-15 most sought after majors. The demand from transfer students is even higher. Together computing and data science already constitute the most-in-demand major at UC San Diego, ahead of perennially in demand majors like Biology, Bioengineering, Economics and Psychology and enroll less than 3% of the applicant pool. At the graduate level, HDSI received 1285 applications in its inaugural year with over a thousand applicants for the MS degree programs. Recognizing these trends as early as a decade ago, UC San Diego launched the Halicioglu Data Science Institute with the mandate of undergraduate and graduate education, sowing the seeds for the creation of SCIDS.

In this context, an important question that needs to be addressed is the accessibility to resources that will make the new School a success without affecting any existing campus entity. The foundation for the new school emerges from the concept of “growing the fiscal pie” and not dividing the existing pie further. We outline below the new revenue that will accrue from the launching of SCIDS benefitting both the new school and broadly the UC San Diego campus.

1. The foundations of the School begin with the generous gift of $75M which helped launch the Data Sciences Institute which serves as the academic pillar of SCIDS and the decades-old San Diego Supercomputer Center, a national treasure, which serves as the pre-existing infrastructure that brings uniqueness to SCIDS. The philanthropic gift provides $3M in annual endowment income that has enabled the university to make one-time investments in launching the HDSI as an academic unit, and established industry liaison, alumni relations, communications, development, career services, professional
training, and online master's degree programs. These elements will now become part of the SCIDS school-wide activities that will benefit from synergies with HDSI and SDSC.

2. Master’s Programs Revenue: Given the large demand for data and computing sciences, we expect a very large demand for the M.S. degree program, evidenced by the 3 years of MS enrollment statistics. Given in-state and out-of-state tuition average of $40,000 and with a modest enrollment of 100 students each year in the 2-year M.S. degree, we expect circa $8M in tuition revenue. The campus will provide a significant portion of the net revenue to the SCIDS Dean and HDSI Director, according to the standard campus models, to support SCIDS programs and faculty recruitment.

3. Enrollment Growth and Academic Support Model: The table below shows the current and planned trajectory of important parameters that are input into the academic support model deployed by the campus. The Academic Support Model provides for a core budget of the school that is directly tied to the enrollments and IDC generated by the school.

<table>
<thead>
<tr>
<th>Projections Growth in HDSI</th>
<th>AY 2023 (Current)</th>
<th>AY 2024</th>
<th>AY 2025</th>
<th>AY 2026</th>
<th>AY 2027</th>
</tr>
</thead>
<tbody>
<tr>
<td>UG Majors</td>
<td>906</td>
<td>1,200</td>
<td>1,455</td>
<td>1,500</td>
<td>1,550</td>
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<tr>
<td>UG Minors</td>
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<td>300</td>
<td>350</td>
<td>400</td>
<td>450</td>
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<tr>
<td>UG class enrollments</td>
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<td>6,300</td>
<td>7,350</td>
<td>7,550</td>
<td>7,750</td>
</tr>
<tr>
<td>UG courses/sections offered</td>
<td>74</td>
<td>120</td>
<td>135</td>
<td>155</td>
<td>165</td>
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<tr>
<td>MS Majors</td>
<td>79</td>
<td>150</td>
<td>200</td>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td>OMDS Majors</td>
<td>22</td>
<td>85</td>
<td>135</td>
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<td>195</td>
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<tr>
<td>MD-MS Majors</td>
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<td></td>
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<td>20</td>
</tr>
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<td>Exec. Training Prg.</td>
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<td>2</td>
<td>5</td>
<td>20</td>
<td>25</td>
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<tr>
<td>DSC Ph.D. Majors (does not include non-DSC PhD advised by HDSI faculty)</td>
<td>17</td>
<td>40</td>
<td>72</td>
<td>90</td>
<td>105</td>
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<tr>
<td>Grad Enrollments (includes non-DSC students)</td>
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<td>4,650</td>
<td>4,830</td>
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<tr>
<td>Grad courses offered</td>
<td>23</td>
<td>30</td>
<td>35</td>
<td>40</td>
<td>45</td>
</tr>
<tr>
<td>Faculty FTE (Core)</td>
<td>23.16</td>
<td>29</td>
<td>35</td>
<td>41</td>
<td>46</td>
</tr>
<tr>
<td>Annual Research</td>
<td>$7.8M</td>
<td>$9.6M</td>
<td>$12.1M</td>
<td>$12.5M</td>
<td>$12.8M</td>
</tr>
<tr>
<td>UG majors/FTE</td>
<td>39</td>
<td>41.3</td>
<td>41.6</td>
<td>36.6</td>
<td>33.7</td>
</tr>
<tr>
<td>UG instructional FTE / faculty FTE</td>
<td>56</td>
<td>61.5</td>
<td>63.2</td>
<td>59.4</td>
<td>56.4</td>
</tr>
</tbody>
</table>
4. Industry Participation and Funding: SCIDS will build an expanded industry liaison program (ILP) with an annual membership cost of $50K. This will build upon HDSI and SDSC success in building their industry programs, focused on companies that are not served by other academic units such as engineering. The figure below shows the growth of HDSI’s industry liaison program, currently generating approximately $0.5M in subscription fees. With participation of SDSC into a unified industry relationship we expect this program to grow and generate a revenue of $4M-$6M/year in annual subscription fees and industry engagement activities. Among the activities here are (a) access to students for internships and projects, b) collaborative data science research, c) access to data and computing resources at cost from SDSC and d) potential future for incubation of new projects.

5. Extra-mural Research from funding agencies, government and private organizations are beginning to invest heavily into data-rich programs and projects. For instance, the National Institutes of Health has committed several billion dollars each year towards generation, maintenance, and support of biomedical data. We anticipate the presence of SCIDS will help UC San Diego garner tens of million dollars of new funding. In its first 5 years, HDSI has already succeeded in landing two major Center-scale research grants at $20M each as well as several research contracts currently at $7.8M/year. We anticipate research revenue (and corresponding IDC) to grow by an average of $200K-$300K/faculty/year, or in between the national average for Computer Science and Engineering faculty.

6. Data in Health Sciences: SCIDS can help human health services in a manner unforeseen. The ultimate goal for each human subject is “to know themselves from their measurements, i.e., the data largesse from myriad measurements.” This will require both the conversion of data to knowledge in a short time and creating new paradigms for data analytics. SCIDS will serve as an exemplar for cross-training health professionals in data paradigms beginning with the proposed MD-MS program. We anticipate both savings and revenue for the campus health system from electronic health will be in tens if not hundreds of millions. This will be a benefit to UC San Diego.

7. Formation of the School will provide an excellent platform for raising new philanthropic funds from traditional supporters of UC San Diego (from industry and from the community) as well our own alumni, as well as opportunities for attracting philanthropy from a broader suite of donors given the broad interest in data science, AI, and their impacts on society. The School will pursue unique opportunities for philanthropy through strategic partnerships with other entities on campus. We anticipate a target raise of $25M to support the establishment of the School in the first 2-3 years after launch.
HDSI Current Financial Status:

HDSI has been supported by institutional resources in concert with philanthropic Foundation resources during the formative years since 2018. While the initial endowment helped launch the Institute, HDSI is financially supported in all the usual ways for an academic unit – faculty recruitment, start-up costs, retentions, building infrastructure and administrative structure – by the campus. The establishment of SCIDS will create the optimal academic structure for HDSI to become a department with a concomitant fiscal structure. Past and projected finances for HDSI from FY20 through FY25 are given in the table below. HDSI's current budget consists of $5.8M in core operations and $3M in activities in form of fellowships, postdoctoral support, infrastructure, outreach, and industry liaison programs. The core budget is directly tied to the growth of enrollments, programs, faculty and staff appointments and is currently on a growth path as we continue to recruit faculty, and add courses and programs. Included in $5.8M is $3M in faculty and $1.2M in staff salary and benefits. Based on the recruiting plan and programs already in progress, we anticipate the core budget to increase to $8M in FY23. The graduate programs will see enrollments starting Fall 2022 and will also add to the graduate support as well as income from the two MS programs being launched starting Fall 2022. Faculty FTE resources will flow to HDSI and SCIDS commensurate with the growth of the educational mission, consistent with standard campus practice. Given the commitment of the University of California to increase the number of bachelor’s graduates through 2030, we expect this to be an ideal time to establish the new school. The planned growth in various parameters that determine the core budget are listed in the table below. The sponsored research is currently ahead of the projected growth due to a number of large-scale projects and proposals in the pipeline. Over the long term, we anticipate HDSI to reach an average of $200K/faculty/year of extramural research funding. However, unlike many traditional disciplinary academic units, we are likely to see a much larger variation in extramural research support across faculty given a very wide range of disciplines and training of its faculty. A closer engagement with SDSC researchers will enable higher levels of extramural research funding by improving the average size and competitiveness of the research project proposals fielded by the SCIDS researchers working together.

SDSC Current Financial Status:
Past and projected finances for HDSI from FY20 through FY25 are given in the table below. In the most recent fiscal year, SDSC reported $35M in contract and grant revenue, and $14M in service agreement and recharge revenue. This can fluctuate significantly due to high performance computing acquisition awards, for example the recent Expanse system, which represents a $10M procurement. Conservative estimates for growth are 4% per year without SCIDS, and 8% per year with a well-resourced, well executed SCIDS. The difference comes to a non-negligible part from the “translation of innovation into practice” focus discussed in Section 5. To achieve growth near 8% per year, we must recruit faculty focused on translational computer, information, and data sciences as part of a focus area in SCIDS. Those faculty are revenue drivers that will expand the scope of research, lead to partnerships with industry, and develop new experiential learning programs. A growing portion of SDSC’s revenue comprises service agreements with the private sector and other external entities. Service agreements provide a mechanism to increase discretionary revenue through differential income (DI). DI is an important mechanism for creating additional resources to invest in new strategic initiatives and can help offset year-to-year budget fluctuations. In a normal year, the DI is roughly what SDSC can invest. The budget model here assumes 4% growth throughout. To support an 8% growth in revenue, we expect to require a 5% growth in SDSC research staff, in particular a growth in the number of PIs. This assumes that a 3% revenue growth is needed to maintain existing staff levels of 200–250 people. In short, SDSC comes to SCIDS in exceptional financial condition and will thus be a net contributor to the overall financial viability of SCIDS, further reducing risk.

SCIDS Dean’s Office Financial Plan:

<table>
<thead>
<tr>
<th>Operating Funds - Core, Differential Income, Education</th>
<th>FY20</th>
<th>FY21</th>
<th>FY22</th>
<th>FY23</th>
<th>FY24</th>
<th>FY25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resources</td>
<td>3,229,747</td>
<td>2,699,956</td>
<td>2,463,102</td>
<td>2,335,132</td>
<td>2,148,381</td>
<td>2,072,401</td>
</tr>
<tr>
<td>Resource Allocations - UCSD</td>
<td>1,098,072</td>
<td>968,811</td>
<td>1,007,045</td>
<td>1,047,325</td>
<td>1,131,111</td>
<td>1,221,000</td>
</tr>
<tr>
<td>Resource Allocations - UCOP</td>
<td>2,500,000</td>
<td>2,500,000</td>
<td>2,500,000</td>
<td>2,500,000</td>
<td>2,500,000</td>
<td>2,500,000</td>
</tr>
<tr>
<td>Differential Income</td>
<td>530,318</td>
<td>358,093</td>
<td>305,000</td>
<td>305,000</td>
<td>305,000</td>
<td>305,000</td>
</tr>
<tr>
<td>Total Resources</td>
<td>7,387,937</td>
<td>6,290,440</td>
<td>6,327,145</td>
<td>6,257,367</td>
<td>6,184,699</td>
<td>6,104,902</td>
</tr>
<tr>
<td>Expenses</td>
<td>430,390</td>
<td>412,312</td>
<td>424,683</td>
<td>437,422</td>
<td>430,344</td>
<td>464,061</td>
</tr>
<tr>
<td>Academic Salaries and Wages</td>
<td>2,795,920</td>
<td>2,783,647</td>
<td>2,894,559</td>
<td>2,984,950</td>
<td>3,019,914</td>
<td>3,130,312</td>
</tr>
<tr>
<td>Benefits</td>
<td>3,329,447</td>
<td>2,249,944</td>
<td>1,275,292</td>
<td>1,255,865</td>
<td>1,082,564</td>
<td>1,042,800</td>
</tr>
<tr>
<td>Total Expenses</td>
<td>7,797,415</td>
<td>5,946,432</td>
<td>6,069,436</td>
<td>6,195,555</td>
<td>6,274,898</td>
<td>6,205,956</td>
</tr>
<tr>
<td>Net Operating Funds</td>
<td>(399,478)</td>
<td>343,888</td>
<td>257,709</td>
<td>61,902</td>
<td>59,794</td>
<td>143,945</td>
</tr>
</tbody>
</table>

Supporting - Contracts and Grants

| Total Resources | IDC (to campus) | 6,907,137 | 7,260,988 | 8,029,828 | 8,351,021 | 9,015,102 | 9,740,630 |

Supporting - Recharge/Service Agreement Activity

| Total Resources | 12,235,937 | 14,085,259 | 13,475,331 | 13,878,339 | 14,572,429 | 15,313,723 |

| Total Expenses  | 10,336,890 | 10,385,791 | 11,009,223 | 11,449,592 | 11,907,757 | 12,383,878 |

| Total Expenses  | 2,210,153  | 1,931,756  | 1,989,679  | 2,049,400  | 2,192,858  | 2,346,315  |

| Total Expenses  | 12,547,043 | 12,317,547 | 12,998,931 | 13,488,991 | 14,100,433 | 14,730,236 |

Supporting - GIFs

| Total Resources | 435,745  | 311,281  | 300,000  | 300,000  | 300,000  | 300,000  |

| Total Expenses  | 550,835  | 638,794  | 502,949  | 567,478  | 682,392  | 697,703  |
Given the excellent fiscal health of both HDSI and SDSC, the proposed initial budget for the SCIDS Dean’s Office, shown in the Table below, is focused on essential operations and a small number of programmatic investments essential for the successful operation of the school. The initial budget below includes key administrative positions, including the Dean, Assistant Dean, Dean’s assistant, academic personnel, and financial analyst. This is a natural path forward in the development of the administrative structure of the school as two established units are brought together under this new umbrella. As the synergism in research, education and development activity grows there will be an opportunity for the new Dean to develop an efficient administrative structure.

In addition to these core functions, the budget includes a Senior Director for Development, development support, and a communications specialist. These positions will initially work closely with their campus counterparts and those in HDSI and SDSC on a wide range of start-up activities, including the development of a website, newsletter, community relations and outreach, and others. The communications specialist will be especially important to coordinate strategies and investments across HDSI and SDSC to engage the rest of the UC San Diego campus as well as the UC system. It is anticipated as the school grows that communications and development will become increasingly centered in the Dean’s office supporting the diverse needs of SDSC, HDSI and the broader mission of SCIDS.

### 8. CAPITAL REQUIREMENTS – INFRASTRUCTURE

The establishment of a new school will provide an important opportunity for UC San Diego to identify a new state-of-the-art home for SCIDS. Initially SDSC will remain housed in the purpose-built building it has resided in for nearly 40 years. HDSI was collocated with SDSC; however, this summer HDSI has relocated to the renovated Data Science Building in the Warren College area. This new home provides relevant space for HDSI, and then, SCIDS to grow the academic program in the near term. In the longer term, the new dean for SCIDS should work with the EVC and the Chancellor to identify philanthropic support for a new home for the academic center of the new school. This should be an important priority in the early years of SCIDS.
This priority also needs to be considered in the context of a more urgent need for both the new school and the campus at large, and that is an expansion of the SDSC data center. SDSC presently operates a 19k square feet data center for UC San Diego, housing 515 computer racks. After a multi-year campaign to consolidate inefficient and often dangerous closet server racks spread across campus, the data center at SDSC is presently saving campus roughly $4.4M per year in energy savings compared to operations prior to the consolidation. At this point, the data center is full, and SDSC is preparing to submit a proposal for an expansion of at least 10,000 square feet. Past growth indicates that such an expansion would be filled within 10 years. To be prepared for additional growth inherent in the creation of SCIDS, we envision a 15-20k square feet expansion, including cooling infrastructure to host the kind of high-power density equipment necessary for today’s top of the line AI/ML computing hardware. Additional
data center space dedicated for SCIDS, and its future computing and data needs would allow for an expansion in systems that facilitate collaborations with industry, foundations, other UC campuses, and federally funded research. As an example, the existing data center includes investments by the Simons Foundation, the NSF, the State of California, and several million dollars of industry supported hardware. The industry investments are particularly noteworthy as they provide physical infrastructure that facilitates faculty - industry collaborations, most notably between health sciences and the pharma industry. Having the data center space to grow such initiatives will be aided by the creation of SCIDS.

SCIDS space growth plans will follow the General Campus mandate on office, laboratory, and research space. In the master plan for space allocation related to instruction and research for campus in the tables shown above, SCIDS will follow the current HDSI plan of opting for 5D, similar to the Computer Science and Engineering model. Based on this formula, the proposed plan anticipates the need for an additional 20-30,000 sq. ft. of space by 2030 when SCIDS is expected to achieve a steady state in terms of faculty, staff, and student strengths.

9. METRICS FOR REVIEW AND ASSESSMENT OF SCIDS

The Task Force discussed the metrics for review and assessment of SCIDS over short, intermediate, and extended time periods. In terms of prior assessment of HDSI, SDSC, and the affiliated departments, i.e., CSE, ECE, Cog Sci and Math, academic achievements highlight the immense success of the units. Within a very short period of existence HDSI and the data science components of closely affiliated departments have achieved the US World and News Report academic ranking of 10th in Data Analytics and Science programs, and SDSC has been a nationally funded and highly recognized supercomputer center.

The success of Schools in institutions of higher education are assessed by multiple metrics, the principal ones being the US World and News Report Annual Rankings at the national level, and the Times Higher Education Rankings internationally. These rankings are based on peer assessments, extramural funding and publications that highlight the research accomplishments and education and training assessed through student placements and alumni reviews. SCIDS administration will gather pertinent data from inception and will review annual progress and propose improvements as needed. We detail specific metrics of assessment and the concomitant timelines below.

In Research, the most significant metrics as associated with extramural research funding, publications, recruitments of quality faculty and students, and peer standing. It is a tradition cutting across academic schools at UC San Diego to obtain exceptional extramural funding from federal agencies, Foundations, and industrial partnerships. SCIDS administration will ensure the extension of this success to departments and units in SCIDS. The Dean will collaborate actively with the campus advancement office and the faculty in SCIDS to enhance endowment funding. The scientific leadership in SCIDS will assess annually the most important areas of growth in computing, information, and data sciences for solving imminent societal problems and advancing data analytics. The Dean, in collaboration with department chairs, will carry out annual assessments of faculty research progress and advise on mechanisms to enhance research and funding. Success in research is traditionally echoed by the training of Master’s and Ph.D. students, postdoctoral associates, and publication of high-quality research papers while advancing new methods and technologies. The latter is often reflected by disclosures and patents
that are licensable for private sector developments. The Dean’s office and administration will monitor and assess the units in SCIDS for these measures. Concrete steps for improvements will be advocated and supported.

A key metric of success of a School lies in training Undergraduate Students who will form the next generation workforce for the nation. The emergence of computing and data sciences and important public-private sector employment needs mandates that SCIDS should play an effective role in educating students. SCIDS will assess the employment statistics of our graduates annually in addition to actively collaborating with local industry in assessing their needs and tuning our training to address the needs. Most importantly, SCIDS will build an internship corridor with industry in the San Diego region and California more broadly to provide a continuous movement of students for training in industry in preparation for successful employment. The Dean’s office and administration will assess this success on an annual basis and provide necessary adjustments. The latter will include periodic assessments of curricula, engagements of students in research training, and ability of students translate learning to practice. SCIDS will form an external advisory committee consisting of academic and industry leaders who will review the success of the program on a 5-year review basis.

SCIDS will also assess in collaboration with other campus units the extent of involvement and affiliation of other campus units with SCIDS. We anticipate in the future departments in other Schools on campus to have stronger affiliations in terms of joint faculty appointments, new educational programs, and creation of joint organized research units (ORUs). These plans and programs will be assessed periodically, as per the campus norm. A five-year review to better guide the development of the undergraduate and graduate programs of the school will initiate the review process going forward.

10. SUMMARY

This proposal is the product of the work of the SCIDS Proposal Task Force and engagement with a broad range of campus and regional stakeholders. In addition, it benefits from the feedback from the UC San Diego Academic Senate and recommendations from UC Office of President and the systemwide Senate in response to submission of the Pre-Proposal. We are pleased to now present this full proposal for the establishment of a new School of Computing, Information, and Data Sciences. The proposal outlines the compelling need for UC San Diego to launch a School of Computing, Information, and Data Sciences and provides a detailed administrative, intellectual, and academic framework. Given that data and computer literacy is the sine qua non of any modern and future society, SCIDS will play an important role in training the next generation workforce and providing solutions to challenging societal problems involving data and information. In the intervening time since the pre-proposal was forwarded, we have already seen broader recognition of the impact of artificial intelligence in the public sphere. We look forward to engaging the Divisional Academic Senate at UC San Diego in refining this full proposal for consideration by the Systemwide Senate and UC Office of the President in preparation for launching this exciting new school.
APPENDIX 1 TASK FORCE MEMBERSHIP and CHARGE LETTER

Task Force Members:

Faculty Representatives

Shankar Subramaniam, Distinguished Professor, Bioengineering, Co-Chair
Virginia de Sa, Professor, Cognitive Science, Associate Director, HDSI
Kelly Frazer, Professor, Pediatrics
Javier Garay, Professor, Mechanical and Aerospace Engineering
Takaki Komiyama, Professor, Neurosciences
Lucia Ohno-Machado, Distinguished Professor, Medicine
Dimitris Politis, Distinguished Professor, Mathematics, Associate Director, HDSI
Alex Snoeren, Professor, Computer Science and Engineering
George Sugihara, Distinguished Professor, Scripps Institution of Oceanography
Allan Timmermann, Distinguished Professor, Rady School of Management
Edward Vul, Associate Professor, Psychology
Yusu Wang, Professor, HDSI

Administration

Robert Continetti, SAVC-AA and Dean Designee for HDSI, SDSC, Co-Chair
Ilkay Altintas, Chief Data Science Officer, SDSC
Cheryl Anderson, Dean, School of Public Health
Chaitan Baru, Distinguished Scientist, SDSC
Rajesh K. Gupta, Director, HDSI
Jessica Kuhrt, Business Officer, Dean Designee’s Office
Sorin Lerner, Professor and Chair, Computer Science and Engineering
Bill Lin, Professor and Chair, Electrical and Computer Engineering
Amit Majumdar, Division Director, Data Enabled Scientific Computing, SDSC
James McKernan, Distinguished Professor and Chair, Mathematics
Douglas Nitz, Professor and Chair, Cognitive Science
Mai Nguyen, Director, Design Lab
Lisa Ordóñez, Dean, Rady School of Management
Shawn Strande, Deputy Director, SDSC
Frank Wuerthwein, Professor, Physics, Interim Director, SDSC

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October 4, 2021

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Yusu Wang, Professor, HDSI
Frank Wuerthwein, Professor, Physics, Interim Director, SDSC

Subject: School of Computing, Information and Data Science Proposal Task Force Charge

Dear Colleagues,

Thank you for agreeing to serve as members of the School of Computing, Information and Data Science (SCIDS) Proposal Task Force. This task force is being formed as a senate-administration task force following adoption of the report of a Workgroup on the feasibility of SCIDS submitted earlier in the summer of 2021. I am pleased that Senior Associate Vice Chancellor for Academic Affairs (SAVCAA) Robert Continetti and Distinguished Professor Shankar Subramaniam from the Department of Bioengineering have agreed to serve as co-chairs for the task force, and the office of the Senior Associate Vice Chancellor will provide administrative staff support.
SCIDS Vision: As outlined in the report by the Workgroup, the School of Computing, Information and Data Science (SCIDS) will be an enduring academic unit that leverages the intellectual and operational resources of the Halıcıoğlu Data Science Institute (HDSI) and the San Diego Supercomputer Center (SDSC). SCIDS is envisioned to be a transdisciplinary school that serves as a hub of research, teaching, and translational practice in broad areas of data science and its impact on the society. At the core of SCIDS will be HDSI and SDSC that together will serve to attract and engage a broad community of researchers on campus and externally. Organizationally, the two units will not only retain their existing external identities but also build upon the SCIDS personnel, academic and operational resources to expand their reach and impact.

The SCIDS Proposal Task Force: In view of the broad and transdisciplinary nature of the scope of the proposed school, based on the recommendations of the Senate Committee on Committees, we have assembled a broad representative task force with members drawn from across the General Campus, SIO and Health Sciences to ensure rich and informed discussions on developing the proposal for creation of the new School.

Proposal Background:

The Task Force is coming together at a key moment in the evolution of the role computing, information and data science play in society and on our campus. The increasing focus on data-driven approaches across the breadth of human inquiry was one of the motivations for the establishment of the interdisciplinary Halıcıoğlu Data Science Institute (HDSI) proposed in 2017 and launched in 2018. The San Diego Supercomputer Center (SDSC) has been on campus now for more than 35 years, with notable external roles and recognition as well as an essential role in supporting interdisciplinary computational science on campus. The two organizations, HDSI and SDSC, have significant interactions, with SDSC researchers serving on HDSI faculty council and in key leadership positions in HDSI. SDSC has appointed 8 HDSI faculty members as SDSC fellows, while SDSC’s chief data scientist is appointed as an HDSI Fellow. The synergy between HDSI research and SDSC’s operational excellence in cyberinfrastructure and large-scale data science projects have raised the possibility of creating a compelling integrated institution at the intersection of computing, information and data sciences. Together, the presence of these two vital organizations on campus provides an outstanding opportunity to leverage complementary strengths of academic and operational success in building a School that takes the lead in not only establishing new academic programs and talent pools but also carrying out exploration to meet the needs of an information society in the decades ahead. As the new School builds new academic programs, supports and expands campus-wide activities, it will catalyze new research communities and efforts while enabling UC San Diego’s unified presence in the emerging area among peer schools.

To assess the prospects for developing a new school, a preliminary Workgroup consisting of faculty and researchers drawn from SDSC, HDSI and other divisions and was convened to examine the question in January of this year. That workgroup met with a wide range of academic leaders, including all academic deans, and produced a report that strongly supported the establishment of a new School. The report noted that to be successful, the School will have to be dynamic and promote collaborations with established programs across the campus, particularly with established departments such as Computer Science and Engineering, Electrical and Computer Engineering and the applied mathematicians in Mathematics. Similarly, the School will need to establish an environment to enhance the breadth of interactions HDSI has and is developing through joint appointments across the general campus, including with the arts and humanities, social sciences, the professional schools, SIO and the health sciences. The educational programs of the School will benefit from the strong momentum HDSI has already generated, and will contribute to broadening the opportunities for students at all levels to benefit from interdisciplinary studies in computational and data science.

Scope and Charter of the SCIDS Proposal Task Force:
As you examine the opportunities presented by the new School, it will be essential to proceed in a way that preserves the existing strengths and roles of HDSI and SDSC, while laying the foundation for a larger and permanent presence for computing, information and data sciences in the research and educational mission of UC San Diego. These include partnerships with the full range of existing schools/divisions.

The next step in this envisioning process is to develop a formal proposal for the School for review, refinement and approval through the established shared governance process with the San Diego Division of the Academic Senate and the Administration, leading to approval by the Divisional Academic Senate and submission to the Office of the President for further review.

The process for approving new schools is described in the Compendium of the University of California. This is typically a two-step process consisting of a preproposal and a full proposal. We will be in consultation with the Academic Senate to consider the possibility of this SCIDS Proposal to be the preliminary or full proposal. Regardless, this task force’s proposal will form the basis of the final proposal submitted for the systemwide review.

The compendium notes that the proposal will need to address four primary elements: (1) academic rigor, (2) financial viability, (3) the need for the program, and (4) the fit of the school within the UC system and within the segments of higher education in the State of California. Furthermore, the compendium specifies that the consideration of financial viability will need to address FTE requirements to support the school, capital requirements and sources of revenue. Writing a proposal responsive to these four required elements is thus the central charge for this workgroup. The report from the preliminary workgroup provides a starting point for embarking on this process, and it will also be valuable for this workgroup to consider the following specific points as you respond to the requirements of the compendium:

I. What organizational structure of the School will contribute most effectively to the success of transdisciplinary research and education across the campus? What are the synergistic programs and activities enabled by the new academic unit, and how will they interact with the full spectrum of existing schools/divisions?

II. Develop a plan for the growth of the academic programs, research thrusts, and the faculty. This should specifically address how the extramurally supported research mission of SDSC can benefit through involvement with the broader educational mission of the School and campus.

III. Consider the potential contributions the programs of the School could make towards understanding the ethics and societal impacts of computation and data across all disciplines.

IV. Identify infrastructure needs for a successful implementation of the School.

V. Assess societal needs and the placement of graduates (at all degree levels) from the programs offered by the School.

VI. Develop metrics to assess the success and future evolution of the School, as well as a process for review and assessment of those metrics.

VII. Consider how the School could support UC San Diego’s goals for diversity, equity and inclusion, and the effort to be recognized as a Hispanic-Serving Institution.

VIII. Consider a transition plan for HDSI and SDSC to the School, as well as potential avenues for expansion of the School in the future.
IX. Assess the potential place and uniqueness of the school in the context of similar endeavors in peer institutions.

The success of HDSI and the engagement of SDSC offer UC San Diego a unique and synergistic opportunity to establish a premier School that embraces computing, information and data science for establishing a leadership position in academic education, research and operational infrastructure.

I ask that the Task Force work to prepare a proposal for presentation to the senior leadership sometime before the end of Fall Quarter 2021 and target submission of a draft report by mid-January 2022.

I appreciate your willingness to participate in this endeavor and look forward to receiving the full proposal for the School of Computing, Information and Data Science. Please direct any questions or comments to Lisa Riolo (lriolo@ucsd.edu).

With best regards,

Elizabeth H. Simmons
Executive Vice Chancellor
APPENDIX 2

SDSC COMPUTATIONAL INFRASTRUCTURE

SDSC is a well-established production facility with many computational and storage resources. Of the current production compute systems, Expanse and the upcoming Voyager and National Research Platform (NRP) are funded by the National Science Foundation (NSF) and are available to the national academic and nonprofit user community of the US. 90% of the cycles of Expanse are allocated via the Extreme Science and Engineering Discovery (XSEDE) organization which coordinates the NSF-funded large scale HPC machines; Voyager and NRP will have three years of “testbed” phase and then two years of allocated phase for the national user community. The Comet machine, originally funded by NSF for about 5 years for the national user community, is now operated by SDSC on behalf of the Center for Western Weather and Water Extreme (CW3E), Scripps Institute of Oceanography, UC San Diego. The Popeye machine is operated on behalf of the Flatiron Institute of Simons foundation by SDSC. The Triton Shared Computing Cluster (TSCC) is funded by UC San Diego, SDSC and UC San Diego faculties. TSCC is operated as a condo cluster where researchers purchase a certain number of nodes, based on their needs and available funding, and SDSC manages the machine as a single cluster. In addition, SDSC staff play leadership roles in the “Pacific Research Platform” and the OSG, two distributed platforms that together have built federated cyberinfrastructure across hundreds of institutions globally.

Expanse

SDSC Expanse is a Dell cluster organized into 13 SDSC Scalable Compute Units (SSCUs), comprising 56 standard nodes and four GPU nodes, connected with 100 GB/s HDR InfiniBand. 13 of Expanse racks are funded by NSF and are allocated to the academic research community through NSF's XSEDE project. Another rack is funded by UC San Diego and is available to industrial users. Every Expanse node has access to a 12 PB Lustre parallel file system (provided by Aeon Computing) and a 7 PB Ceph Object Store system. Expanse's standard compute nodes are each powered by two 64-core AMD EPYC 7742 processors and contain 256 GB of DDR4 memory, while each GPU node contains four NVIDIA V100s (32 GB SMX2), connected via NVLINK, and dual 20-core Intel Xeon 6248 CPUs. Expanse also has four 2 TB large memory nodes. The Expanse cluster is managed using the Bright Computing HPC Cluster management system and uses the SLURM workload manager for job scheduling. While the system is suited for modest-scale jobs as few as tens of cores to several hundred cores, Expanse also handles high-throughput computing jobs via integration with the Open Science Grid, which can have tens of thousands of single-core jobs and provides connectivity to commercial clouds via the job queuing system. A low-latency interconnect based on Mellanox High Data Rate (HDR) InfiniBand supports a fabric topology optimized for jobs of one to a few thousand cores that require medium-scale parallelism. One of the key innovations of Expanse is its ability to support composable systems, allowing researchers to create a virtual 'tool set' of resources, such as Kubernetes, for a specific project and then re-compose it as needed. Expanse will also feature direct scheduler-integration with
the major cloud providers, leveraging high-speed networks to ease data movement to/from the cloud.

**Comet**

SDSC Comet is the predecessor to Expanse, a Peta scale resource that consists of 1,944 compute nodes, each equipped with Intel Haswell dual socket processors, 12 cores/socket, 2.5 GHz clock, AVX2. Each node has 128 GB of DDR4 memory and 320 GB of flash memory; large memory nodes contain 1.5 TB of DRAM. Each rack of 72 nodes has full bisection InfiniBand FDR interconnects, with a 4:1 bisection interconnect across the racks. In addition, 72 nodes with GPU accelerators, 36 nodes with 2 Nvidia K80 cards and 36 nodes with 4 Nvidia P100 cards. Comet users have access to 7 PB of Lustre-based high-performance storage and 6 PB of durable storage for data reliability, both of which are part of SDSC's evolving Data Oasis storage system.

**Voyager**

SDSC Voyager is an NSF funded AI resource scheduled to begin operation in late 2021. Based on AI processors of Habana/Intel optimized for deep learning (DL) operations for training (using Habana Gaudi processors) and inference (using Habana Goya processors), Voyager will be one of the first-of-its-kind systems available in the NSF resource portfolio. This will give researchers the opportunity to explore Voyager's unique hardware and software using well-established deep learning frameworks like TensorFlow and PyTorch to implement deep learning techniques such as convolutional neural networks (CNNs) and generative adversarial networks (GANs). Researchers will also be able to develop their own AI techniques using software tools and libraries built specifically for Voyager's innovative AI architecture.

**NRP and related projects**

SDSC lead National Research Platform (NRP) is a distributed infrastructure with computer hardware on the west coast, Midwest, and east coast, and a content delivery system with caches in the national network backbone of Internet2 in five additional locations. The 8 locations were chosen to achieve coverage of the continental USA. Any location in the continental USA can reach a cache within roughly 500 miles. The project includes a “Bring Your Own Resources” program that builds on concepts developed by the Pacific Research Platform (PRP), as well as OSG. The larger vision is to work towards federating cyberinfrastructure across all 3,900 accredited degree-granting institutions of higher education. We see this as the next logical step beyond the expansion of highspeed internet in California (funded by CA State government at the tune of $6.25B) and nationwide (part of the Biden infrastructure package to the tune of $76B). We are focused on education and research being an application driver of these networking investments, in addition to YouTube, Netflix, and social media. Our collection of funded projects comprises close to 1,000 GPUs, ranging from gaming GPUs to top of the line NVIDIA data center systems with low latency high bandwidth networking, close to 40 FPGAs, and a mix of low latency parallel as well as distributed high throughput computing infrastructure. In addition, these projects include regional storage pools, with special focus on expanding data infrastructure in EPSCOR states, and at minority serving institutions.
Popeye

The Popeye supercomputer is hosted by SDSC for researchers at the Flatiron Institute of the Simons Foundation. Popeye is a heterogeneous cluster that has been upgraded several times. The CPU and GPU racks are from Lenovo, the InfiniBand switches are from Mellanox, and most of the disk storage is from Aeon. Currently there are 11 CPU racks with a total of 41,472 Intel cores that have a peak speed of 3.67 Pflop/s plus two GPU racks with a total of 1,280 Intel cores and 128 NVIDIA V100s that have a combined peak speed of 1.0 Pflop/s. Six CPU racks are liquid-cooled; all the other racks are air-cooled. The operating system is CentOS, the cluster management system is Bright, and the scheduler is Slurm. The compute nodes and the file systems are connected via an EDR InfiniBand network. The primary file system is managed by Ceph and consists of 25 PB raw disk of which about 15 PB should be usable. However, not all the storage is online yet, since it has not been needed.

Triton Shared Computing Cluster (TSCC)

TSCC is a medium-scale, high performance computing cluster primarily for campus researchers. The system is housed in a secure, energy-efficient data center on the UC San Diego campus. Designed to facilitate rapid access to computing resources, TSCC features flexible usage and business models and professional system administration and user support. The primary business model for TSCC is the “condo computing model,” in which research groups use grant, startup, gift, or other funds to purchase computer servers (“nodes”) which are installed in the cluster and are available to all users on a fair-share basis. Condo participants and the campus administration cost-share the annual operating costs for the cluster. In addition to the condo computing partition, TSCC has a “hotel node” partition which is available to condo owners and to other researchers on an ad hoc (“pay as you go”) recharge basis. The condo and hotel configurations contain both standard two-socket, x86 compute nodes and Graphics Processing Unit (GPU) nodes. The hotel configuration also features one or more large-memory nodes. The cluster contains several generations of x86 compute nodes (16-36 cores, 64-384GB memory), several generations of NVIDIA GPU nodes, and a mixed interconnect including EDR InfiniBand for closely coupled simulations and 10/25GbE Ethernet for high performance communications and I/O. The system has a 2 petabyte, high performance Lustre parallel file system for staging of input data and temporary storage of results data.

SDSC Cloud (Compute)

The SDSC Cloud also offers Compute and block storage utilizing the same Openstack underpinnings with Swift Cloud Storage, such as common identity management. The Compute functionality provides an elastic resource for small or non-parallel compute jobs not requiring or well suited to high performance computing (HPC).

Storage Infrastructure

SDSC Universal Scale Storage (High Performance, Large-Scale Storage)

SDSC’s Universal Scale Storage (USS) provides researchers and research partners with a flexible, scalable, and affordable storage cluster for any storage purpose, including high
performance computational workloads, departmental user data storage, and long-term archival.

Housed within the SDSC data center with multiple high-speed 80Gb links to the internal SDSC network and internet at large, USS can be mounted directly on SDSC high performance computing (HPC) systems (Comet, Expanse and TSCC), in addition to most UC San Diego campus systems. Erasure encoding striped across clustered storage devices ensures effective data durability. A daily snapshot option creates the opportunity to restore recently accidentally deleted data or recover after disasters. An SSD cache on top of spinning disk storage within each device in the cluster achieves maximum system I/O performance. Users may request a copy of data to be pushed to a separate archival object storage system for additional redundancy.

While the typical use case is a 200+ TB share mounted on collocated systems or SDSC HPC systems, users can request shares greater than 1 PB and can access the data from anywhere when pairing USS with local file servers, such as an SDSC VMware VM, or 3rd party interfaces. Experienced SDSC storage engineers are available to architect solutions tailored to research needs and provide ongoing support.

**SDSC Cloud (Storage)**

SDSC's Cloud Storage provides academic and research partners with a convenient and affordable way to store, share, and archive data, including extremely large data sets. The object-based storage system and multiple interface methods make the SDSC Cloud easy to use for the average user, but also provide a flexible, configurable, and expandable solution to meet the needs of more demanding applications.

Utilizing the OpenStack Swift Object Storage software across 3 PB of hardware, objects are written to multiple physical storage arrays simultaneously, ensuring at least three verified copies always exist on different servers. Continuous, automatic data verification provides unparalleled durability, which equates to peace-of-mind for you and your data. Optional off-site replication to our partner facility provides additional durability and protection against data loss.

Files of any size can be stored in the cloud, from small personal document collections to multi-terabyte backup sets routed directly to the cloud by Rackspace or S3 API compliant applications. Cloud Backup package solutions are also available, using SDSC's CommVault Backup service. With on-demand storage, researchers never have to worry about running out of space – storage scales as needed.

**SDSC Project Storage (High Performance NFS and CIFS Storage)**

SDSC's Project Storage provides academic and research partners a network-based storage service that offers CIFS/Samba and NFS to UC San Diego. Leveraging Oasis with a dual 10 Gbps network connection and boasting a raw capacity of 4.4 PB (1,900+ disks), Project Storage is an excellent option for interactive access and use as a traditional mounted file system. Project Storage is a popular option with HPC users as it allows for the fastest transfer of large data to and from the supercomputers at SDSC, as well as easy access through mount points. Nightly ZFS snapshot replications ensure dual-copy data durability. By choosing to add historical backups utilizing SDSC CommVault
services, users can perform point-in-time file recovery. Additionally, users can invest in project storage hardware housed in a condo function, allowing the users to trade steeper up-front fees for lower long-term costs. The user is responsible for investing in hardware while SDSC typically handles the hardware procurement, setup, and maintenance.

**Global scale data federation**

SDSC is collaborating across multiple projects (OSG, PRP, NRP, NSDF, OSN) towards a vision of a global scale data federation. Different projects pursue this vision with different technology foci. All have in common the vision of federating data into a global namespace that allows for fine grained access controls, distributed across many storage systems owned by many different organizations, and data accessed from anywhere at any time via a content delivery network (CDN). Several of these projects have a strong focus on democratization of access to data, thus deploying hardware in minority serving institutions nationwide. Some are focused mostly on "Bring Your Own Resource," i.e., integrating existing data on existing storage systems at institutions other than UC San Diego. The largest of these systems today includes 18 caches across 4 continents, most of them located in the USA, plus 9 data origins that feed the CDN for a wide range of communities. One of the projects (NSDF) includes funding to integrate the USS mentioned above into this global scale data federation as an origin.

**Additional Resources**

**SDSC Datacenter**

All equipment is housed in the SDSC colocation facility. SDSC’s 19,000-square foot climate-controlled and secure datacenter is fully equipped with 13 Megawatts of power, 100 gigabit and multi-10-gigabit network connectivity, and a 24/7 operations staff. Staff constantly monitor the room environment and are available as ‘remote hands. Options for highest uptime use cases include emergency power, UPS, and generator-backed racks. Equipment is dual-powered by two PDUs per rack. All racks are installed on isobase, floating foundations for earthquake protection.

**EarthCube Office (ECO)**

The EarthCube Office serves as the backbone organization for the community driven, NSF-funded EarthCube Initiative. ECO is a collaboration between SDSC, the National Center for Supercomputing Applications at University of Illinois Urbana Champaign, the Scripps Institution of Oceanography at UC San Diego, the University of Hawaii at Manoa, the Earth Science Information Partners (ESIP), and the US Geoscience Information Network (USGIN). ECO’s science engagement and technical activities include data FAIRs and data help desks at geoscience community meetings, and consultation on best practices for interoperability between geosciences/EarthCube projects.

**National Data Service**

Resources offered through the National Data Service (NDS) are available for pilots via NDS Labs and for larger or production scale data needs via NDS Share. SDSC makes available portions of its storage and compute platforms on SDSC Cloud to the NDS.
Projects needing multiple sites utilize tools such as Globus to move between federated resources at the nation’s major academic supercomputing centers.

**West Big Data Innovation Hub**

With a focus on thematic ‘verticals’ such as metro/urban data science, and natural resource management, especially water, as well as cross-cutting ‘horizontals’ such as open science, workforce development, and data ethics, the West Hub enables creative cross-pollination and resource-sharing. Our initiatives convene a diverse and inclusive community, bringing together scientists and technologists, policy enthusiasts and decision makers, local innovators, and the broader public to identify common goals and opportunities. Fueled by outcomes-focused partnerships, the West Hub facilitates the development of collaborative pilot projects addressing regional needs, while connecting and scaling efforts as part of a larger global network. The WBDIH connect, convene, curate, and communicate across our network with an emphasis on enabling interoperable, scalable, and sustainable solutions.

The West Big Data Innovation Hub (WBDIH) is one of four regional hubs funded by NSF to build and strengthen partnerships across industry, academia, nonprofits, and government to address scientific and societal challenges, spur economic development, and foster a big data innovation ecosystem. Launched in November 2015, the West Hub has recruited a diverse community of contributors across disciplines, backgrounds, and geographies to enable translational research projects that have the potential for wide-reaching societal impact.

By spanning 13 states and sparking national as well as global engagement, the West Hub can leverage a broad collection of physical facilities as well as online infrastructure. The West Hub has hosted in-person and virtual community convenings at many campuses including: (University of California - Berkeley, Los Angeles, Davis, San Diego, University of Washington, University of Colorado - Boulder, Boise State University, Portland State University, University of Wyoming, University of Utah, New Mexico State University, and others), Federally Funded Research and Development Centers, industry sites (from small startups to large corporations), co-working innovation spaces, local government venues, large technical conferences, and community facilities, often open to the public and captured online to broaden access and participation.

**Go FAIR (US)**

Research Data Services division of the San Diego Supercomputer Center (SDSC) at the University of California San Diego, hosts the U.S. GO FAIR Coordination Office. GO (Global Open) FAIR is a ‘bottom up’ initiative aimed at implementing the FAIR principles to ensure that data is findable, accessible, interoperable, and reusable. GO FAIR’s main goal is to kick-start the development of a global data commons for research and innovation. The GO FAIR US office serves as a coordination entity to develop and facilitate community engagement, capacity building and training, decision-making and other activities related to the adoption the FAIR principles within the U.S. and its territories. GO FAIR US works to support all knowledge domains and leads efforts toward the general goal of increasing FAIR data stewardship.
Cyberinfrastructure and SCIDS

Infrastructure for computing and data has become an essential component of every institution of higher learning. UC San Diego has a larger mandate in this domain given the presence of a national supercomputing center. The establishment of SCIDS would enhance the presence of this advanced infrastructure and can help launch UC San Diego as the paradigm for the next generation cyberinfrastructure (we define cyberinfrastructure (CI) as hardware, software, research networking, and a team of technical and domain experts.) Here we present the exceptional scope of cyberinfrastructure available at SDSC and how it provides a central role in the success of SCIDS.

Cyberinfrastructure must be a foundational element of SCIDS, providing the computing, data resources, and expertise to advance its research, teaching, and service missions. To be successful, SCIDS will require a scale and complexity of CI that goes well beyond the department or campus research computing function. Today, SDSC provides a wide range of these services and resources to campus, with well-developed cost recovery and funding models. While some additional growth is possible, what SDSC can provide to campus is bounded by available funding, people, and the limitations inherent in current organization structure. The advent of SCIDS will provide new opportunities for the growth of SDSC and through careful stewardship of existing resources, using well-established service and business models, SDSC can build out its existing services and resources, and develop the new ones that will be needed.

The table below describes SDSC’s current portfolio of CI solutions, current support model, how they are relevant to SCIDS, and suggests what will be needed for SCIDS and how they can be capitalized. In addition, there are two proposed services suggested that would be of value to SCIDS. Capital investment will be targeted and wherever possible, leverage existing cost-recovery models, or direct grant funding. There are two notable exceptions to this as noted in the table. First, and regardless of SCIDS, there is an urgent need for a data center expansion to meet existing needs. Planning work is underway now to assess the required funding and potential impacts to campus. SCIDS may provide new opportunities for funding such an effort, for example, if it were done in conjunction with a new SCIDS building, one can envision a showcase building with a state-of-the-art data center, technology innovation lab, teaching space, lab space, and collaboration spaces. Second, SDSC has for many years operated the campus research computing cluster (TSCC). With some investment from campus and some from SDSC, TSCC has reached a point of stability and success that is marked by widespread support from PIs. However, investment is needed for growth.

Table I Campus Cyberinfrastructure Resources Relevant to SCIDS

<table>
<thead>
<tr>
<th>Cyberinfrastructure</th>
<th>Function/Service</th>
<th>Funding model</th>
<th>Relevance to SCIDS</th>
<th>SCIDS funding model and Capital requirement</th>
</tr>
</thead>
</table>

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| Campus Colocation facility | Space, power, cooling, R&E networking ([https://www.sdsc.edu/services/ci/colocation.html](https://www.sdsc.edu/services/ci/colocation.html)) | SDSC Data Center Colo model in place and supporting researchers from UC San Diego and across the UC system in 507 racks, but essentially out of space for new systems. Campus covers fees for UCSD researchers. External (including UC) customers pay full rate. Full range of services provided. | Data center expansion or new data center as part of SCIDS facilities is a must to accommodate expected growth in research, scale, students | Mixed model of campus support, donor, fee-for-service recharge including revenue from industry partners. | New data center or expansion required in the future. Capital requirement: 10’s of millions of $.

| Expanse high-performance computing system | 5 petaflop CPU and GPU compute system. SDSC’s largest HPS systems. ([https://www.sdsc.edu/services/hpc/expanse/](https://www.sdsc.edu/services/hpc/expanse/)) | 13 of the scalable units were funded by NSF and operated on behalf of the national community. An additional Scalable Unit was purchased by SDSC and is operated for UCSD as a recharge | A fraction of Expanse can be allocated to UCSD researchers at no cost via NSF-approved discretionary mechanism. Many active UCSD researchers take advantage of this now. | No additional capital required beyond data center space and power. Anticipated operating for an additional 5 years once it goes out of NSF service via a model like Comet, which is now operated on behalf of SIO. |

| Comet HPC system | 2.5 petaflop CPU and GPU system. Previously an NSF system, now operated by SDSC on behalf of the Center for Western Weather and Water Extremes (CW3E) at Scripps Institute of Oceanography. ([https://www.sdsc.edu/support/user_guides/comet.html](https://www.sdsc.edu/support/user_guides/comet.html)) | Maintenance and support are covered by SIO. | This is the backbone of CW3E and an exemplar of how the pipeline of HPC systems at SDSC benefit UCSD researchers | No additional capital required beyond data center space and power. |

<p>| Popeye HPC System | ~5 petaflops CPU and GPU system operated on behalf of the Flatiron Institute at the Simons Foundation | Hardware purchased by the Simons Foundation, which also provides funding for SDSC staff to operate the system, and for data center colocation space and power. Simons had previously assumed operational expenses for SDSC’s Gordon HPC system when it | UCSD has multiple research collaborations with the Simons Foundation; there is also differential income provided by the arrangement. More recently Simons has provided computing time | No capital required other than space in the data center. |</p>
<table>
<thead>
<tr>
<th>Facility</th>
<th>Description</th>
<th>Funding</th>
<th>Responsibilities</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voyager AI supercomputer</td>
<td>Specialized HPC system for machine learning and artificial intelligence research</td>
<td>Funded by NSF, Voyager enters production in 2022 and will operate for 5 years.</td>
<td>UCSD researchers Rommie Amaro and Javier Duarte are co-PIs. Voyager put UCSD at the forefront of innovation in AI/ML architectures and provides a platform for research in this important area.</td>
<td>No capital requirements other than continued data center space and power.</td>
</tr>
<tr>
<td>National Research Platform (NRP)</td>
<td>National, distributed resource for data-intensive science and engineering. (<a href="https://www.sdsc.edu/News%20Items/PR20200701_voyager.html">https://www.sdsc.edu/News%20Items/PR20200701_voyager.html</a>)</td>
<td>Funded by NSF, NRP enters production in 2022 and will operate for 5 years.</td>
<td>UCSD researchers Tajana Rosing and Tom DeFanti are co-PIs. NRP will allow exploration of emerging interconnect and computing technologies and help advance research in many domains.</td>
<td>No capital requirements other than continued data center space and power.</td>
</tr>
<tr>
<td>Triton Shared Computing Cluster (TSCC)</td>
<td>Campus computing cluster for research, education, capstone projects. Owned by and operated on behalf of campus researchers</td>
<td>TSCC supports 30+ labs, hundreds of researchers. Mix of condo and hotel nodes purchased by PIs with operational subsidy covered via SDSC and UCSD</td>
<td>Scale-out to support growth of SCIDS education and research portfolio</td>
<td>Campus support for racks and labor sufficient to ensure long-term sustainability and growth. Seek partnerships with industry.</td>
</tr>
<tr>
<td>Storage and Data: Spectrum of high-capacity, high-performance storage, including Universal Scale Storage, SDSC Cloud</td>
<td>On premise and distributed data storage. TB to multi-PB scale</td>
<td>Primarily a fee-for-service recharge model. Currently supports many researchers across campus. Solutions and support</td>
<td>An essential element in nearly all SCIDS data-driven research and education activities.</td>
<td>Capital requirement: $500K - $1M/year</td>
</tr>
</tbody>
</table>
In addition to the CI in Table 1, SDSC operates several other projects which provide resources, expertise, and collaboration opportunities relevant to SCIDS. Table 2 lists several of these with a brief description and links to additional information.

**TABLE 2 Synergistic Programs**

<table>
<thead>
<tr>
<th>Program</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Center for Applied Internet Data Analysis (CAIDA)</td>
<td>Founded in 1997, the Center for Applied Internet Data Analysis (CAIDA) conducts network research and builds research infrastructure to support large-scale data collection, curation, and data distribution to the scientific research community. <a href="https://www.caida.org">https://www.caida.org</a></td>
</tr>
<tr>
<td>CloudBank</td>
<td>a cloud access entity that helps the computer science community access and use public clouds for research and education by delivering a set of managed services designed to simplify access to public clouds. <a href="https://www.cloudbank.org/about">https://www.cloudbank.org/about</a></td>
</tr>
<tr>
<td>EarthCube Coordination Office</td>
<td>The EarthCube Office serves as the backbone organization for the community driven, NSF-funded EarthCube Initiative. <a href="https://www.earthcube.org">https://www.earthcube.org</a></td>
</tr>
<tr>
<td>Open Science Grid</td>
<td>The OSG is a consortium of research collaborations, campuses, national laboratories and software providers dedicated to the advancement of all open science via the practice of distributed High Throughput Computing (dHTC), and</td>
</tr>
<tr>
<td>Pacific Research Platform</td>
<td>The Pacific Research Platform (PRP) is a multi-institutional extensible deployment that establishes a science-driven high-capacity data-centric ‘freeway system.’ The PRP spans all 10 campuses of the University of California, as well as the major California private research universities, four supercomputer centers, and several universities outside California. <a href="https://pacificresearchplatform.org">https://pacificresearchplatform.org</a></td>
</tr>
<tr>
<td>US GO FAIR Coordination Office</td>
<td>GO (Global Open) FAIR is a ‘bottom up’ initiative aimed at implementing the FAIR principles to ensure that data is findable, accessible, interoperable, and reusable. <a href="https://www.go-fair.org/go-fair-initiative/go-fair-offices/go-fair-us-office/">https://www.go-fair.org/go-fair-initiative/go-fair-offices/go-fair-us-office/</a></td>
</tr>
<tr>
<td>West Big Data Innovation Hub</td>
<td>The West Big Data Innovation Hub (WBDIH) is one of four regional hubs funded by NSF to build and strengthen partnerships across industry, academia, nonprofits, and government to address scientific and societal challenges, spur economic development, and foster a big data innovation ecosystem. <a href="https://www.westbigdatahub.org">https://www.westbigdatahub.org</a></td>
</tr>
<tr>
<td>Workflows for Data Science Center of Excellence (WoRDS)</td>
<td>WoRDS is a hub for the development, promotion, and delivery of workflow services for a wide range of applications. The mission is to support data analysis projects, data scientists and software engineers in their computational practices involving process management. <a href="https://words.sdsc.edu">https://words.sdsc.edu</a></td>
</tr>
</tbody>
</table>
APPENDIX 3

LETTERS OF SUPPORT

Albert Pisano, Dean, Irwin and Joan Jacobs School of Engineering
Carol Padden, Dean, School of Social Sciences
Steven E. Boggs, Dean, School of Physical Sciences
Kit Pogliano, Dean, School of Biological Sciences
Margaret Leinen, Dean and Vice Chancellor, School of Marine Sciences, Scripps Institution of Oceanography
Caroline Freund, Dean, School of Global Policy and Strategy
Lisa Ordóñez, Dean, Rady School of Management
Brookie Best, Dean, Skaggs School of Pharmacy and Pharmaceutical Sciences
Steven Garfin, Interim Dean, UC San Diego School of Medicine
Cheryl Anderson, Dean, Herbert Wertheim School of Public Health and Human Longevity Science
Cristina Della Coletta, Dean, School of Arts and Humanities
John Moore, Dean, Division of Undergraduate Education
Judy Kim, Senior Associate Dean, Division of Graduate Education and Postdoctoral Affairs
Hugo O. Villar, Dean, Division of Extended Studies
Bill Lin, Professor and Chair, Department of Electrical and Computer Engineering
Sorin Lerner, Professor and Chair, Department of Computer Science and Engineering
Michael Holst, Chair, Department of Mathematics
Douglas A. Nitz, Professor and Chair, Department of Cognitive Science
Ramesh Rao, Director, Qualcomm Institute
Erik Mitchell, The Audrey Geisel University Librarian
UC San Diego Innovation and Entrepreneurship Council
Becky Petitt, Vice Chancellor, Equity, Diversity and Inclusion
Dear Chancellor Khosla:

I would like to express my strongest support for establishing SCIDS, the School of Computing, Information and Data Sciences, which I expect to benefit the entire UC San Diego campus as well as the Jacobs School of Engineering in particular.

The Jacobs School is the largest school of engineering on the west coast and is highly ranked in the nation for the excellence of its research programs. The departments of engineering also enjoy outstanding and high rankings, among these being Computer Science and Engineering, Electrical and Computer Engineering, and Bioengineering. During my tenure as the Dean of JSOE, I encouraged, resourced, and supported the growth of Information Theory, Machine Learning, and a host of other innovative research activities in Engineering, many of which laid the groundwork that led to the creation of the Halicioglu Data Sciences Institute. The Jacobs School has a history of launching extraordinarily successful partnerships across the campus and the foundation of SCIDS will be a crown jewel in our efforts.

Given the strong constructive collaboration between educational and research activities in the Jacobs School and the proposed School, the Chairs of CSE and ECE, along with myself, felt that it would be natural for these foundational departments to have a dotted line affiliation with SCIDS. I have worked closely with the Taskforce which created the SCIDS proposal in defining the implications of the dotted line. CSE and ECE, which have provided the intellectual foundations for the proposed School will have joint faculty, curriculum, and research partnerships. These departments and their faculty, while formally belonging to the Jacobs School, will provide valuable input into SCIDS administration now and the future. I am strongly supportive of this model, and I look forward to working closely with SCIDS leadership for mutual benefit as well as the benefit of the campus.

I am excited that the San Diego Supercomputer Center (SDSC), a true national treasure, will be a part of SCIDS and will play a significant role in shaping the infrastructure for computing and data science research of the future. The Jacobs School has had substantial interactions with SDSC since its inception four decades.
ago and has substantial joint appointments and projects today. The foundation of SCIDS will facilitate such interactions even further, as we develop new research projects that require the combined intellectual powers of the Jacobs School of Engineering and SCIDS, made possible by the special contributions only SDSC can provide. I also anticipate a strong constructive collaboration between SDSC and the Qualcomm Institute, a premier Collaboratory at UC San Diego.

I support the creation of SCIDS and the dotted line affiliation of the Departments of CSE and ECE (both of which are Jacobs School of Engineering Departments) in the strongest terms and I look forward to the synergistic growth of the new School.

Sincerely,

Albert P. Pisano, Dean
Irwin and Joan Jacobs School of Engineering Walter J. Zable Distinguished Professor Professor, Mechanical and Aero Engineering Professor, Electrical and Computer Engineering Member, National Academy of Engineering Member, National Academy of Inventors
August 28, 2023

TO: Robert Continetti, SVCAA
    Academic Affairs

    Shankar Subramaniam, Professor Computer Science and Engineering

RE: Proposal for a new School of Computing, Information and Data Sciences

I am writing to express support for the proposed new School of Computing, Information and Data Sciences. The School of Social Sciences has had representation throughout the process of putting this proposal together and I am pleased to see that many of our ideas are incorporated.

We have a growing number of faculty who work in data science and with big data and we are continuing to hire new faculty in this area. Some of these hires have been carried out jointly with HDSI, and some are wholly within our departments. Moreover, a number of our faculty have joint appointments or other types of affiliations with HDSI. Our faculty and their graduate students rely on the services of the Supercomputer Center and we continue to hire new faculty whose startup packages and appointment letters include support from SDSCC. The Supercomputer Center is an extraordinary benefit in terms of recruiting new faculty, and I am pleased to see the proposal discuss the ways that SCIDS can directly and indirectly support our faculty.

I want to recognize two units in particular who will be partnering in the future of SCIDS: the Cognitive Science Department and the Computational Social Science Program. Prof. Jeffrey Elman from the Cognitive Science Department worked with Prof. Rajesh Gupta to develop the current framework of HDSI, which is now becoming fully realized. The Computational Social Science Program (CSS) which was led by Prof. Edward Vul (a member of the exploratory committee to develop SCIDS, before he took a leave of absence to work in industry), offers a minor, a masters’ program and a PhD specialization. There are no plans as of yet for a major in CSS. The program offers courses by participating Social Sciences faculty from many of our departments and programs in the School.

I appreciate the SCIDS proposal outlining types of relationships that the new School might have with affiliate faculty and affiliate Schools. We are open to all, including other ways to involve Schools as well as individual faculty and research staff. Thank you for outlining each of these options, and inviting deeper involvement with SCIDS over time.

Thank you for your effort and that of the committee. As Dean, I look forward to being your partner in realizing and building a new School, SCIDS.
Sincerely,

Carol Padden
Dean, Division of Social Sciences
August 15, 2023

To: UC San Diego Division of the Academic Senate

I am writing to provide my strong and enthusiastic support for the proposal to create the new School of Information and Data Sciences (SCIDS) at UC San Diego. SCIDS represents both the culmination of a natural progression in the evolution of data sciences on campus and the much-needed foundation for expanding our endeavors in computing, information, and data sciences going forward. Physical Sciences has played a driving role in this evolution, both through our historical and ongoing connections and leadership of the San Diego Supercomputer Center (SDSC), and through our foundational role in partnering to create the Halicioğlu Data Sciences Institute (HDSI). All four of the departments in Physical Sciences – Mathematics, Physics, Astronomy & Astrophysics, and Chemistry & Biochemistry – maintain close and productive connections with both SDSC and HDSI. The establishment of SCIDS will serve to enhance these connections to Physical Sciences. I anticipate strong collaborations between the schools, and many possibilities to explore exciting new research directions in partnership. The mutual areas of overlap in computing and data science are enormous, and the applications affect nearly every field of physical and mathematical sciences. I am particularly interested in seeing how the establishment of SCIDS could help in expanding the visibility and impact of both statistics applied mathematics at UC San Diego, fields that are largely concentrated in our department of Mathematics. We will be eager to explore more formal engagement between Physical Sciences and SCIDS once the school is established.

Sincerely,

Steven E. Boggs
Dean of Physical Sciences
Chancellor’s Associates Endowed Chair in Physics
University of California, San Diego
He/him
To: Robert E. Continetti
Sr. Associate Vice Chancellor
Academic Affairs

RE: Proposal for a new School of Computing, Information and Data Sciences

Dear Sr. Associate Vice Chancellor Continetti,

On behalf of the School of Biological Sciences, I am pleased to support the proposal for a new School of Computing, Information and Data Sciences. The proposal was reviewed by the chairs and Biological Sciences Executive Committee, and we find the plan to be robust and well-articulated. There is clearly a strong opportunity for growth in Data Sciences research and education, and for collaboration with many disciplines. The proposed new School will be well-positioned to capitalize on these research opportunities, while delivering high value curricula for our students. We have no specific concerns, and look forward to collaborating with the new school.

Sincerely,

Kit Pogliano, PhD
August 14, 2023

Dr. Robert Continetti
Senior Associate Vice Chancellor
UC San Diego

Dear AVC Continetti,

It is my pleasure to write in support of the creation of the proposed new School of Computing Information and Data Science at UC San Diego. Over the past five or six years the University has discussed how best to educate students and do research in the rapidly developing areas of computing information and data science. From the beginning we envisioned a mechanism to partner the scholarship of the university with the tools and techniques in computing information and data science. The emergence of the new Halicioglu Data Science Institute and its focus on joint faculty with other parts of the University brings that vision to reality. The addition of Computing Information built on the foundation of the San Diego Supercomputer Center, which has transformed our national capabilities in how to generate information from data is most welcome. Our new leadership in these areas is also firmly focused on generating new ways of thinking about data and information. I am enthusiastic about the potential for UC San Diego that the new School offers and I know that faculty and researchers at Scripps Institution of Oceanography join me in looking forward to working with the new School.

Sincerely,

Margaret Leinen
Dean, School of Marine Sciences and Vice Chancellor for Marine Sciences.
To: Divisional Senate

From: Caroline Freund
Dean, School of Global Policy and Strategy

RE: Creation of a School of Computing, Information and Data Sciences (SCIDS)

The School of Global Policy and Strategy (GPS) supports the creation of a School of Computing, Information and Data Sciences (SCIDS). There are many synergies with GPS, given the emphasis in our curriculum on data and analysis and our faculty’s research, which increasingly uses big data, AI, and new methodologies.

Our programs provide training in quantitative and qualitative domains of International Affairs and Public Policy. Our programs are known for providing the strongest training in computational and data work of any policy school, and the new school would help us continue to deliver on that goal. We believe that the proposed school would complement the programs at GPS and there would be great potential for interdisciplinary research. Evidence of the potential is the ongoing search for a Chancellor’s joint faculty position with Halicioğlu Data Science Institute (HDSI).

The search process itself has highlighted the many complementarities, as our members have gotten to know each other throughout the interview process. For GPS, this new joint position will bring additional teaching resources on data science and a potential collaborator for our faculty, who is highly skilled technically and interested in policy analysis. We look forward to many more such interactions.

GPS is highly interdisciplinary, with economists, political scientists, and scientists all working on pressing policy issues. The new school will provide GPS with an additional resource on which to draw on as they search for the best method to analyze a policy issue. It will also support our students in providing the most advanced quantitative skills of any policy school. We look forward to working collegially, collaboratively, and cooperatively with the leadership of the new school.
August 15, 2023

Dear Prof. Robert Continetti and Prof. Shankar Subramaniam,

I have been honored to serve on the task force that prepared the “School of Computing, Information, and Data Sciences” proposal. This new school, if approved, will be an exciting hub for the campus in terms of research and teaching in these areas. The Rady School faculty and MS in Business Analytics would clearly benefit from the activities and faculty in this new school.

Thus, I am pleased to write this letter in support of the SCIDS proposal dated 4/27/23. We at the Rady School are eager for this new school to be approved.

Sincerely,

Lisa D. Ordóñez, PhD
Dean, Rady School of Management
Stanley and Pauline Foster Endowed Chair

Rady School of Management

lordonez@ucsd.edu
rady.ucsd.edu
August 16th, 2023

Senior Associate Vice Chancellor Robert Continetti
Distinguished Professor Shankar Subramaniam

Dear Drs. Subramaniam and Continetti,

The leadership of the Skaggs School of Pharmacy and Pharmaceutical Sciences (SSPPS) is pleased to support the launch of the new UC San Diego School of Computing, Information, and Data Sciences. This new school is a critical step forward that will address compelling societal needs across every discipline. The foundational pillars (HDSI and SDSC) and existing and future potential synergies at UC San Diego and across the region ensure that this new school will continue our tradition of excellence and benefit our community.

SSPPS expects to partner with faculty, research and training programs in the new School in several areas, including but not limited to:

- High performance computing (HPC). Our computational pharmaceutical sciences faculty are heavily engaged in HPC related to drug discovery, drug design, predicting potential drug targets, and managing massive datasets.
- Our faculty and trainees are advancing science at the interface of chemical informatics, structural biology, and molecular simulations with artificial intelligence and machine learning, including partnerships with the San Diego Supercomputer Center.
- Pharmacomicrobiomics, pharmacogenomics and precision medicine, metabolomics and proteomics are major areas of focus for our faculty and trainees, using machine learning and generative AI to help collect, manage, interpret, visualize and deploy these data for improved health.
- Several new faculty are experts in pharmacy informatics, utilizing large scale clinical datasets, machine learning and AI to answer medication-related public health questions, and optimize medication utilization via disease and therapy prediction and monitoring.

The formation of this new school provides a unique opportunity to synergize with our pharmacy school to improve the health of our communities. The formation of this new school at UC San Diego has the wholehearted support of SSPPS.

Sincerely,

Brookie M. Best, PharmD, MAS
Dean, Skaggs School of Pharmacy and Pharmaceutical Sciences
Professor of Clinical Pharmacy and Pediatrics

Skaggs School of Pharmacy & Pharmaceutical Sciences
School of Medicine, Pediatrics Department – Rady Children’s Hospital San Diego
UC San Diego • 9255 Pharmacy Lane, MC 0657 • La Jolla, CA 92093-0657
T: 858-822-5550 • Email: brookie@ucsd.edu • pharmacy.ucsd.edu
Robert Continetti  
Senior Associate Vice Chancellor Academic Affairs UC San Diego  

August 16, 2023  

Dear Dr. Continetti:  

Please convey to the Divisional Senate my strongest support for the proposed School of Computing Information and Data Sciences (SCIDS). The School of Medicine sees SCIDS as a bridge between multiple medical and scientific disciplines and computing technology which is a growing necessity for effective and timely cross-disciplinary data science research.  

The School of Medicine has data analytics needs that relate to basic, translational, and clinical research, as well as the quality of patient care and other operational initiatives. Partnership with data scientists from SCIDS will strengthen biomedical data science efforts already underway in various basic science and clinical departments. For basic research, SCIDS partnerships focused on developing algorithms and tools to extract novel biological information from the combined analysis of large and complex omics (genomic, epigenomic, metabolomics) public datasets will be hugely beneficial. For translational and clinical research, SOM faculty will offer SCIDS partnerships creating a gateway for access to real clinical data and/or genomic data from human subjects.  

The research and training needed for the future of the School of Medicine strongly warrants the creation of a School that will provide a unique opportunity to serve as the next-generation data-driven health care incubator. The proposed program can be a leader in training the next generation of physicians, particularly those who wish to pursue a career in data analytics in medicine.  

Please do not hesitate to contact me if I can provide additional support for this transformational proposal.  

Sincerely,  

Steven R. Garfin, MD  
Interim Dean, UC San Diego School of Medicine
Dear Dr. Continetti:

I am pleased to provide this letter of support for the creation of a School of Computing, Information and Data Sciences (SCIDS) at UC San Diego. In the realm of public health, data science is integral to data gathering, analytics, predictive computing, and devising interventions to advance public health outcomes. The establishment of SCIDS will accelerate efforts to bring data science to the Herbert Wertheim School of Public Health and Human Longevity Science (HWSPH), which was recently established and is positioning itself as an outstanding place for education and research into 21st century public health challenges. We are excited about the proposal for a new School of Computing, Information, and Data Sciences as it is highly complementary with the strategic areas of focus for our school. These areas include global and border health, health services and learning healthcare systems, climate and public health, health equity, mental health and addiction, and longevity sciences. In addition, our educational core will be enhanced by strong data science support from SCIDS.

The local, state, and global impact of our school of public health will be heightened by the presence of, and partnership with, the School of Computing, Information, and Data Sciences. Recognizing the many intersections between data science and public health, the HWSPH currently partners with HDSI in data science as well as joint faculty recruitment. We look forward to additional interdisciplinary teaching and research, and to the creation of community programs that employ data science techniques in addressing longstanding public health challenges.

We are excited about the potential transformational impact of this new school and offer our strongest support.

Sincerely,

Cheryl Anderson, PhD, MPH, MS
Professor and Dean
Hood Family Endowed Dean’s Chair in Public Health
August 29, 2023

Dear Colleagues:

I write in very strong support of the proposal to create the UC San Diego School of Computing, Information and Data Sciences (SCIDS).

UC San Diego is well-positioned to provide critical leadership and innovation in the rapidly evolving and interconnected fields of data, information, and computing sciences. As detailed in the proposal submitted by the SCIDS task force, “the proposed school is envisioned to be UC San Diego’s next leap forward in addressing the most compelling need of modern times – transforming data into knowledge. Every walk of our day-to-day life, from the continuous myriad measurements of wearable sensors to the vast amounts of temporal data collected across the globe documenting climate change, warrant conversion into actionable knowledge and models. Addressing the data deluge is arguably the greatest intellectual challenge of our time and this will motivate the unprecedented integration of diverse disciplines and development of unforeseen technologies.”

SCIDS will provide the intellectual core where these issues will be addressed, and connect meaningfully with other units, thus enhancing synergistic and interdisciplinary strengths and opportunities. In this context, the School of Arts & Humanities will both benefit from and support SCIDS through initiatives such as those pioneered by the Institute for Practical Ethics (IPE). The IPE engages with research big data, for example, in order to understand the ethical implications involved in the interpretation and dissemination of these data, fostering deliberation amongst ethicists, scientists, and policy makers.

SCIDS will play an important role in training the next generation of leaders in computing, information and data science. These leaders will have the tools to transform data into knowledge, as well as understand the nature of this knowledge within the framework of ethical reflection. In this framework, the national and international standing of UC San Diego will not only grow, but also benefit the common good.

With best regards,

Cristina Della Coletta
Chancellor’s Associates Chair in Italian Literature
Dean of Arts and Humanities

Division of Arts and Humanities
University of California San Diego · 9500 Gilman Drive #0406 · La Jolla, California 92093-0406
Tel (858) 534-6270 · Fax (858) 534-0091 · artsandhumanities.ucsd.edu
August 27, 2023

Dear Senior Associate Vice Chancellor Continetti:

It is my pleasure to write in support of the proposed establishment of the School of Computing, Information, and Data Sciences. The proposal would create structures that will enhance the educational and research missions of the university in the areas of data science and related disciplines. It has the potential to make our campus a world leader in this growing area. It would also strengthen a number of inter-disciplinary connections – very much in line with the campus’ innovative academic mission. From the point of view of the Division of Undergraduate Education, the school will strengthen undergraduate programs and research in these areas. I do suggest that connections with the undergraduate colleges be explored; the emphasis on experiential learning, including undergraduate research, represents a shared goal between the colleges and the proposal.

Sincerely,

John C. Moore
Dean, Undergraduate Education
Bob Continetti  
Senior Associate Vice Chancellor – Academic Affairs  

Shankar Subramaniam  
Distinguished Professor  

Dear Bob and Shankar,  

Thank you for sending me the proposal for the new School of Computing Information and Data Sciences (SCIDS) at UC San Diego. It was a pleasure to read. It is my view that the establishment of a new School of Computing Information and Data Sciences (SCIDS) at UC San Diego will have a positive impact on graduate students and postdocs across the university.

The most immediate positive impact would be the creation of a substantial school-based infrastructure to house the exciting, and compelling, new degree programs in data science. Such a housing gives students and postdoctoral scholars an important intellectual home within which to engage in the exciting work of data science, and from which both can launch cross-campus collaborations. The school structure also dramatically clarifies the ways in which we, as a university, advertise and promote the presence of graduate program offerings to the external world, which is important because it signals to all that UC San Diego is a global leader in the multifaceted research areas addressed by the broad moniker of data science.

The existence of this school will also bring intellectual energy around all data science issues and allow my team to work closely with an easy-to-identify collection of scholars when it comes to brainstorming about broader campus-wide initiatives. An example would be the creation of data science oriented professional development initiatives that would benefit all graduate students, not just those majoring in data science. Our world is increasingly data dependent, and most intellectual work in any discipline benefits from a deeper understanding of how to work with data. I envision a future in which UC San Diego has data science professional development opportunities for all graduate students, regardless of disciplines; I see the same opportunities for our postdoctoral scholars. A new School of Computing Information and Data Sciences (SCIDS) would facilitate these kinds of forward-thinking conversations at UC San Diego.

In short, a new School of Computing Information and Data Sciences (SCIDS) at UC San Diego is a brilliant idea. The synergies possible are many, and—in sum—the existence of this new school will have great potential to benefit all graduate and professional students, as well as all postdoctoral scholars. I look forward to the possibilities.

Sincerely,

Judy Kim, PhD  
Dean Designate  
Senior Associate Dean, Division of Graduate Education and Postdoctoral Affairs  
University of California San Diego
August 14, 2023

Academic Senate
University of California San Diego Mail
Code 0002
9500 Gilman Drive
La Jolla, CA 92093-0002

RE: Support for the Creation of School of Computing, Information, and Data Sciences (SCIDS)

Dear Members:

This letter expresses our enthusiastic support for the proposal to create a School of Computing, Information, and Data Sciences at UC San Diego.

The Division of Extended Studies (DES) constantly monitors the community's needs specifically to ensure a vibrant workforce that sustains the economy in our State. For many years, we have witnessed a continued increased interest on the part of employers on topics that relate to information technologies, data capture, and analysis. Employers seek professionals with a sophisticated understanding of issues that surround data streams to inform decisions or create insights. Challenges in data management, visualization, research, machine learning techniques, or other artificial intelligence methods to gain insights have revolutionized the most diverse endeavors, from marketing to defense and social services, to urban planning, health, or environmental sciences. Today, data science is an integral and core component of most areas of human endeavor knowledge systems. Thus, they have become crucial for organizations, regardless of the mission.

At the Division of Extended Studies, we have witnessed an increased demand for all data and analytics offerings for over a decade. Our non-matriculated students come from leading organizations in their fields. These are not purely in the STEM industries but also in social benefit organizations, healthcare, government, and particularly individuals in the social sciences keen on exploring the social data collected at different levels by various individual organizations.

Our offerings at DES have provided new or updated skills to thousands of individuals who came seeking some level of credentialing. However, our efforts reach only a certain level of complexity. There is a substantial, unmet need to offer programs beyond skill-building. Curricula that teach learners to develop data-driven solutions by collating data into information they can synthesize into knowledge to create truly impactful programs to address the most varied sets of issues. Indeed, few areas of activity have not been rethought or impacted by new information technologies and data analytics.
In this way, UC San Diego can provide a complete range of educational opportunities, from cutting-edge technologies to the primary workers needed to support a data-driven, information-rich environment.

Furthermore, a truly collaborative, multidisciplinary environment, such as the School of Computing, Information, and Data Sciences is proposing, can open new avenues of research into innovative and broadly applicable methodologies. We believe that establishing this new School will provide a highly valued resource that will have a transformational impact on our global community.

Sincerely,

Hugo O. Villar, PhD, MBA
Dean
UC San Diego Division of Extended Studies
August 27, 2023

Dear Executive Vice Chancellor Simmons,

I have reviewed the proposal for the creation of a new School of Computing, Information and Data Sciences (SCIDS), and I am pleased to provide my support. My department is delighted to see that the proposal recognizes that ECE (Electrical and Computer Engineering) has played an instrumental role in the creation of HDSI that forms the foundation of SCIDS, that the formation of similar new schools at our peer institutions have involved formal connections with their ECE/EECS departments, and that establishing a formal connection between SCIDS and ECE from inception is important to ensure that externally the new school starts off aligned with national trends. I am also pleased to see that we already have an example of the type of benefits that the formal connection will bring in the establishment of the recent $20M AI Institute TILOS where the ECE faculty represents about one-third of the TILOS faculty and serves in key leadership roles.

As indicated in the proposal, the details of the formal connection between ECE and SCIDS are to be memorialized in an MOU. Note that other universities in similar situations all have clearly developed MOUs. While there has not been any progress made on this MOU since the initial proposal, ECE looks forward to actively engaging in this next phase of discussion to develop a partnership that will be mutually beneficial to all parties involved and maximize the impact that UC San Diego will make on the world stage. I look forward to the successful formation of the new school and our partnership with SCIDS in coordination with the Jacobs School of Engineering.

Sincerely,

Bill Lin
Professor and Chair
Department of Electrical and Computer Engineering
University of California San Diego
DATE: August 28, 2023

TO: Elizabeth Simmons, Executive Vice-Chancellor

FROM: Sorin Lerner, Professor and Chair of Computer Science and Engineering RE:

School of Computing, Information and Data Sciences

I am pleased to provide my support for the establishment of a School of Computing, Information and Data Sciences (SCIDS) with a formal connection to the department of Computer Science and Engineering (CSE), reflecting CSE’s leadership in defining computing at UC San Diego over the last 40 years, its position at the core of computing education and research at the university, and the role it will play in making SCIDS an international leader in research and education.

Computing, information and data have fundamentally transformed our modern society, affecting every aspect of our daily lives, either directly or indirectly. Communication, health, scientific discovery, entertainment, there is not a single part of the modern world that has not been touched by computing and data. Fully unlocking the potential of computers, software and the data they process, in a safe and impactful way, with all its societal implications, is one of the central intellectual endeavors of our time.

The CSE department has seen this intellectual endeavor as central to its mission for many years now. We see a new School of Computing, Information and Data Sciences as a next step toward the broader fulfillment of this intellectual endeavor. The interdisciplinary nature of the school will lead to strengthened collaborations across the campus. CSE looks forward to engaging, contributing and taking part in the creation of this new school.

CSE has supported the campus efforts toward Data Science and the mission of the Halıcıoğlu Data Science Institute (HDSI) from the very beginning:

- CSE was the administrative home of the Data Science undergraduate program for several years before HDSI was created as an academic unit.
- CSE hired two Teaching Professors to teach in the Data Science undergraduate program before HDSI was able to hire its own faculty (these Teaching Professors were then transferred to HDSI when it became an academic unit capable of holding faculty lines)
- CSE has given all HDSI faculty affiliate status in CSE so that they can admit PhD students from the CSE PhD pool.
- CSE faculty have led a variety of faculty searches in HDSI, and are leading several proposals that are put together in HDSI.
- CSE and HDSI have a joint educational program, an online Master of Data Science
- CSE and HDSI have five joint faculty appointments.

Many top universities are re-imagining a future that brings computing, data and applications into focus with a new school, division, or college. This includes Berkeley, MIT, Carnegie Mellon University, Cornell, University of Washington, and University of Wisconsin. As the proposal states, at all universities that have a school/division/college with the word Computing in the name, Computer Science and Engineering is in the School. In some cases, CSE is housed solely in the School of Computing, for example at Carnegie Mellon and Georgia Tech. In other cases CSE is part of both the school/division/college of computing and other structures like a school/division/college of Engineering. This is the case at Berkeley, MIT, and Cornell.

For SCIDS to be competitive at the national and international level, the SCIDS task force recommended that a formal connection be established between CSE and SCIDS at the time of inception. Indeed, the CSE faculty agree with this, and cannot envision SCIDS without a deep and substantial formal connection with CSE.

Thus, building on the existing strong relationship between CSE, JSOE, HDSI and SDSC, the CSE department is looking forward to engaging in the process of defining this formal connection. There are varying views in the CSE department about what this formal connection should look like, but there is broad agreement, both from our faculty and the SCIDS taskforce, that this connection needs to be there. In defining the MOUs for this formal connection, it will be important to look at recent examples of joint department membership of CSE in similarly scoped new schools/divisions/colleges, for example those at Berkeley, MIT and Cornell.

The SCIDS taskforce explicitly states in the proposal that an MOU needs to be developed to formalize the relationship between CSE and SCIDS. Other universities with similar schools have such MOUs. However, there has been little-to-no progress on this front since the original proposal was submitted. We look forward to a more vigorous discussion to finalize the nature of the formal connection between CSE and SCIDS.

In summary, I am pleased to support the establishment of SCIDS with a formal connection to CSE. The CSE department looks forward to continued engagement to define this formal connection. We are excited to establish a deep and strong partnership with SCIDS in coordination with the Jacobs School of Engineering.

Sincerely,

Sorin Lerner
Professor and Chair, Department of Computer Science and Engineering Jacobs School of Engineering, University of California, San Diego
Robert E. Continetti
Sr. Associate Vice Chancellor–Academic Affairs
University of California, San Diego

Subject: Proposal to Establish the School of Computing, Information and Data Science (SCIDS)

Dear Sr. AVC Continetti,

The Department of Mathematics at UCSD would like to express our strong support for the establishment of the School of Computing, Information and Data Science (SCIDS) with a productive and well-structured relationship with the Department of Mathematics. This view reflects our department’s longstanding dedication to fostering strong Statistics and Applied Mathematics groups since its inception in 1964, its position as a cornerstone of statistical and mathematical education and research within the university, and the role it will play forming foundational bedrocks for the growing field of Data Science and propelling SCIDS towards global eminence in both research and education. We believe that the creation of this institution will mark a significant advancement in the realm of data-intensive sciences and will further solidify UCSD’s role as a global leader in this domain.

The constant flow of ideas between various branches of mathematics and statistics with the data-intensive sciences has been instrumental in advancing all fields involved. In recent years, the transformation brought about by computing, information, and data has deeply shaped our contemporary society, leaving an enduring imprint on every aspect of our everyday existence. Creating foundational mathematical and statistical theories for modern data science algorithms is a crucial requirement. Achieving insight into these algorithms, implementation intricacies, and the subsequent impact on decision making, is made possible by skillfully leveraging statistical, probabilistic, and optimization tools. Modern computing, operating at unprecedented speeds, intricately depends on numerical analysis and optimization principles for efficient execution. Rigorous data analysis, through statistical algorithms, forms the bedrock for all data-derived decisions, while ensuring their correctness relies on a robust comprehension of statistical theory. Such rigorous groundwork is necessary not only to unlock their complete potential but also to effectively mitigate risks, especially as our society adopts this technology on a larger scale. This has been a core tenant of the Department of Mathematics for many years now.

We perceive the emergence of a new School of Computing, Information, and Data Sciences as the next progressive stride towards the wider realization of this intellectual endeavor. The inherently interdisciplinary nature of the school promises to foster and fortify collaborative initiatives across the entirety of the campus. The Department of Mathematics eagerly anticipates its involvement, contribution, and active engagement in the establishment of this innovative academic venture.
Mathematics has been a steadfast supporter of the university’s endeavors in the realm of Data Science and the overarching mission of the Halıcıoğlu Data Science Institute (HDSI) from its inception:

• Mathematics faculty played a pivotal role in shaping the Data Science undergraduate minor and major programs well before HDSI’s establishment as an academic unit. Specifically, a dedicated mathematics course, Math 189, was designed for this purpose and is a core requirement of the DSC major. Similarly, Math 173AB was created as one of the first DSC electives.

• A number of Mathematics faculty members hold joint appointments with HDSI, contributing significantly to its initial establishment and the subsequent development of its faculty cohort.

• Mathematics faculty have taken the lead in various faculty searches within HDSI, underscoring the collaborative partnership between the two entities.

• Mathematics has admitted and housed a number of graduate students that are co-advised by HDSI faculty.

• The synergy between Mathematics and HDSI has also led to the formulation of impactful academic offerings, underscoring the university’s commitment to cutting-edge education and research. This collaboration has further extended to the formulation of new undergraduate and graduate courses that serve both units.

We believe that the creation of SCIDS is vital to provide a hub for HDSI and the San Diego Supercomputer Center (SDSC). Its establishment is also timely, especially in light of similar institutions being formed by esteemed institutions such as UC Berkeley, MIT, and many others. It is essential to remain at the forefront of such advancements. Notably, many of these initiatives underscore the integration of Statistics within the realm of Data Science. For instance, at Berkeley, the initiative encapsulates Statistics, while at universities like Carnegie Mellon and Cornell, Data Science initiatives are directly accommodated within the Statistics departments, prompting the transformation of department names to Statistics and Data Science departments. For SCIDS to achieve competitiveness at the national and international levels, Mathematics faculty envision SCIDS with a profound, substantial, and clearly understood relationship with the Department of Mathematics, considering it an indispensable component of SCIDS’ foundation.

In conclusion, the Department of Mathematics eagerly looks forward to the formation of the new school and the opportunities it presents. We believe SCIDS will further enrich the academic and research ecosystem at UCSD and are excited about the collaborative possibilities it will bring.

Sincerely,

Michael Holst, Chair

Department of Mathematics
Chancellor’s Associates Endowed Chair
To: Robert Continetti, SVCAA Academic Affairs  
Shankar Subramaniam, Professor  
Computer Science and Engineering  

From: Douglas Nitz, Professor and Chair  
Department of Cognitive Science  

RE: Proposal for a new School of Computing, Information, and Data Sciences  

On behalf of the Cognitive Science Department, I write to express support for the new School of Computing, Information, and Data Sciences. The Department has had representation on the campus-wide committee working to outline the structure of the new School and I am pleased to see that many of the ideas put forth by members of the Cognitive Science Department have been adopted in the first complete draft of the proposal document. Having met and discussed those aspects of the proposal relevant to Cognitive Science, the Department voted, nearly unanimously, to support the new School’s development and to coordinate our efforts with the new School to the mutual benefit of both. Specifically, the Department’s support is contingent upon incorporation into the School plan of a “dotted line” relationship between Cognitive Science and SCIDS that is equivalent to that formulated for the Departments of Computer Science and Engineering and Electrical and Computer Engineering. With this more formal relationship in place, we are excited to support the new School and to coordinate activities related to curricula, research, governance, outreach, and fund-raising. This more formal relationship is seen by the Department as reflecting extensive current and past efforts in helping to develop the Data Science program at UCSD, as reflecting the extensive overlap in research interests and expertise between Cognitive Science and the new School, and as reflecting the need for consistent communication and transparency concerning issues of mutual interest.

The Department of Cognitive Science is home to faculty and students conducting research under a wide range of scientific disciplines including computation, data science, machine learning, artificial intelligence, education, human animal cognition, psychology, ethnography, neuroscience, genetics, design, human-computer interaction, and linguistics. In all of these areas, the application of data science and large-scale computational methodologies is key to the development of modern research programs. Accordingly, many of the faculty currently composing Cognitive Science have been leaders in their fields with respect to the design and execution of large-scale, data and computation intensive research initiatives on an international scale. Not the least of these include work in organization of communities-wide urban planning, computational and statistical approaches to genomic and imaging data, the adaptation of data science practice to neuroscience, the development of widely-distributed instructional practices in data science, the development of media to foster skill-building in programming techniques (e.g., Python Tutor), and machine learning approaches to computer vision and language processing.
Specific, existing contributions to the development of data science at UCSD include the contributions of Jeff Elman as a co-leader of the Halıcıoğlu Data Science Institute’s (HDSI) inception. Equally impactful have been the contributions of several faculty acting in executive positions with HDSI, including Shannon Ellis, Virginia de Sa, and Bradley Voytek, who substantively contributed to the design, development, and execution of HDSI’s diversity equity and inclusion, industry liaison, and internship program initiatives as well as the structuring and delivery of curricula. Finally, Cognitive Science is home to multiple lower and upper division courses in data science and machine learning that are open to students of data science and important components to its curriculum.

Thus, Cognitive Science has had, and will continue to have in the future, a close relationship to the work of SCIDS. Cognitive Science includes much more than its contributions to data science, machine learning, computation, human-computer interaction, and statistical approaches. In turn, information and data science research and SCIDS will span multiple areas beyond those covered by Cognitive Science, and so it is important to recognize the significant overlap between the Department of Cognitive Science and SCIDS. The two units will unequivocally benefit mutually, and this will enhance the stature and standing of UC San Diego as a leading institution in data science research and training and their applications to the highly diverse set of data types examined and processed in the practice of Cognitive Science. Given the overlap and presence of several joint faculty between Cognitive Science and HDSI, it will be beneficial for Cognitive Science to have a formal affiliation with SCIDS, even while retaining its position with the Division of Social Sciences. Given the strong connections between HDSI, CSE, ECE, Cognitive Science and the data science and applied data science that will be the focus of SCIDS, a more formal connection between the Cognitive Science, CSE and ECE departments and SCIDS is proposed at the formation of the school.

Finally, we congratulate the leaders of the new School’s development plan on the building of an exciting new enterprise at UCSD. The Cognitive Science Department is excited to see UCSD build upon a solid foundation in this area of research and instruction and will continue its efforts to help make this initiative take final shape in the months and years to come.

Sincerely,

Doug Nitz

Douglas A. Nitz, PhD
Professor & Chair, Dept. of Cognitive Science
University of California, San Diego
August 15, 2023

RE: SCIDS Letter of Support

Dear Divisional Senate:

The comprehensive proposal for the establishment of the new School of Computing Information and Data Sciences (SCIDS) is very persuasive. Kudos to the team that put it together. The Qualcomm Institute looks forward to developing new collaborations with SCIDS above and beyond the ones already underway. As a trans-disciplinary entity, QI serves as a unique place to explore and develop new ideas. We are confident that SCIDS, like the other schools at UC San Diego, will engage with and enrich the larger campus community. We look forward to its speedy establishment.

Sincerely,

Ramesh Rao, PhD
Professor, Electrical and Computer Engineering
Director, Qualcomm Institute
Interim Director, California Institute for Telecommunications and Information Technology Qualcomm
Endowed Chair in Telecommunications and Information Technology
August 18, 2023

Elizabeth Simmons
Executive Vice Chancellor
UC San Diego

Dear Elizabeth,

I am writing in my role as the University Librarian to express the Library’s support for the proposed School of Computing, Information and Data Sciences.

The Library is committed to supporting all educational and research programs at UC San Diego and I have been excited to see the development of data science and trans-disciplinary areas of research connected to the Halıcıoğlu Data Science Institute. I am especially excited about the vision of the new school - to take the “next leap forward in addressing the most compelling need of modern times - transforming data into knowledge.”

As this school takes shape the Library will work to support the school’s emerging programs, research areas and learning support needs. This will require some investment and adjustments in focus as we increase our capacity to support students and faculty engaged in data science but I believe that this shift is well aligned with the overall direction of the Library.

I expect that as we support the work of this new school the Library itself will benefit by being able to draw on the expertise of the students and faculty in exploring pressing Information Science questions. I’m excited to think that we will have new collaborators interested in pursuing the pressing questions around the democratization of information, equitable access to and critical assessment of knowledge and the ethical and societal impact of big data research.

The library already has a number of experts on staff who closely collaborate with the existing partners who will come together to form the proposed school and I am excited to extend these collaborations and bring more expertise to bear from the Library. I believe that we could contribute to and benefit from the schools’ investment in experiential education, in working on data science at classroom and research scales and in developing professional education and training programs.

Sincerely,

Erik Mitchell
The Audrey Geisel University Librarian
UC San Diego
August 29, 2023

Chancellor Pradeep K. Khosla
Office of the Chancellor
UC San Diego
9500 Gilman Drive
La Jolla, CA 92093

Dear Chancellor Khosla,

We write to you in our capacity as members of the UC San Diego Innovation and Entrepreneurship Council (IEC) to reaffirm our unequivocal endorsement for the launch of the UC San Diego School of Computing, Information and Data Sciences (referred to as SCIDS). The IEC, composed of entrepreneurs, industry partners and alumni, is an advisory group to the Chancellor, and is deeply committed to establishing UC San Diego as a premier institution for scientific and societal impact through innovation.

UC San Diego has a deep history in computing and computational sciences. With the global Big Data explosion of the past decade, and given the unprecedented acceleration in users and use cases within this past year, we have entered the next frontier for innovation, competition, and productivity. The advent of this new frontier justifies the urgency of the SCIDS initiative. As an enduring academic unit, SCIDS will be uniquely positioned to effectively leverage the existing intellectual and operational resources of the Halıcıoğlu Data Science Institute (HDSI) and the San Diego Supercomputer Center (SDSC) to serve the rapidly increasing need to train the next generation workforce in data sciences and computation. This transdisciplinary school will also serve as a much-needed hub of research, teaching, and translational practice in broad areas of data science and its impact on society.

The view of the IEC, shared by campus academic unit leaders, is that the SCIDS will expand upon UC San Diego’s Vision for Innovation to drive social and economic prosperity in the following ways:

- Attract and engage a broad community of researchers on campus and externally.
- Develop and train highly qualified students for the data workforce and create a unique niche for interdisciplinary training across multiple disciplines and data sciences. SCIDS will help students accomplish experiential learning with data and computing, while realizing the synergies between education, training and ground-breaking research through collaborations with faculty and researchers across campus.
- Advance exciting and novel opportunities for fundamental and applied research in the interdisciplinary areas of data science and computing.
- Enable broad practical applications of research topics spearheaded by renowned domain science departments and schools across UC San Diego.

This is truly a pivotal moment in the evolution of the role computing, information and data science play in society - and our campus. We respectfully encourage you to approve UC San Diego’s proposal for the
School of Computing, Information and Data Sciences, which is an unprecedented opportunity to make a meaningful difference for our students, faculty and the diverse communities we serve for generations to come.

Sincerely,

Pelin Thorogood, Chair
_Cofounder and Executive Chairwoman, Radicle Science_  
_Treasurer, UC San Diego Foundation_

Leo Spiegel ’83
_Managing Partner, Spiegel Capital Management Chair, UC San Diego Foundation_

Jeff Belk ’83
_CEO, Ocreati Advisors, LLC Past President, UC San Diego Alumni Board of Directors_

Taner Halıcıoğlu ’96
_Founder, Halıcıoğlu Data Science Institute Trustee, UC San Diego Foundation_

Sabrina Johnson
_President and CEO, Daré Bioscience, Inc_

Drew Senyei
_Chairman, CEO and Founder, NoniGENex Trustee, UC San Diego Foundation_

Deborah Bronston-Culp ’80
_Managing Partner, Samothrace Partners Trustee, UC San Diego Foundation_

Steve Hart, MA ’80
_Executive Vice President and CTO, Viasat Chair Emeritus, UC San Diego Foundation_
Matthew Newsome ’91  
*Vice President and General Manager, Cubic  
Transportation Systems Trustee, UC San Diego  
Foundation*

Jeff Silberman  
*President and CEO, Carlton  
Management Immediate Past  
Chair, UC San Diego Foundation*
September 1, 2023

Dr. Elizabeth H. Simmons
Executive Vice Chancellor for Academic Affairs
University of California, San Diego
evc@ucsd.edu

Dear Executive Vice Chancellor Simmons:

On behalf of the University of California San Diego, Office of the Vice Chancellor for Equity, Diversity, and Inclusion, I wish to express our full support for the proposed School of Computing, Information, and Data Sciences (SCIDS).

As a public institution, UC San Diego’s commitment to diversity is demonstrated in and executed through the institution’s Strategic Plan for Inclusive Excellence and Accountability Process. The UC San Diego Strategic Plan for Inclusive Excellence, deeply connected to the UC San Diego Strategic Plan, is a roadmap to fulfill our vision and collective commitment to academic and institutional excellence through strategic diversity, equity, and inclusion efforts. Led by my office (Office of the Vice Chancellor for Equity, Diversity, and Inclusion), the plan—involving input solicited from the entire campus community—is structured around three core tenets:

- Access and Success: Attract, retain, and support a diverse faculty, staff, and student body with the goal of reflecting California demographics and achieving institutional excellence.
- Climate: Create and foster a positive and welcoming climate where we value, include, and support all.
- Accountability: Ensure institutional accountability through processes and structures that strengthen our clear and continuous commitment to equity, diversity, and inclusion.

The aim of SCIDS aligns with our institution’s Strategic Plan for Inclusive Excellence and advances our collective efforts to advance the equity, diversity, and inclusion mission of our university. This includes efforts described in the proposal specifically structured around the three core tenets cited above of Access and Success, Climate, and Accountability.
This collaborative effort addresses the advancement of equity, diversity, and inclusion in all of its operations. The SCIDS proposal describes specific plans and support mechanisms to bring justice, equity, diversity, and inclusion gains to the research, mentorship, and teaching activities of faculty. Staff support for efforts include the appointment and empowerment of a diversity and outreach coordinator, and the establishment of funding mechanisms (including within faculty startup packages). Outreach to K-12 schools and already established relationships with school districts promises to broaden pathways to the SCIDS for a broad swath of Californians. This is a small sample of the intentional efforts built into the design of SCIDS that holds great promise for advancing justice, equity, diversity, and inclusion for our students, faculty, staff, and the broader community that the school will enrich.

Utilizing a collective impact framework, UC San Diego will leverage institutional resources and initiatives to support the success of SCIDS. The proposal specifically cites coordination with our office’s Strategic Plan for Inclusive Excellence and Strategic Accountability Processes, demonstrating that the leadership of SCIDS are committed to our structured processes for data-driven change, and holding all segments of academic activity accountable to the DEI goals of the university.

The UC San Diego Office of the Vice Chancellor for Equity, Diversity, and Inclusion enthusiastically supports the funding of this proposal and looks forward to our ongoing work and collaboration with SCIDS.

Sincerely,

Becky R. Petitt, Ph.D.
Vice Chancellor for Equity, Diversity, and Inclusion
October 2, 2023

John Hildebrand, Chair
UC San Diego Academic Senate

SUBJECT: Proposal for the Creation of the School of Computing, Information and Data Sciences

Dear Chair Hildebrand,

We thank you for providing the further comments from Senate Council regarding the full proposal submitted by EVC Simmons for consideration at the October 10 Representative Assembly of the Divisional Academic Senate. In this memorandum we provide responses to those comments.

Senate Council noted that further detail regarding the development of the memoranda of understanding agreements (MOUs) between units with dotted line affiliations and SCIDS would be of value. As the Council noted, in the full proposal under consideration by the Representative Assembly, we provided further detail on the process for developing these MOUs (Section 7.1.1, pp 58-60). To provide further detail, and to help minimize variations in the content of the MOUs across units, we have developed a conceptual MOU template that can be included in the proposal when it is sent forward for systemwide review. This draft MOU template is appended to this memorandum. We concur that moving forward with development of the MOUs will be an important element of launching the new School, and when the School is approved those discussions between academic units will begin in earnest.

Senate Council also commented on the EDI strategy revolving around a shared pool of funds tied to faculty hiring startup commitments and asked if additional information could be provided regarding the effectiveness of this novel approach as currently implemented in the Haliçioğlu Data Science Institute. The full proposal describes in detail (Section 5.2 pp. 53-55) the shared pool approach in building a coherent EDI program with a defined funding source. We are attaching the full 2023 Strategic Accountability Report for HDSI that discusses in further detail the benefits enabled by the innovative HDSI EDI-sharepool. While we remain open to revisiting the amount of sharepool funds based on programmatic needs, in the near term, we do not anticipate changing the amount of individual sharepool funds from the current allocation of $30K/faculty startup in sharepool funds. As HDSI and/or SCIDS approach steady state, other funding sources including philanthropy, foundation, and core support will be identified as required to maintain the EDI infrastructure that has been built with the sharepool funding. This is a key component of our goals for weaving JEDI and broadening participation in computing (BPC) activities into the foundation of SCIDS.

We thank you for the opportunity to respond and look forward to presenting the full proposal for consideration at the October 10 meeting of the Representative Assembly as the next step in the
compendium process for establishment of the School of Computing, information and Data Sciences.

With kind regards,

Distinguished Professor Shankar Subramaniam

Senior Associate Vice Chancellor Continetti

Enclosed: Template for MOUs between SCIDS and existing academic units
HDSI 2023 Strategic Accountability Report

CC: Chancellor Khosla
    Executive Vice Chancellor Simmons
    Director Gupta
    Director Würthwein
MEMORANDUM OF UNDERSTANDING BETWEEN DEPARTMENT X AND SCIDS
Draft Template

Preamble:
[Define the purpose and scope of the dotted-line relationship. What does the department hope to accomplish with this relationship and what are the areas of engagement in which it seeks to work jointly with SCIDS?]

This memorandum of understanding (MOU) defines a ‘dotted-line’ relationship (affiliation) between Department X in the School of Y and the School for Computing, Information and Data Sciences (SCIDS). The motivation for this affiliation stems from the understanding that the department can best fulfill its research, educational, and faculty development missions through collaboration with SCIDS as outlined below.

Research Mission:

[List specific goals such as increased extramural research funding in specific area(s), increased pool of graduate students, post-doctoral researchers, research staff, etc. Identify the scope of research-level engagements that the Department and SCIDS are willing to entertain, including potential researcher appointments, graduate student support, support staff and jointly appointed faculty and research staff across the two academic units. If joint appointments are envisioned, what is the expectation of the level of joint appointments and the home department of such faculty? What is the role (if any) of research scientists in departmental activities including governance? Ensure and reiterate that UC San Diego policies on the distribution of resources from joint activities will take precedence.]

Recent research advances in our field involve foundational aspects of computing, information, and data sciences with profound applications that can transform knowledge in our field. These areas will benefit significantly through faculty affiliation and joint presence in SCIDS and through collaborations with existing SCIDS units. With this relationship, we seek enhanced extramural research funding benefiting both academic units including through new joint Center-scale integrative proposals that are likely to benefit from leveraging the intellectual and operational assets of the Department and SCIDS. The affiliation will also help attract a distinct set of graduate students, faculty, and research staff.

With the affiliation, there will be the opportunity to have joint faculty and research staff appointments ranging from 0 to a finite percentage.

I. The listed faculty and research staff in Department X will have a 0% (or Y%) appointment in one of the SCIDS departments (e.g., Data Sciences). This will involve agreement between the academic appointees, the Chairs of the two Departments and approval by the Deans of both Schools. Per standard UC San Diego processes, these appointments will be reviewed by CAP prior to EVC and/or Chancellor final review.
II. IDC revenue generated from extramural grants by each joint Principal Investigator will be proportionately assigned to each School according to the Academic Affairs policy in force. As of writing this agreement, 1/3 of the IDC follows the fractional FTE, 1/3 grant administration, and 1/3 for space. Any revisions to this policy from Academic Affairs will automatically apply to this agreement.

**Educational Mission:**

[Identify courses and educational programs – current and anticipated – that are going to be affected by this agreement. Describe the general nature of collaboration in instructional activities while ensuring that the details here will conform to the UC San Diego rules on these matters.]

Areas of interest in Department X have advanced to be interdisciplinary with computing, information and data sciences. Our students will benefit from courses taught by units in SCIDS, and our faculty will benefit through participation in teaching courses germane to SCIDS units. Further, joint degree programs such as undergraduate students enrolling as minors in SCIDS programs and graduate students being mentored jointly by the Departmental and SCIDS faculty will benefit the Department in its stature and ranking. Towards this, we recommend joint student recruitment and joint teaching responsibilities for faculty with joint appointments in SCIDS.

III. Department X will offer the opportunity for its students to enroll in courses offered by SCIDS, with some designated as core courses and others as electives. Undergraduate students will also have the opportunity to earn a minor in a SCIDS discipline. This will be reciprocated with SCIDS UG students having the options to earn a minor in our degree program.

IV. Faculty jointly appointed between Department X and SCIDS will have the opportunity to participate in graduate student supervision and in serving as graduate advisor and chair on Master’s and Doctoral dissertation committees in either academic unit.

V. The teaching effort of the faculty member in each unit will be based on the percentage of the appointment and the teaching load.

**Faculty and Research Staff Hiring and Appointments:**

[Define the scope of faculty engagement and how such engagement will be assessed for its success. Do the two units anticipate making joint faculty appointments, addressed earlier under the research or teaching section? How are the joint searches to be proposed, reviewed, approved, and conducted? Where are such joint faculty to be located? Please list any joint faculty appointments already made here.]

An important goal of this agreement is to enable the Department X attract and retain high quality faculty members and researchers who work at the interface of the Departmental disciplines and Computing, Information and Data Sciences. An entirely new genre of faculty and research staff who will become pioneers and leaders in new frontiers of the discipline have the potential to be hired and nurtured through the affiliation with SCIDS.
VI. New joint appointments of faculty and research staff will follow the rules currently in practice at UC San Diego. This will include salary, recruitment costs, and space.

VII. Space allocations to support these appointments will be decided by mutual agreement between the two department chairs and the Deans, with final approval by standard campus processes.

VIII. Tenure and Promotion recommendations will be jointly formulated by the two departments and the two Schools through appointment of a joint ad hoc committee consisting of faculty members in both academic units.

IX. Existing departmental faculty and researchers will have the opportunity to request a joint appointment depending on the research and teaching interests of the academic appointee.

X. All standard procedures for promotion and tenure will apply.

Governance:

[Define the scope of engagement in the departmental administration in each of the two units. How are important issues brought up for discussion? When a vote is necessary, and what thresholds are needed for the approval process? How are administrative review and input incorporated in such decisions? What is the mechanism by which minority opinion is expressed and incorporated?]

The dotted line affiliation will entail joint governance needs and opportunities. The affiliated department will engage with the SCIDS administration in all appropriate formats including academic appointments and promotions, curricular developments, and development activities.

XI. The department chairs whose department has a dotted line affiliation will be involved in the SCIDS Dean’s Council and will participate in decision making for SCIDS.

XII. Should there be any conflict the Deans of the two schools will attempt to resolve the matter and, if necessary, the campus administration will be involved in the decisions.

XIII. Faculty members will be allocated service responsibilities in the two departments commensurate with their fractional appointments.

Agreed by:

We, the undersigned, concur with the above agreement, which is binding upon us or our successors:

_______________________________ __________________________________
XXX       Date
Chair, Department of [DEPARTMENT]
XXX  
Chair, Department of [SCIDS DEPARTMENT]  
Date

XXX  
Dean, School of [SCHOOL]  
Date

XXX  
Dean, SCIDS  
Date

XXX  
Executive Vice Chancellor  
Date

6
2023 HDSI Strategy for Inclusive Excellence

HDSI Mission and Goals for Inclusive Excellence

Mission:
Establish and sustain a climate of inclusion for institutional and individual growth.

HDSI’s overall mission is to serve as “the campus hub for data science.” This mission is qualitatively very different from traditional schools and departments that seek to establish primacy of UC San Diego in a specific academic area that generally falls squarely within the scope of the academic unit. Instead, HDSI is challenged to find ways in which it is able to maximally engage the largest set of individuals and departments from across the campus into activities and programs that share a broad interest in the areas of Data Science.

To serve this mission in an effective and sustainable way, HDSI must devise initiatives and programs that ultimately and always present a ‘win-win’ proposition to the academic units. This charge requires us to think in a fundamentally different way as to how all our academic activities are structured, the incentives and reward system that supports these activities, and how the overall success of HDSI itself is measured. Fortunately, all these considerations directly lead to initiatives that are quite aligned with the spirit of the Strategy for Inclusive Excellence adopted by the university. In particular, the campus strategy document seeks “dialogue and challenges itself to take bold actions that will ensure learning is accessible and affordable for all.” The core tenets to meet its goals consist of 3 elements: access & success, accountability and climate. Each of these has a direct reflection on specific initiatives taken by HDSI.

To operationalize this coherence across HDSI’s overall mission and UC San Diego’s Strategic Plan for Inclusive Excellence, we have devised and articulated to our community the following four Goals, each of which is described in further detail under our programs, initiatives and policies with specific objectives.

Goal 1: Align institutional and individual success objectives and metrics.

Inclusive excellence relies critically on “accountability” as a core tenet. Our entire system of incentives and rewards centered around academic review and promotion processes is built up as an incentive to achieve individual recognition in a faculty or staff member’s primary responsibilities. For faculty, these responsibilities come in the form of research outcomes and secondarily as teaching activities. Mentoring activities are indirectly accounted as a part of research activities. Thus there exists a gap from Institutional goal of “inclusive climate and
improved learning or job experience” and individual goals. A direct consequence of this gap is that the institutional and individual goals become ownership responsibilities divided neatly amongst administration and faculty/staff. HDSI has taken proactive steps to ensure that the two goals are aligned via our system of incentives. For instance, EDI-sharepool plan makes EDI activities part of the research laboratory setup tasks via accountable third-party oversight of a part of the startup funds we provide to new faculty hires. EDI-sharepool currently consists of nearly a $1M in funds that are under the directional control of a full-time EDI-coordinator who is building a portfolio of projects and services under a well-defined and detailed plan for inclusive excellence. Of course, an active and assertive stewardship of the EDI activities via a full-time endowment-supported diversity and outreach coordinator itself is part of the implementation strategy to achieve this goal.

**Goal 2: Balance incentives against obligatory actions in HDSI service activities**

Providing financial resources such as endowment-support full-time activity coordinator and EDI sharepool funds are necessary but not sufficient to ensure an active and sustainable ecosystem for an inclusive climate. Without an in-built sense of moral obligation, coupled with formal job requirements such activities are unlikely to make long term impact or become part of the institutional culture. To enable that we have sought to incorporate activities that are part of academic review process. This is clearly very challenging, but one where the nascent nature of HDSI with new faculty, programs and processes has actually helped us. Among the current activities in place are: requirement mentoring duties as a part of job requirement in the academic series in HDSI. Currently such mentoring is via capstone courses which is written in to the job offer of our entering faculty. Mentoring undergraduate students is an integral part of college experience, and one where students from different backgrounds, minority communities feel out of place in a large urban campus with over 600 steel and concrete buildings. Indeed, a major reason for recruiting faculty proactively from URM categories, such as AFD and Design Just Futures programs is to recruit new faculty who are better able to mentor and inspire URM students. Capstone courses have been highly effective in mentoring our students. But this requirement has not come with its own challenges: particularly, from the existing faculty who have transferred a part of their existing appointment to HDSI. Fortunately, as we recruit new faculty, now at 28, it makes it easier for us to make continued progress in building this important student mentoring program at HDSI. In addition to capstone mentoring, we have also established GCCP criteria that reflect social conscious and responsible conduct obligations as indicated via timely completion of training requirements and participation in HDSI’s volunteer communities.

**Goal 3: Devise reflective and causally-connected metrics to drive success of our initiatives**

Metrics are our means of achieving not only for accountability but also for establishing a vision for what success looks like, especially for the faculty to measure their own progress. As an institution, our obligation is to ensure that the metrics being used are actually causally-connected to the desired outcomes of our efforts in fostering a climate of inclusion. That is, the outcome of directed efforts is directly reflected in the metrics. For this reason, some
metrics are related to outcomes (e.g., number of K-12 students in our programs, number of high-schools reached in disadvantaged communities etc) and some are related to inputs without necessarily a similar rise in the corresponding outcomes (e.g., number of offers made faculty candidates across demographics and experiential backgrounds, number of scholarships offered to entering graduates). Statistics associated with metrics are further analyzed for insights into individual processes that may be affecting the outcome. For instance, over the past three years, HDSI made offers to 44% women and minority candidates with nearly identical acceptance outcomes, falling short of our stated 50% goal. However, for jointly recruited faculty positions, only 1/3rd of the candidates were women and minorities despite explicit focus on this metric under the CJFTE process, prompting a detailed look and remedial proactive actions that have been brought before the HDSI Oversight Committee. A much harder case is presented by metrics where we have no direct or indirect influence even though these metrics are significant by their obvious presence. This includes the constitution of our entering cohort of undergraduate students. HDSI demographics reflect a baseline of a highly competitive discipline that is relatively unknown outside of elite college advising circles. While we can and are taking measures to get the word out through highschools and community college engagements, including pursuing articulation agreements, we have no real controllable way to effect the outcome and, therefore, must focus on building the reputation and accessibility of our program as outlined in the Goal 4 below.

**Goal 4: Devise access pathways & communications to support the overall mission**

Broad interest in the field of Data Science is both a blessing and challenge for successful operation of an academic program in Data Science. While it attracts a very diverse array of interested individuals – from STEM areas to Social Sciences to Arts and Humanities – to our classes and degree programs, it makes it virtually impossible for some of our instructors to reach specific learning goals in some courses, especially in the absence of requisite background in quantitative subjects especially as a working knowledge, delaying progress towards graduation or increasing the risk of attrition from our degree programs. We have devised a number of measures with the objectives of ensuring timely progress through our degree programs, and an effective learning environment for all our students, especially talent from outlier areas of society, mentoring and training. These measures include boot camps run by our EDI coordinator, 1-1 in-person advising sessions for our students, mandated setting up and review of course plan for each of our students and a series of “on-ramp, on-line” courses and course modules that are currently under development. These courses and course modules will be made available to our targeted students free of charge to help them prepare for our courses, as well as used by the course instructors to specifically identify students who may need additional help. In addition, and in view of privacy considerations, we also provide public information communications with detailed information that individuals can use to help themselves. These into an extensive list of resources on our advising webpages (https://datascience.ucsd.edu/undergraduate/) as well as a weekly newsletter with timely information.
Appendix A: HDSI Inclusive Excellence Program Highlights.

This Appendix lists notable efforts taken by individual faculty, the DEI committee of HDSI and the EDI coordinator over the past year. It is not an exhaustive list, and indeed, we expect such activities to be part of routine by our community (Goal #1). That said, it lists examples of efforts that set commendable precedents for us and others.

A-1: FACULTY-LED INITIATIVES

Members of the Diversity in Data Science Student Organization, with faculty guidance from Professor Soohyun Liao, are designing and implementing a summer day camp called “Data Science Discovery Bootcamp.” This bootcamp was exclusively offered to the Sweetwater Union High School District which has a majority of students who are URM by ethnicity and/or race. The bootcamp attracted 30 applicants and has accepted 10 students for the pilot program. This camp will be piloted July 10-14, 2023. In addition, earlier Professor Liao ran a mental health program for our undergraduate students.

Professor David Danks is running a summer residential program called IDEAS (Intelligence, Data, Ethics, And Society) for external undergraduates. The program attracted 164 applicants. The program currently hosts 20 students from both philosophy majors and data science majors. David’s program also attracted DEI funding contributions from 3 other HDSI faculty, Professors Ben Smarr, Duncan Watson-Parris, and Tiffany Amariuta-Bartell.

Professor Tiffany Amariuta-Bartell’s research has included a strong DEI component focused on developing statistical methods that improve the generalizability and applicability of research (specifically genetic risk prediction) to underrepresented groups / admixed populations (African Americans and Latinx) in the US.

Professor Arun Kumar has spoken at a number of conferences and forums on topics that directly address the issues of equity, access and success for the minority communities:
- 2022 Oct: Invited panelist and speaker for SC 2022 Early Career panel discussion where he spoke about how to cope with, and grow from, grant rejections as junior faculty;
- 2022 Jun: Invited panelist for ACM SIGMOD 2022 Diversity & Inclusion panel discussion on “Success and Impact Beyond Traditional Metrics”;
- 2022 Mar: Talk on MAP and careers in CS and STEM at the UCSD MAP monthly meeting for high school students.

- 2021 Nov: Founding member of QICSE a group for LGBTQ+ graduate students, postdocs, faculty, and staff at UCSD CSE;

- 2021 Oct: Talk at oSTEM General Body Meeting on being an out academic in computing/STEM;

- 2021 Summer: Member, UCSD LGBTQIA+ Undergraduate Scholarships Committee;

- 2021 Summer: Talk on mentoring programs and CS careers at the UCSD ABLE End of Year Celebration for high school girls interested in computing.

Professor Justin Eldridge organized efforts to build transfer pathways from area community colleges to UCSD.

Professor Biwei Huang is working as a Diversity & Inclusion Chair at the Conference of Uncertainty in Artificial Intelligence (UAI 2023) this year.

Professor Stuart Geiger participated in two activities:
- Course development: creating and teaching courses that examine issues of bias, discrimination, equity, and justice in data science and society (DSC 260 and Comm 106D and 106E)
- Speaker organizer for Institute for Practical Ethics Data Analytic Working Group, hosted speakers who discussed topics of bias, discrimination, equity, and justice in data science and society.

A-2: DEI COMMITTEE ACTIVITIES

The DEI committee is an open-participation committee with dedicated volunteers drawn from faculty and staff of HDSI. The committee is co-chaired by our EDI Coordinator, Saura Naderi and Professor Gal Mishne. Among the notable activities in the past year are:

- Created Request for Activities (RFA) to support faculty in using their DEI funds. The RFA solicits and creates a portfolio of DEI activities that support Goals (1-4) for the overall Inclusive Excellence mission of HDSI. Individual faculty members can then vote for their support of individual activities by volunteering their time and/or a portion of their EDI-sharepool funds. We plan to make these activities as a regular part of our academic review processes (Goal #2).
DEI committee led the formulation of a well-defined “Broadening Participation in Computing Department Plan”. This plan is now approved by the NSF funded initiative BPCnet.org. This will enable individual faculty to reference this plan for medium and small CISE grants. It will also used as a guide for other broadening participation plans that NSF recommends in their grants.

Faculty Accountability Survey
DEI Committee designed and led the Faculty Accountability Survey. A total of 18 faculty responded (out of 14 full-time and 6 part-time faculty who are currently in residence at HDSI). Among the highlights of the survey:

- 8 faculty are participating in the following EDI related programs: 1. PATHS; 2. MARC; 3. MAP; 4. STARS; 5. USS (Undocumented Student Services); 6. McNair; 7. ERSP; 8. IDEAS; 9. REHS; 10. ENLACE.

- Faculty are mentoring and/or advising following groups of students for a total of 179 students with 59 URM students.
  - 17 out of 34 undergraduates are URM
  - 30 out of 94 graduate students are URM
  - 2 out of 6 postdocs are URM
  - 10 URM unknown status students (the faculty member didn’t make it clear what the student status was) of 45 students

A-3: K-12 OUTREACH PROGRAMS

“HDSI Lab 3.0” is the outreach program for HDSI. The concept of the new laboratory was formulated during our proposal writing for the AI Institute supported by NSF. Upon the launch of TILOS AI Institute, this plan has been put into action along with its inclusion in the EnCORE TRIPods Institute on Foundations of Data Science. Thus the Lab 3.0 effort is specifically designed to engage a large community of researchers spread across the nation among many universities that are part of Institute-scale projects. The effort is conceived and led by the full-time HDSI EDI coordinator, Saura Naderi. As a part of this effort, during the past year, we have engaged the following schools/community centers

- ARTS community center is in National City which has 70.7% URM
- Mar Vista Middle: 80% URM
- Southwest Middle: 88.4% URM
- Chula Vista Middle: 86% URM
- Bell Middle: 85.9% URM
- Urban Discovery Academy Charter: 69.5% URM
- Morse High: 86.4% URM

A number of Center-specific activities were conducted by the Lab as listed below:
**TILOS-Sponsored Activities:**
- Fall 2021 - Data Science Automaton - 40 middle school students from Chula Vista Middle School
- May 20th, 2022 - Hosted field trip for 25 students from Morse High School
  - 5 faculty presenters
- May 26th 2022 - 500 Data Science Automaton kits were created
- Fall 2022 - Data Science Automaton - 37 middle school students from Chula Vista Middle School
- November 2022 - Data Driven robotic art - 38 students participated from Morse High School
- November 19th, 2022 - 5 middle school teachers and 1 high school teacher participated in professional development for Data Science Automaton
- December 9th 2022 - hosted field trip for 25 students from Morse High School
  - 4 Faculty presenters
- Winter 2023 - hired 2 undergraduates and advertised to URM supporting student organizations. Recruited a student from NSBE (National Society of Black Engineers)
  - Students designed and piloted an activity called “predictive analytics and income” to 32 students at Morse High School
- Winter 2023 - Data Science Automaton - 78 students participated from Urban Discovery School
- Spring 2023 - Data Science Automaton - 120 students participated from Mar Vista Middle School.

**EnCORE-Sponsored Activities:**
- Diversity in Data Science Student Organization runs Quarterly Python Bootcamps for DSC10 majors who have little to no coding experience. 60 undergraduate students have participated since Fall 2022.
- Middle School After School Data Science Workshop - 3 middle school students - Chula Vista Middle School
- Elementary School 1 day experience - 5 elementary school students from Ocean Air Middle
- 1 day middle school experience - 31 middle school students - chula vista middle school

Overall, a total of 434 K-12 students participated in these activities, a majority of whom are URM, thus, contributing significantly to the outreach Goal (#4) of the Institute.

**UCTV Data Science Channel:** We have created 8 videos featuring faculty. 4 of those videos are URM faculty.
September 22, 2023

ELIZABETH H. SIMMONS
Executive Vice Chancellor

SUBJECT: Review of the Proposal for the School of Computing, Information and Data Sciences

Dear EVC Simmons,

The proposal for the School of Computing, Information and Data Sciences (SCIDS) was discussed at the September 18, 2023 Senate Council meeting. Senate Council endorsed placing the proposal on the October 10, 2023 Representative Assembly meeting agenda. Council appreciated the additional information provided and offered the following for consideration as the proposal advances.

The updated proposal included process information for preparing memoranda of understanding agreements (MOUs) between units with dotted line affiliations and SCIDS (Section 7.1.1). Council noted that the information provided about the topics covered in the MOUs is vague, given the complex nature of these agreements. To minimize variations in the content of the MOUs across units, Council strongly recommended developing a standardized MOU template and appending the template to the proposal for systemwide review. Council also emphasized the urgency of starting MOU negotiations with partner departments now to ensure ample time for these agreements to be in place before the launch of the new School.

Additionally, members noted that a shared pool of funds will be used to support SCIDS’ EDI efforts, modeled after an existing initiative in HDSI. It would be beneficial to provide additional information regarding how this novel approach has been effective for HDSI and if the amount of the share pool funds will change once SCIDS is established.

Sincerely,

John A. Hildebrand
Chair
San Diego Divisional Academic Senate

cc: Pradeep Khosla, Chancellor
Robert Continetti, Senior Associate Vice Chancellor
Jeff Gattas, Associate Chancellor
Rajesh Gupta, Director, Halicioğlu Data Science Institute
Olivia A. Graeve, Senate Vice Chair
Lori Hullings, Senate Executive Director
Alison Sanders, Assistant Vice Chancellor, Academic Affairs
Shankar Subramaniam, Distinguished Professor, Bioengineering
Frank Wuerthwein, Director, San Diego Supercomputer Center
June 15, 2023

ELIZABETH H. SIMMONS  
Executive Vice Chancellor, Academic Affairs

SUBJECT: Review of the Proposal for the School of Computing, Information and Data Sciences

Dear EVC Simmons,

The proposal for the School of Computing, Information and Data Sciences was distributed to Senate standing committees and discussed at the June 12, 2023 Senate Council meeting. While there was great appreciation for the changes made in response to the pre-proposal review, Council had some additional issues and comments that members would like to see addressed before the proposal is forwarded to Representative Assembly.

1. Given that SCIDS’ interdisciplinary work includes partnerships with many entities across campus, Council noted the importance of ensuring that all stakeholders are consulted throughout the process of the school’s establishment. To ensure the best possible educational experience for our students and ensure that SCIDS is successful in becoming a cross-disciplinary bridge for education and research, it is important that there is strong communication, collaboration, and cooperation with existing schools, departments, and programs in support of the vision laid out in the proposal. Council is requesting updated letters of support to signal that stakeholders were provided the opportunity to review the full proposal and comment on the additional information provided. It was noted that the letters of support included with the proposal have not been updated since SCIDS’ pre-proposal stage.

2. Some reviewers noted that the relationship between SCIDS and allied departments remains vague. In light of the aforementioned interdisciplinary work of SCIDS and the overlap of existing structures, Council recommended that SCIDS create and articulate a process for creating MOUs with the partner departments.

3. Reviewers were pleased that the proposal discussed in more detail the impact of SCIDS on the California State University system and California Community Colleges, as well as the inclusion of Justice, Equity, Diversity and Inclusion (JEDI) into the practices and policies of the school. It was recommended that the proposal go even further by providing specific outreach plans and identifying how the JEDI efforts will be implemented and tracked to create a diverse student population pipeline.

4. Related to SCIDS’ educational goals, Council recommends that the proposal specify how the school will obtain the necessary resources to support the educational goals outlined in the proposal and how transfer students will be supported.

5. Based on the administrative costs provided, reviewers noted that the resource and staffing allocations seem unrealistically low. The SCIDS Dean’s Office is minimally staffed and only one development person will be assigned to soliciting donations for a new building. Given the ambitious proposed plans, reviewers recommend revisiting these allocations to ensure that proper resources are provided to ensure the administrative success of the school.
In addition, Council’s discussion included comments on the proposed school’s name and corresponding acronym. Council is not requesting that the school’s name be revised but is sharing the feedback provided for consideration. Since data science is the school’s primary emphasis, some Council members suggested that it should be highlighted first in the name. They felt that this would be preferable because computing is shared with entities on campus outside of SCIDS. It was also noted that the SCIDS acronym has some uncomfortable associations and changing the order would have the added benefit of producing a more palatable acronym.

The Committee on Diversity and Equity, Committee on Planning and Budget, Educational Policy Committee, Graduate Council, and Undergraduate Council reviewed the proposal. Their responses are attached.

Sincerely,

Nancy Postero
Chair
San Diego Divisional Academic Senate

Attachments

cc: Pradeep Khosla, Chancellor
    Robert Continetti, Senior Associate Vice Chancellor
    Jeff Gattas, Associate Chancellor
    Rajesh Gupta, Director, Halicioğlu Data Science Institute
    John Hildebrand, Senate Vice Chair
    Lori Hullings, Senate Executive Director
    Shankar Subramaniam, Distinguished Professor, Bioengineering
    Alison Sanders, Assistant Vice Chancellor, Academic Affairs
    Frank Wuerthwein, Director, San Diego Supercomputer Center
June 2, 2023

NANCY POSTERO, CHAIR
Academic Senate, San Diego Division

SUBJECT: Proposal to Establish a School of Computing, Information, and Data Sciences (SCIDS).

The Committee on Diversity and Equity (CDE) reviewed the proposal for a School of Computing, Information, and Data Sciences (SCIDS) at its May meeting. This is as strong a proposal as one can hope for. As EVC Simmons pointed out, UCOP and its committees looked very favorably on the proposal, particularly given the inherent outstanding strengths of the composite schools of SDSC and HDSI, which are the “foundational pillars” of SCIDS. The concerns raised by the UC Committees of Graduate Affairs (CCGA), Educational Policy (UCEP) and Planning and Budget (UCPB), were relatively minor. They focused on (but not limited to) the need for greater detail describing the organizational structure, comparisons of the proposed department with other similar academic institutions, benefits to non-STEM students, support for community college transfer students, more detail of revenue sources and further development of EDI components, amongst others. The response in the revised version is very direct, succinct and comprehensive. As the EVC pointed out, it will be prudent of our Division to promptly respond to the points raised by UCOP, so that SCIDS could possibly be launched in the Fall of 2024.

In terms of discussions within CDE, the pre-proposal stage from the CDE committee provided 3 suggestions:

1. More detailed articulation of Justice, Equity, Diversity, and Inclusion (JEDI) efforts with the new school, and support for community college transfer students.
   
   **Response:** The full proposal discussed in more detail the impact of SCIDS on the Cal State University system and California Community Colleges and broadening participation across the university campus. These efforts are commendable. We hope the new school will continue expanding opportunities for underrepresented communities.

2. The committee was concerned about capped majors as a JEDI issue.
   
   **Response:** The full proposal does not eliminate capped majors but increases its limit from 175 to 300. This is good progress, though we would hope that the major can become uncapped in the future.

3. The CDE encourages the school to offset some of the consolidation forces with more concrete bridge-building.
   
   **Response:** In the full proposal, more details of the organization structure are provided, with associations with different departments highlighted. The cross-disciplinary bridge will be built.
through curriculum, joint faculty, academic programs, and multidisciplinary research programs.
This is well articulated. We would like to see this vision being implemented.

4. Of particular note, the proposal also addressed revenue sources that will sustain the school in the future.

Overall, this is a strong proposal and SCIDS will be a good addition to the UCSD campus. The CDE
strongly supports this proposal for the creation of the School of Computing, Information and Data
Sciences.

Sincerely,

Shantanu Sinha, Chair
Committee on Diversity & Equity

c: J. Hildebrand
May 31, 2023

NANCY POSTERO, CHAIR
Academic Senate, San Diego Division

SUBJECT: Proposal to Establish a School of Computing, Information, and Data Sciences (SCIDS).

The Committee on Planning and Budget (CPB) reviewed the proposal for a School of Computing, Information, and Data Sciences (SCIDS) at its May meeting. The proposal has already gone through a UCSD CPB and UCPB systemwide pre-proposal review, and the present proposal addresses earlier questions. CPB Vice Chair Mark Estelle was the lead reviewer.

UCSD is not an outlier in seeking to establish a program in Data Science, and universities around the country have joined what appears to be a bit of an academic craze. The proposed program at Berkeley, for example, has provoked opposition due to campus perceptions that the discipline of data science may seek to conquer the world, one academic department at a time.

At UCSD the path has been smoother, perhaps because the conquest has already taken place, owing to the existing importance of data science on campus, and to the prominence of two of the proposed components, the Halicioğlu Data Science Institute (HDSI) and the San Diego Supercomputer Center (SDSC). The proposal argues convincingly that these campus assets make the new school a good, and obvious, idea for UCSD.

The proposal argues that the existing administrative structure with HDSI reporting to the Senior Associate Vice Chancellor for Academic Affairs is suboptimal and that the proposed structure is required for the HDSI to reach its full potential. The proposal argues that the new structure will lead to substantial new synergies and opportunities. Also reimagining HSDI as SCIDS will increase the visibility of UCSD in the data science space making it easier to recruit the best students and faculty as well as grant and philanthropy dollars. CPB cannot judge if the expected synergies will actually happen as expected but it certainly seems possible. The proposed school has garnered the enthusiastic support of the Chancellor, the EVC, and nearly every Dean on campus.

In our earlier review, CPB sought more detail on administrative costs, and some have been provided. Based on the new information we have a few observations. The SCIDS Dean’s office appears to be only minimally staffed. In a field with high salaries, skilled administrators and staff will not come cheap. We note that though the proposal says existing space is adequate, the new school will require its own building soon, and will want to raise philanthropic funds for the purpose. We note that despite the ambitious forecast, the proposed budget includes only a single development staff person. We think projected administrative costs are unrealistically low.

The role of SDSC in SCIDS remains vague. The activities of SDSC will not change, but are claimed to become bigger and better, with an increased emphasis on translational work. The proposal forecasts increased revenues, and notes "Conservative estimates for growth are 4% per year without SCIDS, and 8% per year with a well-resourced, well executed SCIDS. The difference comes to a non-negligible part from the ‘translation of innovation into practice.’"

UNIVERSITY OF CALIFORNIA – (Letterhead for interdepartmental use)
The SDSC is not an academic unit and is thus not a natural fit in the proposed school. But, we note the SDSC lends heft and reputation to the new school, and we think the association will probably benefit the SDSC, HDSI, the new school, and ultimately UCSD generally.

The relationship between SCIDS and the allied departments remains quite vague. The proposal states that "the Department Chairs council of SCIDS will include Chairs of departments with dotted line affiliation. This council will decide curricular, hiring and other important decisions germane to SCIDS. Such practice is not uncommon in UC San Diego; for instance, the Chair of Bioengineering attends the School of Medicine Council of Chairs meetings."

CPB is happy to endorse the proposal, but we believe the strategy described for self-assessment is inadequate. The proposal states the new school will be judged by national rankings, number of papers, grant dollars, and philanthropy. CPB recommends that the new school be subjected to an outside review by disinterested parties after its first five years.

Sincerely,

Michael Provence, Chair
Committee on Planning & Budget

cc: J. Hildebrand
May 25, 2023

PROFESSOR NANCY POSTERO, Chair
Academic Senate, San Diego Division

SUBJECT: School of Computing, Information, and Data Sciences Proposal

At its May 15, 2023 meeting, the Educational Policy Committee reviewed the proposal for the creation a School of Computing, Information, and Data Sciences (SCIDS) at UC San Diego. The Committee offered the following comments:

- The Committee commends the proposers for the ambitious goals set for the School. However, EPC recommends that the proposers specify how they will obtain the necessary resources to support all of the educational goals outlined in the proposal.
- EPC recommends that the School develop a more comprehensive plan outlining how they will promote diversity and create a pipeline for students that fosters a diverse student population.
- The Committee is concerned about the lack of information in the proposal regarding the School’s support for transfer students and outreach to California Community Colleges.

Sincerely,

Geoffrey Cook, Chair
Educational Policy Committee

cc: J. Hildebrand
L. Hullings
J. Lucius
S. Mel
May 31, 2023

NANCY POSTERO, Chair
Academic Senate, San Diego Division

SUBJECT: School of Computing, Information, and Data Sciences Full Proposal

At its May 8, 2023 meeting, the Graduate Council reviewed the full proposal to establish a School of Computing, Information, and Data Sciences (SCIDS). The Council offers the following comments:

- The Council notes that startup funds will be used to create programs. How will those programs be sustained and funded in the long-term?
- The Council notes that the proposal states that Justice, Equity, Diversity and Inclusion (JEDI) will be incorporated into policies and practices of the School. The Council recommends that the proposal go into further detail about what can or will happen, including: Who is responsible for ensuring JEDI is incorporated into policies and practices? What are accountability practices to ensure JEDI is implemented? Equity in professors’ teaching load was included, but how will equity in service be assessed? What are the structural changes that SCIDS will make to improve JEDI?
- The Council recommends SCIDS establish a process to form agreements with other departments and to start creating MOUs with partners.
- The Council has questions about the integration of partner departments. How will joint hires be administered? What are the guidelines for evaluation in joint appointments? What are the processes for managing disputes in joint appointments?
- The Council notes that many of the support letters are outdated, and suggests that proposers seek approval of the final version of the proposal from all relevant stakeholders.
- The Council has concerns about the name of the school and whether a “School of Computing” is traditionally associated with Computer Science. What are the potential impacts of the name on current UC San Diego programs?

Sincerely,

Timothy Gentner, Chair
Graduate Council

cc: J. Hildebrand
    L. Hullings
    J. Lucius
May 23, 2023

PROFESSOR NANCY POSTERO, Chair
Academic Senate, San Diego Division

SUBJECT: Proposal to Establish the School of Computing, Information and Data Science

At its May 12, 2023 meeting, the Undergraduate Council reviewed the proposal to establish the School of Computing, Information, and Data Science. The Council endorses this proposal and provides the following comments:

The Council recommends the School identify and plan specific outreach strategies as they pertain to Diversity, Equity, and Inclusion efforts.

We also recommend the School establish intentional lower division coursework to serve as onramps to better prepare students beginning the major.

The Council appreciates the opportunity to complete this review.

Sincerely,

Mirle Rabinowitz Bussell, Chair
Undergraduate Council

cc: J. Cooke
    J. Hildebrand
    L. Hullings
    J. Lucius
10c Undergraduate Climate Change Education for All

Enclosure includes (each document is bookmarked):

- Report of the Senate-Administration Workgroup on Undergraduate Climate Change Education for All 3-24-23
  - Appendix A: Sample Regulation 600 amendments
  - Appendix B: Existing Courses that Address Climate Change
  - Appendix C: Program Home Evolution for the DEI Requirement
  - Appendix D: Sample Bylaw for the Jane Teranes Climate Change Education Requirement Committee
- Final Regulation 600 *Campuswide Graduation Requirements*
- Final Bylaw 212 *Jane Teranes Climate Change Education Requirement Committee*
- Senate Council Response 7-25-23
- Senate Committee Responses
  - Committee on Campus Climate Change response 6-1-23
  - Committee on Diversity & Equity response 6-2-23
  - Diversity, Equity & Inclusion Course Requirement Committee response 6-2-23
  - Educational Policy Committee response 5-25-23
  - Undergraduate Council response 5-23-23
- Committee on Rules & Jurisdiction response 9-29-23
Report of the Senate-Administration Workgroup on Undergraduate Climate Change Education for All

March 24, 2023

Workgroup Members:
- Jane Teranes, Teaching Professor, Scripps Institution of Oceanography, Co-Chair
- Jan Kleissl, Professor, Mechanical and Aerospace Engineering, Co-Chair
- K. Wayne Yang, Provost, Muir College, Co-Chair
- Fonna Forman, Professor, Political Science; Chair, Committee on Campus Climate Change
- Sarah Gille, Chair, Scripps Institution of Oceanography Department
- Michelle Griffith, Campus Wide Senator, Associated Students
- David Holway, Professor, Ecology, Behavior and Evolution
- Jake Lacy, Dean of Academic Advising, Warren College
- John Moore, Dean, Division of Undergraduate Education
- Steven Parish, Professor, Anthropology
- Tricia Taylor-Oliveira, Director, Academic Internship Program, Teaching + Learning Commons
- Dan Vitkus, Professor, Literature and Member, Undergraduate Council
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1. Background

In 2019, UC San Diego Chancellor Pradeep Khosla, along with UC President Janet Napolitano and the chancellors of each UC campus, joined over 7,000 colleges and universities around the world to sign a climate emergency declaration letter.1 This declaration calls for “increasing the delivery of environmental and sustainability education across curricula, campus and community outreach programmes.”

Also in 2019, a UC San Diego Climate Crisis Task Force was formed and advanced the call for Climate Education for All. The report generated by this task force proposed 35 concrete actions that the campus should take to drastically cut emissions, including advancing research and teaching on climate change. The formation of a standing senate committee, the Committee on Campus Climate Change (CCCC), was one of the actions proposed by the Task Force, and is the first of its kind for the entire UC system. CCCC reviewed the task force report and unanimously agreed to adopt the 35 concrete actions as its starting point.

In Spring 2021, after a town-hall meeting that summoned UC San Diego’s seven college provosts and climate education advocates from across the campus, the Committee on Campus Climate Change (CCCC) drafted a resolution proposing that the university require climate change education for all undergraduate students at UC San Diego. Senate Council and the Undergraduate Council discussed the resolution and both committees endorsed the idea of climate change education for undergraduate students. It was recommended that a Senate-Administration workgroup be formed as a next step to further explore possible models and make recommendations on the specifics of a climate change requirement.

The charge of the Senate-Administration Workgroup was as follows:

- Develop a proposal for a Bachelor’s degree requirement for all undergraduate students to complete coursework in climate change and consider whether there are means to promote climate change awareness and action among students, in addition to, or even instead of, a proposed course requirement.
- Evaluate three models suggested by CCCC to determine if any of these models can be scaled up for all undergraduate students to satisfy a climate change education requirement and consider if there are alternative models for designing a climate change education requirement.
  - A. Courses on climate change that fulfill existing college general education requirements and electives;
  - B. Discipline-specific courses on climate change that can be applied towards major or minor requirements;
  - C. Existing courses in which faculty develop new lectures, assignments, or examples to infuse topics of climate change into their syllabi.

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1 https://www.universityofcalifornia.edu/news/university-california-declares-climate-emergency
• Present the workgroup’s recommended model for a climate change education requirement and include specifics on the steps required to operationalize the proposed requirement. This includes:
  ○ Addressing whether any changes are needed to Senate Regulations specifying undergraduate degree requirements (SD 600 – 635);
  ○ Clarifying who would be responsible for determining which specific courses satisfy the requirement and for certifying that each student applying for graduation has satisfied it;
  ○ Assessing potential impacts on students’ time to degree – with special attention toward impacts on historically marginalized student populations.

2. Rationale

The vision of the Committee on Campus Climate Change (CCCC) is to position UC San Diego as a living laboratory for scalable climate solutions. This entails educating a generation of young people who understand not only the scientific and technological dimensions of the climate crisis, but also the social, cultural, economic, and political dimensions, as well as the inequitable burdens faced by vulnerable populations across the world. This educational mandate aligns with a growing demand by undergraduates for climate-related courses and content. The CCCC endorsed and built on the 2019 report by the Climate Crisis Task Force that states: “UCSD has a moral and practical obligation to teach tens of thousands of students about the climate crisis. This requirement will prepare students to think critically about what, for many, will be the biggest problem of their lives; to help them be part of collective action on genuine emissions reductions; and to provide them with relevant skills for a workplace that is going to be increasingly affected by climate concerns.”

In order to achieve these goals, the CCCC endorsed a climate change education requirement for all undergraduate students at UC San Diego, structured similarly to the Diversity, Equity, and Inclusion (DEI) Requirement.

3. Recommendations

The workgroup envisions a climate change requirement focused on broad institutional thinking and experimentation, across a range of disciplines, toward climate mitigation, adaptation, and justice. Educators are encouraged to pursue an interdisciplinary approach to climate change, so that students are empowered to think within and outside of their areas of specialization and therefore to understand the complex nature of the problem and of its potential solutions (scientific, technological, cultural, psychological, political, and economic). We acknowledge the strengths of the DEI Requirement model and understand the challenges of building a program that moves beyond being a burdensome box-checking exercise to an illuminative experience for students. The recommendation of the workgroup is that the climate change requirement be an undergraduate campuswide requirement (see Appendix A).
The Working Group evaluated the three models suggested by CCCC by discussing literature on climate change curriculum, surveying department and program chairs about existing courses, engaging the college provosts on both existing and possible future general education courses that address climate change topics, examining the impact of different models of requirements on student time-to-degree, debating how faculty participation would be incentivized or discouraged by different curricular requirements, and envisioning the kind of interdisciplinary training needed to fundamentally address the social, economic, political, cultural, and scientific roots of the climate crisis. The recommendations are a blend of the three models rooted in a similar structure to the DEI requirement, plus suggestions for extending climate change education beyond the formal requirement itself.

The literature on climate change education in leading universities reveals that “it is easy for a student to graduate with a bachelor's degree without being exposed to climate science or related climate-change topics through core curriculum requirements.” Compared to other universities, UC San Diego students are more likely to be exposed to climate change curriculum because of our leadership in the foundational scientific research on climate, the multifaceted Bending the Curve education project, new educational initiatives such as the Climate Change and Human Solutions Major and the Climate Change Studies Minor. Nonetheless, consistent with the literature, it is still more likely than not that an undergraduate student at UC San Diego will graduate without exposure to climate change curriculum. Indeed, a 2020 publication by UC San Diego Bending the Curve states this clearly: “The many talented and devoted faculty teaching [climate change] courses… are another strength that UCSD has to offer… [However] the main concern is that these climate change education courses do not reach the majority of the student body.”

**Model A: Courses on climate change that fulfill existing college general education requirements and electives.**

The Working Group engaged the college provosts in assessing the prevalence of such coursework. Although courses have been created based on pedagogical interests of the faculty, such as in Warren and Muir Colleges’ academic programs, these topics are not permanently infused into the college programs (with the exception of the new Seventh College’s Synthesis Program). We agreed that increasing the availability of courses would be critical in the initial implementation of a requirement. The provosts and college program directors agreed to increase the number of college courses with climate change topics in the initial years of the requirement, allowing departments and programs some time to propose and then offer additional courses to fulfill the requirement. These recommendations are discussed in Section A, “Student Experience”, in terms of staging and scaling the requirement.

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3 Al-Ateeq, M., Michels, V., Zell, C., & Zwicker, L. (2020). UCSD Undergraduate Climate Education. *UC Office of the President: Bending the Curve.* p. 4. Retrieved from [https://escholarship.org/uc/item/61s0763n](https://escholarship.org/uc/item/61s0763n)
Model B: Discipline-specific courses on climate change that can be applied towards major or minor requirements.
The Working Group recommended a twofold approach to addressing climate change where faculty develop coursework within majors/minors, and where faculty offer their students an interdisciplinary pedagogy that addresses the political, economic, and cultural changes necessary to implement solutions to the climate crisis. This approach is detailed in the Section B, “Curriculum”, in terms of curricular content, i.e., the standards that a proposed course must meet to fulfill the requirement.

Model C. Existing courses in which faculty develop new lectures, assignments, or examples to infuse topics of climate change into their syllabi.
The Working Group surveyed departments and programs to assess what UC San Diego’s existing or forecasted course offerings are that address climate change. This inventory of courses (which is fairly representative, if not comprehensive) is included as Appendix B. This inventory reveals that UC San Diego already has a significant number of courses that likely could fulfill this requirement, and others that, with some adjustment, could fulfill the requirement. There are large differences in the number of courses offered by major/minor. There is, nonetheless, a need to create more courses (thus our engagement with the Colleges about staging/scaling) both overall among the colleges’ General Education options and within majors or minors. This inventory is qualitatively summarized in Section B, “Curriculum”, under “Current Course Offerings.” Moreover, Bending The Curve™ is an open-source, Massive Open Online Course (MOOC) developed by UC San Diego faculty which any student can already take. Bending The Curve provides students with fundamental literacy about climate change as well as the tools to develop climate change solutions across different disciplines.

We have assembled our recommendations into three sections below: (A) Student Experience, (B) Curriculum, and (C) Program Home.

A. Student Experience

The Working Group acknowledges that students are driving the demand for the University of California to address climate change through the advocacy of campus organizations such as Green New Deal or CALPIRG, the voices of students enrolled in Bending the Curve and courses in climate change studies, and the reports from Associate Students. In terms of student experience, the Working Group’s recommendations were designed to ensure that a requirement does not increase time-to-degree, and that courses are widely available as both general electives and within academic majors.

The proposed Climate Change Education Requirement (CCER) is styled after the Diversity, Equity, and Inclusion (DEI) requirement in that:

- the CCER does not increase the total number of courses required for graduation
- Faculty in academic departments/programs/areas will develop new and/or propose existing courses to fulfill the CCER
- In principle, a single course can fulfill the CCER while also fulfilling other GE, Major or Minor requirements, including the DEI.
The rationale for these similarities is based on best practices learned from the DEI requirement. That is, a DEI-style CCER minimizes potential impacts on students’ time to degree by maximizing the opportunities towards fulfilling the requirement without increasing the total number of courses required for graduation.

Some important differences between the DEI requirement and the proposed CCER are as follows:

- Transfer students are exempt from the proposed CCER. With DEI, the effective date of the requirement was delayed two years to allow students at community colleges to plan accordingly and be aware of the requirement. The proposed 5-year assessment (below) would provide a mechanism for the Academic Senate to extend the requirement to include transfer students.
- The proposed CCER will be assessed every 5 years, and the Faculty Senate will vote to continue, discontinue, or amend the CCER based on the assessment. This approach allows for iterative redesign based on data about how the CCER impacts the student experience, and on the pedagogical gaps/needs in the CCER offerings in three course typologies described by the CCCC (above, in *Rationale*). Indeed, the Senate could decide new course typologies are needed, or that additional requirements should be added or relaxed. The assessment even allows for the possibility that the CCER could be discontinued, should the Senate decide that it is no longer necessary or that the mandate has been fulfilled.

These similarities and differences with the DEI fulfill the mandate of the CCCC to provide the steps required to operationalize the proposed requirement, with special attention toward impacts on historically marginalized student populations.

**Transfer students exempt.** The rationale for exempting transfer students is also based on experience with the DEI requirement. Many transfer students do not currently receive credit for the DEI for courses taken in their previous institutions, even if the courses have identical titles and content that would likely count for the requirement. Several thousand transfer students matriculate each year from over one hundred different colleges; assessing each transfer student’s individual transcript and submitted syllabi is not feasible. The exemption is also necessary because of the current context involving the reform and streamlining of transfer credit articulation: California is working to align the transfer requirements (Cal-GETC) across the UC and CSU systems to provide greater clarity and simplicity for community college students to apply the appropriate coursework toward transfer. In exempting transfer students from the CCER, this proposal avoids adding noise in the form of a unique UC San Diego requirement to a statewide system in need of clarity. In principle, if in the future, the UC and CSUs collectively adopt a CCER, then any transferable coursework would be articulated as part of the transfer process.

**Staging.** Beyond the basic aspects of the proposed CCER, this proposal attempts to address the staging and scaling of the requirement. The Working Group discussed at length whether to pursue a simple one-size-fits all requirement, such as a form of the *Bending the Curve*
curriculum. While the Working Group agrees that fundamental teachings about the crisis of climate change ought to count for the CCER, we felt the long term pedagogical goal is twofold: first, that faculty develop innovative upper-division coursework that deeply engages with the climate crisis and its potential solutions AND second, that faculty offer their students an interdisciplinary pedagogy that inculcates an understanding of the big picture (including an awareness of the political, economic, and cultural changes that will be necessary in order to implement those solutions). Therefore, the proposed CCER is intended to be permissive enough, initially, that the campus may quickly generate enough courses for students to fulfill the requirement in the initial rollout. The intention is that courses will continue to be added that balance disciplinary depth with interdisciplinary capaciousness. The proposed 5-year review cycle is intended to assess progress towards this twofold goal.

To assess the initial challenges in the staging period of the CCER, we have surveyed departments and programs to provide data to the Academic Senate on the existing courses that address climate change (see Appendix B). The actual courses would have to be submitted (and possibly revised) for approval, and the inventory is likely incomplete. However, the inventory offers a snapshot of what is currently available.

Moreover, the eight undergraduate Colleges have agreed to maximize their course offerings on climate change education within the required college programs for the first three years of the CCER. Given that each college has different pedagogical mandates for their programs, not every college course will fulfill the CCER. Nonetheless, this commitment by the Colleges will help launch the CCER by providing opportunities in the staging period of the requirement.

**Scaling the requirement and creating communities of practice.** In terms of scaling the requirement, the DEI requirement also provides some useful insights. Through grants, incentives, and teaching symposia, the DEI helped create communities of practice among faculty interested in developing their courses in alignment with the spirit of the DEI requirement (communities of practice⁴ are similar to a loosely organized committee or a working group). Similarly, the long-term goal of integrating CCER upper-division courses into most majors would best be achieved by intentionally creating a Climate Change Education community of practice. Support for such a community of practice is proposed in Section C: Program Home. Effective scaling would have the most profound pedagogical impact on the student experience, consistent with UC San Diego’s mission as a top educational and research institution.

On March 1, 2023, working group members Michelle Griffith (Campus Wide Senator, Associated Students) and K. Wayne Yang (Provost, Muir College, Co-Chair of working group) presented key pieces of proposed CCER to the UC San Diego Associated Students Senate Assembly. Senator Griffith prepared the presentation, took comments and questions, and conducted a straw poll of all present to gauge support for the proposal. Comments from senators and officers included:

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⁴ "A Community of Practice (CoP) is a group of people who share a common concern, a set of problems, or an interest in a topic and who come together to fulfill both individual and group goals." (https://www.communityofpractice.ca/background/what-is-a-community-of-practice/)
“This is long overdue.”
It would be great to have a course on the history of UC San Diego climate change efforts, specifically a critical history that includes an examination of what UCSD has done/not done.
It is good that the colleges are involved so that students of all colleges have the opportunity to complete the requirement when it is first offered. (This was a clarifying question that turned into a comment).
The straw vote recorded unanimous support, none opposed, no abstentions. The poll included AS senators and officers as well as of the public audience in attendance (which was unusually large). The VP of Academic Affairs Rhianen Callahan offered to take the full proposal (once it is made public) to their UC-wide AS Academic Affairs meeting in hopes that a CCER will spread to the other UC campuses.

B. Curriculum
I. Curriculum Content:
The committee classified CCER content into four categories:

1. **Scientific Underpinnings:** Does the course provide students with a scientific foundation to understand the mechanisms responsible for climate change and the scope of projected climate change, including knowledge of the magnitude of the impact of human-caused climate change on the planet, the biosphere, OR society?

2. **Humanistic and Social Dimensions:** Does the course provide knowledge of the historical, cultural, OR social causes of climate change, OR its basis in human values, and provide an understanding of the human costs, consequences, and disproportionate impacts of climate change? Does it offer context for understanding how addressing the climate crisis requires social, political, OR economic transitions and transformations? Does it engage health, equity, and climate justice issues?

3. **Climate Solutions:** Does the course provide knowledge of both scientific and non-technical solutions to the crisis? Does the course consider social, cultural, OR political adaptations to climate change? Do the solutions discussed include a holistic assessment of political, social, economic, behavioral, OR technological approaches? Does the course consider the needs and/or concerns of those experiencing the impact of climate change? Does it put solutions in the context of the scientific underpinnings and/or humanistic OR social dimensions of climate change?

4. **Project-based Learning:** Do students have opportunities to gain experience or work on a project that is related to climate change content? Examples could include a project-based writing assignment, case study, presentation, business plan, community-based project, research experiments, artistic projects, interviews and oral histories, podcasts, design projects, or others.

Within each component an “OR” is used. For example, scientific underpinnings could be met with content from atmospheric chemistry, ocean physics, or anthropological science.
II. Curriculum Amount
A minimum of 30% of the course content should be focused on understanding and addressing climate change and its impacts. The number 30% corresponds to 3 weeks of a 4-unit course that should be dedicated to climate change in the form of lectures, reading, project-based learning activities, and/or case studies. (For 2-unit courses, the requirement would be 60%.) Assignments and grades must also reference climate change content with at least 20% of the grade determined by it. The number 30% was identified by the committee because it allows the instructor to maintain a significant portion of other materials that may be non-negotiable content in existing courses. 30% therefore allows more courses to qualify. The 30% threshold should be reevaluated in a few years.

III. Curriculum Content Integration
The committee examined different options for combining the content in these categories and voted on the options in a multiple choice - multiple answer format on January 23, 2023.

Option 1 (supported by 67% of the committee): The 30% climate change content should be from at least two of the four components; each of the two components should cover the equivalent of at least a one-hour lecture.

Option 2 (supported by 22% of the committee): The 30% climate change content should contain content from all four components. Proponents of option 2 argued that, in reality, any technical solution is intertwined with socio-political, economic, and public policy aspects of the solution. Students will benefit by undertaking a broad, interdisciplinary approach. If they learn about only two of the components, their learning experience will be limited to specialized study, and they will miss the bigger picture. While an understanding of potential technical solutions can provide a convenient launching point for a broader engagement with component 2, students also need to consider how changes in our political, social, economic, and cultural status quo must take place if those technologies are to be implemented. Courses that do not meet all four components could add missing content by integrating one or more out-of-discipline lectures into the course using materials from the Bending the Curve collection of lectures.

Option 3 (supported by 78% of the committee): In the long term, the university will pursue a vision in line with greater interdisciplinarity for this requirement (Option 2), but initially go with Option 1, working toward Option 2 and then reevaluating in 5 years at the time of assessment.

In summary, Option 3 has the greatest support among the committee.

IV. Time to Degree
To not burden transfer students who already often take much longer than the designated 2 years to graduate, at least initially transfer students will be exempt from the climate change education requirement (CCER). The exemption for transfer students will be reevaluated after operating the program for 5 years.

The CCER should not add to the time-to-degree for the vast majority of students, including engineering majors.
The undergraduate colleges have agreed to qualify at least one existing course within each of their required programs, which would be offered for at least the initial 2 years that the CCER policy is in place. Currently, courses in the Seventh College Synthesis program already likely fulfill the requirement. Sixth College currently offers one course on climate change for several hundred students in the required Culture, Art, Technology sequence. Muir College Writing Program has a curriculum on climate change that all first years were required to take in 2018-2019 and would be able to offer a similar curriculum to help with staging of the requirement. Similarly, Warren College Writing Program has offered courses on climate change in the past and could reinstate them. The Writing Program Directors of Making the Modern World, Dimensions of Culture, and Humanities are confident that they could integrate the 30% threshold described in the proposed CCER for the remaining colleges (Roosevelt, Marshall, and Revelle, respectively). Eighth College will likely be able to follow suit. Moreover, Colleges will ensure that CCER courses will be incorporated wherever possible into approved General Elective breadth requirements. To satisfy the CCER, students then have options of fulfilling within the college writing program, a General Elective course, a course in their major/minor, or any other course at their leisure.

To reiterate, the undergraduate Colleges have committed to offer these courses in their programs to help with the staging of the CCER, allowing time for faculty in departments and programs to create and propose courses. As part of the 5-year assessment, data about the role of colleges will be examined, alongside any modifications to the requirement to increase from 2 to 4 instead of the curricular elements (i.e., Scientific Underpinnings, Humanistic and Social Dimensions, Climate Solutions, Project-based Learning) as discussed above in III. Curriculum Content Integration.

V. Current Course Offerings
A request for information was sent to 55 departments and programs to provide courses that contain climate change content. Using the responses and input from committee members a list of 125 courses was compiled. Whether these courses meet the “2 out of 4” and 30% requirement has yet to be established, but based on preliminary information provided by instructors and department / program chairs, 8 courses address all 4 components, an additional 19 courses address 3 components, and an additional 27 courses address at least 2 components. Therefore, the committee is hopeful that around 50 courses already meet the current requirement of option 1 in the above. Anthropology (26), SIO / CCS (23), and USP (10) provide the most relevant courses. All other departments or programs have fewer than 4 courses. There are only 7 relevant courses across all of engineering: these courses are only from two departments (MAE and ECE), are only technical electives, and most of these courses currently only satisfy one component. Therefore, engineering students will initially have to rely on college courses or breadth requirements in their general electives to satisfy the CCER.
C. Program Home

I. Program Home Functions
As is the case with the DEI requirement, a climate change education requirement will require an administrative structure. At a minimum, there needs to be a process for curating the lists of courses that satisfy the requirement, vetting proposals for additions to the list, and interfacing with the Registrar. A more extensive administrative unit might provide leadership in climate change education, create a community of practice, establish assessment protocols, and provide climate change education programming. The desired functions of a program home are:

- Creating a community of practice (such as the one established in relation to the DEI Program)
  - Development opportunity and community for faculty
  - Supporting faculty who are creating courses and adding course content
- Administration of incentives
  - Administer grants, focus on interdisciplinary proposals
- Assessment
  - A 5-year clause to assess the requirement
  - Vetting courses

II. Program Home Options
See Appendix C for program home history and experiences with the DEI requirement. We propose that the CCER be initially managed by a standing committee (either an administrative or a Senate committee, see Appendix D), while a proposal for a Climate Change Program is developed. The committee could develop a rubric and a set of questions similar to the DEI course proposal to solicit and approve course proposals.

A proposal for a Climate Change Program should outline the functions of the program and identify an academic unit as its home (the current workgroup believes that it would be premature to identify a specific home at this point). A program would build a community of practice, set assessment metrics, and help faculty in course development.

As is the case with the DEI Program, a Climate Change Program would signal the importance of the requirement and ensure that it continues to meet its goals.

4. Dedication

In honor of the late Jane Teranes’ contributions to climate change education at UC San Diego the committee would like to dedicate this requirement to Jane Teranes. Among many other contributions to climate change education, Jane Teranes worked with colleagues across campus to create a new Climate Change Studies minor in 2019. The minor represents the precursor of the present requirement as it was “designed to help students from any major develop knowledge of climate science, understand the human and social dimensions of climate impacts, and find opportunities to develop and implement solutions.” Naturally, Jane was named the co-chair of the Climate Change Education Requirement committee upon its initiation. Jane
was the heart and soul of this committee, and her input was the seed for the final report presented here. The committee feels that it is appropriate to honor her legacy by naming the requirement the Jane Teranes Climate Change Education Requirement (JTCCER). Jane dedicated her life to climate change education at UC San Diego. This committee was inspired by what Jane would have wanted to see.

5. Feedback solicited and received on this proposal and committee responses
This section will be populated after the final report is submitted.

6. Ramping up the Requirement

I. Senate announces JTCCER
By Spring 2023 Senate would approve and announce the (at that time to be unspecified) JTCCER to start with the Fall 2024 freshman admissions.

II. Senate Standing Committee to Approve Courses
We suggest that by Fall 2023, the Senate create a standing JTCCER committee. This committee will solicit course proposals and approve courses during the 2023/2024 academic year.

III. Course Development
We suggest that in Fall 2024, colleges plan to jump start the JTCCER with lower-division offerings. In parallel, but likely over a longer time horizon, additional courses will be developed to fulfill upper-division requirements within each major, as determined by individual programs, departments, and faculty. As these upper-division courses are developed, the JTCCER will be able to transition to courses that offer more depth of investigation in the majors (versus the broader lower-division content).

IV. Resources Available for Departments and Programs
While initially there may be few financial resources to support course development and course modification, there are several other resources available for departments and programs to adapt to the JTCCER. There are many passionate educators on campus who would be willing to support guest lectures and/or point to existing JTCCER content. All members of this committee would be happy to consult further. A great resource is *Bending The Curve™*[^5], which is an open-source course that was co-developed by faculty at UCSD. *Bending The Curve* contains modules that are aligned with all the curriculum content listed in Section 3.B.I.

[^5]: [https://bendingthecurve.ucsd.edu/](https://bendingthecurve.ucsd.edu/)
V. Five-year Assessment
The committee feels that several recommendations should be reassessed in five years, especially: (i) The curriculum options in 3.B.III. (ii) The exclusion of transfer students from the requirement (iii) The program home. Note that the resources that come with a program home may be required to perform the assessment.
Appendix A - Senate Regulation 600: Campuswide Graduation Requirements

(A - G) [no changes]

H) Jane Teranes Climate Change Requirement

A knowledge of climate change is required of all candidates for a Bachelor’s degree who begin their studies at UC San Diego in lower-division standing in Fall 2024 or thereafter.

1) This requirement shall be satisfied by passing, with a grade not lower than C- or P, a one-quarter course expressly approved by the Undergraduate Council for that purpose. A list of approved courses will be provided in the UC San Diego General Catalog.

2) This requirement is required of all candidates for a Bachelor’s degree who begin their studies at UC San Diego as a first-year student. Transfer students are not required to satisfy this requirement.

(I - L) [current requirements H - K, renumbered to accommodate insertion of new requirement H]
# Appendix B - Existing Courses that Address Climate Change

<table>
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* Estimated maximum enrollments as reported by faculty and departments who participated in generating this inventory of courses

** Incomplete data available
Appendix C - Program Home Evolution for the DEI Requirement

The evolution of the DEI requirement might inform UC San Diego’s approach to the administration of the climate change requirement. The following paragraphs outline how this has unfolded.

For almost ten years, the DEI requirement was managed by an administrative standing committee. This committee was charged with reviewing course proposals and assessing existing courses. The committee had representation from the Division of Undergraduate Education (the dean and a college provost), students, and several faculty nominated by the Committee on Committees. The committee met quarterly to evaluate proposals for prospective DEI courses. However, it lacked the bandwidth to assess existing courses, to re-vet courses, or to assess the program. The Division of Undergraduate Education scheduled the annual DEI awards ceremony.

From February 2019 through Winter quarter 2020, a Senate-administration workgroup examined aspects of the DEI requirement and made recommendations that there should be a way to create a more robust administrative structure. The report led to two developments.

First, the Academic Senate asked that the standing committee be made a Senate committee, with a close relationship to the Undergraduate Council. This change occurred two years ago. The transition has worked fairly well, but there are some challenges. As an administrative committee, membership turned over slowly and required that faculty members have DEI teaching experience, allowing the committee to retain significant subject matter expertise. The Senate committee, paneled by Committee on Committees, without a DEI teaching requirement, has had less expertise.

The report also gave birth to a new workgroup that created a proposal for a DEI Program, with the goal of creating a community of scholars and DEI educators. The program, housed in the Institute of Arts & Humanities, is to be charged with assessment and other administrative functions (although the vetting of proposals remains with the Senate committee, the committee and the program will collaborate closely). The Senate approved the program proposal in 2022; a search for an inaugural director is currently underway.
**Appendix D - Proposed Bylaw XXX - Jane Teranes Climate Change Education Requirement Committee**

A) This committee shall consist of five ordinary members of the Division. It shall also have two undergraduate student representatives, who shall not have the right to vote. The chair of the committee may invite the Dean of Undergraduate Education, a representative from the Committee on Campus Climate Change, and a College Provost, who shall be selected by the Council of Provosts, to serve as consultants to the committee, without the right to vote. The chair of the committee shall also serve as a member of the Undergraduate Council. *[see Bylaw 210]*

B) Duties:

1) This committee shall make recommendations to the Undergraduate Council on proposed new undergraduate courses and existing undergraduate courses that may be used for the purpose of fulfilling the Climate Change Requirement. *[see SD 600.H]*

2) This committee shall make recommendations to the Undergraduate Council on the criteria that courses are expected to meet to be used for the purpose of fulfilling the Climate Change Requirement.

3) This committee will report to Undergraduate Council the number of courses submitted but not recommended for approval and the rationale.
A) Every candidate for a Bachelor's degree must have completed a major. [En 11/27/90]

1) A major shall require the equivalent of 12 or more upper division courses (48 or more units).

2) Requirements for majors shall be determined by departments and programs, subject to the approval of the Undergraduate Council. [Am 3/1/11]

3) Double Majors
   With the approval of both departments or programs and of the college provost, a student in good standing may declare a double major. [Am 2/27/96, Am 6/5/18]
   a) A student with a double major must fulfill the separate requirements of each major, and the equivalent of at least ten upper-division courses (40 units) must be unique to each major. Courses taken in fulfillment of lower-division requirements may overlap to any degree. [Am 2/27/96]
   b) The two majors may not be within the School of Engineering, nor, except with the approval of the Undergraduate Council, within a single department. [En 2/27/96, Am 3/1/11, Am 5/24/05, En 10/1/17]
   c) A student with a double major may graduate only upon completion of all requirements for both majors. Both majors will be noted on the student's transcript and diploma. If the two majors lead to different degrees (B.A. and B.S.), that fact will be noted on the transcript, and the two degree designations will appear on one diploma. [Am 2/26/96, Am 2/27/96, Am 6/5/18]
   d) A student who has declared a double major may graduate in one major upon the completion of all requirements for that major. [Am 4/25/95, Am 2/27/96, Am 6/5/18]
   e) A student with a double major who has reached the quarter limits of paragraph C and needs additional time to complete all requirements for both majors will be required to submit a completion plan and have it approved by their college prior to enrolling for additional quarters to continue works towards the degree. [En 6/5/18]

4) An undergraduate student must have declared a major or pre-major upon completion of 90 units.

B)

1) Other requirements for graduation shall be determined by the colleges in conformity with Universitywide regulations and subject to approval by the San Diego Division of the Academic Senate.

2) Each college must set a minimum requirement for a bachelor's degree equivalent to at least 180 units, including not less than 60 at the upper division level. The minimum number of units required by a college must be the same for the degrees of Bachelor of Arts and Bachelor of Science. Except as may be otherwise provided in the Regulations of the Academic Senate or of the San Diego Division, no college may set a standard higher than passing for the satisfaction of any requirement for graduation. [Am 5/23/95]
3) The value of a course in units ("quarter units" or "quarter credits") shall be reckoned at the rate of one unit for three hours' work per week per quarter on the part of the student, or the equivalent [SR 760] [Am 5/22/90, Am 11/27/90]

C) Quarter Limit and Enrollment Beyond the Quarter Limit [En 11/27/90, Am 6/5/18]

1) An undergraduate student who enrolls at UC San Diego as a freshman in Fall 2019 or thereafter will be allowed to enroll for 12 quarters to complete all requirements for a degree; if a student reaches this quarter limit and needs additional time to complete those requirements, they will be required to submit a completion plan and have it approved by their college prior to enrolling for additional quarters to continue work towards the degree. [Am 3/1/11, Am 6/5/18]

2) An undergraduate student who enrolls at UC San Diego as a transfer student in Fall 2019 or thereafter will be allowed to enroll for six quarters to complete all requirements for a degree; if a student reaches this quarter limit and needs additional time to complete those requirements, they will be required to submit a completion plan and have it approved by their college prior to enrolling for additional quarters to continue work towards the degree. [Am 6/5/18]

3) Summer sessions as well as quarters during which students are approved for part-time status or have withdrawn from all courses will not count toward the allowable number of quarters. [En 6/5/18]

D) Special kinds of study e.g., laboratories, reading programs, studio work may be required in addition to the basic course work in given curricula.


A minor is not required for graduation. A student in good standing may declare an optional minor. [Am 5/28/96]

1) A minor shall consist of at least 28 units, of which at least 20 units must be upper division. For sound academic reasons and with the approval of the Undergraduate Council a minor may be established with fewer than 20 upper-division units. [Am 5/28/96, Am 3/1/11]

2) Requirements for minors shall be determined by departments and programs, subject to the approval of the Undergraduate Council. [Am 3/1/11]

3) A student may apply the equivalent of two upper-division courses (a maximum of eight units) to fulfill the requirements for a minor that have also been used to satisfy the requirements of a major. [Am 5/28/92, Am 4/12/16]

4) Double Minors

   a) With the approval of both departments or programs and of the college provost, a student in good standing may declare a double minor.
b) A student with a double minor must fulfill the separate requirements of each minor, with no overlap of upper-division courses. Courses taken in fulfillment of lower-division requirements may overlap to any degree.

F) [SR 638] American History & Institutions Requirement [Am 1/26/71, Am 1/21/86, Rt by Assembly 5/6/86] Knowledge of American history and of the principles of American institutions under the federal and state constitutions is required of all candidates for the degree of A.B., B.Arch., or B.S. This requirement may be met in any one of the following ways:

1) One high school unit in American history, or high school unit in American history and high school unit in civics or American government, with a grade of C or better [Am 10/23/90]

2) By completing, with a grade of C- or better or a grade of P, any one quarter UCSD course of instruction accepted as satisfactory by the Undergraduate Council. Courses suitable for fulfilling the requirement will be designated by the Undergraduate Council. The list of suitable courses will be indicated in the UCSD Catalog, or other official academic publications of the colleges. [EC 5/29/73, Am 10/23/90, Am 3/1/11]

3) By presenting proof of having received a grade of 3 or higher on the Advanced Placement Test in American History administered by the Educational Testing Service of Princeton, New Jersey.

4) By presenting proof of having satisfied the present requirement as administered at another collegiate institution within the state.

5) By presenting proof of successful completion of a one quarter or one semester course, with a grade of C or better, in either American history or American government at a junior college within the state.

6) By presenting proof of successful completion of a one quarter or one semester course, with a grade of C or better, in either American history or American government at a recognized institution of higher education, junior college included, in another state. [Am 2/25/69]

7) A student attending the University on an F1 or J1 visa, by showing proof of temporary residence in the United States, petition for exemption from this requirement through the office of the student’s college provost. [Am 4/13/21]

G) Requirement in Diversity, Equity, and Inclusion [En 3/1/11, Am 4/12/16] A knowledge of diversity, equity, and inclusion is required of all candidates for a Bachelor’s degree who begin their studies at UC San Diego in lower-division standing in Fall 2011 or thereafter, or in upper-division standing in Fall 2013 or thereafter.

1) This requirement shall be satisfied by passing, with a grade not lower than C- or P, a one-quarter, four-unit course expressly approved by the Undergraduate Council for that purpose. A list of approved courses will be provided in the UC San Diego General Catalog. [Am 4/12/16]
2) This requirement may be satisfied by presenting proof of having passed a one-quarter, four-unit transfer course, or its equivalent, at a recognized institution of higher education, community colleges included, that has been articulated to one of the courses approved by the Undergraduate Council for the purpose of meeting the Diversity, Equity, and Inclusion requirement. [Am 4/12/16]

H) Jane Teranes Climate Change Education Requirement

A knowledge of climate change is required of all candidates for a Bachelor's degree who begin their studies at UC San Diego in lower-division standing in Fall 2024 or thereafter.

1) The requirement shall be satisfied by passing, with a grade not lower than C- or P, a one-quarter course expressly approved by the Undergraduate Council for that purpose. A list of approved courses will be provided in the UC San Diego General Catalog.

2) This requirement is required of all candidates for a Bachelor's degree who begin their studies at UC San Diego as a first-year student. Transfer students are not required to satisfy this requirement.

H) Residence

Except as provided in SR 614, the minimum residence at the University of California required for a degree is three terms. Each summer session in which a student completes a course of at least two units may be used in satisfaction of half a term's residence. [Am 12/2/08]

Except as otherwise provided in this section and SR 614, 35 of the final 45 units completed by each candidate for the Bachelor's degree must be earned in residence in the college or school of the University of California in which the degree is to be taken. A student who completes the graduation requirements while in the Education Abroad Program, the UC Washington, D.C. program, the UC Center in Sacramento Program, or the UC Natural Reserve System (NRS) California Ecology and Conservation Course may satisfy the requirement with the final 45 units preceding the student's entrance into any of these programs. [Am 5/23/01, Am 12/2/08] [Am 12/12/17]

Faculties may permit a student who is enrolled in the Education Abroad Program, the UC Washington, D.C. program, the UC Center in Sacramento Program, or the UC NRS California Ecology and Conservation Course to satisfy the residence requirement by earning at least 35 of the final 90 units, including the final 12 units, in residence in the college or school of the University in which the degree is to be taken. [En 4/1/75, Am 12/2/08] [Am 12/12/17]

I) Part-Time Study [En 11/24/92]

1) Degree programs in the University may be open to part-time students whenever there are good educational reasons for so doing. No majors or other degree programs will be offered only for part-time students, except as specifically authorized by the Academic Senate.

2) A part-time undergraduate student is one who is approved to enroll for ten units or fewer, or an equivalent number of courses per quarter.

3) The same admissions standards that apply to full-time students will apply to part-time students. Approval for individual students to enroll on a part-time basis will be given for reasons of occupation, family
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responsible, health, or for one quarter only graduating senior status. Approval to enroll as a part-time undergraduate student shall be given by the appropriate provost.

4) Residence in any regular term is validated for a part-time student on the San Diego campus by a program of one or more courses. Part-time undergraduate students shall not be required to meet minimum progress requirements.
{I) Subject A Requirement  [(Variance En 5/27/75, Rt by Academic Council 7/14/76,Rp 11/27/84 because variance rescinded by amendment of SR 636) [See SR 636]}


1) There shall be a campuswide requirement for the award of college honors at graduation. No more than fourteen percent of the graduating seniors on campus shall be eligible for college honors. Normally, no more than the top two percent shall be eligible for summa cum laude and no more than the next four percent for magna cum laude, although minor variations from year to year shall be permitted. The remaining eight percent are eligible for cum laude. The ranking of students for eligibility for college honors shall be based upon the grade point average. In addition, to be eligible for honors, a student must receive letter grades for at least 72 quarter units of course work at the University of California. Each college may award honors at graduation only to those who are eligible to receive college honors. [Am 6/6/17]

2) Each department or program may award honors to a student at graduation in accordance with the following criteria:

a) The student must have completed a special course of study within the department or program. The requirements for this special course of study shall be approved by the divisional Undergraduate Council and published in the Catalog. The requirements must include 8-12 units of supervised research or other creative activity leading to the preparation of a paper or other appropriate project. Public presentation of the project, through performance, participation in the undergraduate research conference, or other appropriate means, shall explicitly be encouraged. [Am 4/23/96, Am 3/1/11]

b) The department or program shall establish formal procedures and criteria for application and admission to the program, which shall normally include a GPA of 3.5 in the major as a prerequisite. Students with a GPA lower than 3.5 may be admitted by exception if they show promise of success in research or creative activity. [Am 4/23/96]

c) Each student whose project earns the equivalent of a grade of B or better and who has maintained a GPA of at least 3.25 in the major shall be entitled to the designation with distinction on the diploma after the departmental or program name. Subject to the approval of the Undergraduate Council, each department or program shall establish criteria for the award of the designations with high distinction and with highest distinction. [Am 4/23/96, Am 3/1/11]

K)L) University of California Entry Level Writing Requirement (formerly called the Subject A Requirement). [Variance En 5/27/75, Rp 11/27/84] [SR 636 governed campus practice from 1984 to 1966] [En 6/10/97 (also see 600H above)] [Am 5/26/15] [Am 5/19/20]
1) University of California Entry Level Writing Requirement is a reading and writing proficiency requirement. Each student must be able to understand and to respond adequately to written material typical of reading assignments in freshman courses. This ability must be demonstrated in student writing that communicates effectively to University faculty. [SR 636(A)] [Am 5/23/96] [Am 5/26/15]

2) Satisfaction of the University of California Entry Level Writing Requirement is a prerequisite for every university level undergraduate course in English composition, including all courses approved as meeting the writing requirements of the undergraduate colleges at UCSD. [Am 5/26/15]

3) Prior to his or her first quarter of study at UCSD, each student may satisfy the University of California Entry Level Writing Requirement by any of the means approved by the Universitywide Committee on Preparatory Education and authorized under Universitywide Senate Regulation 636. [Am 5/26/15]

4) A student who has not satisfied the University of California Entry Level Writing Requirement prior to his or her first quarter of study at UCSD must satisfy the requirement by completing with a grade of "C" or better a course approved for this purpose by the divisional Committee on Preparatory Education. A student who receives a final grade of "C-" or below has not satisfied the University of California Entry Level Writing Requirement and may repeat the course in accordance with Paragraph 6. [Am 5/26/15, Am 5/19/20]

5) A student who has not satisfied the University of California Entry Level Writing Requirement must register for the course specified in Paragraph 4 during each quarter of residence at UCSD until the University of California Entry Level Writing Requirement is satisfied. [Am 5/26/15]

6) In accordance with Universitywide Senate Regulation 636, a student who has not satisfied the University of California Entry Level Writing Requirement after three quarters of enrollment at any campus of the University of California will not be eligible to enroll for a fourth quarter. Exceptions to this regulation may be considered in accordance with Divisional Bylaw 200, but only within policies established by the Divisional Educational Policy Committee and the Divisional Committee on Preparatory Education. [Am 3/1/11, Am 5/26/15]
Bylaw 212. Jane Teranes Climate Change Education Requirement Committee

A) This committee shall consist of five ordinary members of the Division. It shall also have two undergraduate student representatives, who shall not have the right to vote. The chair of the committee may invite the Dean of Undergraduate Education, a representative from the Committee on Campus Climate Change, and a College Provost, who shall be selected by the Council of Provosts, to serve as consultants to the committee, without the right to vote. A member of the Undergraduate Council will serve as the chair of this committee. [see Bylaw 210]

B) Duties:

1) This committee shall make recommendations to the Undergraduate Council on proposed new undergraduate courses and existing undergraduate courses that may be used for the purpose of fulfilling the Climate Change Requirement. [see SD 600.H]

2) This committee shall make recommendations to the Undergraduate Council on the criteria that courses are expected to meet to be used for the purpose of fulfilling the Climate Change Requirement.

3) This committee will report to Undergraduate Council the number of courses submitted but not recommended for approval and the rationale.
July 25, 2023

K. WAYNE YANG, Provost
Muir College and Workgroup Co-Chair

JAN KLEISSL, Professor
Mechanical and Aerospace Engineering and Workgroup Co-Chair

SUBJECT: Review of the Report of the Senate-Administration Workgroup on Undergraduate Climate Change Education for All

Dear Professors Yang and Kleissl,

The report of the Senate-Administration Workgroup on Undergraduate Climate Change Education for All was distributed to Senate standing committees and discussed at the June 12, 2023 Senate Council meeting. Senate Council endorsed the Workgroup report. There was strong support among committee members for establishing the Jane Teranes Climate Change Education Requirement (CCER) as a campuswide undergraduate degree requirement for first-year students. Senate Council also endorsed the creation of a standing Senate committee to oversee the CCER, similar to the role played by the Diversity, Equity and Inclusion Course Requirement Committee for the DEI requirement. As next steps toward implementation, Senate Council approved sending the proposed amendments to San Diego Senate Regulation 600, Campuswide Graduation Requirements, establishing Section H for the CCER, and the proposed bylaw for the Jane Teranes Climate Change Education Requirement Committee (JTCCERC) to the Committee on Rules and Jurisdiction for review followed by placement on a future Representative Assembly agenda for final approval.

Senate Council also offers the following comments on the report. It is Council’s intent to also share these comments with the JTCCERC, once empaneled, for further consideration.

- It is expected that the JTCCERC will be charged with finalizing the criteria for the CCER courses and making recommendations on which courses meet the criteria, in consultation with the Undergraduate Council. The JTCCERC may also consult with relevant Senate committees, the workgroup, and administrative offices during the implementation process. Senate Council supports the workgroup’s recommendation to include a representative from the Committee on Campus Climate Change (CCCC) as a consultant to the JTCCERC.

- Senate Council supported the Workgroup’s recommendation that the CCER be initially managed by the JTCCERC and further recommended that the idea of a Climate Change Program be re-evaluated after the CCER has been established and the campus has an opportunity to learn from the DEI Program, which is currently in the process of being launched.

- Council appreciated the rationale provided for exempting transfer students from the CCER. Council expressed support for including transfer students as soon as feasible, as they would also benefit from completing coursework on climate change.

- Council recommends removing project-based learning as one of four curriculum content categories and instead recommends requiring that the CCER courses meet two of the remaining
three categories (Scientific Underpinnings, Humanistic and Social Dimensions, and Climate Solutions).

- Council appreciated the inclusion of Appendix B, identifying existing courses that address climate change. It will be important for the JTCCERC to vet these courses to ensure they meet the content requirements for CCER courses (once the criteria are finalized). Members also noted that there are likely additional existing courses being offered that may be eligible to satisfy the CCER. Council encourages the JTCCERC to collaborate with all schools and departments to expand the workgroup’s initial list. Climate change content spans all disciplines and it will be important to include coursework from all areas of campus.

The Committee on Campus Climate Change, Committee on Diversity and Equity, DEI Course Requirement Committee, Educational Policy Committee, and Undergraduate Committee reviewed the proposal. Their responses are attached. Senate staff will follow up with you regarding the Representative Assembly meeting once the 2023-24 schedule is available.

Sincerely,

Nancy Postero
Chair
San Diego Divisional Academic Senate

Attachments

c: Christine Alvarado, Acting Dean, Division of Undergraduate Education
   Leslie Carver, Chair, Council of Provosts
   John Hildebrand, Senate Vice Chair
   Ashley Hill, Senate Associate Director
   Lori Hullings, Senate Executive Director
   Alison Sanders, Assistant Vice Chancellor, Academic Affairs
   Elizabeth H. Simmons, Executive Vice Chancellor, Academic Affairs
June 1, 2023

NANCY POSTERO, CHAIR
Academic Senate, San Diego Division

SUBJECT: Climate Change Education for All Workgroup Report

The Committee on Campus Climate Change (CCCC) discussed the workgroup report at its May meeting. As expected, given the considerable overlap in the membership of the CCCC and the committee that wrote the report, we came to a very positive assessment of the work. The consensus was that while it falls short of the original vision of every student taking an interdisciplinary climate course with a focus on social and political aspects, it represents the best compromise we could hope for, given the legitimate concerns about time-to-degree, transfer students, and teaching-freedom.

As we understand it, the next substantive step will be to work out how the courses will be vetted and chosen. We hope very much that the CCCC will play a role, not least because the idea for the Jane Teranes Climate Change Education Requirement (JTCCER) originated with us three years ago.

The evolution of the DEI requirement is most revealing in this respect, and we were unanimous in judging that a Senate committee paneled by ConC – where the DEI process currently stands – is not the right way to go, as the problems of subject-matter expertise and duration of service that have bedeviled the DEI Senate committee are just as pressing in this case. According to Appendix 3 of the report, DEI is now creating a program, and this seems an ideal structure, as there would surely be lots of interest among faculty, and it would create an all-important community of practice around climate education, making it much more likely that it will be truly interdisciplinary.

I later had the opportunity to ask the Chair of the DEI committee for his advice about rolling out this requirement, and he said “make sure that the intention of the initiative, the call for proposals, the rubric for assessment are all aligned,” which strikes me as excellent counsel for whoever guides this initiative to realization.

We discussed the exemption for transfer students, and the consensus was that it makes sense, for all kinds of reasons, including equity in terms of their graduation rates and the administrative burden of articulating our requirements with Community College courses.

Overall, the CCCC endorses the findings of this report, and respectfully requests that the committee be integrated into the process of implementation. Thank you for the opportunity to comment on this important initiative.

Sincerely,

Cathy Gere, Chair
Committee on Campus Climate Change

cc: J. Hildebrand
June 2, 2023

NANCY POSTERO, CHAIR
Academic Senate, San Diego Division

SUBJECT: Climate Change Education for All Workgroup Report

The Committee on Diversity and Equity (CDE) discussed the workgroup’s report at its May meeting. In general, CDE is in enthusiastic support of the recommendations of the report.

Here is a summary of the central issues for CDE:

1. Does the JTCCER proposal have a differential effect for historically marginalized students compared to the majority?

   Of laudatory note is the fact that the proposal does not increase the total number of courses so as not to have an impact on time to degree. It utilized best practices developed by the campus in the creation and implementation of the DEI requirement in the 2010’s to think about qualifying courses for the requirement and staging them to meet demand. Departing from the DEI requirement, transfer students will be exempt from the JTCCER requirement, and a 5-year assessment and review cycle will culminate with a Senate Faculty vote to continue, amend, or sunset the requirement. The proposal contends that “These similarities and differences with the DEI fulfill the mandate of the CCCC to provide the steps required to operationalize the proposed requirement, with special attention toward impacts on historically marginalized student populations.”

   CDE concurs in this assessment, but we wonder whether exempting transfer students from the requirement does them a disservice. Our suggestion is that a list of DEI courses that also meet the JTCCER requirement is developed that would allow transfer students to meet both requirements with a single course, i.e., a course could be designed to satisfy the DEI and climate change education requirement.

2. Does the JTCCER proposal ensure curricula that include attention to historically marginalized populations and communities?

   In terms of the JTCCER curriculum content, attention to historically marginalized populations and communities is built into the proposal in 2 different places. Under 2. Rationale, the proposal reads:

   “The vision of the Committee on Campus Climate Change (CCCC) is to position UC San Diego as a living laboratory for scalable climate solutions. This entails educating a generation of young people who understand not only the scientific and technological dimensions of the climate crisis, but also the social, cultural, economic, and political dimensions, as well as the inequitable burdens faced by vulnerable populations across the world.”

   The final clause, highlighted in italics, adds the issues of differential impact on groupings of people to the goals of providing JTCCER educational engagement to the undergraduates. It will be important for the JTCCER Committee to maintain this part of the criterion as an “and” and not an “or.”

The second curriculum criterion adds an element related to the effects of climate change on historically marginalized populations and communities:

University of California – (Letterhead for interdepartmental use)
2. **Humanistic and Social Dimensions**: Does the course provide knowledge of the historical, cultural, OR social causes of climate change, OR its basis in human values, and provide an understanding of the human costs, consequences, and disproportionate impacts of climate change? Does it offer context for understanding how addressing the climate crisis requires social, political, OR economic transitions and transformations? *Does it engage health, equity, and climate justice issues?*

Here there are 3 questions, the first 2 containing a series of options connected by “or”, and the last, highlighted in italics, adds the relationally connected issues of health, equity, and climate justice. It will be important for the JTCCER Committee to maintain “Does it engage health, equity, and climate justice issues" portion of the criterion as an “and” and not an “or”.

Conceptually, we understand “issues of health, equity, and climate justice” to incorporate the following core concepts:

- **Climate injustice** - occurs where marginalized communities benefit the least from, contribute the most to, and pay the most for the destructive processes contributing to climate change;

- **Environmental racism** - occurs when people of difference face systematic exclusion from environmental decisions that affect their communities leading to unequal protection;

- **Relational inequality** - occurs wherever environmental privilege for some people derives from environmental inequality elsewhere. Privileged consumption practices generally sustain and perpetuate racism, patriarchy, and class exploitation.

The problem is that, under the current staging plan, JTCCER courses may be offered initially that incorporate only 2 of the 4 curriculum criteria, and therefore may not contain substantive inclusion of climate justice issues faced by historically marginalized populations and communities since they are currently listed only under criterion #2, Humanistic and Social Dimensions.

In summary, the CDE is in enthusiastic support of the goals and general form of the recommended JTCCER proposal. It recommends that some manner of including transfer students in the requirement be devised, and that no JTCCER course should be offered without substantive inclusion of the core climate justice concepts listed above.

*Sincerely,*

Shantanu Sinha, Chair
Committee on Diversity and Equity

*cc: J. Hildebrand*
June 2, 2023

PROFESSOR NANCY POSTERO, Chair
Academic Senate, San Diego Division

SUBJECT: Review of the Undergraduate Climate Change for All Workgroup Report

At its May 3, 2023 meeting, the Diversity, Equity, and Inclusion Course Requirement Committee reviewed the workgroup report on the Undergraduate Climate Change for All requirement. Based on this committee’s experience, we offer the following pieces of advice:

In communicating the requirement to students, staff, and faculty, it is useful to include the historical context that precipitated the requirement. This helps to anchor the mission and vision for the requirement and preemptively answers the “why” the requirement is in place.

The current report provides a great deal of flexibility for defining the relationship between a potential Senate committee and any administrative institution that supports the requirement (for example, the relationship between the DEI-CRC and the new DEI Program). We recommend defining this relationship as early as possible to reduce any confusion and clarify roles and responsibilities.

Finally, we recommend course proposal questions specifically reflect the mission and vision of the requirement.

The committee appreciates the opportunity to complete this review.

Sincerely,

Mark Hendrickson, Chair
Diversity, Equity, and Inclusion Course Requirement Committee

cc: J. Hildebrand
L. Hullings
J. Lucius
M. Rabinowitz-Bussell
May 25, 2023

PROFESSOR NANCY POSTERO, Chair
Academic Senate, San Diego Division

SUBJECT: Senate-Administration Workgroup on Undergraduate Climate Change for All

At its May 15, 2023 meeting, the Educational Policy Committee reviewed the Senate-Administration Workgroup on Undergraduate Climate Change for All Report. The Committee offered the following comments:

- While EPC recognizes the importance of this impactful topic, the Committee is concerned about adding another graduation requirement for undergraduate students. Instead of implementing this as a campus graduation requirement, EPC recommends that each college incorporate a course on this topic as part of their general education requirement.
- The Committee recommends that if this requirement is implemented as a graduation requirement for undergraduate students it should include transfer students as well.

Sincerely,

Geoffrey Cook, Chair
Educational Policy Committee

cc: J. Hildebrand
    L. Hullings
    J. Lucius
    S. Mel
May 23, 2023

PROFESSOR NANCY POSTERO, Chair
Academic Senate, San Diego Division

SUBJECT: Review of the Undergraduate Climate Change for All Workgroup Report

At its May 12, 2023 meeting, the Undergraduate Council reviewed the workgroup report on the Undergraduate Climate Change for All requirement. The Council endorses this proposal and provides the following comments:

In reviewing the list of identified courses that currently qualify to meet the requirement, the Council notes that there are very few lower division courses beyond the college writing courses. We recommend identifying and promoting more lower division courses.

The Council agrees that Project-Based Learning as described on page 9 is a pedagogy that should be encouraged. However, the Council recommends removing it as one of the four main categories that a course may qualify to meet this requirement. Instead, courses may meet two of the remaining three categories (Scientific Underpinnings, Humanistic and Social Dimensions, or Climate Solutions) in order to qualify as a Climate Change Education Requirement course.

The Council recommends the administration of the requirement (whether overseen by an Administrative or Senate committee) should ensure committee members include Senate faculty with knowledge of climate change.

The Council appreciates the opportunity to complete this review.

Sincerely,

Mirle Rabinowitz Bussell, Chair
Undergraduate Council

cc: J. Cooke
    J. Hildebrand
    L. Hullings
    J. Lucius
September 29, 2023

John Hildebrand, Chair  
San Diego Divisional Academic Senate

SUBJECT: Proposed Amendments to San Diego Regulation 600 Campuswide Graduation Requirements and Establishment of Senate Bylaw 212. Jane Teranes Climate Change Education Requirement Committee

Dear Chair Hildebrand,

The Committee on Rules and Jurisdiction (CRJ) reviewed the proposal to amend San Diego Regulation 600. Campuswide Graduation Requirements and found the proposed amendments consonant with the code of the Academic Senate. CRJ also reviewed the proposal to establish Senate Bylaw 212. Jane Teranes Climate Change Education Requirement Committee and found the proposed bylaw consonant with the code of the Academic Senate.

Sincerely,

Steve Constable, Chair  
Committee on Rules and Jurisdiction

cc: O. Graeve  
L. Hullings

Attachment
10d Proposal to establish the Department of Otolaryngology

Enclosure includes (each document is bookmarked):

- Department of Otolaryngology Proposal 4-7-23
  - Cover letter
  - Proposal
- Senate Committee Responses
  - Senate Council response 6-27-23
  - Committee on Academic Personnel response 5-5-23
  - Committee on Diversity & Equity response 6-2-23
  - Committee on Research response 5-25-23
  - Educational Policy Committee response 5-25-23
  - Graduate Council response 5-31-23
  - Undergraduate Council 5-23-23
  - Committee on Planning & Budget 5-31-23
January 11, 2023

Nancy Postero Ph.D.
Chair, Academic Senate
UC San Diego Division, MC 0002

Dear Dr. Postero,

Please find the proposal for the transition of the Clinical Department of Otolaryngology to an Academic Department. In the proposal, which is supported by the Executive Vice Chancellor of Health Sciences, the Dean of the School of Medicine, the Hospital Director, a representative sample of Chairs and the home department Chair of Surgery, we have put forth the compelling story of the maturation of the program in the important missions of a department in the School of Medicine and the rationale for this request. This proposal to separate from Surgery is not due to a lack of support, but rather to afford us greater opportunities to enhance our national visibility and reputation, improve resident and faculty recruitment and retention, improve diversity and collaboration, augment our representation at the institutional level and attract greater philanthropic support. Additionally, it will align us with the vast majority of Otolaryngology programs across the country which are separate departments, as well as our all of our sister UC Otolaryngology departments.

The faculty of the Clinical Department of Otolaryngology greatly appreciates your time and consideration in this matter and I look forward to hearing from you.

Thank you,

JEFFREY P. HARRIS, M.D., Ph.D., F.A.C.S.
Department Chair and Distinguished Professor
Otology, Neurotology, Skull Base Surgery
University of California San Diego
T: 619-543-7895 F: 619-543-5521
Formal Proposal for the conversion to an Academic Department of Otolaryngology within the School of Medicine

December 2022
Executive Summary

The Clinical Department of Otolaryngology has developed into an established and robust clinical, educational, and research program. It provides a full range of consultative and therapeutic services for adult and pediatric patients, offers residency and fellowship opportunities, and conducts defining research that is evolving the field. All of this has allowed Otolaryngology to be recognized through major philanthropic gifts. Our transition to an academic department will allow us to continue to grow our clinical and research programs infrastructure, provide further esteem to our residency and fellowship training programs and improve philanthropic position for dedicated endowed chairs and research funds.

UC San Diego Otolaryngology’s trajectory has been on the rise and will continue to see growth and expansion in the upcoming academic year.

Otolaryngology has improved from 61 to 21 in the US News & World Report rankings over the past three years. We have achieved this success by being responsive to demand for our services and to our patients. For example, we continue to increase our faculty profile to meet demand and we recently expanded our geographic location to Rancho Bernardo making it easier for patients to access care.

With the upcoming arrival and open recruitments of new clinical and research faculty, we are committed to attracting and retaining the best faculty with a focus on diversity. Currently we are well above the national norm for gender equity in Otolaryngology with 48% females on our faculty versus 24.5% as well at UCSD in our other surgical subspecialties.

In the coming academic year, we have identified new space for our Center for Voice and Swallowing that will allow us to recruit an additional provider, expand our scope of services to include HNS Fluoroscopy, Manometry, Swallow studies in clinic, and have an expanded multidisciplinary center.

Recently, Otolaryngology has successfully recruited Akihiro Matsuoka, MD, PhD as the director of our expanded Vestibular Disorders program. He specializes in patients with vertigo, dizziness, and tinnitus and leads a basic science laboratory focused on stem cell regeneration of vestibular neurons. This recruitment provides us with the opportunity to become the #1 vestibular referral center in Southern California.

Our new recruitments have been extremely successful in obtaining research funds and growing our research portfolio. Dr. Jacqueline Green received an ACTRI KL2 award, Dr. Theresa Guo received a $200,000 V Foundation award and a Young Investigator Award from the AHNS-AAO/HNS societies and Dr. Carol Yan received a K08 as well as an American Rhinological Society New Investigator Award. Each of these fellowship-trained faculty have received highly competitive grants while maintaining busy and highly specialized surgical practices. Our faculty have been highly productive academically generating 703 publications from the start of 2018 to July 2022, 48% of which have involved medical students, residents or fellows.

Our application for a R25 from the NIH-NIDCD has been funded for the next 5 years. This provides us with the ability to offer 1-2 full years of research to our residents. Their participation in this research intense year(s) has led to many accolades and small research grants to help fund their programs. We hosted our 3rd Annual Southwest Otolaryngology Hands-on Boot Camp at the state-of-the-art- UCSD
Center for the Future of Surgery (CFS) simulation labs where all 10 residency programs in the Southwest participated by sending their junior residents and faculty. We created a new Visiting Medical Student Virtual Subinternship as a response to the COVID pandemic which restricted in-person rotations for visiting students. It consists of two-week blocks designed to provide direct interaction for the student with individual faculty providing lectures, interacting with residents in the operating room, in meeting rooms, and even virtual happy hours via Zoom.

Our adult surgical volume has grown to over 2700 major cases and over 35,000 outpatient clinic visits increasing our outpatient clinic volume by 40% in 2 years from our baseline from FY 18-20. Similarly, the Department has had a positive year-over-year collection rate over the last 6 years and consistently contributes to a positive contribution margin for the health system.

Otolaryngology faculty have a strong commitment to university service. For example, Dr. Friedman serves on the Quality and Public Profile Committee, Strategic Alignment Committee and OR Governance; Dr. Califano is on the MCC Executive Committee, Quality and Public Profile Committee, MCC Structural and Functional Genomics Co-Lead, Chairs and Chiefs Committee, and BOG; Dr. Nguyen serves as the MCC Associate Director for Research Education and Training; Dr. Harris serves on Executive committee AuD doctoral program with SDSU, Perioperative Committee, Surgical Executive Committee; Dr. Gilani serves on the Medical Records and Informatics Committee & Utilization Review Committee; Dr. Coffey is Co-Director of Surgery Core Clerkship (SURG-401), Director of selective & elective rotations in Head & Neck Surgery (SURG-401A and SURG-411) and Subinternship/ Otolaryngology- Head & Neck Surgery (SURG-433); Dr. Magit is the UCSD IRB Director, and Dr. Watson serves on the Health Sciences Board of Governors.

We have long had an excellent research reputation and this year if we were an academic department, we would rank 13th of Otolaryngology departments in research funding according to the Blue Ridge Institute for Medical Research with over $5 million in grant funding. This has resulted in research leadership positions nationally for our faculty. The division currently receives over $10 million in research support from all sources and of the submitted grants, if funded, this would increase to $23,322,453.

We have excelled in the key areas for a successful department: clinical, research, education, financial, university service, with a focus on diversity equity and inclusion. Our successful transition to an academic department will match the status appreciated by our national peers and sister UC campuses.

Transition to a Department:

We seek to become an academic department for the following reasons:

1) Distinct discipline. Otolaryngology is an independent and distinct discipline that is separate from General Surgery. The American Board of Otolaryngology was formed in 1924 which preceded the American Board of Medical Specialties (1934) and became one of its founding members. Otolaryngology has separate national meetings with a separate Accreditation Council for Graduate Medical Education (ACGME) and residency review committees. We have distinct residency and fellowship programs that go through accreditation channels completely separate from General Surgery.

2) Enhanced national visibility and reputation. Academic department status is a natural evolution of our growth and stature. Of the 108 Otolaryngology programs there are only 8 remaining Clinical Departments of Otolaryngology in the nation and UCSD is the only sister UC that is not an
academic department (table in appendix). We exceed the size and depth of many existing UC and national departments. Becoming a clinical department created positive momentum and improved our US New & World Report ranking and becoming an academic department will further improve our reputation score.

3) Faculty retention and recruitment. School of Medicine department status is important for faculty retention and recruitment. Otolaryngology department status enhances engagement, faculty satisfaction and morale. Department status allows us to have our own committees with only Otolaryngology faculty representation that makes direct decisions on how department funds are spent and compensation plans are designed as well as makes decisions for other department policies. Faculty will have the opportunity to be on more institutional committees providing additional leadership opportunities and exposure to institutional decisions. Not being a School of Medicine Department, Otolaryngology residents and faculty compensation discussions, offer letters, and promotion letters come from the leader of the general surgery department with whom they have little interaction with and is more appropriate to come from the Otolaryngology leader.

4) Improved diversity and collaboration. Academic Department status will allow us to build a diverse and collaborative faculty complement. A Director of Research will be recruited to assist with strategic planning of our research program given our continued successful growth. We also currently have 3 open recruitments that will allow us to attract top talent. This also creates a platform for adjunct appointments to faculty in allied departments to continue fostering our commitment to collaborations and multidisciplinary solutions.

5) Improved representation of Otolaryngology at the institutional level. Improved representation of Otolaryngology specific needs at the institutional level remains a critical issue. While the Chair of Otolaryngology of UC San Diego Health has appreciated membership on Health System Committees, Otolaryngology is strong in all three missions and should have an equal voice for education and research. There are instances where governance issues arise that the Otolaryngology perspective is compromised by a governance distinction on the School of Medicine side. While we appreciate the support and partnership of the Department of Surgery, financial operations, policies, faculty promotion, and conduct issues have been complicated by our dual Clinical Department/department status.

In summary, the clinical Department of Otolaryngology seeks the status of academic Department within the UC San Diego School of Medicine. Academic department status is a natural evolution of our growth and independence and will: recognize our distinctiveness as a discipline; enhance faculty, fellow, and resident recruitment, diversity, and retention; align us with other otolaryngology programs the overwhelming majority of which are departments including of the our sister programs in the UC System; enhance our representation for otolaryngology programmatic issues at the institutional level; and facilitate our growth and excellence. A strong Department of Otolaryngology will bring further academic, clinical, and educational recognition and profitability to UC San Diego.
Goals

Overall

1. Creating an environment and culture within the department that supports the academic mission and inspires continued and future leadership on a national level.

2. Key participation, planning and execution of clinical programmatic development within the department Clinical Departments and the institution.

3. Building a diverse and collaborative cross-campus basic, clinical and translational research portfolio that takes advantage of the many opportunities at UCSD on both the Health Sciences Campus and the University.

4. Promote diversity and inclusion within the Department.

5. Fostering clinical care of the highest quality that anticipates the changing landscape in healthcare.

6. Enhancing Otolaryngology resident/fellow clinical and scientific education.

7. Providing the highest quality medical student teaching and mentoring.

8. Creating a network within the local and regional communities for patient outreach and fundraising for the department.

Specific Goals


2. Maintain Top 20 in NIH Funding and recruit a Director of Research with retirement of current director, Allen Ryan, PhD as well as a PhD in hearing science and a PhD in dysphagia

3. Maintain as a Center of Excellence for Acoustic Neuroma nationally and expand our footprint nationally and internationally.

4. Be active partners in the redevelopment of Hillcrest.

5. Actively enhance diversity, equity, and inclusion as part of the tripartite teaching, research, and clinical care missions within each Clinical Department of Otolaryngology.

6. Create an Ear Institute to enhance clinical innovation as well as gather immense talent in hearing research to exist in one place in San Diego.

7. Expand the fellowship program to offer additional fellowships in other robust subspecialties.

8. Create a more formal relationship with Bioengineering for device development that will foster innovation in Otolaryngology

9. Develop the culture in which every patient is potentially enrolled in a clinical trial or research study

10. Advancing patient satisfaction and value-based care
History of Otolaryngology Overview

The Clinical Department was founded in 1972 by Alan Nahum and Marshall Orloff with 2 state FTE’s and the first two faculty members were Dr. Nahum and Dr. Robert Bone. The residency program was initiated with one resident per year as a 5-year program and this was expanded to 2 residents per year shortly after. The Department of Veterans Affairs (VA) was a significant part of the training program from the start and provided funding for one faculty member to be situated at the VA. Dr. Nahum was an authority in the biomedical aspects of trauma to the head and neck particularly focused on trauma resulting from motor vehicle accidents.

Dr. Nahum recruited Dr. Allen Ryan, a neuroscientist, to expand the research focus from head and neck trauma to the basic science of hearing and ear physiology and biology. In 1976, Dr. Davidson was appointed full-time faculty, after graduating from the residency program and a fellowship in Boston. Dr. Jerald Robinson was appointed as a Neurotologist from the House Clinic but stayed only one year before rejoining House Clinic in 1978. At that same time, Dr. Robert Bone left the Clinical Department to become the Chief of Otolaryngology at Scripps Clinic.

In 1979, Jeffrey Harris, MD, PhD was recruited from Harvard to join the faculty and Nigel Woolf, PhD from Johns Hopkins was appointed to expand the hearing research program. During the next several years hearing research matured with multiple NIH grants and an NIH Teacher-Investigator (K08) was awarded to Dr Harris in the area of inner ear immunopathology and viral labyrinthitis models. Dr. Harris then took a leave of absence to do a Neurotology/Skull base fellowship at the University of Zurich. Upon his return, Dr. Harris obtained a VA Merit grant and two NIH R01’s. With this increased grant funding, Dr. Harris recruited Elizabeth Keithley, PhD, a post-doc in inner ear anatomy from Harvard and then Peter Billings, PhD in molecular biology, bringing the full-time research faculty to 4.

In 1986, Dr. Nahum resigned as Clinical Department Chief and Dr. Moossa, Chair of Surgery, initiated a national search for his successor. Dr. Harris was selected and appointed Chief of the Division. Dr. Harris began the task of rebuilding the Clinical Department as he and Dr. Davidson were the only full-time clinical faculty remaining. His first goal was to recruit a fellowship trained Head and Neck Oncologic surgeon. That was accomplished with the recruitment of Dr. K. Thomas Robbins from MD Anderson. Dr. Gayle Woodson a fellowship trained Laryngologist at Baylor also joined faculty. Shortly thereafter, Drs. Harris and Ryan obtained a NIDCD T32 Research Training Grant in Otolaryngology which has been continually funded as one of the longest training grants from the NIDCD in the country and has been supervised over the years by Dr. Allen Ryan, Dr. Harris, Quyen Nguyen, MD, PhD and Rick Friedman, MD, PhD. Soon thereafter, Dr. Anthony Magit was recruited as a pediatric otolaryngologist. Recently Dr. Magit was selected to be the UCSD Human Research Protections Program Medical Director. Also, during 1986 the Clinical Department began an ACGME accredited Neurotology/Skull Base Fellowship program, under Dr. Harris’ direction.

To build the strength of the head and neck program Dr. Lisa Orloff was recruited to be a reconstructive (microvascular free flap) surgeon to assist in the reconstruction of head and neck defects from ablative cancer surgery and to spearhead endocrine surgery of the head and neck. After five years, Dr. Robbins and Dr. Woodson (his wife) left as Dr. Robbins became the Chair at U. of Tennessee, Memphis. With
their departure, Dr. Robert Weisman was recruited from U Penn in head and neck oncology and Dr. Kris Moe for anterior skull base surgery.

Dr. Harris and Otolaryngology were heavily involved in the expansion of UC San Diego Health. Dr. Harris assisted in drafting the bylaws of the newly formed Medical Group and Board of Governors in partnership with Dr. Mike Swenson in Neurology and Dr. Charles Mittman from the Dean’s office. Dr. Harris was elected the first Secretary-Treasurer of the Medical Group and Chair of the Finance Committee. He then was appointed Chair of the Medical Staff Executive Committee. When the Thornton Hospital opened, Otolaryngology was one of the first services to elect to move there and has occupied a suite in the Perlman Clinic since it opened. Furthermore, Dr. Harris was the first Chief of the Medical Staff at the Thornton Hospital and worked with Micki Olin to assist in staffing the facility during a time when several departments resisted the move to La Jolla from Hillcrest. During this time, Dr. Terence Davidson was appointed the Associate Dean for Continuing Medical Education, a role he served until he retired.

Dr. Deborah Watson, Professor of Otolaryngology was recruited in 1999 and was appointed as the Residency Program Director in 2005 when Dr. Harris relinquished this position. Under her outstanding leadership the Clinical Department increased its residency allotment to 3 per year and is fully accredited without any citations.

In 2004, Dr. Harris collaborated with SDSU to establish a joint Audiology Doctoral program with the support of VC Academic Affair, R. Attiyeh. Dr. Erika Zettner was recruited to lead the UCSD program and subsequently added Dr. Meghan Spriggs as faculty. This doctoral degree granting program under the aegis of the Division of Graduate Education is a fully accredited 4-year program with 40 students and is the only program of its kind in the UC system. Because it is embedded in Otolaryngology and the School of Medicine, it has received numerous accolades as the model for audiology training throughout the country.

Compared to an academic department the Clinical Department was at a distinct disadvantage in retaining critical faculty that resulted in the departure of several key section leaders. The Clinical Department persevered and began a recruitment that was focused on not only clinical expertise but with an emphasis on recruiting clinician scientists. Key recruitments included, Dr. Joe Califano from Johns Hopkins, Rick Friedman, MD, PhD (a former resident) from USC, our own home-grown clinician-scientist, Quyen Nguyen, MD, PhD, Dr. Matt Brigger (Section Chief of Pediatric Otolaryngology at Radys) from Harvard and Dr. David Hom from U Cincinnati. The Clinical Department has the distinction of nurturing the research careers of faculty members including the successful applications for Career Development Awards/K08 Mentored training awards to Dr. Allen Ryan, Dr. Jeffrey Harris, Dr. Michael Ruckenstein (fellow), Dr. Gayle Woodson, Dr. Quyen Nguyen, Dr. Joni Doherty, Dr. Carol Yan, and Dr. Greene. In addition, Dr. Quyen Nguyen was awarded the very prestigious Burroughs Wellcome CAMS award. Our recent successes include Dr. Carol Yan and Dr. Jaqueline Greene, recent addition to the faculty have each been awarded a K08, Dr. Ryan Orosco received an ACTRI Clinician scientist award and Dr. Theresa Guo has a K award application pending.

From a faculty of 2 clinicians when Dr. Harris took over, the department is now comprised of 38 faculty. Key to our national reputation our faculty have created several crucial programs. The first is the Acoustic Neuroma Program where the Clinical Department was fortunate to have recruited Dr. Rick Friedman, an
internationally known Neurotologist and acoustic neuroma surgeon. To make this recruitment complete, Dr. Harris worked with Dr. Khalessi to also recruit Dr. Marc Schwartz the most experienced Neurosurgeon in acoustic neuroma surgery in the US, from the House Clinic. Together, the AN program has done over 500 cases in 3 years and is ranked by Vizient, as the number one AN program in volume in the US. We have also developed an auditory brainstem implant program under Dr. Schwartz’s supervision—one of the few programs of its kind. These programs have become a Center of Excellence and a destination spot for patients from across the country and overseas. In addition to these accomplishments, Dr. Friedman has a basic science laboratory and recently was granted his third NIH R01, each related to the molecular biology and genetics of hearing loss.

Another truly remarkable program has been the Head and Neck Cancer program. When Dr. Robert Weisman announced his retirement, Dr. Harris worked with Scott Lippman, Director of the Moores Cancer Center and Dr. Ezra Cohen to identify a national leader and were extremely fortunate to recruit Dr. Joseph Califano. Since his arrival, he has built a comprehensive patient centered program that was recently awarded a $12M donation by the Gleiberman family to support the Head and Neck Cancer program at Moores. In addition, he has been designated for a Vice Chancellor endowed chair by the Matthew and Iris Strauss family. Together with Dr. Silvio Gutman and Ezra Cohen they were awarded one of the “Moon Shot” grants to support head and neck cancer research as well as several other NIH grants. Our head and neck oncology program has 5 full-time academic surgeons: Dr. Ryan Orosco, Dr. Kevin Brumund, Dr. Theresa Guo, Dr. Charles Coffey, and Dr. Califano. The Clinical Department is now in the process of recruiting a PhD to focus on research in speech and language pathology, specifically swallowing dysfunction after cancer survival and a head and neck cancer surgeon to keep up with the volume of referrals.

Dr. Adam DeConde, a fellowship trained Rhinologist has rapidly built a Sinus Center at the Perlman clinic, and now has a colleague Dr. Carol Yan, a clinician-scientist to expand this program. Dr. DeConde rose to the highest wRVU producer in the Department of Surgery after just a few years on faculty. He, with Dr. Thomas Beaumont from Neurosurgery, have expanded the anterior skull base surgery program.

Dr. Philip Weissbrod has established the stand-alone Voice and Swallowing Center at UPC and has become the referral center for these conditions in our region. We recently recruited Dr. Andrew Vahabzedeh, a fellowship trained laryngologist to join him. There are now 5 Speech and Language Pathologists in the Center in cooperation with the Moores Cancer Center.

Over the years the Clinical Department has been home to two peer-reviewed academic journals, Head and Neck Surgery founded by Dr. Nahum, who was the editor-in-Chief until he retired and Audiology and Neurotology an international journal devoted to the science of hearing and balance with Dr. Harris as the Editor-in-Chief. Dr. Harris recently announced he was stepping down from this role after 14 years.

The Clinical Department has a reputation nationally for producing very well-trained young surgeons and is proud that many have chosen academic careers. Most of our graduates have taken advantage of our one or two-year T32 training grant and have worked in labs at UCSD. As a result, many have achieved awards and publications that have made them very competitive for academic positions. These graduates include Dr. Cherie-Ann Nathan; Chair of Otolaryngology at LSU, Dr. Patrick Byrne; Chair at Cleveland Clinic, Dr. Stan Chia; Head of Otolaryngology Washington Medical Center/Georgetown University, Dr. Albert Merati; Chief of Laryngology, Univ of Washington, Dr. Jeremy Richmon; Professor at Harvard, Dr.
Michael Ruckensteins; Vice-Chairman of Otolaryngology, Univ of Penn, Dr. Quinton Gopen; UCLA, Dr. Akihiro Matsuoka; Northwestern, Dr. David Darrow; Eastern Virginia Medical College, Dr. Michael Godin; Medical College of Virginia, Dr. Quyen Nguyen; UCSD, Dr. Harrison Lin; UCI, Dr. Yin Ren; The Ohio State University, Dr. Aria Jafari; U Washington, Dr. Hitomi Sakano; U Rochester and Dr. John Pang; LSU/Shreveport., Dr. Sunny Haft; U of Maryland, Dr. Andrey Finegersh; Stanford, Dr. Bharat Panughanti; U of Alabama, Dr. David Braken; U of Texas Medical Branch. Recently, Dr. Harris turned over the program directorship of the Neurotology fellowship to Dr. Quyen Nguyen. This two-year fully accredited fellowship is highly sought after and currently is approved for two fellows.

Our faculty and graduates have held many national leadership positions and awards. Dr. Ryan and Dr. Harris have both been President of the Association for Research in Otolaryngology and both received the prestigious Shambaugh Prize in Otolaryngology from the Collegium Oto-Rhino-Laryngologicum Amicitiae Sacrum (CORLAS). This society requires significant scientific accomplishments of its members who are voted on by an international jury. Each country has an allotment of positions and in the U.S., there are 26. Currently 4 members are our faculty, the largest number of any university and we have two additional UCSD alumni who are also members (Dr. Cherie Ann Nathan and Dr. Gayle Woodson). In addition, Dr. Harris and Dr. Roberto Cueva, a UCSD clinical Professor and former resident, have been Past Presidents of the American Otological Society, the second oldest medical society in the U.S. Additionally, Dr. Cherie Ann Nathan is the Past President of the American Society of Head and Neck Surgery and Dr. Albert Merati has been and Past President of the American Academy of Otolaryngology/Head and Neck Surgery and Vice President of the Triological Society. Dr. Daniella Carvalho, a UCSD Professor of Otolaryngology, is the upcoming President of the Society of Ear, Nose and Throat in Children (SENTAC).

The Clinical Department has been highly successful in competing for extramural funding. Currently the total grant funding including directs and indirects is $13,422,578. As a department, our current funding would rank us in the top 20 ranking at the 13th spot in US Otolaryngology Departments. Of the submitted grants, if funded, this would increase to $23,322,453.

We have been fortunate to have received $16,814,667 in philanthropic support which we have used for our research and training activities, faculty support, program expansion and start-up packages.

Our faculty have helped create two biopharmaceutical companies; Otonomy, Inc (Nasdaq: OTIC) founded by Drs. Harris, Ryan and Friedman and Alume Biosciencies, founded by Dr. Nguyen. Otonomy is involved in novel drug delivery systems to the inner ear and Alume is focused on using unique fluorescent markers to trace nerves and identify cancer margins, so-called molecular navigation in surgery. Both companies have brought considerable positive visibility to UCSD.

In summary, the Clinical Department of Otolaryngology has developed into a mature and dynamic clinical, educational and research program with accomplished and internationally recognized faculty and alumni. We have a strong reputation for training academic physicians and have stability and a vision for continued growth. The faculty strongly feel that the best way to build on the excellence we have established is by transitioning from a Health Sciences Clinical Department to an Academic Department within the School of Medicine.
UC San Diego Otolaryngology Overview

Highlights
Otolaryngology is comprised of several sub-specialties:

- General Oto/Sleep Medicine
- Facial plastics/facial nerve/trauma recon
- Neurotology/skull base
- Rhinology/skull base
- Head and Neck Surgical Oncology/thyroid and parathyroid
- Laryngology - Voice/Swallowing
- Facial Plastics and Reconstruction
- Pediatrics

Each subspecialty has helped Otolaryngology mature clinically, introduce and develop more modern techniques and innovations, and attracted world class talent.

Figure 1 Dept. of Otolaryngology Organization Chart

General Oto/Sleep Medicine
In this age of sub-specialization native to an academic medical center, we must respond to patient access with faculty who are well trained generalists. These individuals provide an important function, not only to see patients with common illnesses in the head and neck region, but also as sources of teaching for students, audiologists in training and our residents. We have recruited several well-trained Otolaryngologists that are located in Hillcrest, La Jolla and our satellite office in Rancho Bernardo. Dr. Sepi Gilani (Stanford), Dr. David Hom (U Michigan), Dr. Cornelius Jansen (Johns Hopkins), Dr. Jacqueline
Greene (Northwestern), and Dr. Paul Schalch (UC Irvine) all are functioning in part as Generalists despite some having advanced sub-specialty training. Their interests and expertise span the gamut of otolaryngology-head and neck surgery including, sinus disease and rhinology, hearing and balance, voice and swallowing disorders, sleep disturbances and obstructive sleep apnea, facial plastic surgery, salivary gland disorders and head and neck infections.

Sleep apnea surgery is one of the younger fields of sub-specialization within otolaryngology – head and neck surgery. After uvulopalatopharyngoplasty (UPPP) was introduced by Fujita in 1981, sleep surgery has evolved significantly. It now constitutes a field that has earned its seat at the sleep medicine table, along with pulmonology, neurology and dental sleep medicine. Sleep surgery can be the connecting element between specialties by providing adjunctive, alternative and even diagnostic services and procedures (including home sleep testing and dynamic upper airway evaluation during sleep, also known as drug induced sleep endoscopy or DISE). The development of a multi-disciplinary sleep clinic (similar to head and neck oncology or craniofacial clinics) can provide specialized care that is tailored to individual patients over their lifetime.

At UC San Diego Health, we have established a hypoglossal nerve stimulation program in collaboration with the sleep medicine Clinical Department, as well as multiple other bi-directional referral collaborations with dental sleep medicine specialists in the community. Interest in this and other surgical techniques continues to grow amongst referring physicians and patients due to increased awareness of sleep as an integral component of health, more common use of wearable devices (sleep trackers), and the increasing prevalence of obstructive sleep apnea (OSA) in the population. Adding to this interest are the limitations and issues with continuous positive airway pressure (CPAP) therapy, including a recent nationwide recall of equipment by Phillips Respironics, as well as significant backlogs in laboratory-based sleep testing and CPAP titrations due to the COVID-19 pandemic as well as decreasing reimbursement.

Our surgical expertise includes all conventional upper airway, multi-level surgical techniques to address the nasal, pharyngeal and hypopharyngeal airway, including septoplasty, nasal valve repair or stabilization, inferior turbinate and septal swell bodies excision, advanced UPPP techniques such as palato-pharyngeal relocation and stabilization, expansion sphincter pharyngoplasty and tonsillectomy, as well as hypopharyngeal techniques such as hyoid myotomy and suspension, epiglottopexy, base of tongue reduction and lingual tonsillectomy. We have also expanded our office based minimally invasive techniques to address nasal obstruction and snoring in the clinic setting.

Facial plastics/facial nerve/trauma recon

Both Dr. Quyen Nguyen and Dr. Jacqueline Greene have a special interest and expertise in facial nerve paralysis and surgery to both reanimate or provide ancillary methods of improving facial movement and symmetry. This is an important resource for the community since facial nerve paralysis is a major impairment that truly affects quality of life. Our program provides every type of surgical procedures available (primary neurorrhaphy or nerve grafts, gracilis muscle transfer, 7-12 nerve transfer, Cross-face nerve anastomosis, temporalis tendon transfer etc) and this program works closely with our head and neck cancer surgeons, the acoustic neuroma program, and collaborates with the Plastic Surgery Clinical Department in Surgery. Dr. Hom is a specialist in Trauma of the head and neck and participates closely with the the Trauma Clinical Department in Hillcrest. In addition, he is a recognized expert in wound healing and teaches residents and medical student in proper wound management and cosmesis. Dr.
Deborah Watson is one of the most experienced nasal surgeons in southern California. She has expertise in improving nasal function, airflow, and cosmetic rhinoplasty.

Neurotology/skull base
Our neurotology program is currently ranked number one by volume in the nation per Vizient. Our skull base surgery program is unquestionably on par with any in the country and our fellows graduate with the largest experience in the nation. We have also established an auditory brainstem implant program with Dr. Schwartz in Neurosurgery and is one of the very few programs in the nation that offers this to individuals who have no cochlear nerves and are profoundly deaf.

We have completed the recruitment of Dr. Aki Matsuoka to be the Director of a new Vestibular Disorders Center here in collaboration with the Department of Neurosciences and Physical therapy. Dr. Matsuoka has been on the faculty at Northwestern for ten years and specialized in balance disorders, vertigo and tinnitus and his recruitment will address the public need for care with these disorders that severely impact gainful employment, quality of life and survival in the elderly.

We have the most comprehensive diagnostic and surgical expertise for hearing loss and deafness in the region. In 1985, Dr. Harris performed the first cochlear implant for profoundly deaf individuals and this adult and pediatric program has grown tremendously with the recruitment of Dr. Elina Kari and Dr. Quyen Nguyen at UCSD and Dr. Carvalho at Rady’s. We provide the full spectrum of microsurgery for hearing reconstruction, implanted bone conduction hearing devices and surgery for vertigo and Meniere’s disease. Our program saw 11,850 Otology and audiology visits in 2022. Additionally, with the gentrification of the San Diego’s southern county we will look to hire an assistant professor level otologist/neurotologist to meet the patient care needs at our Hillcrest center in the 2024 academic year to also anticipate the opening of the new facility.

Rhinology/skull base
Our two fellowship trained surgeons are Dr. Adam DeConde (UCLA) and Dr. Carol Yan (Penn) who direct care in the Sinus Center. Their research and clinical practice are focused on disorders of the nose, paranasal sinuses and olfaction. Each are highly trained to manage the complexities of sinus pathology that ranges from structural deformities that affect the nasal airway, allergic and infectious conditions and neoplastic diseases. Additionally, they work collaboratively with our neurosurgery department in managing benign and malignant tumors of the anterior skull base including pituitary adenomas, esthesioneuroblastomas, chordomas, and cancers. We have one nurse practitioner who works closely with our faculty to provide better access and follow-up care.

Head and Neck Surgical Oncology/thyroid and parathyroid
The head and neck surgical oncology section currently consists of five fellowship trained head and neck surgical oncologists and is associated and supported by the Gleberman Head and Neck Cancer Center at UC San Diego. UCSD Head and Neck Surgical Oncologists include Kevin Brumund (VA and UCSDH), Joseph Califano, Charles Coffey (VA and UCSDH), Theresa Guo, and Ryan Orosco. UCSD Head and Neck Surgical Oncology provides a unique tertiary care surgical service in San Diego County including:

- Robotic, endoscopic, minimally invasive surgery
- Complex reconstructive services
- Multidisciplinary skull base
- Dedicated facial rehabilitation
The Gleiberman Center is matrixed across academic departments and the health system. It started in 2015, now includes over 90 members, including full multidisciplinary clinical operations, 20 active head and neck clinical trials, a pilot research award program to engage across UCSD Health Sciences, and educational programs and conferences.

The Gleiberman center is led by Dr. Joseph Califano, the senior head and neck surgeon and Director, and also includes three faculty medical oncologists, five radiation oncologists as well as staff to support these physicians. The Gleiberman Center includes clinical support from three dedicated speech language pathologists, as well as registered dieticians, oral maxillofacial prosthodontics, physical therapy, occupational/lymphedema therapy, social work, a dedicated patient navigator, survivorship nurse practitioner as well as other supportive services. In addition, the center has as administrative leader and data analyst. The GHNCC is currently supported with over $15M in direct support, including over $5M in NIH funding with an additional commitment of over $40M in future committed funds. In 2021, GHNCC members published 118 peer reviewed publications, including 23 high impact publications with impact factor >10.

Head and neck surgical oncology volumes have increased progressively over the past six years, with over 5000 outpatient visits annually, double the volume of FY16.

Laryngology - Voice/Swallowing

The Laryngology Service at UC San Diego has a long history of innovative work and is nationally known for excellence in clinical care for more than 30 years. Currently, the program is housed at the UC San Diego Center for Voice and Swallowing (CVS). Established in 2017, the center is the only one of its kind in the San Diego region. Clinically, the group is comprised of two fellowship trained laryngologists, 5 speech and language pathologists, and a complement of nursing and support staff. The center is predicated on the idea that delivery of multidisciplinary care can improve patient experience, patient outcome, and provider satisfaction.

The Laryngology Service and CVS focus on medical, surgical, and behavioral care for disorders that affect voice, swallowing, and breathing. This includes endoscopic and open management of vocal fold paralysis, laryngeal cancer, benign vocal fold lesions, tracheal stenosis, Zenker’s diverticuli and cricopharyngeal hypertrophy, and gender affirmation surgery. The team also provides a variety of in-office procedures unique to the region including vocal fold injection medialization, laser ablations, laryngeal botox injections, and diagnostic laryngeal electromyography. Additionally, in 2019, the team performed the first ever direct hormonal injections into the vocal folds for voice masculinization.

Our speech pathology team has a national reputation in a variety of areas including professional voice care, cancer care, dysphagia, and management of trachea-esophageal punctures and alyryngeal speech. The team is also actively involved in developing a trans care pathway to provide gender affirming therapies.

The group is well integrated into the environment of multidisciplinary care at UCSD. The team provides integral components of care to other service lines including head and neck surgery, skull base surgery, gastroenterology, pulmonary medicine, allergy, cardiothoracic surgery, minimally invasive surgery, and spine surgery.

With all of the above activities, the Laryngology Service remains one of the busiest service lines in La Jolla. The group accounted for more than 7000 visits last year and totaled more than 500 surgical procedures. From FY19 to FY21 surgical and clinical volume increased 30% and 35% respectively. Academically, the teams work is visible at a national level through publication and presentations at
national meetings. With the growth and continued diversification of the service line, the Laryngology Service at UCSD is poised to have a measurable and lasting impact on the greater laryngology community.

The research portfolio of the team continues to expand. There are a number of funded projects that fall into three major areas of research, sensory technology, surgical robotics, and improving patient outcomes and experiences.

Facial Plastics and Reconstruction
We are fortunate to have three subspecialty trained facial plastic and reconstructive surgeons on our faculty.

Dr. Deborah Watson who specializes in nasal airway and cosmetic surgery of the nose is highly regarded nationally and sits on the board of AFPRS and a senior examiner of the American Board of Otolaryngology. Her research interest is in cartilage engineering that has been in collaboration with the department of Orthopedics.

Dr. David Hom is a nationally recognized facial trauma expert and has a research interest in wound healing and scar. He has written a textbook on this subject as well. He works extensively with our trauma surgeons and the Emergency Medicine department to manage acute care of seriously injured patients with head and neck trauma.

Dr. Jacqueline Green did her fellowship at Harvard with Dr. Tessa Hadlock and recently joined the faculty with the specific goal of establishing a facial nerve reinnervation program. She is interested in all aspects of facial rehabilitation through surgery, physical therapy and research.

Pediatrics
The UCSD Clinical Department of Pediatric Otolaryngology consists of seven fellowship trained pediatric otolaryngologist who practice at Rady Children’s Hospital San Diego and UCSD Hospitals in La Jolla and Hillcrest. The faculty are also the exclusive providers for pediatric otolaryngology services for the neonatal intensive care units for the Scripps and Sharp Healthcare systems, with the primary Sharp maternity hospital having the largest number of births per year for all hospitals in California.

The complex airway service is led by Clinical Department Chief Dr. Matt Brigger. The aerodigestive service provides care for the most medically complex children and is a treatment destination for patients from the United States Southwest region and Pacific Rim, including Hawaii, Saipan and Guam. Approximately 300 endoscopic and 20 open airway surgeries are performed yearly at RCHSD. Tracheal reconstructions are routinely done in collaboration with the Rady cardiothoracic surgeons. Resources utilized by Rady’s airway program include having access to one of the nation’s most advanced cardiac interventional radiology suite, supporting hybrid procedures involving Cardiology and Cardiothoracic Surgery. An expansive innovative biomedical service with 3-D printing capability supports complex clinical planning and reconstructive surgeries.

Dr. Daniela Carvalho is the Director of the Rady Hearing Program. Dr. Carvalho is known internationally for expertise in cochlear implantation, placing bone anchored hearing aids and performing endoscopic otologic surgery. In addition to performing cochlear implants, Dr. Carvalho is a leader in developing techniques and instrumentation for endoscopic ear surgery. Dr. Carvalho serves as a principal investigator for clinical trials involving innovative implantable devices and has published in several areas of interest, including language acquisition following cochlear implantation. In addition to having a clinical practice including the entire spectrum of pediatric otologic disorders, Dr. Carvalho is the Director of Rady
Surgical Services and is currently the President of the Society for Ear, Nose and Throat Advances in Children.

Dr. Wen Jiang has built one of the largest pediatric endocrine surgical practices in California. Dr. Jiang has published multiple articles related to pediatric thyroid disease and developed a strong relationship with the Clinical Department of Pediatric Endocrinology, as well as becoming one of the few pediatric otolaryngologists who is a member of the American Thyroid Association.

Dr. Nation has developed a referral practice for complex anterior skull base surgery in collaboration with Dr. Michael Levy, the Director of the Rady/UCSD Pediatric Neurosurgery Program. Dr. Nation performs extensive endoscopic procedures for removing benign and malignant tumors, including angiofibromas, as well as providing surgical access for the resection of intracranial tumors.

Dr. Shelby Leuin has expertise in nasal reconstruction, performing closed and open reconstructive surgery for functional nasal deformities. Dr. Leuin participates in numerous clinical research studies, including a longitudinal study of nasal function and quality of life following nasal reconstruction.

Dr. Javan Nation is the otolaryngology lead for the multi-disciplinary Complex Sleep Program, which is a multi-disciplinary program involving otolaryngology, plastic surgery, nutrition and pulmonary medicine. Dr. Nation’s practice involves complex surgical treatment for obstructive sleep disorders as well as advanced diagnostic techniques involving sleep endoscopy.

Pediatric otolaryngology is a key component of the Rady Vascular Lesions Clinic (VLC). This clinic is a regional referral site for complex vascular malformation with participation from pediatric dermatology, plastic surgery, interventional and diagnostic radiology, and pathology. VLC clinicians provide the full range of therapeutic interventions for vascular malformations, as well as conducting clinical trials. Under the direction of Dr. Anthony Magit, clinical trials directed towards management of lymphatic malformation have been completed with a current multi-institutional trial in the planning stages.

The Pediatric Otolaryngology Fellowship led by Dr. Shelby Leuin is a one-year, ACGME approved postgraduate training program providing training in advanced pediatric otolaryngology, in addition to providing opportunities for acquiring skills essential for conducting clinical research and becoming an accomplished educator. Graduates of the fellowship include the Director of Pediatric Otolaryngology at UCLA, in addition to physicians who have faculty positions at UCSF, Geisenger School of Medicine, Texas Children’s Hospital, Dalhousie University, University of Memphis, Albert Einstein School of Medicine, Washington University, Medical College of Virginia and the University of Southern California.
**Otolaryngology Team**

The Otolaryngology team currently includes 28 surgical faculty, 2 fellows, 16 residents, 5 Advanced Practice Practitioners (APPs), 9 Researchers, 8 Audiologists, 5 SLPs, 30 clinical staff, and 3 open recruitments.

We have three FTEs allocated to Otolaryngology, one of which is borrowed from Surgery. State full FTEs are currently held by Dr. Harris and Dr. Califano. The other remaining FTE is split, 0.5 FTE is held by Dr. Friedman and 0.5 FTE is held by Dr. Nguyen.

Our physicians cover UC San Diego Health hospitals in Hillcrest and La Jolla, Veterans Affairs San Diego Healthcare System, Rady Children’s Hospital and are actively involved in extending the reach of UC San Diego Health through the Clinical Integration Network. US News & World Report ranks the Otolaryngology program at UC San Diego Health among the top 21 in the nation.

Our Faculty Series include:
- Clinical X = 5
- HS Clinical = 12
- In-Residence = 4
- MSP = 4
- RTAD = 1
- Adjunct = 3
- Project Scientist = 2
- Research Scientist = 1
- Postdoctoral Scholar = 2

*Note: please find listing of all faculty on the following page. Short biographies on each faculty member, APPs, Audiologists, and SLPs can be found in the Appendix.*
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**Administrative Organization**
Administratively, the academic Department of Otolaryngology – Head & Neck Surgery will be under Hillary Gallagher, Assistant Department Business Officer (Professional School) and Ellington Jones, Chief Administrator Officer of orthopaedics, urology, otolaryngology, obstetrics-gynecology, reproductive science, and surgical specialties (Health System and Physician Group). Ms. Gallagher and Mr. Jones are fairly new recruitments to the department and have been jointly managing the professional and clinical administrative functions of Otolaryngology Head and Neck Surgery since 2022.

Otolaryngology’s administrative core has expanded to efficiently support substantial growth. An administrative officer has recently been recruited to assist with all academic department operations. Otolaryngology is beginning its separation of business functions from the Department of Surgery. Otolaryngology has an administrative assistant to support the administrative load for faculty. As Otolaryngology continues to evolve as a Department it will consider opportunities of sharing resources where it operationally and financially makes sense and favors both Departments and additional recruitments when necessary.

Otolaryngology recognizes the importance of keeping a lean administrative core and will strive to share business expertise with HR/Faculty affairs administration with resources in the Department of Otolaryngology as appropriate. Otolaryngology relies on central shared services for the functions of grant/research management (RSC), human resources/payroll (HHR), faculty administration & academic affairs (ARC).

*Note: please find current administrative organizational chart on the following page. Short biographies on Administrative Leadership can be found in the Appendix.*

Figure 1 - Administrative Organizational Chart
Clinical Overview

The clinical Department of Otolaryngology’s clinical activity has steadily grown over time and is on a strong trajectory of clinical and financial expansion. Our adult surgical volume has grown to over 2700 major cases and over 35,000 outpatient clinic visits, increasing our outpatient clinic volume by 40% in 2 years from our baseline of approximately 25,000 visits from FY 18-20.

The clinical Department of Otolaryngology is foundational in several distinguished programs for UC San Diego Health:

- #1 Acoustic Neuroma Program in Volume Nationally and Center of Excellence
- Gleiberman Center: Head Neck and Surgery Program
- Development of a Voice and Swallowing Center
- #1 Cochlear implant program in Southern California
- Serves as a Liaison to the Trauma Center
The Clinical Department has several clinical sites in San Diego, including Hillcrest, Perlman, Moores Cancer Center, UPC (Voice and Swallowing Center), and VTC in Rancho Bernardo. We are also exploring establishing sites in South Bay and Encinitas. We also provide Otolaryngology services at the VA Medical Center and Rady Children’s Hospital.

UC San Diego Health has recently made some large investments in the Department’s growth. The Initiative Management Committee recently approved the business plan for the Center of Voice and Swallowing. A new space has been identified for the Voice and Swallowing Center and planning for this space will occur over fiscal year 23 along with approvals for incremental faculty and staff. We have most recently recruited Dr. Matsuoka who will start in January 2023 and specializes in vertigo, dizziness and tinnitus to build our Vestibular Program disorders. The development of this program has the potential to make us the #1 referral center for these disorders in Southern California.
Otolaryngology has a longstanding national reputation as a research powerhouse. From our earliest beginnings, basic science research in the neuroscience of hearing has been extremely strong. As outlined in our history section with the recruitment of Allen Ryan, PhD, Jeffrey Harris, MD, PhD, Nigel Woolf, ScD and Dr. Elizabeth Keithley we have had continuous funding from the NIH. With recent recruitments of Dr. Califano, Dr. Friedman, Dr. Nguyen, Dr. Guo, Dr. Kurabi, Dr. Yan, Dr. Orosco and Dr. Greene extramural funding continues to be sustained and grow.

If we were an academic department Otolaryngology would rank #13 with research funding of $5,203,052. Of the submitted grants, if funded, this would increase to $23,322,453.

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Outlined below is an overview of Otolaryngology’s research portfolio by each sub-specialty.

**Otology**

**Dr. Harris:**

Dr. Harris began his academic career here with a NIH-NINCDS Teacher Investigator Development Award (equivalent to today’s K08). He then built a research laboratory focusing on inner ear inflammation and
immunological mechanisms that affect hearing and balance. After a number of VA Merit and NIH grants on inner ear Immunology, and Immune mechanisms in CMV he is well regarded as one of the pioneers in how the inner ear responds to antigen and pathogens. He has also been on study sections at the NIH-NIDCD, the president of the Association for Research in Otolaryngology and the prior Co-PI on our T32 training grant. His interest has been in inner ear drug delivery which has led to the founding of Otonomy, Inc a biopharmaceutical company here in San Diego. His recent interest is finding a causation in Meniere’s disease.

Current project:
Manitou Fund: Whole-genome sequencing of over 500 patients with Menieres disease. This $1.3MM grant is being done in collaboration with Dr. Friedman, Dr. Kathleen Fisch (Center for Computational Biology & Bioinformatics) and Kristen Jepsen (Institute of Genomic Medicine). The goal will be to find targets of treatment and development of a diagnostic test for Meniere’s disease.

Co-Investigator on VA Merit Grant Basic Mechanisms in hearing loss of cochlear origin, Allen Ryan (PI)

Dr. Ryan:
Dr. Ryan has been our Director of Research and throughout his career, he has gained an international reputation, been in advisory and study section positions at NIH-NIDCD, the Association for Research in Otolaryngology, the CORLAS where he is on the International Jury, and is a frequent invited speaker across the globe. During his time on faculty, he has been a mentor to numerous graduate and medical students as well as visiting scholars and our own residents. He has recently chosen to become an Emeritus yet still has the following active grants.
5R01DC012595-09: Innovative therapy for diseases of the middle ear.
5I01BX001205-10: Basic mechanisms on hearing loss of cochlear origin.
5I01RX002744-04: Genome-wide association study of tinnitus in the Million Veterans Program with emphasis on traumatic brain injury.
5R01DC000129-41: Middle ear response in otitis media.
VA Merit Award: Basic Mechanisms in hearing loss of cochlear origin (PI)

Dr. Friedman:
Dr. Friedman has had a career long interest in genes responsible for age-related hearing loss, noise-related hearing loss, Meniere’s disease, and the aging vestibular system. He is also the Co-founder of Otonomy, Inc. He assumed the PI for our T32 Training grant when Dr. Ryan retired. His current funding includes:
1R01DC018566-02: The genetic basis for age-related hearing loss in outbred mice.
5R01DC020052-02: The genetics of functional decline in the aging vestibular system; a was and gene expression analysis in aging mice and humans.
1R25DC020173-01: Otolaryngology training in immunology, virology, and molecular biology.
1R01DC019426-01A1: Mechanisms of protection from noise-induced hearing loss.
Manitou Foundation: Whole-genome sequence of over 500 patients with Menieres disease.

Dr. Kari:
Dr. Kari is interested in congenital deafness and abnormal development of the cochlear nerve resulting in sensorineural hearing loss. She is an expert in cochlear implants in children and adults and has ongoing clinical outcomes studies in these areas. Additionally, she is involved in an industry funded clinical trial. Her current funding includes:
A phase 2B randomized double blind placebo-controlled study to evaluate the efficacy of Ebsalen for Menieres disease. Sound Pharma, Inc.

Dr. Nguyen:
Dr. Nguyen has been at the forefront of utilizing fluorescent markers in human surgery to identify tumor margins, nerves and nerve regeneration. She had several early investigator awards including a Burroughs Wellcome Award, Presidential Early Career Award for Scientists and Engineers (PECASE, April 2014), and several NIH awards. Her technology developed in collaboration with Roger Tsien was licensed by Avelas Biosciences, INC and received Breakthrough Designation from the FDA in late 2020. She was the founder of Alume Biosciences, INC (Alume) in 2017. She currently has applications for two R01 grants through NIH. Other funding includes:
Dose ranging study of the efficacy and safety of miconazole oil used for 7 or 14 days. QST Consultations, Inc.

Oncology
Dr. Califano:
Dr. Califano has a primary interest in head and neck squamous cell carcinoma therapy and molecular cancer detection. He has led translational research and multi-institutional trials investigating novel therapeutic and immunologic agents as well as clinical trials defining novel strategies for cancer detection. He is Co-Director of the Gleberman Cancer Center at Moores and has an independent laboratory with a focus on integrative network-based analysis of malignancy to define novel carcinogenic mechanisms and corresponding therapeutic strategies. His current funding is as follows:
5R01CA243393-04: Plasma and saliva biomarkers of disease status in HPV related oropharynx cancer.
NIH/NCI R01 CA243393-02: Plasma and Saliva Biomarkers of Disease Status in HPV-Related Oropharynx Cancer
NIH/NCI 5 R01 CA226909-03: Therapeutic Targeting of Macrophage PI3Kgamma in HNSCC
NIH U01 DE028227-01: Stimulating Neo-Antigen Specific T Cell Responses in Head and Neck Cancers
NIH Clinical Center 1 R01 DE028563-0: Role of B-cell Mediated Anti-tumor Antibodies in Responses to Radiation and Immunotherapy in HNSCC
NIH/NCI 5 P30 CA023100-34S4: Smoking Cessation Program for the UCSD Moores Cancer Center
NIH/NCI 5 P30 CA023100: Structural and Functional Genomics Program: Specialized Cancer Center Support Grant, UCSD Moores Cancer Center
NIH/NCI 1 R01 CA247551-01: Co-targeting the HER3 Oncogenic Signaling Circuitry and PD-1 As a Novel Multimodal Precision Immunotherapy for HNSCC
5R01CA204264-05: A novel point of care test for oral and oropharyngeal cancer risk.
5P30CA023100-36: Structural and functional genomics.

Dr. Guo:
Dr. Guo is a recently recruited clinician-scientist who came here after a fellowship at MD Anderson. She is interested in neoantigens in head and neck squamous cell carcinoma for the purpose of developing immunity and vaccines against HNSCC. Her current funding is as follows:
AAO-HNSF Young Investigator Combined Award: Establishing immunogenicity of splice variant derived neoantigens in HNSCC
ACTRI KL2: Identification of splice variant derived neo-antigens in head and neck squamous cell carcinoma as targets for tumor vaccine therapy
V Foundation: Defining the relationship between aberrant splicing burden and anti-tumoral immunity in head and neck squamous cell carcinoma

Dr. Orosco:
Dr. Orosco is interested in methods of translational research that aid in head and neck surgery. These include telerobotic surgery done in collaboration with Bio Engineering and the use of fluorescent markers in tumor surgery. His current funding is as follows:
ACTRI career development award
ALM-488 for intraoperative visualization of nerves in head and neck surgery. Alume Biosciences, Inc.

Dr. Coffey:
Dr. Coffey is an MD Anderson trained head and neck surgical oncologist and is based at the VA Hospital and the Moores Cancer Center. He has a grant through the VA: A novel point of care test for oral and oropharyngeal cancer risk. Veterans Medical Research Foundation, San Diego.

Laryngology
Dr. Weissbrod:
Dr. Weissbrod is the Director of the Voice and Swallowing Center and is involved in a number of device related projects in collaboration with Dept of Bioengineering. These studies focus on 3 main areas of research: sensor technology; advances in sensor materials and electronic signal processing for assessing Neuromuscular voice and swallow capacity of tongue, throat and laryngeal muscles, assessment of vocal fold paralysis in children and development of a novel pacifier that can predict breastfeeding outcomes, surgical robotics; focuses on new ways to integrate flexible and concentric tube robotics into endoscopic surgical procedures to enhance access to lesions and expand surgical indications, and improving patient outcomes and experiences. His funding is as follows:
NIH, NIBIB (R21 EB030692): Robotically controlled intralumenal instruments for flexible endoscopic intervention.
Seymour Cohen Grant: Validation of high-density surface electromyography of the larynx: concurrent hook-wire and high-density surface electromyography.

Dr. Andrew Vahabzedeh:
Dr. Vahabzadeh is a laryngologist with an interest in devices for the improvement of head and neck surgery. He has been developing a novel device to reduce traction from a tracheotomy tube that can cause erosive damage to the anterior wall of the trachea and result in bleeding or tracheal stenosis. He has also been developing a device to allow intubation without exposure of staff to potential airborne pathogens such as Covid-19. Development of novel injectable biomaterials to promote muscle regeneration in head and neck cancer care with a specific focus on tongue muscle and novel therapeutics for treatment of vocal fold scars.

Rhinology
Dr. Yan:
Dr. Yan is a clinician-scientist who is investigating the inflammatory profile of patients with rhinosinusitis who develop anosmia. She has been at the forefront of attempting to elucidate the cause of anosmia in Covid-19 patients: Her funding is as follows:
1K08DC019956-01: Elucidating olfactory epithelial anti-viral responses in persistent post-viral olfactory dysfunction.
Dr. DeConde:
Dr. DeConde is the director of our rhinology section and is involved in the development of novel surgical
techniques in anterior skull base surgery in conjunction with Dr. Tom Beaumont in Neurosurgery. He has
an industry grant as follows:
A randomized double-blind parallel group Ph3 study to assess the clinical and safety of Xance. PPD Inc.

Facial Plastics and Reconstructive Surgery
Dr. Jacqueline Greene:
Dr. Jacqueline Greene is a recently recruited clinician-scientist with research interests that include
biomaterials and bioelectronics, tissue engineering, and translational research involving facial nerve
regeneration. She has done a 2-year fellowship in this subspecialty area at Harvard (Mass Eye and Ear)
and has a background in engineering from her undergraduate degree from MIT. She recently was awarded an ACTRI KI2 award to support her career development.

Dr. Deborah Watson:
Dr. Deborah Watson has had a long interest in cartilage tissue engineering for the express purpose of
developing autologous tissue for nasal airway and cosmetic reconstruction. This research has been
accomplished in collaboration with the Department of Orthopedics. She has mentored many residents
and medical students in her laboratory and these individuals have received several national research
awards.

Sleep Medicine:
Dr. Paul Schalch-Lepe:
Dr. Schalch-Lepe is doing clinical outcomes research on minimally invasive, clinic based nasal airway
procedures utilizing radiofrequency and laser devices, impact of nasal surgery in CPAP adherence and
compliance, and assessment of combined dynamic upper airway evaluation (drug induced sleep
endoscopy, DISE) during nasal (septoplasty, rhinoplasty) and functional endoscopic sinus surgery (FESS).
He is investigating through clinical trials the emerging role of cranial nerve stimulation for treatment of
patients with moderate to severe OSA patients that are CPAP intolerant (Inspire) as well as the stimulation
of other cranial nerves and nerve branches including ansa cervicalis. Dr. Schalch is a collaborator with the
Pulmonary group headed by Dr. Atul Malholtra.
Space Allocation and Physical Footprint

Primary administrative offices for Otolaryngology’s faculty and staff are in the East Campus Office Building near Jacobs Medical Center. Educational facilities include Microsurgical Laboratory, designed by Otolaryngology faculty at the Center for the Future Surgery as well as the other facilities offered in the Center.

Otolaryngology clinics are located in Rancho Bernardo (VTC), Hillcrest (Medical Office North), La Jolla (UPC and PMC), the Koman Family Outpatient Pavilion, The Moores Cancer Center with new clinic space approved for the Center for Voice and Swallowing and a carve out for Otolaryngology in the new Hillcrest Outpatient Pavilion. In addition to Jacobs Medical Center and Hillcrest, Otolaryngology service needs are provided at the La Jolla VA Medical Center, and Rady Children’s Hospital.

Otolaryngology has research space in ACTRI, Leichtag, Biomedical Science Building, School of Medicine, and Moores Cancer Center.
Education

The UCSD Otolaryngology-Head and Neck Surgery Residency is an accredited ACGME training program which involves 5 years of clinical training and an additional 1 to 2 years of research time. Our program was approved for a permanent increase of 15 residents (3-3-3-3-3) during the April 2020 RRC meeting and has consistently received commendations from the ACGME Resident Review Committee on our Annual Program Reports. As of this date we have not been able to secure funding for the entire resident complement increase so we are taking a third resident every other year.

The training experience for our resident is very robust and covers all aspects of our specialty: neurotology and skull base surgery, head and neck cancer, facial plastic and reconstructive surgery, laryngology, rhinology, sleep surgery, and pediatric otolaryngology. The rotation blocks occur at several facilities: UCSD JMC, UCSD Hillcrest, VA Medical Center, Moores Cancer Center, Perlman Clinics, Voice Center, Radys Childrens Hospital, and Kaiser Permanente. Enabling the rotation through these different hospital systems enhances the resident’s experience, improves their practice management within each facility, and broadens their training with the various patient populations.

Due to the high volume of clinical and surgical experiences available in our program, our graduating residents consistently have above national average numbers in terms of the ACGME Key Indicator Surgical Cases and above national average in total number of surgical cases, even during the last two pandemic years. We have also been successful with a 100% Board Pass rate for over 15 years.

Educational conferences

The didactic curriculum is very extensive, involving residents, fellows, faculty, medical students, nursing, colleagues from collaborative services, and community surgeons. The various weekly conferences include:

- Otolaryngology Grand Rounds
- Morbidity and Mortality Conference
- Chairman’s Conference (led by Dr. Harris; case review, mock oral board exam format)
- Professor’s Conference (led by individual faculty; case presentations, work-up and management)
- Facial Plastic and Reconstructive Surgery Conference (led by Dr. Watson; case preparation, mock oral board exam format)
- Neurotology Conference
- Head & Neck Surgical Oncology Literature review (led by Dr. Califano with resident team)
- Resident Core Curriculum Lecture series (lecture series with invited local and national speakers, covering all sub-specialty areas)
- Head & Neck Tumor Board/Treatment Planning Conference
- Resident Study Session (led by the chief residents; cyclical review of topics based on AAO-HNS FLEX Learning Modalities, group preparation for annual in-service exam)
- Journal Club (focused on resident and faculty discussion over case presentations and journal articles)

Hands-on Lab Experience

The educational experience for our residents has been enhanced with our access to the state-of-the-art UCSD Center for the Future of Surgery (CFS) simulation labs, that were completed in 2019. These labs have given our program an opportunity to broaden our hands-on resident educational curriculum. Our
Residents have greater access to the simulation labs, cadaver dissections, and robotic training. In addition, the microsurgical lab, equipped with 20+ binocular microscope stations, provides teaching equipment, space, and instrumentation to enable all our residents to have an unparalleled temporal bone dissection experience.

At UCSD, our Department has hosted a Southern California Regional Resident Bootcamp every August since 2020 as an in-person, full day activity. Residents and faculty from several other regional otolaryngology residencies join us at our CFS facility to learn hands-on principles for effective responses to otolaryngology emergencies. CFS is an ideal venue to provide space, social-distancing, and safe practice of diagnostic, technical, and managerial skills in a simulated environment. We hosted our third Bootcamp in August 2022 with resident and faculty representation from ten residencies in the Southern California region, Nevada, and Arizona. The diversity of the visiting residents included 11% URM; 3% Black and 8% Hispanic.

Clinical Training Experience

PGY-1 Year
Clinical training for otolaryngology-head and neck surgery residents begins with six months of elective non-ENT rotations at UCSD under the supervision of the Otolaryngology-HNS Program Director. All training is completed at JMC, Hillcrest, and the VA. This clinical curriculum fulfills the otolaryngology-head and neck surgery RRC requirements of six months encompassing plastic surgery, emergency medicine, intensive care unit, anesthesia, neurosurgery, and elective in neuroradiology-pathology. The remaining months are dedicated to otolaryngology-head and neck surgery with one month allotted for vacation.

PGY-2 Year
An intensive faculty-resident tutorial is arranged during August of each year to establish a strong practical foundation from the outset. This is our Regional Southwest Otolaryngology Emergencies Bootcamp hosted by our program. This course enables the resident to grasp important concepts in the management of the entire spectrum of otologic and head and neck disorders with a special emphasis of managing emergencies.

The residents receive an expanded clinical experience this year in the diagnosis and treatment of head and neck and general otolaryngology conditions as they rotate through UCSD JMC and Hillcrest, the VA Hospital, and at Rady’s. Chronic and acute care, as well as outpatient diagnostics and treatment are emphasized on all rotations.

PGY-3 Year
Building on the solid general fund of basic science and clinical knowledge that was acquired in the previous PGY-2 year, principles of diagnosis and treatment are taught progressively, and continuity of care is emphasized at the same variety of hospital locations. Delegation of authority and responsibility for patient care will increase as the resident demonstrates increased competence in the delivery of safe, effective, and compassionate care. During this level, the resident transitions to a more senior role and his or her responsibilities increase accordingly. Outpatient management and medical decision making in the staff clinic becomes one of the main responsibilities of the senior resident. This year provides additional experience in the management of patients, intensive operative experience, and the development of increased sophistication in surgical techniques. They will have clinical exposure and surgical opportunities to develop their skills and techniques by managing more complicated cases, and performing progressively more advanced procedures, appropriate for their technical development. The
residents will also continue to strengthen their teaching skills through close interactions with their junior residents and medical students.

PGY-4 Year
The resident should begin planning their research during the second half of the PGY-3 year after meeting with the Program Director, and then the appropriate full-time faculty member in the Clinical Department. The resident is expected to develop a research proposal with the faculty mentor and receive approval. The resident is encouraged to apply for grant funding and participate in the ARO or the Research Forum. This protected one- or two-year period enables the resident to develop investigative skills and pursue course work offered at the university in research methodology and the appropriate basic sciences.

PGY-5 Year
By now, the resident has over two solid years of Oto-HNS care experience and will be allowed to progress in their level of responsibility, as well as have a larger teaching role for the junior residents and medical students. In the outpatient clinics, they are allowed significant supervised independence in formulating diagnostic workups and treatment plans. As knowledge and experience progress, the resident has a leadership role in seeing patients and emergency room consultations. In the OR, the resident is allowed to progress as primary surgeon on most advanced procedures and is responsible for bringing both junior residents and medical student assistants through mastered basic surgical procedures. The resident should be capable of functioning independently, gain additional responsibility to prepare for his/her chief year, and is provided ample opportunity to exercise his/her clinical skills. The residents will have the opportunity to rotate through Kaiser Permanente during this year for an introduction to a different healthcare system and to gain a wide exposure to a high-volume community-based practice, develop a high degree of independence, and improve practice efficiency.

PGY-6 Year
The resident assumes administrative duties during this final year and is expected to display mastery of all procedures encountered during previous rotations. There is refinement with their competence in the diagnosis and treatment of tertiary care patients, emphasizing the patient with advanced, complicated and/or recurrent disease. The resident develops organizational skills to “run” the Oto-HNS team at either UCSD-JMC, UCSD-Hillcrest, or the VA. With their competence of building appropriate physician-patient relationships, they regularly discuss treatment alternatives and formulation of a management plan for tertiary care patients.

Resident Presentations and Publications
Our program has a strong track record of supporting and mentoring our residents through research, publications, and presentations which have been given at the local/regional/national/international levels. Our residents are exceedingly successful in building collaboration across specialties and research campuses. From Jan 2018 – July 2022 faculty were responsible for 703 publications of which 46% included residents, fellows, or medical students. A list of publications over the last 5 years is listed under the Appendix.

Graduate Performance
Our resident graduates are highly successful in their transitions into competitive fellowship training positions and to coveted career positions around the US. This is a list of the last ten years of post-UCSD fellowship or practice locations:
Research
Over the past 30 years, UCSD Otolaryngology has expanded its immunology, virology and molecular research, resulting in an established cadre of scientists. These investigators provide a fertile training ground for clinicians who wish to pursue these arenas of research, to provide our specialty with well-trained clinician-scientists. Our research year prepares our residents for careers that include high-quality research.

We established the support for our clinician-scientist resident with the T32 training program and more recently have continued the support through a new R25 mechanism. Our program addresses the major barriers to research by clinicians by providing training in: 1) experimental design and scientific techniques; 2) research collaboration and teambuilding; 3) grant and scientific manuscript writing; 4) managing the conflict between clinical work and research; and 5) preparation for academic medicine. The trainees for this program pursue 12 to 24 months of research training during their Otolaryngology residency. Research experiences frequently extend throughout residency, to provide continuity. Trainees receive instruction in research ethics, methods to ensure data quality and reproducibility, responsible
Two of our residents chose to pursue a PhD degree during their time as a resident. This includes Rick Friedman, MD, PhD in molecular pathology where he worked in Howard Hughes lab and Alex Battaglia Md, PhD in molecular pathology.

### T-32 Research Year resident projects

<table>
<thead>
<tr>
<th>Year</th>
<th>Led Researcher</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>John Pang</td>
<td>Extrachromosomal DNA in HPV mediated oncogenesis in head and neck cancer.</td>
</tr>
<tr>
<td></td>
<td>J. Qualliotine</td>
<td>Visual detection of HPV-associated HNSCC via an acoustically-powered nanomotor that produces a fluorescent signal upon detection of intracellular HPV 16E6 mRNA.</td>
</tr>
<tr>
<td>2019</td>
<td>Emily Funk</td>
<td>The use of engineered corrective software to mitigate the detrimental effects of signal latency in surgical performance during remote telerobotic surgery. In addition, I collaborated on research involving surgical automation using the da Vinci surgical robot to perform surgical tasks such as suctioning and knot tying. Research was performed in lab-based models as well as a cadaveric and live porcine animal model.</td>
</tr>
<tr>
<td></td>
<td>Rob Saddawi</td>
<td>Discovery and development of novel immune-oncology therapies.</td>
</tr>
<tr>
<td>2020</td>
<td>Farhoud Faraji</td>
<td>Taste and Smell Research: Understanding Disease and Disorders. Project description: Identification and characterization of the natural history of COVID19-related olfactory and gustatory dysfunction.</td>
</tr>
<tr>
<td></td>
<td>K. Crawford</td>
<td>Phase I/II clinical study on the safety and efficacy of a novel, fluorescent-labeled peptide, ALM-488, for illumination of peripheral nerves during fluorescence-guided surgery and Fluorescence imaging with ALM-488 improves identification of degenerated facial nerve segments after transection injury in a murine model</td>
</tr>
<tr>
<td></td>
<td>Rob Saddawi</td>
<td>Discovery and development of novel immune-oncology therapies (2nd year in research).</td>
</tr>
<tr>
<td>2021</td>
<td>Rob Saddawi</td>
<td>Discovery and development of novel immune-oncology therapies (additional 3rd year in research).</td>
</tr>
<tr>
<td></td>
<td>Farhoud Faraji</td>
<td>Taste and smell Research: Understanding Disease and Disorders. Project description: Identification and characterization of the natural history of COVID19-related olfactory and gustatory dysfunction (2nd year in research).</td>
</tr>
</tbody>
</table>

### UCSD Independent Resident Research Awards (From previous 5 years)

#### 2018 - 2019
Centralized Otolaryngology Research Efforts (CORE) Grant, Resident Research Award
American Academy of Otolaryngology—Head and Neck Surgery Foundation
Project: Nanorobotics in HPV-associated head and neck squamous cell carcinoma
National Research Service Award. Institutional fellowship awarded by the National Institute on Deafness and Other Communication Disorders
Project: Otolaryngology Training in Immunology, Virology and Molecular Biology. Award provided funding to support postdoctoral training
2020-2021

National Research Service Award. Individual fellowship awarded by the National Institute of Dental and Craniofacial Research
Project: Exploiting the HER3-PI3K/mTOR-Immune Axis to Design Precision Immune Oncology Therapy for Head & Neck Cancer. Award provided funding to support postdoctoral training
2020-2021

UC San Diego School of Medicine / Altman Clinical and Translational Research Institute (ACTRI) MedGap Research Fellowship Grant
Project:

2021 – 2022

2021 Young Investigator Award. Individual fellowship awarded by the American Society of Clinical Oncology
Project: Imaging Biomarker to Predict Response to Immune Checkpoint Inhibitor Therapy in Head and Neck Cancer

2021-2022

2021 Young Investigator Award. Individual fellowship awarded by the American Society of Clinical Oncology
Project: Imaging Biomarker to Predict Response to Immune Checkpoint Inhibitor Therapy in Head and Neck Cancer

2021-2022
Society for Immunotherapy of Cancer (SITC) Annual Meeting, Washington, D.C.
Project: Sequencing Immunotherapy Before Lymphatic Ablation Unleashes cDC1-Dependent Antitumor Immunity in HNSCC. Young Investigator Travel Award

2021-2022
Altman Clinical and Translational Research Institute Award for research advances in health through the discovery and translation of new biomedical science
Project:

2021-2023
Hanna and Mark Gleiberman Head and Neck Cancer Center Pilot Grant. Individual award conferred by the Gleiberman Head and Neck Cancer Center at UCSD
Project: Interaction-Dependent Identification and Characterization of Tumor Antigen-Specific T cells for Adoptive Therapy in HNSCC

2021-2023
The Cancer Research Institute Clinic and Laboratory Integration Program awarded by the Cancer Research Institute. Project: Precision immuneoncology therapy targeting HER3-PI3K/mTOR and PD-1 in HNSCC

2022-2023
Multidisciplinary Head and Neck Cancer Symposium Early Career Investigator Travel Grant
Project: Neoadjuvant Immunoradiotherapy in a Tobacco-Signature Preclinical Oral Squamous Cell Carcinoma Model

2022-2023
Centralized Otolaryngology Research Effort (CORE) Grant, Resident Research Grant, American Academy of Otolaryngology – Head & Neck Surgery Foundation (AAO-HNSF)
Project: Migraine in Patients with Vestibular Schwannoma and the Impact of Treatment

2022-2023
American Head & Neck Society Pilot Grant. Individual award conferred by AHNS, AAO-HNSF and the Centralized Otolaryngology Research Effort Study Section
Project: Interaction-Dependent Identification of TSA-T Cells for Adoptive Therapy in HNC

2022- 2023
Acoustic Neuroma Association Grant
Project: Genetic and Molecular Characteristics of Latent versus Actively Growing Sporadic Vestibular Schwannoma

Neurotology Fellowship
Our neurotology fellowship is a 2-year ACGME-accredited experience that provides subspecialty training in the diagnosis and management of disorders of the temporal bone, lateral skull base, and related structures. The fellowship successfully prepares it fellows to become competent and highly skilled neurotologists with excellent clinical and surgical patient care, mastery of literature and hands-on knowledge, excellence in teaching, and a drive to push the boundaries of the field. Through one-on-one mentorship, the fellows become well equipped to handle the rigors of a busy academic otology/neurotology practice and to strive to be leaders in the field.

They are scheduled with alternating clinical rotations at JMC, Kaiser Permanente, Rady’s and the VA. The fellows receive a full spectrum of neurotologic care, and they can demonstrate progression in every area of competency. At Kaiser specifically, the fellow acts as a member of the multidisciplinary skull base team providing tertiary medical and surgical care for patients from the entire Southern California region. The fellows experience a very high volume of patients with skull base lesion at all locations in the clinic setting and the operating room. They are instrumental during the regular experience in temporal bone drilling with the residents, they provide the Friday morning neurotology didactics, and are a key instructor during the department’s comprehensive temporal bone drilling course. Past fellows who have graduated from the program are listed over the last ten years with their current position:

- 2012 Harrison Lin, MD, Assoc Professor, UC Irvine
- 2013 Mia Miller, MD, House Ear Clinic
- 2014 Harrison Lin, MD, Assoc Professor, UC Irvine
- 2015 Yu-Tung Wong, Cedars- Sinai
- 2016 Nopawan “Bonnie” Vorasubian, Kaiser LA
- 2017 Candace Hobson, Emory University
- 2018 Hitomi Sakano, MD, PhD, Assist Professor, University of Rochester
- 2019 Joe Saliba, MD, Assist Professor, University of Montreal
- 2020 Kareem Tawfik, MD, -Assist Professor, Vanderbilt
- 2021 Yin Ren, MD, PhD, Assistant Professor, Ohio State
- 2022 Alexander Claussen, MD, Assistant Professor, University of Iowa

Medical Students
It is the goal of the Otolaryngology faculty that all medical students at UCSD are provided with a foundation of instruction and exposure to the fundamentals of otolaryngology during the first two years of medical school, with additional clinical instruction and opportunities for more in-depth experience during the clinical years (Table 1)
Otolaryngology faculty engage students early by teaching the head & neck exam portion of the clinical foundations course and as laboratory instructors for four sections of the anatomy lab. Students also can explore their interests with faculty in the clinics or operating room during the Careers in Medicine elective and Pre-Clinical Preceptorship in Surgery. During the second-year students learn about some fundamental aspects of the field via four hours of lectures in the MBB2 course. Third year medical students can spend either two weeks or four weeks on the inpatient services during the selective and core surgery rotations, respectively, and may also elect to pursue a two-week apprenticeship rotation in head & neck microvascular surgery. Students on any of the MS3 or MS4 Oto rotations participate in a range of didactic activities within the Clinical Department, including bimonthly grand rounds & subspecialty lectures during the Friday academic mornings, Resident Study Sessions on clinical topics, and the weekly head & neck oncology journal club. All third-year students also gain additional exposure to key clinical topics via the Otolaryngology Case Conferences incorporated into the core surgical clerkship. Fourth year UCSD or visiting medical students may participate in one of three different subinternship rotations, and students participating in the Procedural Pathway of the core Residency Transition Course also gain additional instruction on airway management techniques and operative anatomy from ENT faculty.
In addition to didactic and clinical instruction, Otolaryngology faculty serve students via a range of mentorship and educational leadership roles within the School of Medicine. Over the past five years faculty have mentored dozens of MD and undergraduate students on various research projects, frequently serving on the ISP committees for medical students (Table 2).

<table>
<thead>
<tr>
<th>Oto-HNS Faculty</th>
<th>Student mentoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Joe Califano</td>
<td>Research mentor, 2 MD students</td>
</tr>
<tr>
<td>Dr. Adam DeConde</td>
<td>ISP committee, 3 MD students</td>
</tr>
<tr>
<td>Dr. Rick Friedman</td>
<td>Research +/- ISP mentor, 4 MD students</td>
</tr>
<tr>
<td>Dr. Andrew Vahabzadeh-Hagh</td>
<td>Research mentor, 4 MD students, 20 undergraduate students</td>
</tr>
<tr>
<td>Dr. Carol Yan</td>
<td>Research mentor, 4 MD students; ISP member/chair, 2 students</td>
</tr>
<tr>
<td>Dr. Anthony Magit</td>
<td>Research mentor, 3 MD students; ISP chair, 2 students</td>
</tr>
<tr>
<td>Dr. Philip Weissbrod</td>
<td>Research mentor, 5 MD students, 1 undergraduate, and 2 PhD students; ISP committee, 1 student</td>
</tr>
<tr>
<td>Dr. Ryan Orosco</td>
<td>Research mentor, 6 MD students; ISP committee, 2 students</td>
</tr>
<tr>
<td>Dr. David Hom</td>
<td>Research mentor, 8 MD students &amp; 4 undergraduates; ISP, 1 student</td>
</tr>
<tr>
<td>Dr. Theresa Guo</td>
<td>Research mentor, 2 MD students</td>
</tr>
<tr>
<td>Dr. Elina Kari</td>
<td>Research mentor, 4 MD students</td>
</tr>
<tr>
<td>Dr. Charley Coffey</td>
<td>Research mentor +/- ISP committee, 7 students</td>
</tr>
<tr>
<td>Dr. Deborah Watson</td>
<td>Research mentor + ISP committee, 8 students</td>
</tr>
<tr>
<td>Dr. Jeffrey Harris</td>
<td>Mentor to all Senior Students interested in Otolaryngology</td>
</tr>
</tbody>
</table>

Table 2 Students mentored by Oto-HNS Faculty (2018-22)

An ad hoc faculty committee advises students interested in pursuing careers in Oto-HNS and provides students with a range of resources for application support, including an application planning guide, published data from the NRMP and AAMC, and the opportunity for career counseling and mock interviews to prepare for the process. The teaching and mentorship efforts of the Oto-HNS faculty are reflected in the success that UCSD students have had in matching into competitive otolaryngology residencies, including 14 of 16 students successfully matching over the last 3 years (2020-22). Faculty also serve the educational mission within the school of medicine by service on various academic services. As one example of this type of leadership, Dr. Coffey currently serves as the Co-Director of the Surgery Core Clerkship, the Co-Director of the Surgery Master Clinician Program, the Chair of the Committee for Teaching Recognition and Gratitude, and a member of the Core Curriculum Committee and the Recruitment and Admissions Committee- Executive Group. He also recently served on the Medical Education Strategic Planning Steering Committee, the Competencies and Objectives work group, and the MSPE/ Clerkship Evaluation work group within the School of Medicine.
In addition, our residents are routinely involved with medical student teaching through these different lecture sessions. We have produced a residency program video which is available on our website, YouTube, and other social media venues to provide added insight for medical students eager to become residency candidates: https://www.youtube.com/watch?v=LpHE1nhIwb0&feature=youtu.be

Our program efforts regarding medical student outreach have had a significant growth with our social media presence on Google, YouTube, OtoMatch, and Instagram. The number of UCSD medical students pursuing our surgical subspecialty has remained high with a 50% representation within each gender and we have seen an increase in the number of visiting sub-intern students.

In addition, our program incorporated the use of Virtual Interviews during the 2019 interview season—before the COVID pandemic—for those individuals who have rotated with us as sub-interns. This was a successful interview format as a cost-savings measure for resident candidates around the country before it became necessary to implement due to COVID travel restrictions.

As a response to the COVID pandemic which restricted in-person rotations for visiting students, our PD created a new Visiting Medical Student Virtual Subinternship. It consists of two-week blocks designed to provide direct interaction for the student with individual faculty and residents in the operating room, in meeting rooms, and in offices via Zoom. This experience is meant to enable individual discussions, medical student contribution during group interaction, and live feedback (see table 3 below). This program allows us to provide exposure to our program to a wider net of interested medical students and will hopefully in turn increase the diversity of our applicants to our program in the future. The two-week rotation was launched through our new engagement with social media on our web homepage, Instagram, and OtoMatch. The PD produced a new video to highlight the aspects of this new rotation which also appears on Google and YouTube: https://youtu.be/OdYij_af-gY.

<table>
<thead>
<tr>
<th>Objective</th>
<th>Educational Modality</th>
</tr>
</thead>
</table>
| Didactic learning                      | 1. Weekly journal club  
2. Case reviews with faculty & residents  
3. Virtual grand rounds  
4. Subspecialty-specific lectures  
5. Virtual conferences held by faculty  
6. Exposure to broad spectrum of subspecialties (head and neck surgical oncology, facial plastic & reconstructive surgery, rhinology, laryngology, sleep surgery, salivary surgery, and otology) |
| Opportunity for mentorship             | Weekly sessions with faculty and residents                                                                                                                                 |
| Professional development               | 1. Interview preparation session  
2. Student slide presentation                                                                                                                                 |
| Assessing mutual program-applicant “personality fit” | Virtual happy hour with residents                                                                                                                                 |

Table 3 Virtual Subinternship Curriculum Objectives and Educational Modalities
Audiology Doctoral Program

The audiology doctoral program is a degree granting joint program between San Diego State University (SDSU) and the University of California, San Diego Clinical Department of Otolaryngology. Program faculty and resources are shared between campuses. The joint doctoral program in audiology is accredited by the Council on Academic Accreditation in Audiology and Speech-Language Pathology (CAA). The program is considered the model for audiology training throughout the country and has received numerous accolades. This program is the only of its kind in the UC system.

The AuD program is a four-year graduate degree program designed for individuals who intend to specialize in clinical practice and to meet current professional standards requiring a clinical doctorate as the entry-level degree for a certified/licensed audiologist. The program structure includes academic, research, and clinical component with a full-time clinical externship and exams in year 1-3. Year 1 students’ complete courses and clinical practice at SDSU. Year 2 students’ complete courses and clinical practice at UCSD. Year 3, students take courses at SDSU and are assigned to off-campus clinical sites located in the San Diego area. Year 4 is a full-time externship with sites available throughout California and other states. One of the many unique opportunities that students are provided in this program is taking an elective in Year 2 in the School of Medicine at UCSD. Listed below are the courses offered in this program.

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUD 236.</td>
<td>Preceptorship in Neuro-Otology (2)</td>
</tr>
<tr>
<td>AUD 257.</td>
<td>Ear Diseases and Treatment (3)</td>
</tr>
<tr>
<td>AUD 263.</td>
<td>Physiological and Behavioral Tests of Vestibular Function (4)</td>
</tr>
<tr>
<td>AUD 271.</td>
<td>Temporal Bone Anatomy and Neuroanatomy (3)</td>
</tr>
<tr>
<td>AUD 272.</td>
<td>Central Auditory Processing Assessment and Management (4)</td>
</tr>
<tr>
<td>AUD 274.</td>
<td>Advanced Technical Aspects of Hearing Amplification (4)</td>
</tr>
<tr>
<td>AUD 275.</td>
<td>Intraoperative Monitoring (3)</td>
</tr>
<tr>
<td>AUD 276.</td>
<td>Cochlear Implants and Other Implantable Sensory Aids (3)</td>
</tr>
<tr>
<td>AUD 278.</td>
<td>Special Topics in Audiology (3)</td>
</tr>
<tr>
<td>AUD 284.</td>
<td>Clinical Practice in Audiology II (1–4)</td>
</tr>
<tr>
<td>AUD 291.</td>
<td>Clinical Case Studies/Staffing (1)</td>
</tr>
<tr>
<td>AUD 296.</td>
<td>Research Practicum (3)</td>
</tr>
<tr>
<td>AUD 298.</td>
<td>Independent Research (3)</td>
</tr>
<tr>
<td>AUD 299.</td>
<td>Doctoral Project (3)</td>
</tr>
</tbody>
</table>

Table 4: Audiology Courses

The admissions committee is comprised of 3 faculty members from UCSD and 3 faculty members from SDSU to ensure equal representation of both schools. The committee meets each year to determine the admissions out come for the upcoming year. The program has 40 available slots (10 slots per year). Over the past 3 years the average makes up of the student body has been 76.1% female and 23.8% male with a 35.6% URM representation.

<table>
<thead>
<tr>
<th>UCSD/SDSU JDP Audiology Program Student Diversity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program Year</td>
</tr>
<tr>
<td>---------------</td>
</tr>
<tr>
<td>2020-2021</td>
</tr>
<tr>
<td>2019-2020</td>
</tr>
</tbody>
</table>
The executive committee for the AuD program is comprised of 3 faculty members from each campus and the graduate Deans from each campus. The executive committee oversees the program, establishes procedures, and sets policies with input from faculty and students. Currently, Jeffrey Harris, Allen Ryan, and Ericka Zettner all serve on this committee for UCSD Otolaryngology. Many of our faculty as well as audiologists at UCSD serve as faculty members for the program.

### Faculty

<table>
<thead>
<tr>
<th>Name</th>
<th>Role and Responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Erika M. Zettner, PhD</td>
<td>Program Co-Director. Coordinates academic and clinic placements at UC San Diego. Supervises AuD students at Perlman Center and teaches courses. Areas of specialization include diagnostic audiology, electrophysiology and otoacoustic emissions as well as treatments including amplification, tinnitus treatments and cochlear implants.</td>
</tr>
<tr>
<td>Meghan Spriggs, AuD</td>
<td>Teaches AuD courses at UC San Diego and clinical supervisor for AuD students at Perlman Center. Areas of specialization include cochlear implants, BAHA, adult diagnostic audiology, amplification.</td>
</tr>
<tr>
<td>Jeffery Harris, MD, PhD</td>
<td>Teaches the Otology Preceptorship course where AuD students receive training in clinical otology, pre/post-operative assessment of patients, pharmacology related to otology, and clinical assessment of patients with balance disorders at the UC San Diego Ear Center.</td>
</tr>
<tr>
<td>Allen Ryan, PhD</td>
<td>Research in Auditory Neuroscience and Otology, including studies of the development of the auditory and vestibular systems, especially molecular control of sensory cell and neuronal maturation in the inner ear. Guest lectures in AuD courses in auditory/vestibular physiology and supervises AuD students during lab rotation and/or doctoral projects.</td>
</tr>
</tbody>
</table>

### Audiologists

<table>
<thead>
<tr>
<th>Name</th>
<th>Role and Responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stephanie Bacter, AuD</td>
<td>Provides clinical supervision for Au.D. students in the areas of adult hearing and balance assessment.</td>
</tr>
<tr>
<td>Joyce Tsand, AuD</td>
<td>Provides clinical supervision for AuD students in the areas of balance assessments.</td>
</tr>
<tr>
<td>Debbie Wian, MA</td>
<td>Provides clinical supervision for AuD students in the areas of hearing assessment and hearing aid fittings.</td>
</tr>
<tr>
<td>Alicia Williams, AuD</td>
<td>Provides clinical supervision for AuD students in the areas of diagnostics, amplification, and cochlear implants.</td>
</tr>
</tbody>
</table>

**Clinical Experience:**
Second year AuD students at UC San Diego participate in a busy neurotology clinic to varying degrees in a variety of clinical experiences. Students can follow patients from initial assessments, to diagnosis, to
surgery and follow-up treatment during the course of the year. They interact with neurotologists, nurse practitioners, medical students, residents and fellows, and professionals in interdisciplinary healthcare teams. With 100% supervision, each student rotates through a variety of clinics where they learn to take thorough case histories; administer and interpret tests of hearing and balance; formulate treatment plans; advise, educate and counsel patients; and provide treatment for a primarily adult population. Each student is assigned to an Audiology Clinic each quarter with one preceptor. Each student rotates through additional clinical clinics including Balance, Ototoxic Monitoring, Evoked Potentials, and Preceptorship in Neurotology. Below is an overview of the clinical experience at UCSD.

| Audiology Clinic | Comprehensive audiologic assessments:  
|                  | • Puretone audiometry 
|                  | • Speech recognition threshold 
|                  | • Word recognition testing 
|                  | • Immittance testing 
|                  | • Multifrequency/multicomponent tympanometry 
|                  | • Tests of malingering 
|                  | • Otoacoustic emission measurements 
|                  | Audiologic Rehabilitation:  
|                  | • Assist with prescription/dispensing of hearing aids using real-ear verification 
|                  | • Troubleshoot and make hearing aid repairs 
|                  | • Patient orientation and fittings for osseointegrated hearing systems (eg Ponto, Baha, Osia) 
|                  | • Patient and family member counseling re: listening strategies 
|                  | • Selection of assistive listening devices 
|                  | • Tinnitus evaluations and treatments 
|                  | • Provision of noise protection and musician earphones 
|                  | • Cochlear implant evaluations, mapping and reprogramming in adults up to 90+ years old. |
| Balance Clinic | Videonystagmography 
| Rotation | Vestibular rehabilitation 
|          | Video Head Impulse Test |
| Ototoxic Monitoring Clinic | Working side-by-side with physicians, nurses, nutritionists, social workers, pulmonary specialists, AuD students identify patients with cystic fibrosis at risk for ototoxicity, monitor auditory and vestibular function. |
| Auditory and Vestibular Evoked Potentials Rotation | Brainstem Auditory Evoked Response (BAER) 
|          | Electrocochleography (EcoG) 
|          | Vestibular Evoked Myogenic Potential (VEMP) |
| Preceptorship in Otolaryngology | All students complete a 10-week rotation with a neurotologist in a busy clinic alongside medical students, residents, and fellows. The experience includes clinical observation of pre- and post-surgical patients being evaluated and treated for outer/middle/inner ear disorders and balance disorders and treatments. Students observe ear surgeries such as stapedectomies, mastoidectomies, tympanoplasties, tumor removal, and cochlear and auditory brainstem implantations. |
| Additional Opportunities | UCSD Student-Run Free Clinic Project, in partnership with the community, provides accessible, quality healthcare for the underserved in a respectful environment in which students, health professionals, patients, and community members learn from one another. |

Research Experience:
SDSU/UCSD students complete a mentored research project as part of the program requirements. All Doctoral Research Projects are data-driven and mentored by academic faculty members. Students may choose a mentor from either SDSU or UCSD. The Doctoral Research Project typically takes two years to complete. Most students complete the project by the end of Year 3. Students present their completed projects at an open forum. Below are some projects completed with UCSD faculty and a full list of student research projects are included in the appendix.

### Bench Science Projects with Dr. Allen Ryan:

- **Effects of Phosphodiesterase (PDE)-V inhibitors on cochlear hair cells and spiral ganglion nerve cells**, Barbara Harris, 2009
- **Sox 11 Expression in Developing Inner ears of Mice**, Rachel Weichert, 2011
- **Peptides With the Ability to Transit the Tympanic Membrane Do Not Influence Middle or Inner Ear Structure or Function**, Kerry Beasley, 2015
- **JNK Isoforms Play Different Roles in Noise-Induced Hearing Loss**, Joseph Hardeman 2015.
- **Transtympanic drug delivery to treat middle ear infections**, Molly Cooper 2021.
- **Role of antioxidants in the prevention of hair cell damage due to noise exposure**, Emily Sereno 2021

### Ototoxicity Studies with Dr. Erika Zettner:

- **Establishment of normative variability in DPOAE and hearing levels for application in assessing acute change in inpatients receiving ototoxic medications**, Hang Lam, 2014.
- **Relationship between tobramycin peak/trough values and change in hearing levels**, Beth Harris, 2014.
- **Development of an iPad/iPhone application for self-administered ototoxic monitoring**, Leah Martin, 2015.
- **Factors associated with ototoxicity in cystic fibrosis patients treated with tobramycin**, Suzanne Rotan, 2015.
- **Self-reported balance function and head thrust test results for persons with cystic fibrosis**, David Nguyen, 2017.
- **Natural progression of hearing loss in persons with cystic fibrosis without aminoglycosides**, Kaitlin Leggins, 2017

### Chart Reviews with Dr. Erika Zettner:

- **CHAMP results for patients with possible Menieres disease**, Yan Li; 2008.
- **Carhart-notch resolution**, Arineh Khatchatourians, 2011.
- **Hearing loss following gamma knife radiosurgery for acoustic neuroma**, Robin Williams, 2013.

### Clinical Studies with Dr. Erika Zettner:

- **ECog: Area under the curve analysis vs. SP/AP ratio**, Dave Stewart; 2008.
- **Effectiveness of a tinnitus seminar**, Caton Harris, 2009
• Comparison of ECoG and CHAMP test results for cochlear hydrops, Jerilyn Dutton; 2009.
• Response variability of the ocular VEMP, Jasmine Hu, 2012.
• Pupillometry as a measure of listening effort in patients with cochlear implants, Stephani Gonzales, 2013.
• Susceptance and reflectance in endolympathic hydrops. Collyn Gallant 2013.
• StackedABR UCSD normative data. Samantha Barbour. 2014.
• Feasibility of recording oVEMP using a horizontal surface-recording electrode montage. Laura Rhee, 2015.
• Early Indication of Noise Induced Hearing Loss in Young Adult Users of Personal Listening Devices. Carol Chou, 2015.
• Frequency spectrum of tinnitus, Chris Johnson 2017.
• Comparison of Benefit Achieved by Noise Reduction Strategies in Cochlear Implants Using 4- and 20-
• Talker Babble Noise, Alex Rieser 2020.
• Comparative Benefits of Directional Microphone Settings to Cochlear Implant Users for Understanding.
• Speech in Noise, Ellen Smith 2020.
• Clinical Utility of Multifrequency Tympanometry in the Diagnosis of Meniere's Disease and Normative Data. Shelby Smith 2021.

The program has a strong success rate for its students. The program has a 3-year average on-time program completion rate of 89.3%, as well as a 96.4% 3-year average pass rate for the Praxis Exam. The program has a 100% 3-year average of graduates employed in the profession 1 year following completion.
Discussions are currently underway for creating an AuD-PhD degree option. Details are being clarified with the SDSU Chancellor’s office about what the degree requirements would include.

Community Outreach Programs:

Over thirty years, we have reached across the county and included the US Navy Balboa department of Otolaryngology in our didactic programs and Grand Rounds. The collaboration has been mutually beneficial and allows a greater sharing of expertise that is unique to both programs. We have also had Navy residents rotate with us and we have used their facilities and allowed their residents to participate in our temporal bone courses prior to the creation of the CFS microsurgical laboratory. Our ENT Nights is a program that is for the continuing education of community otolaryngologists, SLP, oncologists. We recently started an International UCSD Otospeaker series that is in a Webinar format and we invite world authorities to lecture on various topics in Otolaryngology.
Otolaryngology has experienced year over year growth of clinical revenue, excluding FY 20 due to the COVID-19 pandemic. Otolaryngology was one of the most impacted departments with the operation rooms and elective procedures cancellations. The Department has had consistent year over year growth of wRVUs even during the pandemic. Most recently Otolaryngology had a wRVU growth of 6% in FY 21 and 9% growth in FY 22. Otolaryngology is the second most profitable Clinical Department in surgery and our wRVUs lead the Surgery Department and are comparable to other newly created departments. Similarly, the Department has had a positive year-over-year collection rate, with an average increase in collection of 20% over the last 6 years. Otolaryngology has contributed a positive contribution margin for UC San Diego Health of $17.2 M in FY 21 and $19.6 M in FY 22. This financial stability and growth have allowed the Department to have a positive margin and provide a positive contribution to UC San Diego Health.
Otolaryngology has had strong Clinical Department/department finances over the 4 years and is committed to staying fiscally sound as it transitions to a department. In FY 20 Otolaryngology did result in a deficit but this was a direct impact of the pandemic. Since then, the Department has rebounded and remains fiscally stable.
# ACADEMIC & CLINICAL

## CDO and DO Finances

<table>
<thead>
<tr>
<th>PRORT &amp; LOSS FINANCIALS</th>
<th>FY 19</th>
<th>FY 20</th>
<th>FY 21</th>
<th>FY 22</th>
<th>Projection FY 23</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFFILIATION AGREEMENTS</td>
<td>3,841,336.00</td>
<td>3,742,697.00</td>
<td>3,263,889.00</td>
<td>4,052,926.10</td>
<td>3,805,035.00</td>
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<tr>
<td>CONTRACT AND GRANTS</td>
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<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
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<tr>
<td>GIFT/ENDOWMENTS</td>
<td>66,666.67</td>
<td>243,544.00</td>
<td>158,338.60</td>
<td>160,000.00</td>
<td>1,359,512.00</td>
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<tr>
<td>CORE CBO ALLOCATIONS</td>
<td>686,456.00</td>
<td>678,000.00</td>
<td>678,000.00</td>
<td>768,000.00</td>
<td>1,359,512.00</td>
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<tr>
<td>SELF-SUPPORTING</td>
<td>594,243.00</td>
<td>686,455.91</td>
<td>429,568.00</td>
<td>593,572.66</td>
<td>415,000.00</td>
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<tr>
<td>OTHER REVENUES</td>
<td>21,760.00</td>
<td>52,989.33</td>
<td>38,100.00</td>
<td>83,852.00</td>
<td>544,493.00</td>
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<td>SERVICE AGREEMENTS</td>
<td>35,000.00</td>
<td>66,667.00</td>
<td>0.00</td>
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<tr>
<td>CARE/GUARANTEED PAYMENTS</td>
<td>6,434,019.00</td>
<td>6,248,122.00</td>
<td>6,922,108.32</td>
<td>7,591,693.00</td>
<td>7,716,962.00</td>
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<tr>
<td>TRANSFER AFTER OVERHEAD</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>HEALTH SYSTEM PROFESSIONAL SERVICES</td>
<td>474,406.00</td>
<td>369,944.00</td>
<td>398,220.00</td>
<td>660,278.00</td>
<td>685,774.00</td>
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<tr>
<td>DEPARTMENT CLINICAL BENEFITS</td>
<td>976,863.00</td>
<td>1,033,478.80</td>
<td>843,676.67</td>
<td>761,119.30</td>
<td>786,168.00</td>
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<tr>
<td>CORE VC/DEAN ALLOCATIONS</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>NON-CORE VC/DEAN ALLOCATIONS</td>
<td>0.00</td>
<td>48,557.30</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
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<tr>
<td><strong>TOTAL REVENUE</strong></td>
<td>12,342,627.00</td>
<td>12,200,353.71</td>
<td>12,860,561.99</td>
<td>14,785,003.96</td>
<td>15,472,944.00</td>
</tr>
</tbody>
</table>

| SALARIES & BENEFITS EXPENSES | 0.00 |
| ACADEMIC SALARIES            | (10,253,097.00) |
| NON ACADEMIC SALARIES        | (1,361,202.00)  |
| MEDICAL SALARIES             | 0.00 |
| ACCRUALS AND OTHERS          | 284,524.53     |
| EMPLOYEE BENEFITS            | (1,655,959.60) |
| **TOTAL SALARIES & BENEFITS**| (11,614,299.00) |

| SUPPLIES AND MATERIALS       | (30,256.00)    |
| OTHER EXPENSES               | (296,067.00)   |
| OVERHEAD - IDC               | 0.00 |
| SHARED SERVICES              | (223,799.00)   |
| UTILITIES                    | 0.00 |
| RECHARGE SALES AND SERVICES EXPENSES | (58,621.00) |
| INVENTORIAL EQUIPMENT        | 0.00 |
| DEPARTMENT ASSESSMENTS       | (483,726.00)   |
| OTHER ASSESSMENTS            | (64,832.00)    |
| **TOTAL NON-PAYROLL EXPENSES**| (1,098,680.00) |

| TOTAL EXPENSES               | (12,712,979.00) |
| **NET SURPLUS / DEFICIT**    | (370,352.00)    |

| OPERATING TRANSFERS          | 0.00 |
| HEALTH SYSTEM TRANSFERS      | 0.00 |
| HEALTH SYSTEM SUPPORT        | 624,336.00    |
| HEALTH SYSTEM TRANSITIONAL SUPPORT | 65,000.00    |
| TOTAL HEALTH SYSTEM TRANSFERS| 565,000.00    |
| OTHER TRANSFERS              | 0.00 |
| OTHER TRANSFERS              | (459,493.00)  |
| **TOTAL OPERATING TRANSFERS**| 624,336.00    |

| NET AFTER OPERATING TRANSFERS| 253,984.00 |

| NON-OPERATING TRANSFERS      | 0.00 |
| TOTAL NON-OPERATING TRANSFERS| 253,984.00 |
Otolaryngology shows a positive financial projection and is committed to a positive bottom line. Based on FY 24 budget conversations within the institution, the Department projects an increase in CARE dollars in FY 24 with a steady growth in volume going forward based on historical productivity. Other salary funding has varied year to year, but Otolaryngology expects an increase in funding given the success of our clinician scientist and growth in our research portfolio. Currently the Department of Surgery taxes the CARE Payment and all non-CARE salary sources at 3.25% which amounts to nearly $260,000. These taxes go towards the support provided by the Surgery Business Office. We also currently do not receive funds for administering our UCSD Pediatric Otolaryngology faculty appointments. This will amount to an additional $140,000 that will be directed to Otolaryngology rather than Surgery. When Otolaryngology becomes an Academic Department, Otolaryngology will use the taxes previously transferred to Surgery and the Rady’s overhead support to hire staff any necessary staff into the Otolaryngology Business Office and/or work with Surgery or other interested departments to share staff where a full FTE may not make sense for either Department to ensure effective use of resources and financial stability. These incremental funds that will flow to Otolaryngology rather than Surgery will be more than enough to fund any necessary positions and allow us to have funds to invest back into our Department.

<table>
<thead>
<tr>
<th>Funding Sources</th>
<th>FY 23</th>
<th>FY 24</th>
<th>FY 25</th>
<th>FY 26</th>
</tr>
</thead>
<tbody>
<tr>
<td>CARE Payment to Department</td>
<td>7,306,457</td>
<td>8,146,699</td>
<td>8,716,968</td>
<td>9,327,156</td>
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<tr>
<td>Other Salary Funding, less division paid admin</td>
<td>2,715,837</td>
<td>2,892,366</td>
<td>3,080,370</td>
<td>3,280,594</td>
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<tr>
<td>APP Support HS</td>
<td>495,090</td>
<td>534,698</td>
<td>577,473</td>
<td>625,671</td>
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<tr>
<td>APP Care Payment Estimate</td>
<td>287,822</td>
<td>299,334</td>
<td>311,308</td>
<td>323,760</td>
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<tr>
<td>GME Housestaff / Rady Support</td>
<td>41,346</td>
<td>42,173</td>
<td>43,016</td>
<td>43,877</td>
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<tr>
<td>Other - IDC Return (estimated)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Other - Acoustic Neuroma Est per HSS Tool</td>
<td>600,000</td>
<td>618,000</td>
<td>636,540</td>
<td>655,636</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>11,446,552</td>
<td>12,533,271</td>
<td>13,365,676</td>
<td>14,254,685</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Expenses: Salaries, Assessments, and Other</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Comp Payments - Model Predicted Salaries</td>
<td>8,741,986</td>
<td>9,603,072</td>
<td>10,275,287</td>
<td>10,994,557</td>
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<tr>
<td>Operating Expenses - Payroll</td>
<td>573,429</td>
<td>811,201</td>
<td>843,649</td>
<td>872,395</td>
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<tr>
<td>Operating Expenses - Non-Payroll</td>
<td>395,804</td>
<td>415,594</td>
<td>436,374</td>
<td>458,193</td>
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<tr>
<td>GSU Residency Expenses</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Estimated APP Expenses</td>
<td>707,272</td>
<td>763,854</td>
<td>824,962</td>
<td>907,458</td>
</tr>
<tr>
<td>Total Estimated Shared Services Expenses</td>
<td>259,078</td>
<td>269,441</td>
<td>280,219</td>
<td>291,428</td>
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<tr>
<td>Fellow Compensation</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Other Expenses</td>
<td>58,000</td>
<td>60,900</td>
<td>63,145</td>
<td>67,142</td>
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<tr>
<td>Dept of Surgery Assessment - Production Payment</td>
<td>237,460</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Dept of Surgery Assessment Other Salary Funding</td>
<td>20,506</td>
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<td>0</td>
<td>0</td>
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<tr>
<td>Deans Office Tax</td>
<td>206,773</td>
<td>215,044</td>
<td>223,645</td>
<td>232,591</td>
</tr>
<tr>
<td>Deans Office Tax - ccFTE</td>
<td>106,582</td>
<td>110,845</td>
<td>115,273</td>
<td>119,890</td>
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<tr>
<td><strong>Subtotal</strong></td>
<td>11,312,890</td>
<td>12,249,951</td>
<td>13,063,360</td>
<td>13,948,064</td>
</tr>
</tbody>
</table>

| Estimated Department Surplus/Deficit                | 133,661  | 283,320  | 302,316  | 306,040  |

This positive Department bottom line will allow Otolaryngology to build up Department Reserves to be able to recruit and retain top talent as well invest in our current programs and faculty. With the creation of the clinical department, many commitments were transferred from the Department of Surgery to Otolaryngology. With this transfer Otolaryngology has still been able to fulfill these commitments and continue to build a reserve balance.
<table>
<thead>
<tr>
<th></th>
<th>652000</th>
<th>676000</th>
<th>699000</th>
<th>962320</th>
<th>1264636</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginning Balance (+/-)</td>
<td>676000</td>
<td>699000</td>
<td>962320</td>
<td>1264636</td>
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<tr>
<td>Prior Year Surplus/Deficit</td>
<td>123000</td>
<td>283320</td>
<td>302316</td>
<td>306040</td>
<td></td>
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<tr>
<td>Commitments</td>
<td>(135000)</td>
<td>(100000)</td>
<td>(20000)</td>
<td>302316</td>
<td>306040</td>
</tr>
<tr>
<td>Other</td>
<td>159000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year-End Reserve Balances</td>
<td>676000</td>
<td>699000</td>
<td>962320</td>
<td>1264636</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1570676</td>
</tr>
</tbody>
</table>

Once an Academic Department, Otolaryngology will create a Finance Committee. The primary purpose of the finance committee will be to make recommendations and assist the department chair with monitoring and overseeing the tripartite financial infrastructure. The finance committee will make recommendations about department strategic initiatives/investments, expense and revenue allocations, and other functions at the request of the chair. There will be deliberate attention to membership diversity, inclusive of members of various faculty ranks, Clinical Departments, and genders.
Philanthropy

Otolaryngology’s base of philanthropic support within the Department of Surgery has continued to grow during the past decade. Donors have increasingly recognized Otolaryngology’s prominence through recent major gifts that acknowledge the strength of and demand for our high-quality clinical care, as well as the potential of our research to yield significant advancements in treatment.

Otolaryngology’s upward trend in philanthropic giving is not a result of one donor or gift, but rather a variety of major contributions in different areas at a range of giving levels, setting a precedent for sustained, broad support in the future. Two key gifts made in 2021 help to illustrate this: Iris and Matthew Strauss gave $2 million to establish the first endowed chair in Head and Neck Surgery, made with the intention of “attracting and retaining world-class experts and provide the resources needed for it to continue to change the landscape of clinical care well into the future;” and Hanna and Mark Gleiberman contributed $12 million toward the newly named Hanna and Mark Gleiberman Head and Neck Cancer Center, largely inspired by their appreciation for the “team-based integration of clinical care, research and supportive care” they received at Moores Cancer Center under the care of Dr. Joseph Califano, who has been instrumental in driving philanthropic support since joining UC San Diego in 2015.

Philanthropic funding for research has also steadily increased; for example, a recent $1.3 million grant from the Manitou Fund, a private foundation, supports high-potential research in Meniere’s disease led by Drs. Jeffrey Harris and Rick Friedman, on the understanding of and the treatment of hearing loss-related diseases. They are garnering support for this work not only because of their contributions toward our understanding of the underlying causes of the disease, but because their access to UC San Diego’s vast clinical and research infrastructure has enabled them to establish a valuable biorepository of patient-derived DNA samples of Meniere’s disease and partner across campus to leverage whole genome sequencing technology, a powerful tool for identifying possible genetic associations with disease. This work has the potential to lead to major breakthroughs and further solidify our standing as a leader in Otolaryngology. To date, Otolaryngology has $776,013 in the UC Foundation under its control for donor designated projects. As well as two endowment funds; the Iris and Matthew Strauss Chancellor’s Endowed Chair in Head and Neck Surgery Matching Fund $526,996.67 and the Hazlett Carpenter Research Fund $585,612.61.

With a designation as an autonomous department within the UC San Diego School of Medicine, our Otolaryngology team can fully embrace its potential for donor support and develop a philanthropic strategy that would further enhance not only the impact we can make through our research and clinical care, but the broader goals of the University and the School of medicine.
Diversity Equity and Inclusion

The Clinical Department of Otolaryngology is committed to fostering, cultivating, and preserving a culture of diversity, equity, and inclusion as we carry out our tripartite mission to improve the health of our community, train our future otolaryngology physicians and surgeons and make advancements in our specialty through health-related research. We are committed to always treat others with dignity and respect and in doing so build a community that works as a team and recognizes and celebrates the contributions of everyone.

Otolaryngology, as in other surgical disciplines, has not fared well in attracting underrepresented minorities (URM) into our specialty despite several national efforts to do so. Although black and Hispanic Americans represent 13.4% and 18.1% of the US population, respectively, they make up only 6.3% and 5.1% of enrolled US medical students. Thus, the pool of URM medical students is limited across our many disciplines in medicine. In a 2013 study by Schwartz et al, the authors reported that annual growth rates among African American and Native American residents in OHNS were not statistically significant, hovering at ~2%. Despite the limited pool of candidates, we have had some success in attracting URM students and faculty. We have currently one black female resident (Dr. Morgan Davis) and recent black female graduate of our fellowship program in neurotology (Dr. Candace Hobson who is an assistant professor at Emory Univ). This past year we ranked as number one in our residency match, a black male, unfortunately, he did not choose to come here. 9% of our ranked applicants were African American while African Americans only made up 5.6% of the entire applicant pool. Also, 15.3% of our ranked applicants were Hispanic while Hispanics made up 11% of the entire applicant pool. In total 24.6% of our ranked applicants were underrepresented minorities. We have made a concerted effort to interview as many URM students as possible who meet our basic requirements for residency training.

Our program has had many female residents which at times outnumbered males. In fact, between 2011-2019 we had 9 female residents and 5 males which is very unusual in our specialty which historically is weighted more towards male otolaryngology residents. Overall, in the period between 2008-2019 we were more balanced with 11 females and 12 males. A snapshot of the current roster shows that females represent 33% of the residency which is in line with the national norm of 34%. We are proud of our inclusion of females in our residency program and strive to maintain this gender diversity.

Similarly, on our faculty we have 3 URM individuals: Dr. Ryan Orosco (Hispanic), Dr. Jacqueline Greene (Filipino), and Dr. Weg Ongeko (Filipino). Of the 27 clinical faculty, 13 are female (48%) which far exceeds the most recent statistic for female faculty in Otolaryngology (24.5%).

Thus, we have a diverse group of staff, faculty and residents in our program—representing different ethnicities and cultural backgrounds that reflect San Diego’s regional diversity and proximity to the US-Mexico border.

Our program engages in episodic Equity/Diversity/Inclusion (EDI) focused Medical Education Grand Rounds throughout the year, hosted by our GMEC. This new forum helps our faculty and residents raise awareness around key topics and promote community around EDI. Moreover, we have increased the number of women in our residency program. From 2020 to 2022, the percentage of women increased from 19% to 33% and it is our intention to continue building on this growth. Our program continues to host a virtual sub internship experience for medical students applying to our program in the 2022-23
Match. This opportunity averts the costs related to the travel, accommodations, and meal expenses of in-person rotations providing access to our program for everyone.

To mitigate the impact of implicit bias during the applicant selection process, we are increasing our awareness with targeted videos provided by the AAMC. Our program efforts regarding medical student outreach have had a significant growth with our social media presence on Google, YouTube, OtoMatch, and Instagram. In addition, UCSD hosts diversity-focused virtual open houses for residency and fellowship candidates. These invitations will be sent to our residency candidates to join in January 2023.

We have also partnered with the Society of University Otolaryngologists for URM Away Rotation Scholarships to provide financial assistance in the amount of $2000 to medical students in good standing. The award opportunity is posted under our program on the OtoMatch website.

By becoming an Academic Department, the Department of Otolaryngology will be a more attractive place for Otolaryngologist to work and provide us with a larger recruitment pool to improve our diversity, equity, and inclusion in our department and leadership roles.


Closing Summary

In summary, the UC San Diego Clinical Department of Otolaryngology/Head and Neck Surgery has developed vibrant and successful clinical, research, and educational programs that meet the guiding principles of the School of Medicine and the University.

Designation as a School of Medicine academic department represents a natural progression that will:

1. Recognize and enhance our reputation as one of the premier departments of Otolaryngology/Head and Neck Surgery in the nation (USNWR ranking of #21 in 2022)

2. Align us with our sister UC Otolaryngology programs which are all stand-alone academic departments as well the predominance of otolaryngology having department designation nationally

3. Contribute to the recruitment and retention of leading faculty through independent promotion processes and improve faculty morale

4. Enhance our ability to attract the top candidates for our residency and fellowship training programs including a focus on diversity, equity, and inclusion.

5. Improve philanthropic position for dedicated endowed chairs and research funds

6. Facilitate adjunct academic appointments that will allow greater institutional level collaboration

7. Foster the impact and visibility of our current clinical, academic and research productivity

8. This transition can occur without additional investment or space request
December 8, 2022

Elizabeth Simmons, PhD
Executive Vice Chancellor-Academic Affairs UC
San Diego
MC 0001

Nancy Postero PhD
Chair, Academic Senate
UC San Diego Division
MC 0002

Dear Drs. Simmons and Postero:

As Interim Vice Chancellor for Health Sciences and Interim Dean for the School of Medicine, I am pleased to write this strong letter of support for the transition of Otolaryngology from a hospital department and division of the Department of Surgery to an independent academic department within the School of Medicine. I believe this represents a natural progression from a series of shared strategic conversations with Dr. Jeffrey Harris. This transition additionally has unanimous support from the Health Sciences Faculty Council. In addition, the Departments of Emergency Medicine, Pathology, Surgery, Pharmacology, Ophthalmology, Neurological Surgery, Urology, Moores Cancer Center, and Senior Associate Vice Chancellor for Health Sciences all provided letters of support demonstrating the enthusiasm for this transition.

Otolaryngology’s evolution has accelerated over the past several years, and its faculty and residents have been strong partners to our tripartite mission. When Dr. Harris took over the department, there were four faculty — there are now 38! Its residency program has one of the longest standing NIH T32 training grants (which recently transitioned to an R25), providing up to three years of dedicated research for its residents. It also has a strong Pediatric Fellowship and Neurotology Fellowship, the latter of which this year matched with its top candidate.

Many of the department’s graduates have faculty positions in top tier-academic programs across the country and several hold Chair appointments. A unique aspect for Otolaryngology is its joint Audiology
doctoral program with San Diego State University, offered under the auspices of the UC San Diego Division of Graduate Education and Postdoctoral Affairs. This program is considered the gold standard for audiology training and the only one in the UC system. Otolaryngology also has a strong commitment to medical school education: Faculty members serve as the Vice Chair of the Core Curriculum Committee; Co Director for the Surgery 401 and Surgery Masters Clinician program; and participate in other medical school program committees.

Otolaryngology currently has the largest research portfolio the Department of Surgery, which continues to grow with the addition of new recruitments. New faculty have received the support necessary to successfully obtain extramural funding, strengthening the department’s overall research impact and fostering a dynamic scientific community with our faculty who historically have had strong research portfolios. As a department, Otolaryngology would rank among the Top 10 in the Blue Ridge Institute Research funding rankings. Its clinical productivity continues to expand to more than 2,700 major cases and over 35,000 outpatient clinic visits, increasing its outpatient clinic volume by 40 percent in two years from its baseline of approximately 25,000 visits in FY18-20. This provides a strong financial foundation for its faculty and leadership to foster the tripartite mission. As Health Sciences actively seeks to broaden its diverse community, all School of Medicine departments, including Otolaryngology, currently completed a three-year plan to assess and enhance diversity across several domains, including faculty, staff, and resident representation. Otolaryngology offers a Southern California Regional Resident Bootcamp and a virtual visiting medical student subinternship to provide access to a diverse pool of candidates to have exposure to UC San Diego.

I remain strongly supportive of Dr. Harris’s vision of the department. Most recently, Otolaryngology ranked No. 21 in US News & World Report. This transition reflects the distinct training and academic culture of Otolaryngology and mirrors the organization of other UC institutions and every other top 25 Otolaryngology program. In fact, there are only eight remaining divisions of Otolaryngology in the country.

I am confident that Otolaryngology has the required framework to thrive as an independent department, one that will bring further academic, educational, and clinical recognition to UC San Diego. I recommend departmental status for Otolaryngology with enthusiasm and without reservation and would be happy to discuss this further at your request.

Sincerely,

Steven R. Garfin, MD
Interim Vice Chancellor for Health Sciences
Interim Dean, School of Medicine

cc: J. Hildebrand
    R. Ross
November 2, 2022

Review Committee
University of California, San Diego

RE: Proposed conversion of Otolaryngology to Academic Department within the UCSD School of Medicine

I am pleased to write this letter of strong and enthusiastic support for the transition of Otolaryngology from hospital department to independent academic department in the School of Medicine at the University of California, San Diego. As Chair and longstanding faculty member of the Department of Emergency Medicine, which underwent a similar transition a few years ago, I believe that the Division of Otolaryngology is well-deserving and also well-positioned for success as an independent academic department at our University.

As you are aware, under the longstanding and productive leadership of Dr. Jeffrey Harris, Otolaryngology has undergone tremendous growth over the last few years with a highly ranked clinical practice (#21 in US New and World report), outstanding teaching programs, and a robust research portfolio. Many current and emeriti faculty are world-renowned in the specialty and hold international leadership positions for example including alumni they hold 6 of the 26 elected positions for the United States in the Collegium Oto-rhino-laryngologicum Amicitiae Sacrum. As an Emergency physician, I can attest to the outstanding clinical care provided by the Division’s faculty for patients in acute need of emergent attention. Similarly, the education programs including its audiology doctoral, residency and fellowship training programs are highly regarded and attract the very best students from top-tier schools.

Given that these programs are accredited separately from general or other surgical specialties, it is clear that Otolaryngology is a distinct academic specialty with an independent body of knowledge and experience. In addition, the faculty’s research productivity has grown markedly, for example if they were a Department; they would rank #13 in the Blue Ridge institute rankings. Their acoustic neuroma program is ranked #1 in volume and quality in Vizient rankings and they are the #1 cochlear implant program in Southern California.

By becoming an academic department, Otolaryngology will continue and indeed accelerate this impressive trajectory. Given that the division is financially self-supporting as an independent hospital department already, the risk of such a transition is minimal. In fact, the greater risk lies in not transitioning Otolaryngology to a full academic department. Our sister institutions at UCSF, UCLA, UC Davis and UC Irvine, have already
established academic Otolaryngology Departments. Maintaining the current status will put UCSD at a disadvantage when recruiting faculty and trainees compared with other institutions that recognize Otolaryngology as a distinct specialty in the House of Medicine and in academia.

As Chair of an academic department that made a similar transition just in the past decade (in a specialty whose board certification developed much later than Otolaryngology), I look forward to collaborating with a future academic Department of Otolaryngology at UCSD - continuing to build outstanding educational, research, and academic opportunities for both our Departments. I foresee strong collaborations with my Department in developing educational programs focused on otolaryngologic emergencies for our trainees and students, as well as initiating innovative treatment pathways and research studying care in the Emergency Department and prehospital setting for these patients.

In summary, I fully support the transition of Otolaryngology from hospital department to full academic department in the School of Medicine. The division's record of clinical service, education, and research is outstanding and the transition to an academic department will insure continued success into the future. I have no doubt that an academic Department of Otolaryngology will contribute immensely to the missions of the School of Medicine and University.

Should you have any further questions for me, please do not hesitate to contact me at any time. Sincerely,

Ted Chan,
MD
Professor and Chair
Department of Emergency Medicine
University of California, San Diego Health Sciences
October 26, 2022

Dr. Jeffery Harris
Distinguished Professor and Chair
Department of Otolaryngology Head
and Neck Surgery

Dear Dr. Harris,

The purpose of this letter is to provide my highest level of support for the proposed action to convert Otolaryngology into an Academic Department in the School of Medicine here at UCSD. Otolaryngology has always provided first-rate clinical services for our patients; however, with recent exceptional in the Health System, it is clear that your department is now a major contributor to all three missions in the School of Medicine.

With regard to research, the list of scholarly publications and grant support in the proposal to covert Otolaryngology into an academic department is extremely impressive. If granted independent department status, Otolaryngology at UCSD would rank amongst the top 15 otolaryngology departments nationwide in NIH research funding. This metric alone would substantially contribute to our reputation as a school of medicine at UCSD.

The clinical training programs in otolaryngology also are impressive. It is clear that you are able to recruit top notch trainees into your clinical training programs. However, I am particularly impressed by contributions made by Otolaryngology faculty to undergraduate medical education in the UCSD School of Medicine. Faculty such as Drs. Califano and Ryan also contribute to graduate education in our interdepartmental Ph.D. programs.

In Pathology, we have taken steps to compliment the exceptional growth in Otolaryngology by hiring specialists in Anatomic Surgical Pathology and in our Clinical Genomic Medicine Program. We will continue to support you in order to provide the best otolaryngology clinical services, education programs, and research.

I am happy to speak with anybody involved in the review of your application for Academic Department status to further justify my strong endorsement of this action.

Sincerely,

Steven L. Gonias, M.D., Ph.D.
Distinguished Professor and Chair
Department of Pathology
Chief of Pathology
University of California, San Diego
November 9, 2022

Dean Garfin,

I am pleased to endorse the creation of a fully separate Academic Department of Otolaryngology in the UCSD School of Medicine. In my role for many years as the Director of Moores Cancer Center (MCC), I have had a close and ongoing relationship with the Division of Otolaryngology and particularly with its leadership. The partnership I have had with Dr. Harris has been most fruitful, beginning with our search for a new director of the head and neck surgical oncology program housed in Otolaryngology. Together we scoured the U.S. and were fortunate to recruit Dr. Joseph Califano, away from Johns Hopkins, who in a very short time rose to the leadership position of Physician-in-Chief of MCC. Head and Neck Surgery has become the model of patient-centered care at MCC and with guidance from Dr. Harris and Dr. Califano, the Division has recruited superb young surgeon-scientists to complement the strong group of more senior faculty.

Forging a closer association with radiation oncology, pharmacology and medical oncology, Otolaryngology has become a force in head and neck cancer research and one of the premier programs, if not the very best, in the country today. Their residents spend 1 to 2 years in the research laboratories of these related disciplines and have produced remarkable and quite innovative research publications. Their research grant funding through the Cancer Center is over $5.3 million and for the Division it exceeds $10 million from various sources.

This close partnership with Otolaryngology has paid off not only in robust extramural grant funding but also in philanthropy. Recently, we received a $12 million donation to establish the Gleiberman Head and Neck Cancer Center in MCC to foster patient-centered care and ground-breaking discoveries in head and neck cancer. Additionally, Matthew and Iris Strauss established a Chancellors’ Endowed Chair in Head and Neck Cancer, the first endowed chair in Otolaryngology.

In summary, I am proud to have been a partner with Otolaryngology over the years. Their program is highly regarded nationally as evidenced by their 21st ranking in USNWR and by their outstanding faculty and residents. They are a distinct discipline from Surgery and the majority of Otolaryngology programs in the U.S. are departments, as well as within our own UC system. Otolaryngology is, without question, deserving of full academic standing in our School of Medicine and I fully support the creation of a separate Academic Department of Otolaryngology.

Sincerely,

Scott M. Lippman, M.D.
Director, Moores Cancer Center
Senior Associate Dean and Associate Vice Chancellor for Cancer Research and Care
Chugai Pharmaceutical Chair in Cancer Distinguished Professor of Medicine
University of California, San Diego
Scott M. Lippman, MD
Director, Moores Cancer Center
UC San Diego School of Medicine
October 26, 2022

To: Pradeep K. Khosla, Ph.D.
Chancellor, UC San Diego

Re: Application of Division of Otolaryngology for Academic Department Status

Dear Chancellor Khosla,

I am writing to express my thoughts and considerations regarding the proposed transition of the Division of Otolaryngology (OTO) to full departmental status. By way of context, effective in 2021, the Division was granted “clinical department” status in July 2021 by Interim-Dean Garfin and VCHS Brenner whereby its financials and clinical programs were separated from the Department of Surgery. The desire and vision of Dr. Jeffrey Harris (Chief of the Division) to transition OTO to full academic department status is a natural evolution that has occurred in the majority of peer institutions across the country and within the UC system. Indeed, fewer than 10% of academic otolaryngology programs remain housed in Departments of Surgery nationwide (i.e. most are fully independent departments). Such a move would mirror those of the Departments of Urology and Neurological Surgery who have also transitioned out of the Department of Surgery in recent years and during my tenure.

To be transparent, I have in general been opposed to the transition of these surgical divisions, including OTO out of the Department of Surgery. The principal rationale is that such a move creates perpetually small/modest sized departments that as a consequence of scale will be challenged to create and maintain academic infrastructure to develop and/or grow the research missions. In addition to the financial disincentives associated with clinical revenue generation that distract surgeons away from robust research efforts, the small nature of many surgical departments is a principal impediment to the conduct of impactful research that
matches the research prominence of their host institutions. Such concerns are typically not a high priority for health systems and academic institutions who depend upon the outsized clinical revenues of surgical programs. In addition to these concerns, the creation of small Departments leads to inefficient administrative and academic infrastructure portfolios and can lead to challenges in the management of shared perioperative resources. Last but not least, the departure of these divisions creates a void in the fabric of the culture of the Department.

The rationale for the transition as laid out by proponents include: enhancing the ability to recruit top talent in the specialty, better development of top tier specialty-relevant research and educational programs, and increased visibility and advocacy within the health system and institution. It should also be pointed out that Department of Surgery chairs are often from general surgery backgrounds and do not always prioritize the needs of subspecialty, non-general surgery divisions. From my perspective all of these concerns can be successfully navigated under a divisional structure with the right departmental and divisional leadership. Indeed, the Division of OTO has under such a divisional structure advanced exponentially in all three missions over the past seven years during my tenure. Furthermore, its progress over this time by any metric exceeds that of the divisions that have previously transitioned. This success has been made possible by outstanding divisional leadership by Dr. Harris in concert with a Department Chair who has prioritized the needs of OTO and steered resources towards it including FTE, start-up funds, operative blocks, etc. The maturation and success of OTO has been among the proudest achievements of the Department under my leadership.

Notwithstanding, I understand the desire and vision of Dr. Harris to seek full departmental status. To be fair, the Division of OTO is truly exceptional in all missions and quite mature. It is larger and more successful in the three missions than Urology and Neurological Surgery were at the time of their transitions to full departmental status. Dr Harris’ compelling application outlines the extraordinary achievements and current status of OTO in great detail. By any metric, if granted departmental status, it would at the time of its inception sit in the top twenty otolaryngology departments in the country in research funding, clinical excellence/quality, competitiveness of its educational programs, and national reputation. The finances of the Division of OTO are solid with current levels of compensation, administrative expenses, clinical revenues, and health system support.

Two significant outstanding issues related to an OTO departmental transition remain unresolved at the current time. The Division of OHNS faculty currently occupy 3.0 FTE, 1.5 of which was invested by me in recent high level recruits despite expectations of the current application for transition to departmental status. By MOU signed by Interim-Dean Garfin (2/23/2022) the first 1.0 FTE to be vacated by retirement or departure of OTO faculty will revert from OTO to the Department of Surgery. The second significant resource issue is in the coverage of debt for building a microsurgery dissection lab in the Center for the Future of Surgery (CFS). The CFS operates as a business unit within the Department of Surgery. In response to the needs and desires of OTO, plastic surgery, and neurological surgery, a campus loan of $2.085 million was secured to build a new microsurgery dissection lab and endovascular suite. With the transition of OTO to departmental status, it will be expected to assume responsibility for coverage of a fair share of this loan and to work with the CFS to generate operational margins that will cover its share.

In summary, the Division of Otalaryngology is an exceptional and mature division. It provides world-class clinical care across the spectrum of otolaryngology/head and neck subspecialties. Its research
portfolio is highly impactful and funded at levels that are on par with the very best OTO departments in the country. Its educational programs are excellent and highly competitive. Its faculty are national and international leaders and recent junior recruits include highly competitive surgeon-scientists who will contribute to an even brighter future. The Division of OTO is also adept in securing philanthropic support for its programs. I am very proud of their successes. I and the Department of Surgery will support the decision of Health Sciences and Campus leadership with respect to the application of OTO for full department status. I am confident of its future success whether as a division in the Department of Surgery or as an independent department.

Sincerely,

Bryan. M. Clary, M.D., M.B.A.
Professor and Chair, Department of Surgery
M.J. Orloff Family Endowed Chair in
Surgery Surgeon-in-Chief, UC San Diego
Health

CC: Steven R. Garfin
October 29, 2022

Steven R. Garfin, MD
Interim Vice Chancellor, Health Sciences
Dean, School of Medicine
UC San Diego

Re: Letter in support of Otolaryngology as an Academic Department

Dear Dr. Garfin,

I am pleased to write this letter of strong and enthusiastic support for the transition of Otolaryngology from Hospital Department to independent Academic Department in the School of Medicine at the University of California, San Diego. As Chair of the Department of Pharmacology, I believe that the Division of Otolaryngology is well-deserving and also well-positioned for success as an independent Academic Department of our University.

As you are aware, under the leadership of Dr. Jeffrey Harris, Otolaryngology has undergone tremendous growth with a robust clinical practice, highly ranked teaching programs, and a burgeoning research portfolio. Many current and emeriti faculty are world renowned in their speciality. As a basic scientist and member of the National Academy of Medicine, I can attest the research potential of the faculty and trainees who are part of the Otolaryngology division. Similarly, the education programs including the fellowship training program is highly regarded and attracts students from top-tier schools.

In my particular case, I have been fortunate to interact frequently with Dr. Harris, and to collaborate with distinguished members of his research team, and to work directly with junior trainees in his department. Thus, I have learned first-hand of Dr. Harris’ leadership role, management style and mentoring skills, and extraordinary clinical and research program addressing head and neck cancer. Specifically, Dr. Califano’s laboratory, member of the Otolaryngology division, is adjacent to my lab. We have made multiple science discoveries, which Dr. Califano is actively translating into the clinic based on the highly interactive and supportive environment in the Otolaryngology division. This includes multiple joint high profile publications, grants in which we are co-investigators, and we have already completed a clinical trial and recently opened a second clinical trial. In addition, I have trained two fellows in Dr. Harris’ division, who have already made remarkable contributions to science. Their devotion to research of direct relevance to head and neck cancer patient care is just remarkable. They succeeded in obtaining NIH funding for their training, federal grants and support from research organizations for their studies, and in publishing their manuscripts in highly recognized journals. Some of their findings
may soon lead to practice changing new strategies for head and neck cancer treatment. This attests to the superb environment in the Department of Otolaryngology, which is already recognized for the highest level of its head and neck cancer research program.

The establishment of the Department of Otolaryngology as an academic department is well-deserved and sends a strong signal of our institution’s commitment to lead the nation in head and neck care, education and research. With the team that Dr. Harris has assembled and continues to build upon, combined with his dedicated and skilled leadership, I have no doubt that the UC San Diego Department of Otolaryngology will meet and exceed all measures of success applied to our university’s academic departments. As member of the Moores Cancer Center leadership and Chair of the Department of Pharmacology, I look forward to collaborating with a future academic Department of Otolaryngology, to create a world renowned head and neck research nucleus at the UC San Diego School of Medicine.

Thank you for your support of the broad reaching endeavours we are pursuing together for furthering the mission of UC San Diego, and for considering this request.

Sincerely,

J. Silvio Gutkind, Ph.D.
Distinguished Professor and Chair Department of Pharmacology
School of Medicine
Associate Director Basic Science Moores Cancer Center
UC San Diego (UCSD)
Re: Transition of Otolaryngology to Academic Department status

Dear Dean Garfin,

I am delighted to enthusiastically support the Clinical Department of Otolaryngology’s transition to an Academic Department in the School of Medicine. I have witnessed over the past decade a meteoric rise in the tripartite missions of the Otolaryngology program. As a discipline, Otolaryngology is distinct from surgery with its own primary board and is a founding member of the American Board of Medical Specialties (ABMS). Furthermore, the vast majority of academic and university-based Otolaryngology programs are separate departments, including all other programs within the University of California.

Under Dr. Harris’ leadership, Otolaryngology has recruited a superb faculty of accomplished clinicians and surgeons, many of whom are academically renowned. Some of their programs are national leaders, including, for example, the Neurotology program which is unparalleled. With the recruitment of Dr. Rick Friedman and Dr. Marc Schwartz, the surgical volume and quality are ranked number one by Vizient and their contributions greatly benefit the UCSD Health, as well as the quality of training. Their fellows attain highly sought-after academic positions that have greatly enhanced the reputation of UCSD. The ability of Dr. Harris to have initiated the recruitment of this talented team is testament to his ability to collaborate with other departments, and in this case to work effectively with Dr. Alex Khalessi in Neurosurgery. In addition, Dr. Friedman is truly a triple treat surgeon-scientist with a vibrant and productive laboratory effort that is well-funded with three NIH grants.

As another example, the recruitment of Dr. Joseph Califano to the Moores Cancer Center was another major accomplishment, in this case in collaboration with Dr. Scott Lippman. In the 6 years that Dr. Califano has been here, not only has he led the expansion of the Head and Neck Surgical Oncology section in Otolaryngology, but he has risen to become the Physician-in-Chief of the Moores Cancer Center. In addition, he has established a world class research program in HPV-induced head and Neck Cancer with multiple NIH grants. The head and neck oncology program has been honored by a $12 million dollar donation to establish the Gleiberman Head and Neck Cancer Center and Otolaryngology's first endowed chair.
Harris has recruited 12 faculty, including several of the junior faculty who are surgeon-scientists who have received K Awards or their equivalent nt. This speaks to a bright future and continued success in their research program and faculty retainment.

The Otolaryngology program has received national recognition by its jump from 61 to 21 in the latest US News and World Report rankings and its research program would rank #13 in the US by the Blue Ridge Institute for Medical Research were it now an academic department. The research program has benefitted by a long-standing T32 NIH-NIDCD training program which recently was converted to an R25. The total research funding from all sources exceeds $15 million dollars.

Otolaryngology has strong leadership and a superb and dedicated faculty. The extensive educational, research and clinical programs will only grow stronger as an academic department. In addition to enhancing retention of current faculty, it also will enhance faculty recruitment. Without question, the transition to a full and independent academic department is well deserved. I support the transition with the highest enthusiasm and without reservation.

Sincerely,

[Signature]

Robert N. Weinreb, MD
Distinguished Professor and Chair, Ophthalmology
Director, Shiley Eye Institute
November 9, 2022

Steven R. Garfin, M.D.
Interim Vice Chancellor for Health Sciences
Interim Dean, UC San Diego School of Medicine
9500 Gilman Drive #0602
La Jolla, CA 92093-0602

Dear Dr. Garfin,

It is my pleasure to support the proposed transition of Otolaryngology to an academic department in the School of Medicine. My comments are focused primarily on the research mission, as I am sure that others have discussed the clinical attributes of the program.

There are few Otolaryngology programs nationally that value basic and translational science research, mentored research training and discovery as much as our own department. Otolaryngology has multiple surgeon-scientists, many of whom have combined MD-PhD degrees and serve as superb role models for the recruitment of young aspiring research-oriented residents and faculty. Review of their research portfolio shows that they 14 active NIH grants of which 9 are R01’s. This is extremely unusual for a surgical department especially in this lean funding climate. When looking at how they compare to other Otolaryngology departments they currently rank 13th in the US by the Blue Ridge Institute. Their research funding from all sources is $15,454,000.

In terms of noteworthy examples that bode well for the future, including a few highlights are below:

- Dr. Carol Yan has received a K08 mentored training grant
- Dr. Jaqueline Greene just received an ACTRI KL2 award.
- Dr. Theresa Guo, a head and neck surgical oncologist has a KL2 as well.

They join a group of well-funded faculty that includes Dr. Rick Friedman, Dr. Joseph Califano, Dr. Quyen Nguyen, Dr. Allen Ryan, Dr. Arwa Kurabi and Dr. Jeffrey Harris all of whom have current research efforts. In an environment that emphasizes on clinical productivity, having so many clinician-scientists in a surgical subspecialty is unusual. This culture of scientific discovery translates down to their trainees who participate in 1-2 years of T32 and R25 mentoring training during their residency program. Several have used this time to enroll in PhD programs and 2 were awarded PhDs in molecular pathology while still a resident.
I also am impressed by the multi-disciplinary nature of the residents’ research, including training in labs outside of Otolaryngology. Quyen Nguyen, a graduate of our residency and fellowship program, is one example where she worked in the laboratory of Roger Tsien. Subsequently, from her own work in collaboration with Dr. Tsien, she received a Presidential Early Career Award for Scientists and Engineers (PECASE, April 2014), a Burroughs Wellcome trust award and has now started a biotech company. Two other current examples from a long list of trainees, are Farhoud Faraji, MD, PhD and Robert Saddawi-Konefka, MD, PhD both of whom are residents who have taken 3 years out of their clinical training to pursue highly productive basic science oncology research under Dr. Silvio Gutkind’s mentorship. Their work is paradigm changing in how we view the treatment of head and neck cancers.

I know by reputation that their clinical program is just as accomplished. Under, Dr. Harris’ leadership, they have had stellar faculty recruitments over the past 6-7 years, and it has resulted in a meteoric rise in their USNWR rankings from 61 up to 21st in the nation.

In summary and from my research perspective, I am confident that establishing Otolaryngology as an academic department will only accelerate their national reputation and rankings and enhance their ability to recruit and retain the highest caliber faculty. Thus, I strongly support its establishment as an academic department.

Sincerely,

Gary S. Firestein, M.D.
November 29, 2022

Dear Chancellor Khosla and Colleagues in the Academic Senate:

It is my sincere pleasure and distinct honor to recommend the establishment of a UC San Diego School of Medicine Department of Otolaryngology (OTO-HNS). As chair of the Department of Neurological Surgery, I enjoy strong visibility to the outstanding contributions made by Dr. Harris and his faculty across the tripartite academic mission.

OTO-HNS designation as a School of Medicine academic department represents a national progression in a proud tradition of otolaryngology/ head and neck surgery at UC San Diego. It would augment the recruitment and retention of leading faculty through independent promotion processes. It would further facilitate adjunct academic appointments for greater institutional level collaboration consistent with a strong chancellor level goal. Our own experience in neurological surgery informs the importance of an independent department of otolaryngology to the future of that specialty here at UC San Diego.

Dr. Harris and colleagues, as detailed in their department application, clearly stand among the nation’s best in providing cutting edge clinical care to their patients and having established multiple novel destination sub-specialty programs. As highlighted in their submitted materials, we are fortunate partners with OTO-HNS in the development of complex destination anterior and posterior skull-base programs. The world-class quality of these programs strengthens research and training efforts in these areas. I would proudly note the recent OTO-HNS clinical department ranking of #21 nationally in US News and World Report.

Beyond these areas of substantial partnership, OTO-HNS faculty strength and collective success spans across all major subspecialties within otolaryngology. The department has a strong record of training and promoting leaders in the field; the Department application details numerous Chairs including at Cleveland Clinic and LSU who originated at UC San Diego.

In a testament to the strong research enterprise within the proposed department, UC San Diego would rank 13th nationally in NIH funding for OTO-HNS research. Current efforts involve the use of fluorescence agents for intraoperative surgical guidance, mechanistic explanations for hearing loss, auditory brainstem implants, head and neck cancer.
Notably, this research funding places UC San Diego only behind UC San Francisco in extramural funding within the University of California system. Sister UC campuses all recognize OTO-HNS as a distinct academic Department in their respective schools of medicine. In this respect, UC San Diego remains an outlier though OTO-HNS exceeds its peers in academic stature and performance.

The department proposal similarly demonstrates significant philanthropic and financial strength and a leading effort among surgical subspecialties in diversity equity and inclusion. OTO-HNS mentor many students, residents, and fellows throughout the school of medicine. Moreover, the gender and URM distribution among OTO-HNS favorably compares among surgical peers. Lastly, OTO-HNS faculty engage in institutional leadership, exemplified by the recent appointment of Dr. Joseph Califano as Director of the Moores Cancer Center.

Overall, I believe the clinical Department of Otolaryngology has a strong foundation for transition to an academic department within the School of Medicine. Under Dr. Harris’s leadership, I anticipate a strong continued trajectory of success in keeping with our own experience in neurological surgery. I look forward to celebrating the continued outstanding representation of UC San Diego by my OTO-HNS colleagues.

I submit this recommendation with great enthusiasm and without reservation. Please do not hesitate to contact me with questions or concerns.

Respectfully submitted,

Alexander A. Khalessi, MD, MBA
Chair of Neurological Surgery
Don and Karen Cohn Chancellor’s Endowed Chair
Professor of Neurological Surgery, Radiology and Neurosciences
November 7, 2022

Steven R. Garfin, MD
Interim Vice Chancellor for Health Sciences and Dean
School of Medicine
University of California San Diego

RE: Proposal by Clinical Department of Otolaryngology to receive academic department status in the School of Medicine

Dear Dr. Garfin,

I am pleased to offer my enthusiastic support of the proposed transition of the Hospital Department of Otolaryngology to an academic department in the School of Medicine. Otolaryngology has built an outstanding reputation for scholarship, education, and patient care. They deserve recognition and independence as a separate discipline from General Surgery. The self-governance conferred by this distinction will focus their capability for continued growth.

As a clinical department, Otolaryngology has seen a tremendous increase over two years in the numbers of operative procedures and outpatient visits. They have recruited new faculty with excellent research profiles who have succeeded in winning research funds. This has greatly boosted their academic research publication in addition to improving educational opportunities for their residents and fellows. Otolaryngology faculty have also excelled in service, representing their discipline on numerous institutional committees and in education leadership roles.

In education, department status will enhance resident and fellow recruitment capabilities. Otolaryngology has devoted efforts to expanding clinical and research education for their residents and fellows. Their plan to create additional subspecialty fellowships within the discipline further demonstrates their commitment to education.

With regard to U.S. News & World Report (USNWR) annual rankings, Otolaryngology was ranked #21 this year, a truly impressive gain from #61 three years ago. It is notable that all of the top 25 USNWR ranked
otolaryngology programs in the nation are departments. Of the 120 such programs in the US, only 9 are divisions and the rest are departments. Furthermore, all of the UC programs are departments. It is clear that department status is beneficial in improving USNWR rank.

In summary, I strongly support the transition of the current academic Division of Otolaryngology to a School of Medicine Department. Becoming an academic department will facilitate their continued growth and more properly align them with peer institutions and our UC sister schools. It will improve their faculty recruitment and retention efforts and will draw a greater and higher quality field of residency and fellowship candidates. This will allow continued growth in clinical services and in their research and academic output. Otolaryngology’s expansion and successes of the past few years demonstrate that they fully deserve the new designation.

Sincerely,

Manoj Monga, MD, FACS, FRCS (Glasgow) Professor and Chair
Department of Urology
Joseph D. Schmidt MD Presidential Chair in Urology

CC: John M. Carethers, MD
Dr. Harris is a neuro-otologic surgeon who deals with disorders of the ear, hearing and balance, and tumors that affect the skull base.

Dr. Harris has an active clinical practice and leads a large research team committed to discovering the causes of deafness and other disorders such as acoustic neuromas, skull base surgery, Ménière’s disease and autoimmune inner ear disease. He has served on several scientific review boards, including the NIH, the Deafness Research Foundation, the American Otologic Society, the House Ear Institute, the American Academy of Otolaryngology/Head & Neck Surgery. Recently, he co-chaired the Expert Panel on Hearing and Hearing Impairment for the National Institutes of Health, which identified the priorities for federal funding of hearing research over the next decade.

Dr. Harris was awarded a $4 million multi-institutional clinical trial to evaluate immunosuppressive drugs in the treatment of autoimmune disease, including autoimmune deafness. He is a past president of the Association for Research in Otolaryngology, the largest international organization devoted to research in otolaryngology, and the past president of the San Diego Academy of Otolaryngology. He has also served as chief of staff of the UC San Diego Medical Center and chief of staff of the UC San Diego Thornton Pavilion, as well as an elected member of the Board of Governors for the UC San Diego Medical Group.

Dr. Harris has been named an outstanding otolaryngologist in Town & Country magazine and American Health Magazine and was included in "Best Doctors in America" by Woodward and White and "The Guide to Top Doctors." UC San Diego's Clinical Department of Otolaryngology has been listed as one of the best otolaryngology programs in the country by U.S. News & World Report. In 2015 he received the American Otological Society Award of Merit.

Dr. Harris has been a visiting professor at many prestigious universities and institutions, including Harvard, Johns Hopkins, Michigan, Iowa, Pennsylvania, Washington, the Mayo Clinic, Stanford, the Cleveland Clinic, and many European universities. He has been an invited guest speaker at the Academies of Otolaryngology in Britain, Ireland, Canada, Japan, Mexico, Norway, China, Spain, Brazil, Korea, and Thailand. He is on the editorial board of several scientific journals, has published four books, 21 patents, and over 200 scientific articles. Dr. Harris has served as editor in chief of the Journal of Audiology and Neurotology and was recently the invited discussant for a NEJM CPC.

Rick Friedman, MD, PhD, is a board-certified neurotologist, a specialist who treats neurological disorders of the ear. He is a world-renowned expert in the treatment of acoustic neuroma, a benign tumor that develops on the main nerve connecting the ear to the brain. In addition to leading the acoustic neuroma program at UC San Diego Health, he also treats meningioma, neurofibromatosis type 2 (NF2), glomus tumors, hearing impairment, otosclerosis, Meniere’s disease, cholesteatoma, superior canal dehiscence and chronic ear infections.

As a professor in the Department of Surgery, Dr. Friedman trains medical students, residents and fellows at UC San Diego School of Medicine. He receives funding from the National Institutes of Health (NIH) for his research on the genetics of common forms of hearing loss.

Prior to joining UC San Diego Health, Dr. Friedman served as the Clinical Department director of otology, neurotology and skull base surgery at the Keck School of Medicine of USC. He was also the director of the USC Acoustic Neuroma Center and has experience treating over 1,000 acoustic neuromas. In addition, he served as medical director of the Cranial Base Surgical Center at Cedars Sinai Medical Center in Los Angeles.

Dr. Friedman completed his fellowship training in neurotology at House Ear Clinic in Los Angeles. He did his residency training in otolaryngology at UC San Diego School of Medicine, where he also earned his medical degree. He holds a doctorate in molecular pathology, also from UC San Diego. He is board certified in neurotology.

A popular speaker, Dr. Friedman has presented his work at more than 30 medical conferences around the world. He has published some 100 articles and book chapters in peer-reviewed publications such as Human Molecular Genetics, American Journal of Medical Genetics, Otology & Neurotology and Laryngoscope, to name a few.

Dr. Friedman belongs to most of the societies in his area of specialization, including the American Academy of Otolaryngology - Head and Neck Surgery, the American Otological Society, the Acoustic Neuroma Association-Medical Advisory Board (co-chair), the American Neurotology Society, The North American Skull Base Society, the Triological Society, and the NIH/National Institute of Deafness and other Communication Disorders (NIDCD), where he serves as an ad hoc reviewer.
Joseph A. Califano III, MD, is an internationally recognized physician scientist who has translated multiple discoveries from his own laboratory into the clinic, including detection of HPV-related and other head and neck cancers. Dr. Califano is Professor of Surgery and Vice Chief of the Clinical Department of Otolaryngology-Head and Neck Surgery, Department of Surgery as well as Director, Head and Neck Cancer Center, Moores Cancer Center at UC San Diego Health. His major focus is the clinical practice of head and neck surgical oncology and the integration of basic, molecular biologic research in that practice.

A graduate of Harvard Medical School, Dr. Califano performed his Otolaryngology-Head and Neck Surgery residency at Johns Hopkins Hospital and completed a fellowship in head and neck surgical oncology at Memorial Sloan-Kettering Cancer Center. He then joined the faculty of Johns Hopkins and ultimately became Professor in the Head and Neck Clinical Department and the Clinical Department of Head and Neck Cancer Research at John Hopkins Department of Otolaryngology-Head and Neck Surgery before moving to UCSD.

His surgical practice focuses on minimally invasive treatment of tumors of the larynx, pharynx, and neck, as well as treatment of premalignant conditions of the upper aerodigestive tract.

Dr. Califano also currently directs an NIH funded laboratory investigating the molecular biologic basis of head and neck cancer. He has published over 300 articles related to both the clinical and basic scientific aspects of cancer, and currently serves as a member of the NCI Head and Neck Steering Committee and Council Member of the American Head and Neck Society, NCCN Board of Directors, as well as other professional organizations and editorial boards.

Kevin T. Brumund, MD

Associate Professor of Surgery Head and Neck Oncology Thyroid and Parathyroid Surgery, Microvascular Reconstructive Surgery

Dr. Brumund is a Professor of Surgery in the Clinical Department of Otolaryngology-Head and Neck Surgery at the University of California, San Diego (UCSD) School of Medicine and the Chief of the Section of Head and Neck Surgery at the VA
Medical Center, San Diego. He obtained his medical degree from Rush Medical College in Chicago. After completing his General Surgery internship at Rush Medical Center, he completed his residency training in Otolaryngology-Head and Neck Surgery at the University of Iowa Hospitals and Clinics. He completed his advanced fellowship training in Head and Neck Oncologic Surgery, Skull Base Surgery, and Microvascular Reconstructive Surgery at the University of California, Davis Medical Center. Dr. Brumund joined the faculty at the University of California, San Diego after completing his training in 2006.

Dr. Brumund is a board-certified head and neck surgeon whose practice is dedicated solely to the treatment of head and neck tumors. Dr. Brumund has extensive training and experience in cancer surgery and specializes in treating both benign and malignant tumors of the head and neck. This includes tumors of the entire upper aerodigestive tract (mouth, throat, nose, sinuses, and voice box), salivary glands (parotid and submandibular glands), neck, facial skin, thyroid and parathyroid glands. He is a member of the multidisciplinary Head and Neck Oncology team of specialists at the UC San Diego Moores Cancer Center dedicated to the cutting-edge treatment of patients with head and neck cancer.

Dr. Brumund’s clinical interests focus on the use of point-of-care ultrasound in the care of patients and particularly to evaluate and manage thyroid nodules and neck masses. He has taught ultrasound instructional courses all over the country, serving as course Chair for many of these, and has served in leadership positions in the American Head and Neck Society and the American Thyroid Association. Dr. Brumund has published over 35 journal articles and textbook chapters.

Charley Coffey, MD is a board-certified otolaryngologist and fellowship-trained head and neck cancer surgeon, with expertise in the diagnosis and management of patients presenting with a broad range of benign and malignant tumors of the head and neck. Dr. Coffey earned his medical degree at the University of North Carolina, followed by completion of residency in otolaryngology at the Medical University of South Carolina and advanced head & neck oncologic surgical fellowship at MD Anderson Cancer Center.

Dr. Coffey’s surgical practice includes management of tumors of the upper aerodigestive tract, salivary glands, neck, and skull base, as well as skin cancers of the face and neck. Where appropriate, he can employ minimally invasive techniques to minimize post-operative morbidity, including transoral robotic surgery, laser microsurgery, and endoscopic surgery. Dr. Coffey has particular interest in salivary gland function, including prevention and management of xerostomia in head & neck cancer patients and the use of minimally-invasive techniques to treat patients with obstructive salivary disorders.

In addition to clinical practice, Dr. Coffey is dedicated to medical education. He is Co-Director of the UCSD Surgery Core Clerkship, serves on the faculty of numerous medical school courses, and participates in curriculum design and review for the UCSD School of Medicine, UCSD Clinical Department of Otolaryngology, and the American Head & Neck Society. His efforts have been recognized with multiple
teaching awards from students and residents. Dr. Coffey completed the ACS-ASE Surgical Education Research Fellowship in 2019. He has authored over 60 publications, chapters, and abstracts, and is currently the primary or coinvestigator on four institutional and federally funded grants.

Adam DeConde, MD
Associate Professor of Surgery
Rhinology
Skull-Base Surgery

Adam DeConde, MD, is a board-certified head and neck surgeon who specializes in treating endoscopic sinus surgery and skull base tumors. Dr. DeConde's goal is to deliver ever-evolving, state of the art care to patients suffering from persistent sinonasal pathology.

To further refine interventions for patients, Dr. DeConde is actively involved in patient-centered clinical outcomes research for medical and surgical interventions associated with chronic rhinosinusitis as well as outcomes and techniques in endoscopic resection of sinonasal and skull base tumors.

Dr. DeConde's clinical and research work is focused on chronic rhinosinusitis and skull base tumors. He is regularly published in medical journals on topics related to endoscopic sinus surgery and skull base surgery.

As an associate professor in the Department of Surgery, Dr. DeConde is involved in training medical students, residents and fellows in rhinoplasty and skull base surgery at UC San Diego School of Medicine.

Dr. DeConde completed fellowship training at Oregon Health & Science University in rhinology and skull base surgery. He focused on techniques in revision endoscopic sinus surgery and endoscopic sinonasal resection and skull base tumors. Dr. DeConde completed his residency training in otolaryngology at University of California, Los Angeles, where he also earned his medical degree and undergraduate degree.

Sapideh Gilani, MD
Associate Professor of Surgery, Otolaryngology
Facial Plastic and Reconstructive Surgery
Sapideh Gilani, MD, is a board-certified otolaryngologist who specializes in treating disorders of the nose and sinuses, as well as facial plastic and reconstructive surgery. She cares for patients with a wide range of conditions that affect the face, head and neck, including facial trauma or fractures, nasal obstruction, nasal trauma or fractures, and sinusitis. Dr. Gilani performs endoscopic sinus surgery, nasal surgery, rhinoplasty and revision rhinoplasty.

As an associate professor in the Department of Surgery, Dr. Gilani instructs medical students, residents, and fellows at UC San Diego School of Medicine. She has co-authored several peer-reviewed articles and her work has appeared in Otolaryngology - Head and Neck Surgery.

Prior to joining UC San Diego Health, Dr. Gilani cared for patients as part of the otolaryngology team at Brigham and Women's Hospital and the Massachusetts Eye and Ear Infirmary in Boston. She was also an instructor in otology and laryngology at Harvard Medical School. Dr. Gilani completed a residency in otolaryngology at Stanford University School of Medicine, where she also earned her medical degree.

Dr. Gilani is board certified in otolaryngology, and a fellow of the American College of Surgeons (FACS).

Jacqueline Greene, MD
Assistant Professor
Facial Nerve Center
Otolaryngology-Head & Neck Surgery

Jacqueline Greene, MD, is a board-certified otolaryngologist with advanced subspecialty training in facial reanimation and microvascular surgery and expertise in facial nerve disorders, facial paralysis, and complex facial and nasal reconstruction. She performs facial reanimation surgery (gracilis free muscle transfer for smile reanimation, facial nerve repair and nerve transfers), facial plastic and reconstructive surgery and Otolaryngology.

As an assistant professor in the Department of Surgery, Dr. Greene trains medical students, residents and fellows at UC San Diego School of Medicine. She also conducts research in facial reanimation, neural regeneration, and bioengineering, which has been published in peer-reviewed journals. Her interests include biomaterials and bioelectronics, tissue engineering, neural regeneration and translational research.

Dr. Greene completed a fellowship in Facial Plastic and Reconstructive Surgery at Massachusetts Eye and Ear Infirmary, Harvard Medical School. She did her residency in Otolaryngology-Head and Neck Surgery at Northwestern University’s Feinberg School of Medicine. Dr. Greene earned her medical degree from the UC San Diego School of Medicine.
She is a member of the American Academy of Otolaryngology–Head and Neck Surgery and the American Society of Peripheral Nerve. She is board-eligible for the American Academy of Facial Plastic and Reconstructive Surgery.

Research Funding: 1 active UCSD Senate grant, 1 active UCSD Cancer Center Pilot grant.

Theresa Guo, MD, is a head and neck surgeon who treats patients with head and neck tumors, including salivary gland, thyroid and parathyroid disorders, as well as cancer of the face, scalp, nose, mouth, tongue and throat.

Dr. Guo approaches treatment of head and neck cancer by including a whole team of experts. Treatment can be a complex combination of surgery, radiation and/or chemotherapy. Diseases of the head and neck have a significant impact on one's quality of life, so a team approach is essential to achieve comprehensive care and to help patients maximize quality of life throughout their journey.

In addition to patient care, she is also engaged in research that seeks to deliver precision cancer care. Her research uses computational biology to study complex post-transcriptional genomic changes that occur in head and neck tumors. She has published more than 44 journal articles and received a KL2 career development award. In addition, she also serves as a peer reviewer for Head & Neck and Oral Oncology.

Dr. Guo completed a fellowship in head and neck surgical oncology at University of Texas MD Anderson Cancer Center in Houston. She completed her residency training in otolaryngology at The Johns Hopkins Hospital, Baltimore, Maryland. Dr. Guo earned her medical degree at Cleveland Clinic Lerner College of Medicine, a program of Case Western Reserve University School of Medicine.

She is Otolaryngology Board certified and a member of the American Medical Association, American Academy of Otolaryngology-Head and Neck Surgery and American Head and Neck Society.
Dr. Hom is double Board Certified in both Facial Plastic & Reconstructive Surgery and Otolaryngology-Head & Neck Surgery. He has over 22 years of experience as an academic facial plastic and reconstructive surgeon. Dr. Hom's expertise includes treating facial injuries, facial (skin and bone) deformities and doing Mohs skin cancer reconstruction. He also specializes in improving nasal breathing problems, nasal fractures and nasal obstruction.

His practice has been nationally recognized in "Best Doctors of America", in Castle Connolly’s “Top Doctors" and as a Top Doctor in the San Diego Magazine.

In addition to his clinical practice, he is investigating new ways to improve wound healing and reduce skin scarring. His research on how growth factors can improve soft tissue wound healing was funded by the National Institutes of Health (NIH).

Dr. Hom earned his medical degree from UCLA School of Medicine. He did residencies in otolaryngology at the University of Michigan and in surgery at UC Irvine. He did a fellowship with the American Academy of Facial Plastic and Reconstructive Surgery. He is honored to be a member of the Alpha Omega Alpha Medical Honor Society. Currently, he serves as Secretary of the American Board of Facial Plastic and Reconstructive Surgery. He is also Associate Editor of Laryngoscope Investigative Otolaryngology. He also is an oral examiner for the American Board of Otolaryngology - Head & Neck Surgery.

He is senior editor of the book entitled "Tissue Healing of the Face & Neck" (which was favorably reviewed by JAMA). He also recently published a new book, Facial Scars - Revision and Treatment, describing surgical and medical techniques to treat facial scars. He also has over 72 Peer Reviewed article publications, over 60 Book Chapters, 9 Medical and Surgical Books (as Co-Editor) 2 Research Grants – 1 Academic Education Grant from the Society of University Otolaryngology, 1 Industrial Wound Healing Research Grant.

Cornelius Jansen, MD
ENT/Head and Neck, General Otolaryngology

Dr. Jansen is a Faculty member in Otolaryngology/Head and Neck Surgery at the University of California at San Diego (UCSD) School of Medicine. He earned his Medical Degree and did General Surgery and Otolaryngology/Head and Neck Surgery Residency at Johns Hopkins. He is Board Certified by the American Academy of Otolaryngology/Head and Neck Surgery.

Dr. Jansen graduated Magna Cum Laude with a Bachelor of Science in Biochemistry at Brown University. He completed research at the Rhode Island Hospital, The National Institutes of Health and at the Johns Hopkins University School of Medicine. He has published articles for publications in Immunology, Laryngeal
Cancer and Hearing loss. Dr Jansen has also worked at the FDA on the Over-the-Counter Drug Review. He has received the Carpenter Prize as an undergraduate and a Travelling Research Award from the Association for Research in Otolaryngology as a Resident.

He has worked at the Maui Medical Group where he served as Vice-President and Personnel Director for 10 years. He then worked at Kaiser Walnut Creek in the Head and Neck Surgery Department for the next 20 years.

Dr Jansen has clinical interests in all of General Otolaryngology/Head and Neck Surgery and is welcoming new patients.

Elina Kari, MD, is a board-certified head and neck surgeon and neurotologist, a specialist who treats neurological disorders of the ear. Dr. Kari’s expertise includes treating ear and hearing problems in adults and children, and conditions such as ear infections, perforated eardrums (tympanic membrane perforations), cholesteatoma, otosclerosis, lateral skull base lesions and acoustic neuroma. In addition, she evaluates patients for cochlear implants, osseointegrated hearing devices and auditory brainstem implants.

As an assistant professor in the Department of Surgery, Dr. Kari trains medical students, residents and fellows at UC San Diego School of Medicine. She also conducts research on pediatric hearing loss and cochlear implants, and cochleovestibular malformation in children as well as abnormal cochleovestibular nerves.

Before joining UC San Diego Health, Dr. Kari was the principle pediatric ear surgeon at University of Southern California / Children's Hospital Los Angeles, where they performed 75-100 pediatric cochlear implants per year. She is currently one of the surgeons at Rady Children’s Hospital that performs cochlear implant surgery on children and babies.

Dr. Kari is board certified in both otolaryngology and neurotology. She completed her fellowship training in neurotology and otology at House Ear Institute in Los Angeles. She completed her residency training in otolaryngology at Emory University School of Medicine in Atlanta. Dr. Kari earned her medical degree from University of Michigan Medical School in Ann Arbor, Mich and he undergraduate degree in Latin American Studies at the University of California, Berkeley. She grew up in Cambridge and Somerville, MA and is now very much enjoying life in Southern California.

She is a member of the American Neurotology Society and the American Academy of Otolaryngology. She is also Co-Editor in Chief of the Journal Audiology and Neurotology. She has published widely on abnormal cochleovestibular anatomy and its implications on cochlear implantation and the genetics of
Elina Kari, MD, is a board-certified head and neck surgeon and neurotologist, a specialist who treats neurological disorders of the ear. Dr. Kari’s expertise includes treating ear and hearing problems in adults and children, and conditions such as ear infections, perforated eardrums (typanic membrane perforations), cholesteatoma, otosclerosis, lateral skull base lesions and acoustic neuroma. In addition, she evaluates patients for cochlear implants, osseointegrated hearing devices and auditory brainstem implants.

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Dr. Nguyen is a Professor in the Department of Surgery and Pharmacology at the University of California San Diego (UCSD). She received her combined MD/PhD degree from Washington University, School of Medicine in St. Louis, MO. She completed her General Surgery Internship at Barnes Jewish Hospital in St. Louis and residency in Head and Neck Surgery and subspecialty fellowship training in Neurotology/Skull Base Surgery at UCSD. She is board certified in both Head and Neck Surgery and Neurotology/Skull Base Surgery and is the fellowship director for the ACGME accredited fellowship in Neurotology/Skull Base Surgery at UCSD. Dr. Nguyen is the Associate Director for Education and Training at the Moores Cancer Center and coleads the Cancer Related Career Enhancement and Related Activities (CRCERA) program (https://crcera.ucsd.edu/).

Her clinical practice is at UCSD Health Systems where she cares for patients with diseases of the facial nerve, ear, and skull base. She has a subspecialty interest in facial nerve reanimation and surgical procedures for patients with facial paralysis. She also specializes in hearing restoration surgeries including stapedectomy and cochlear implantation.

Dr. Nguyen’s interest in molecular imaging for fluorescence guided Precision SurgeryTM began during her fellowship at UCSD where she collaborated with Dr. Roger Tsien (1952-2016), Nobel Laureate, Chemistry 2008. She has been awarded the Presidential Early Career Award for Scientists and Engineers (PECASE, April 2014). The Presidential Award is the highest honor bestowed by the U.S. government on outstanding scientists and engineers beginning their independent careers.

Together with Dr. Tsien, Dr. Nguyen co-invented a tumor marker for fluorescence-enabled real-time detection of tumor margins and nerve marker for fluorescence-enabled real-time illumination of nerves. The tumor marker was licensed by Avelas Biosciences, INC and received Breakthrough Designation from the FDA in late 2020. Dr. Nguyen founded Alume Biosciences, INC (Alume) in 2017 to enable the clinical translation of the nerve marker. Alume has received an allowance from the United States Food and Drug Administration (US FDA) to proceed with clinical trial testing in patients undergoing head and neck surgery (NCT04420689) at University of California, San Diego, Stanford and Harvard. Dr. Nguyen currently holds an active NIH R33 grant and an industry-sponsored grant.
Dr. Ryan Orosco is a board-certified head and neck surgeon who specializes in benign and malignant tumors and complex reconstruction of the head and neck. He earned his medical degree from Johns Hopkins University and was an otolaryngology resident at UC San Diego. He completed a fellowship in head and neck cancer and microvascular reconstruction at Stanford University. Dr. Orosco’s clinical interests include head and neck cancer, robotic and minimally-invasive techniques, endocrine and salivary gland surgery, microvascular reconstruction.

He is dedicated to developing and evaluating innovative treatments, and is currently leading a national clinical trial of fluorescence-guided surgery. Additionally, he has pursued robotic surgery research. In partnership with a dynamic robotic engineering professor at UCSD, Dr. Michael Yip, Dr. Orosco leads a translational robotic surgery laboratory devoted to advancing the field of robotic surgery.

Dr. Orosco has received career development funding through the Altman Clinical Translational Research Institute (ACTRI), and research grants through ACTRI and the UCSD Academic Senate. Dr. Orosco has published more than 60 journal articles. He is a member of several professional organizations including the American Academy of Otolaryngology-Head and Neck Surgery, American Head & Neck Society, American Thyroid Association, and a Fellow of the American College of Surgeons.

Meghan K. Spriggs, AuD, is a certified audiologist who cares for adults with hearing loss and ear disorders, including sensorineural, mixed and conductive hearing loss, tinnitus, hearing loss with age (presbycusis), acoustic neuroma, single-sided deafness, otosclerosis, and noise-induced hearing loss. Her primary area of interest and expertise is in implantable hearing technologies, including cochlear implantation and osseointegrated hearing implants. Additionally, she sees patients for audiometric evaluation, tympanometry, otoacoustic emissions, speech perception assessment, hearing aid evaluation and fitting, and aural rehabilitation and counseling regarding communication strategies and use of hearing assistive technology.
Dr. Spriggs has contributed to studies of hearing loss related to diabetes and hearing outcomes for Meniere’s treatments. Her past research interests include the study of hair cell regeneration in the avian inner ear. Dr. Spriggs is an ad-hoc reviewer for the International Journal of Audiology and Otology & Neurotology and is a member of the American Speech-Language Hearing Association.

Before joining UC San Diego Health, Dr. Spriggs served as a clinical applications specialist for Cochlear Americas, in which she provided audiologic support for cochlear implant clinics. She has also worked as an audiology consultant at the San Diego Regional Center, where she performed hearing screenings for developmentally delayed children. Her audiology clinical externship was completed at The Listening Center at Johns Hopkins, where she evaluated cochlear implant candidacy and programmed cochlear implants for pediatric and adult patients. Her experience includes working with patients with multiple disabilities and diverse cultural backgrounds.

As a faculty member of the UCSD/SDSU joint doctoral program in audiology, Dr. Spriggs teaches graduate level courses to second-year audiology students in temporal bone anatomy and neurophysiology, aural rehabilitation, and cochlear implants and other implantable hearing devices. She is a clinical preceptor for doctoral students during their clinical rotations. She has been invited to present at regional conferences on implantable hearing technology, cochlear implant candidacy and outcomes, and amplification options for single-sided deafness, conductive or mixed hearing loss.

Dr. Spriggs earned a doctoral degree in audiology (AuD) from Washington University School of Medicine in St. Louis. She holds the Certificate of Clinical Competence in Audiology (CCC-A) from the American Speech Language-Hearing Association.

Andrew Vahabzadeh-Hagh, MD
Assistant Clinical Professor of Surgery

Andrew Vahabzadeh-Hagh, MD, is a board-certified otolaryngologist/head and neck surgeon who treats disorders of the ear, nose and throat. As a fellowship-trained laryngologist, Dr. Vahabzadeh-Hagh specializes in treating diseases of the larynx in both the clinic and in surgery, including complex airway, voice and swallowing disorders. Dr. Vahabzadeh-Hagh's work is driven by compassion for patients and an understanding that there is no substitute for truly listening to them. Through his expertise in laryngology, he aims to restore daily functions vital to the quality of life: speaking, swallowing, and breathing.

Dr. Vahabzadeh-Hagh is an assistant professor in the Department of Surgery at UC San Diego School of Medicine. His research interests include vocal fold physiology and understanding the key ingredients to clear and effortless voice production. He is also interested in novel therapeutics to treat vocal fold scar and optimizing durable minimally invasive treatments for dysphonia resulting from glottic insufficiency. He also
works on novel therapeutic approaches to dysphagia resulting from head and neck cancer and its treatment side effects using regenerative medicine.

His academic work and innovation have resulted in many podium presentations at national meetings, including invited grand rounds, poster presentations, 28 published research articles in peer-reviewed journals, 7 book chapters, and 5 patents. He currently holds 2 institutional grants.

Dr. Vahabzadeh-Hagh completed his laryngology fellowship at the David Geffen School of Medicine at UCLA, where he learned to perform the selective laryngeal adductor denervation-reinnervation (SLAD-R) operation pioneered at UCLA by Dr. Gerald Berke. He also did his residency at the David Geffen School of Medicine at UCLA. He earned his medical degree from Harvard Medical School in the combined HarvardMIT Program on Health Sciences and Technology.

Deborah Watson, MD, FACS
Professor of Surgery
Residency Program Director
Facial Plastic and Reconstructive Surgery

Dr. Watson is a Professor of Surgery and the Program Director for the Otolaryngology-Head and Neck Surgery residency at the University of California, San Diego (UCSD) School of Medicine. She earned her medical degree from the University of Southern California School of Medicine and completed general surgery and otolaryngology-head and neck surgery residencies at the UCLA Medical Center. Dr. Watson had the privilege of receiving advanced fellowship training in Facial Plastic and Reconstructive Surgery at the University of Illinois at Chicago. She is double Board-certified by the American Board of Otolaryngology-Head and Neck Surgery and the American Board of Facial Plastic and Reconstructive Surgery.

Dr. Watson joined the faculty at UCSD’s Department of Surgery in 1999. In addition to her regular teaching and mentoring responsibilities with the UCSD surgical residents, medical students, and bioengineering students, Dr. Watson has pursued basic science research in autologous tissue-engineered cartilage for its use in craniofacial reconstruction as well as research in the educational arena with graduate medical program improvement studies. She serves on two major national examining boards, has chaired multiple national meetings, and has published more than 80 journal articles, chapters, and abstracts. She was honored as a member of the Phi Beta Kappa Society, has received numerous teaching awards, and has consistently been named one of the “Best Doctors in America” by her peers since 2003.
Dr. Weissbrod is the Director of the Center for Voice and Swallowing and Associate Professor of Surgery in the Clinical Department of Otolaryngology at University of California San Diego. He completed his undergraduate studies at Washington University in St. Louis and earned his medical degree from The State University of New York at Stony Brook. He was a general surgery intern at St. Vincent’s Medical Center in New York City and completed residency in otolaryngology at The New York Eye and Ear Infirmary and fellowship at The University of Washington under doctors Albert Merati and Alan Hillel.

Dr. Weissbrod’s practice focuses on laryngology which encompasses voice, airway, and swallowing disorders. In particular, he has an interest in swallow surgery for cricopharyngeal hypertrophy and Zenkers diverticula, laryngeal surgery for benign and malignant disease, and management of airway stenosis. He also has a focus on management of neurologic disease of the larynx and recently edited a textbook on the topic, “Neurologic and Neurodegenerative Diseases of the Larynx,” published by Springer.

Dr. Weissbrod has been honored for clinical and teaching activities throughout his career. As a student he was inducted into the Arnold P. Gold Humanism Honor Society as well as the Alpha Omega Alpha Medical Honor Society. In residency, he served as Academic Chief Resident and was the recipient of the Swift Hanley Award for excellence in research, the William & Judith Turner Award for excellence in residency, the Resident Teaching Award, and Nursing Appreciation Award. As a faculty member, he has been the past recipient of the Clinical Departments Excellence in Teaching Award and has been listed multiple times as a San Diego Magazine Top Doc.

In addition to clinical work, Dr. Weissbrod has a robust research portfolio. His research interests primarily focus on engineering and technology applications in laryngology. Ongoing projects include high-density surface electromyography (HDsEMG) for voice and swallow applications and the development of a flexible robotic platform for use in endoscopic procedures. He currently has a number of funded project including grants from the American Laryngological Association, American Speech and Hearing Association, UCSD Accelerating Innovation to Market, and industry sponsors.
Carol Yan, MD, is a board-certified head and neck surgeon who specializes in treating sinonasal disease and skull base tumors. She treats a wide range of conditions, including sinus infections (sinusitis), nasal polyps, nasal obstruction, deviated septum, enlarged turbinates, rhinitis, smell loss, and cerebrospinal fluid leak. She also treats patients with tumors and cancers of the nose and sinuses, as well as skull base tumors.

Dr. Yan performs primary and revision endoscopic sinus and nasal surgery, as well as endoscopic skull base surgery in collaboration with the neurosurgical team at UC San Diego Health. Dr. Yan's goal is to deliver state of the art research and evidence-based care to people who suffer from sinonasal disease and tumors. In an effort to continue to improve patient care, Dr. Yan actively conducts research on inflammatory profiles in chronic rhinosinusitis patients and novel treatments for patients with olfactory dysfunction (loss of sense of smell). She is involved in the national academic rhinologic group, the American Rhinologic Society, and serves in several committees.

As an assistant professor in the Department of Surgery, Dr. Yan trains medical students, residents and fellows at UC San Diego School of Medicine. Her work has been widely published in professional journals and book chapters.

Dr. Yan completed a rhinology and skull base surgery fellowship at Stanford University School of Medicine where she completed both a research and clinical fellowship, training under internationally recognized surgeons. She completed a residency in otorhinolaryngology at the University of Pennsylvania Perelman School of Medicine, where she also earned her medical degree.

Dr. Yan is a member of the American Academy of Otolaryngology - Head and Neck Surgery.

Erika Zettner, PhD, CCC-A
Professor & Co-Director, AuD Program

Erika Zettner, PhD, is a clinical professor in the Clinical Department of Otolaryngology at UC
San Diego School of Medicine, and a certified licensed dispensing audiologist (CCC-A) who specializes in hearing assessments, hearing aid fitting, evoked potential testing, ototoxic monitoring and cochlear implant assessments and mapping.

As co-director for the SDSU/UCSD Joint Doctoral Program in Audiology, Dr. Zettner provides program administration, student advising, serves as instructor for doctoral level courses as well as clinical and research rotations for audiology doctoral students.

Her research in otoacoustic emissions, hearing loss and ototoxicity has been published in peer-reviewed medical journals, including International Journal of Audiology, Annals of Otology Rhinology and Laryngology, Otolaryngology Head and Neck Surgery, Pharmacogenetics and Genomics and the Journal of the Acoustical Society of America. She also serves as an ad-hoc reviewer for numerous medical journals. She is a coinvestigator of a multisite NIH R33 Funded National Hearing Test study to develop a mobile hearing test app.

Dr. Zettner has won several awards and honors, including Honorary Member for teaching from the Golden Key International Honour Society, and the Institutional National Research Service Award from the National Institute on Deafness and Other Communication Disorders. Over the years she has been invited to speak at national conferences on topics such as clinical and research applications of otoacoustic emissions, locally to medical students and residents on universal newborn hearing screening, ototoxic monitoring in patients with cystic fibrosis, and hearing assessment; and invited community lectures on hearing aids and cochlear implants.

Prior to joining UC San Diego Health in 2004, Dr. Zettner was assistant professor in audiology at Ohio University. She earned a doctoral degree in audiology from the University of Washington. She is a member of professional organizations, including the American Speech-Language-Hearing Association, and American Academy of Audiology.
Dr. Brigger is Chief of Pediatric Otolaryngology at Ray’s Children Hospital – San Diego and Professor of Surgery at UC San Diego School of Medicine. He earned his medical degree from the University of Cincinnati and then proceeded to join the Navy where he trained in Otolaryngology-Head and Neck Surgery followed by a pediatric otolaryngology fellowship at the Massachusetts Eye and Ear Infirmary/Harvard Medical School. While he was a fellow, he earned his Master of Public Health from the Harvard School of Public Health. He is board certified in Otolaryngology-Head and Neck Surgery. He served fourteen years as an active-duty Naval Officer prior to joining the Faculty at UCSD.

Dr. Brigger’s clinical interests include diseases of the upper aerodigestive tract with a focus on surgical management of children with breathing and swallowing disorders. He directs the Pediatric Aerodigestive Program at RCHSD which utilizes a proponent of providing care based on the best available research, he was named a 2015 Cochrane Scholar of the American Academy of Otolaryngology- Head and Neck Surgery and has served on multiple journal editorial boards. Dr. Brigger has published over 85 journal articles, reviews, books, and book chapters and is routinely invited to speak at national and international meetings. Dr. Brigger’s research areas include investigating the epidemiology of disease and evaluating treatment outcomes for various breathing and swallowing disorders as well as the development of novel approaches to treating these difficult problems.

Dr. Brigger was honored as a member for Alpha Omega Alpha Medical Honor Society in Medical school, has received numerous teaching awards and received the Rady’s Children’s Hospital Excellence in Clinical Care Award in 2018. He has been named as a “Top Doctor” in San Diego. He serves as an examiner for the American Board of Otolaryngology-Head and Neck Surgery and serves in a variety of roles within the American Society of Pediatric Otolaryngology.

Dr. Daniel Carvalho, Professor of Otolaryngology – Head and Neck Surgery at UCSD and Medical Director of Surgical Services, RCHSD, is a pediatric otolaryngologist with a focus in pediatric otology (ear surgery). She
is the Director of the Hearing and Cochlear Implant Program at Rady Children’s Hospital of San Diego California (RCHSD) since 2003. She brought pediatric BAHA implantation to San Diego and was the first surgeon in California to perform a pediatric Osia Implant surgery. She is the Medical Director of Surgical Services at RCHSD/UCSD, where more than 20,000 surgeries are performed in children annually.

She graduated from Medical School and Otolaryngology – Head and Neck Surgery residency at UNICAMP (University of Campinas Brazil). She then completed a 2-year fellowship in pediatric otolaryngology at RCHSD/UCSD. In 2018 she earned a Master of Medical Management degree at USC. She joined the Clinical Department of Otolaryngology – Head and Neck Surgery at UCSD in 2003.

Her major research emphasis is in advancing pediatric endoscopy otology techniques and developing improved multidisciplinary assessment and treatment of children with hearing loss. She currently participates in a multicenter NIH Funded study to assess the effects of antiviral treatment in speech and language outcomes in children with hearing loss due to congenital CMV. She has published over 60 journal articles, book chapters and abstracts, and has given more than 80 invited lectures in international conferences.

Dr. Carvalho is highly active in several national and international otolaryngology societies and is currently the President- Elect of SENTAC (Society for Ear, Nose, and Throat Advancement in Children). She serves as a reviewer for several journals and is an Associate Editor for the Audiology and Neurotology Journal since 2012.

Dr. Tzyynong Liou Friesen (Tina) is a board-certified, fellowship-trained pediatric otolaryngologist at Rady Children's Hospital-San Diego and an associate physician in the Department of Surgery at UC San Diego. She completed her medical degree and residency training at Washington University in St. Louis followed by a fellowship in pediatric otolaryngology at the UC San Diego/Rady Children's Hospital.

As a pediatric otolaryngologist, Dr. Friesen is dedicated to treating a variety of ear, nose, and throat diseases in children. She is particularly invested in the diseases of the airway, masses of the head and neck, and the interface between breathing and swallowing disorders in children. She has extensive training in head and neck surgery as well as endoscopic procedures, including endoscopic laser surgery.

Dr. Friesen is a member of the multidisciplinary Aerodigestive Team at Rady Children's Hospital that specializes in treating children with complex medical conditions resulting in airway obstruction, dysphagia, and voice concerns. She advocates for pediatric tracheostomy patients and is a member of the Trach Taskforce Quality Improvement Initiative. She has conducted research in various fields within otolaryngology and has ongoing projects that focus on advancing care for the aerodigestive population and refining the approach to pediatric vocal cord paralysis.
Dr. Wen Jiang is a board-certified, fellowship-trained pediatric otolaryngologist on staff at Rady Children's Hospital San Diego and an Associate Professor of Surgery in the Clinical Department of Otolaryngology – Head and Neck surgery.

Dr. Jiang received her undergraduate degree in Chemical Engineering from the University of California, Los Angeles. She is a graduate of Johns Hopkins University school of medicine and completed her General Surgery internship and Otolaryngology, Head and Neck Surgery residency at Washington University in St. Louis where she also completed a two-year research fellowship in molecular biology studying the molecular alternations that were the key drivers in head and neck cancer. She completed a pediatric otolaryngology fellowship at the St. Louis Children’s hospital before joining the practice at Rady Children’s hospital San Diego in 2007.

Specializing in voice disorders in children, she currently co-directs the Speech and Voice Endoscopy Clinic, a multidisciplinary voice and speech team that works closely with speech-language pathologists. This team provides comprehensive service to children with speech-related disorders such as vocal nodules, functional voice disorders, hypernasality and/or velopharyngeal incompetence.

With extensive training in head and neck oncology, Dr. Jiang’s surgical practice focuses on the treatment of head and neck neoplasms in children with a special focus on thyroid neoplasms. Together with the Clinical Department of Pediatric Endocrinology, she has created and lead the multi-disciplinary thyroid tumor board which provides pediatric patients with comprehensive and evidence-based care for a variety of thyroid disorders and malignancies. She is an active member of the American Thyroid Association (ATA) and American Society of Pediatric Otolaryngology (ASPO). Through the collaborations with a network of pediatric otolaryngologists and endocrinologists, Dr. Jiang’s has produced several recent publications, contributing to the field of pediatric thyroidology.

Dr. Jiang is also board certified in the subspecialty of Clinical Informatics. She is the Clinical Department’s medical informatics champion and works closely with IT analysts to optimize the use of electronic medical record system improving physician clinical efficiency. Her expertise in reporting workbench has allowed the pediatric Clinical Department to leverage the vast amount of clinical data in the EMR in a variety of clinical research projects and publications.
Shelby C. Leuin, MD, is a pediatric otolaryngologist at Rady Children’s Hospital and is Associate Clinical Professor of Surgery at the University of California San Diego. She graduated from the University of California San Francisco School of Medicine and performed her residency at the Harvard Combined Otolaryngology Program. She then completed a pediatric otolaryngology fellowship at the Children’s Hospital at the University of Colorado.

Dr. Leuin’s clinical focus is on reconstructive nasal surgery to correct congenital and post-traumatic nasal disorders, including severe nasal septal deformity, external nasal deformity and congenital and acquired nasal masses. Over the course of her career, she has received 2 Physician Development grants, has given 65 national and regional presentations, and published 22 peer-reviewed articles. She has contributed multiple book chapters as well as American Academy of Otolaryngology education modules and clinical practice guidelines.

She is the program director for the pediatric otolaryngology fellowship and in this capacity the program has successfully received ACGME accreditation. She has been elected as the Chair of the Department of Surgery at Rady Children’s Hospital and serves on multiple hospital committees for quality, safety, professional competence, and professional oversight. Dr. Leuin has been awarded Regional and Top Doctor since 2015, and in 2021 was recognized by the San Diego Magazine/Castle Connolly as an Exceptional Woman in Medicine. In 2020 she was inducted as a Fellow of the American College of Surgeons.

Anthony Magit, MD, MPH
Professor of Surgery Pediatric Otolaryngology

Dr. Magit is Professor of Otolaryngology-Head & Neck Surgery at the University of California San Diego, Chief Physician Integration Officer at Rady Children’s Hospital San Diego and the Medical Director of the UC San Diego Human Research Protections Program. He graduated from the University of California School of Medicine, completed his residency in Otolaryngology at Duke University and a fellowship in Pediatric Otolaryngology at Children’s Hospital of Pittsburgh. He earned his Master's of Public Health at the Johns Hopkins Bloomberg School of Public Health.
Dr. Magit’s clinical interests include Cystic Fibrosis related sinus disease and vascular malformations. He is the physician leader for the Rady Children’s Hospital Telemedicine Program and the Chairman of the Education and Regulatory Committee for the California Telehealth Policy Coalition. He previously served as the Chief of Staff for Rady Children’s Hospital, President of the Children’s Specialty Care Coalition and President of the Society for Ear, Nose and Throat Advances in Children.

In addition to vascular malformations and Cystic Fibrosis, Dr. Magit’s research interests include ethical issues in human subject’s research and access and outcomes related to telemedicine. He is the Medical Director of UCSD Human Subjects Committee.

In addition to vascular malformations and Cystic Fibrosis, Dr. Magit’s research interests include ethical issues in human subject’s research and access and outcomes related to telemedicine. He is the Medical Director of UCSD Human Subjects Committee.

Dr. Javan Nation is a pediatric otolaryngologist at Rady Children's Hospital-San Diego and an assistant professor of pediatric otolaryngology in the UC San Diego Department of Otolaryngology/Head and Neck Surgery.

Dr. Nation started his college education as an oboe performance major at La Sierra University. He then switched to biology/pre-med and graduated from Pacific Union College. After earning his medical degree at Loma Linda University, he went on to complete his residency at Wayne State University in Michigan. After an additional year of fellowship training at Rady Children's, he was invited to join the Otolaryngology Clinical Department.

Although Dr. Nation enjoys all aspects of clinical pediatric otolaryngology, he has a special interest in pediatric sleep apnea surgery. His research focuses on sleep surgery, and he is building a special niche in that area. He serves on the American Academy of Otolaryngology sleep disorders committee. After visiting several multidisciplinary sleep clinics at leading universities around the country, Dr. Nation co-founded the first multidisciplinary complex sleep apnea clinic at Rady Children's.

He also has a clinical interest in pediatric skull base surgery and has worked closely with the Rady Children's Neurosurgery Clinical Department on endoscopic resection of skull base and sinonasal tumors.
Dr. Ryan is Distinguished Professor of Surgery/Otolaryngology and Neurosciences, and Director of Otolaryngology Research, at the UCSD School of Medicine. He is also a Research Physiologist at the San Diego VA Healthcare System. He earned a BS in Biology at Stanford University and a joint PhD in Neuroscience and Psychology at the University of Washington. He completed a postdoctoral fellowship in Auditory Neuroscience at Northwestern University before joining UCSD.

Dr. Ryan's primary research interests include the cellular and molecular biology of sensory cells and neurons of the inner ear, with an emphasis on gene regulation as well as mechanisms and prevention of damage. In addition, he studies the genetic underpinnings of tinnitus using genome-wide association. He has a long-standing interest in tissue and cellular responses to infection of the middle ear, including the role of innate and cognate immunity in otitis media pathogenesis and recovery. Finally, he studies drug delivery to the middle and inner ears, using phage display to identify peptides that can mediate non-invasive delivery of drugs and gene therapy into the middle and inner ears. He has published more than 390 journal articles and book chapters, including papers in Nature, Science, Nature Medicine and PNAS, as well as a similar number of abstracts. Dr. Ryan has presented at more than 150 national and international
meetings. He is currently the Principal Investigator on two NIH R01 grants, an NIH T32 training grant, and two VA Merit awards. He is also a Co-Investigator on an Australian Medical Research Council grant at the University of New South Wales.

Dr. Ryan has received numerous awards for his research, including the Claude Pepper award of Excellence from the NIH, Auditory Researcher of the Year from the National Organization for Hearing Research, the Shambaugh Prize from the Collegium Otorhinolaryngologicum Amicitiae Sacrum, a Presidential Citation from the American Otological Society, Researcher of the Year from the San Diego VA Healthcare System, the Morgagni Medal for Research from the University of Padua, and the Wuhlstein Award from the German National Academy of Otorhinolaryngology. He has been Secretary/Treasurer and President of the Association for Research in Otolaryngology. He has travelled to more than 55 countries and is a Fellow National of the Explorer’s Club based on his field research on animal hearing and communication.

He continues to serve on or chair numerous review committees for the NIH, the VA, the MRCs of the UK, Australia and New Zealand, as well as several private foundations. He is a Co-Founder of Otonomy, Inc., a biotechnology company that develops local treatments for disorders of the middle and inner ear.

Royce Clifford, MD, MPH
Research Scientist

Dr. Clifford is a Research Scientist in the Department of Surgery, Clinical Department of Otolaryngology, at University of California San Diego (UCSD) School of Medicine and at the VA Hospitals San Diego, as well as Visiting Scientist at Harvard University. She earned her MD Degree from University of Illinois Medical School in Chicago, completed her otolaryngology residency at Kaiser Hospitals, San Francisco, and an aerospace medicine residency through the US Navy. She has been board-certified in otolaryngology, preventive medicine, and aerospace medicine.

After engaging in a private otolaryngology practice for over a decade, she then completed a full career as a Commander in the Navy. She forward deployed with the Marines, where she was the only military otolaryngologist in Iraq, and later became one of the first females to lead the medical department on a US aircraft carrier. Dr. Clifford’s interests are now in research of the genomics of hearing loss and tinnitus. Specifically, she is engaged in the identification of genes related to sensorineural hearing loss and tinnitus and has published on these topics over the past 10 years.

Dr. Clifford received the Harvard School of Public Health Public Health Innovator Award in 2013 in recognition of her “treatment and documentation of noise-induced hearing loss, raising awareness of it as a public health issue, her contributions to the engineering approaches, scientific research, pursuit of pharmacological solutions to acoustic trauma, and her guidance in the national, multidisciplinary approach to the solution for noise.”
Dr. Clifford has published 12 manuscripts and is the recipient of the VA Rehabilitation Research and Development Grant, 1 NIH R01.

Elizabeth Keithley, PhD
Professor Emeritus of Surgery
Auditory Research

Dr. Elizabeth M Keithley joined the UCSD faculty in the Clinical Department of Otolaryngology/Head and Neck Surgery in 1985 after receiving her Ph.D. in anatomy from Boston University in 1980. Her thesis investigated age-related changes in the inner ear.

She then completed post-doctoral training through Massachusetts Institute of Technology at the EatonPeabody Laboratory where she investigated the physiological activity of auditory neurons.

During her career at UCSD she investigated both age-related mechanisms of cochlear degeneration as well as immune responses in the inner ear. She trained numerous undergraduates, medical students and otology fellows. She has published 83 articles and 11 book chapters. She retired in 2010. She now serves on the Board of Directors of the Hearing Health Foundation and The Escondido Creek Conservancy.

Arwa Kurabi, PhD
Research Scientist

Dr. Kurabi is currently an Associate Research Scientist in the Department of Surgery (Otolaryngology), at the University of California, San Diego (UCSD). After earning her Ph.D. in protein chemistry from York University (Toronto, Canada), she joined the Department of Surgery at UCSD for a post-doctoral research fellowship in Otology. She obtained an R03 grant from the NIH to study the human-specific immunological response to ear infections using a humanized mouse animal model.

She also actively works on a translational project to develop small peptide carriers to target the middle ear and inner ear for local drug delivery that is also funded by NIH (R01) and RNID-Action on Hearing Loss (UK). Dr. Kurabi’s projects have focused on otologic diseases like Otitis Media (OM), Eustachian tube dysfunction, Cholesteatoma, and sensorineural hearing loss (SNHL). She applies basic science approaches to understand the molecular and genetic mechanisms orchestrating normal function and disease processes.

Dr. Kurabi studies the role of immunity in OM pathogenesis, a common pediatric disease, with the general aim of enhancing medical treatment options and therapeutics. She uses “Humanized” mice as a model.
system to explore the role of human leukocytes in host defense against human-specific pathogens. She has published over 36 research papers, 2 book chapters, as well as 4 protein solution structures that have been deposited into the Protein Data Bank.

Dr. Ongkeko earned his medical degree from the University of California, San Francisco and his D Phil (PhD), from the University of Oxford. The overarching goal of his research has been to elucidate the molecular mechanism in the pathogenesis and progression of various solid tumors and to develop diagnostic tools and cancer signatures for early diagnosis and prognosis. Using multi-omics (genomics, transcriptomic, both coding and non-coding RNA, and epigenetics), machine learning, and deep learning, his laboratory studies individual genes and pathways in studying cancer immunology, immune dysregulation and immune evasion.

More recently, he has also focused his work on the role of the microbiome in cancer development. Dr. Ongkeko’s work has the ultimate goal of understanding the molecular biology of solid tumors in order to be able to diagnose cancers early, identify biomarkers and signatures, and to discover therapeutic targets that will provide better outcomes for these cancer patients.

His current grants include the University of California, Office of the President/Tobacco-Related Disease Research Program Emergency COVID-19 Research Seed Funding Grant (R00RG2369) and University of California, Academic Senate Grant that studies the role of the microbiome in the pathogenesis and progression of head and neck squamous cell carcinoma.
Leslie Gomez, MSN, is a board-certified nurse family nurse practitioner (FNP-C) who treats adults with acute or recurring inflamed sinuses (sinusitis), inflammation of the sinuses and nasal cavity (rhinosinusitis), and sinus infections. She also provides care for recurring nosebleeds, general ear, nose and throat conditions, earwax buildup and hearing loss.

Mrs. Gomez previously worked in primary care and urgent care at other health systems. She has traveled with medical and surgical mission trips abroad in Mexico and Ecuador, where she saw a wide variety of medical conditions and surgeries. She also has a strong interest in public health.

Mrs. Gomez earned her master's and bachelor's degree in nursing from Johns Hopkins University in Baltimore, after graduating in exercise biology from UC Davis. She is a member of the American Association of Nurse Practitioners and the California Association for Nurse Practitioners.

Sharon Mick, MSN, is a certified family nurse practitioner (FNP-C) with Head and Neck Surgery at UC San Diego Health. She specializes in treating ear infections and providing professional ear cleanings or earwax removal using special miniature instruments. Ms. Mick sees a variety of conditions that may lead to earwax buildup, including narrow ear canals, Swimmer's ear, dry ear wax, or an overproduction of ear wax. She frequently performs ear cleanings for individuals with hearing aids.

As part of the otolaryngology team, she also meets with patients before and after their surgeries, providing procedure education and discharge instructions.

Ms. Mick has been with the Clinical Department of Head and Neck Surgery since 2005, and serves as the clinic manager, overseeing staff and day-to-day operations at UC San Diego Health's Perlman Medical Offices.
Prior to joining Head and Neck Surgery, Ms. Mick was a nurse practitioner in rheumatology at Illinois Bone and Joint Institute and with UC San Diego Health's Arthritis and Joint Care services. She earned a bachelor's in nursing from UCLA and her master's degree in nursing from Louisiana State University.

Audiologists Biographies

Deborah Wian, MA, is a certified audiologist who treats a variety of hearing losses, mostly in the adult population. She provides behavioral diagnostics for hearing loss and has expertise in fitting assistive listening devices, including hearing aids, FM systems, and Bluetooth-enabled devices. Debbie also performs fittings and orientations of audiology implantable hearing devices such as the Baha and Ponto osseointegrated temporal bone implant systems.

Wian has been with UC San Diego Health for over twenty years. Previously, she worked at CSG Better Hearing Center in Walnut Creek, Calif.

She earned a master's degree in audiology from San Diego State University, and a bachelor's degree in speech-language pathology and audiology from Ball State University in Muncie, Ind. She holds a Certificate of Clinical Competence in Audiology (CCC-A) from the American Speech-Language-Hearing Association and is a member of the California Academy of Audiology.

Joyce Tsang, AuD, is a certified audiologist who cares for adults with hearing loss and balance (vestibular) disorders. She evaluates and treats sensorineural hearing loss (hearing loss that results from damage to the inner ear or the pathways from the inner ear to the brain), conductive hearing loss (when sound cannot be conducted through the outer and middle ear), and mixed hearing loss, a combination of both types.

Tsang enjoys working with patients to develop optimal treatment plans for everyone. This may include the use of hearing aids, osseointegrated devices, assistive listening devices (such as Bluetooth, FM, or telecoil)
or daily communication strategies. She also educates patients and their families on how to cope with hearing loss and provides follow-up support to make sure patients experience the maximum benefit of treatment.

Before joining UC San Diego Health, Tsang served as an audiologist at California Head and Neck Specialists, where she conducted comprehensive diagnostic audiological evaluations and treated people with hearing loss, including fitting and follow-up evaluation of hearing aids.

Tsang earned a doctoral degree in audiology (AuD) from the joint audiology program offered by San Diego State University and UC San Diego. She holds the Certificate of Clinical Competence in Audiology (CCC-A) from the American Speech-Language-Hearing Association and is also a member of the American Academy of Audiology.

Charles Ruby, AuD, CCC-A
Audiologist

Charles Ruby, AuD, is a certified audiologist who cares for adults with a variety of hearing losses and ear disorders. He performs diagnostic support with hearing and vestibular assessments for audiology, otolaryngology, and head and neck surgery. His primary area of interest is caring for patients with various degrees of hearing abilities, from individuals with normal hearing who may need custom earplugs to those who have severe hearing loss and are on their journey to implanted hearing technologies. Dr. Ruby also has experience with diverse pathologies, including acoustic neuroma, Meniere's disease (inner ear disorder that causes episodes of vertigo), otosclerosis (abnormal bone growth in the ear), presbycusis (slow loss of hearing in both ears), as well as conductive, mixed and sensorineural hearing losses.

Dr. Ruby believes his patients are making a positive health decision when they choose to come for care, and it is his job to provide information about their hearing and balance abilities as well as available treatment options. From there, he acts as a guide in maintaining positive health decisions, so treatment is a collaborative effort.

Before joining UC San Diego Health, Dr. Ruby worked as a clinical audiologist at Orange County Physicians' Hearing Services where he performed diagnostic testing and aural rehabilitation on a diverse patient population, including comprehensive audiological evaluations, cerumen management, vestibular assessments and hearing aid evaluations, fittings and follow-up appointments. He was an adjunct faculty member at Chapman University and currently is an adjunct faculty member at San Diego State University.

Dr. Ruby earned a doctoral degree in audiology (AuD) from the joint program between San Diego State University and UC San Diego and a bachelor's degree in psychology from Chapman University. He holds the Certificate of Clinical Competence in Audiology (CCC-A) from the American Speech-Language-Hearing
Stephanie Baxter, AuD, is a certified audiologist who cares for children and adults with hearing loss and vestibular disorders. Her primary area of interest is electrophysiology and vestibular disorders. She is also experienced in fitting hearing aids and assistive listening devices.

In addition to practicing a full scope of audiology – pediatric and adult diagnostics, hearing aids, cochlear implants, electrophysiology and vestibular disorders – Dr. Baxter also holds a certificate in tinnitus management.

Before joining UC San Diego Health, Dr. Baxter served as lead doctor of audiology at Onslow Memorial Hospital – ENT in North Carolina, where she started the audiology pediatric program and specialized in diagnostics and pediatric electrophysiology. She completed her clinical externship and first worked at Texas Medical Center in Houston.

Dr. Baxter earned her doctoral degree in audiology from Lamar University in Beaumont, Texas. She earned her master's degree in general psychology and her two bachelor's degrees in psychology and communication sciences and disorders (CSDO) from Texas A&M University – Kingsville, where she graduated Summa Cum Laude. She holds the Certificate of Clinical Competence in Audiology (CCC-A) from the American Speech-Language-Hearing Association and is a fellow of the American Academy of Audiology (FAAA).

Alicia Williams, AuD, is a certified audiologist who cares for adults with a variety of hearing losses and ear disorders. She is experienced in evaluating patients to diagnose the type and degree of their hearing loss.
and its effect on their daily life and determining the most appropriate audiologic treatment plan for each individual. Her primary area of interest is implantable hearing devices, including cochlear implants and auditory brainstem implants. She is also experienced in fitting hearing aids and assistive listening devices.

In addition to fitting and providing support for different hearing technologies, Dr. Williams enjoys working with patients to get the most out of the hearing device(s) they use. She provides counseling to ensure they have appropriate expectations, educates about communication strategies, and promotes self-advocacy in daily life to maximize their benefit in every situation, as well as their long-term outcomes.

Before joining UC San Diego Health, Dr. Williams worked as an audiologist at Scripps Health, where she performed diagnostic audiologic evaluations and treated patients with hearing loss using hearing aids and cochlear implants. Prior to that, she served in the Adult Cochlear Implant Program at The House Institute in Los Angeles, where she specialized in evaluating patients to determine candidacy for cochlear implantation, programming of their cochlear implant after surgery, and counseling to ensure they have realistic expectations before embarking on the cochlear implant journey, as well as guidance for aural rehabilitation throughout the process of adapting to their new way of hearing.

She completed her clinical externship at UC Davis Medical Center, where she worked with both adult and pediatric patient populations providing a variety of diagnostic and rehabilitative services in audiology.

Dr. Williams earned a doctoral degree in audiology (AuD) from the University of Kansas Medical Center. She holds the Certificate of Clinical Competence in Audiology (CCC-A) from the American Speech-Language-Hearing Association.
Liza Blumenfeld, MA, is a speech-language pathologist with expertise in managing complex voice and swallowing disorders in a variety of patients, including those with head and neck cancer.

She is a board-certified swallowing disorders specialist (BCS-S) whose therapeutic approach integrates science and technology within a multidisciplinary care model. She is dedicated to restoring patients' quality of life while they battle the side effects of cancer treatments.

Blumenfeld's research interests focus on exploring modalities that increase salivary flow, taste and swallowing function. She is involved in implementing heart rate variability biofeedback for hyper-responsive laryngeal disorders and objectively quantifying fluoroscopic swallowing study findings to drive appropriate and efficient treatment. She has published work in Otolaryngology-Head and Neck Surgery, Laryngoscope, and Dysphagia. She has served in rehabilitation leadership since 1996, providing both therapeutic services and administrative oversight of clinical programs.

Prior to joining UC San Diego Health, Blumenfeld was manager of speech-language pathology, audiology and motility at the Center for Voice and Swallowing at Scripps Memorial Hospital in La Jolla, where she was recognized for transforming the center into a regional center of excellence.

She earned her master's and bachelor's degrees, both in communicative disorders from San Diego State University and Yeshiva University in New York.

Blumenfeld holds a Certificate of Clinical Competency in Speech-Language Pathology (CCC-SLP) from the American Speech-Language-Hearing Association and is a board-certified specialist in swallowing disorders. She is also a national instructor to speech-language pathologists on transnasal endoscopy technique and interpretation.
Kristen Linnemeyer, MA, CCC-SLP, is a certified speech-language pathologist with expertise in assessing and treating patients with complex voice and swallowing disorders as a result of illness, surgery, stroke, or head and neck cancer. She has a special interest in post-laryngectomy voice and swallow restoration.

Linnemeyer is part of the voice and swallow team within Head and Neck Surgery at UC San Diego Health. Her entire career has been spent working amongst a multidisciplinary team at an academic institution, where collaboration, innovation, and research are paramount.

Prior to joining UC San Diego Health, Linnemeyer worked at The University of Kansas Voice and Swallow Center. During that time, she helped build a speech pathology team specializing in voice and swallow within the University of Kansas Medical Center.

In 2009, Linnemeyer accepted a multicultural opportunity to work in Singapore, where she diagnosed and treated patients from all over the world. During her time abroad, she trained speech pathologists and physicians on post-laryngectomy voice restoration, tracheotomy care, and instrumental swallow assessments including Videofluoroscopic Swallow Studies (VFSS) and Flexible Endoscopic Evaluations of Swallowing (FEES).

In 2019, Linnemeyer obtained a Certificate in Clinical Trials Design and Management, consisting of 20 hours post-graduate education through the UC San Diego Extension Program, allowing her to become acquainted with the clinical trials process in an accelerated approach.

An active advocate for laryngectomees, Linnemeyer organized and leads a San Diego Laryngectomee Club for the local community to deliver non-medical assistance and social support to patients and their caretakers.

Linnemeyer is a board-certified swallowing disorders specialist (BCS-S). She holds a Certificate of Clinical Competency in Speech-Language Pathology (CCC-SLP) from the American Speech-Language-Hearing Association (ASHA) and is also certified in Lee Silverman Voice Treatment (LSVT).

She has published in both journals and a textbook, presents at ASHA's annual national convention, and has lectured internationally.
Erin Walsh, MA, is a speech-language pathologist, singing voice specialist and lactation consultant. She has clinical expertise in managing a wide variety of voice disorders and newborn feeding difficulties, and a special interest in rehabilitating performers and professional voice users.

She is a part of the voice and swallowing team within Head and Neck Surgery at UC San Diego Health. Walsh conducts lectures throughout the community on vocal health and collaborates with faculty of university music departments on laryngeal injury prevention. Her therapeutic style creatively integrates technology to hasten recovery, and her research interests emphasize behavioral management of cough.

Prior to joining UC San Diego Health, Walsh was a speech-language pathologist and clinical voice specialist for 12 years at the Ronny Schwartz Center for Voice, Swallowing and Motility Disorders at Scripps Memorial Hospital La Jolla, where she also built a thriving outpatient infant feeding disorders clinic.

Walsh earned a master's degree in speech-language pathology from San Diego State University, and a bachelor's degree in vocal performance from The University of Kansas. She studied lactation at University of California, Los Angeles and at University of California, San Diego.

Walsh holds a certificate of clinical competency in speech-language pathology (CCC-SLP) from the American Speech-Language-Hearing Association (ASHA) and is a board-certified lactation consultant. She is also a board-certified specialist in swallowing and swallowing disorders (BCS-S).

Since 2006, Walsh has served as an ASHA continuing education administrator. She is an instructor of transnasal and transoral endoscopy for speech-language pathologists and teaches courses on how to manage complex voice disorders.

In 2012, she received an outstanding achievement award from the California Speech-Language-Hearing Association.
Andi Docktor, MA, CCC-SLP
Speech-Language Pathologist

Andi Docktor, MA, is a certified speech-language pathologist (CCC-SLP) with clinical expertise in assessing and treating patients with a variety of voice and swallowing disorders. She is part of the Voice and Swallowing Disorders team within Head and Neck Surgery at UC San Diego Health.

Ms. Docktor is passionate about the care and management of patients with dysphagia and has a particular interest in serving the transgender and gender nonbinary community to provide gender-affirming voice therapy. Her therapeutic style highlights collaboration with her patients to improve overall quality of life. Ms. Docktor is bilingual and offers services in both Spanish and English.

Prior to joining Head and Neck Surgery, Ms. Docktor was a speech-language pathologist in the acute inpatient setting, where she provided care during hospitalizations for a variety of medically complex patients.

Ms. Docktor earned her master's degree in speech and hearing sciences from San Diego State University and completed her bachelor's degree in linguistics at University of California, Santa Barbara. She holds a certificate of clinical competency in speech-language pathology from the American Speech-Language-Hearing Association (ASHA) and is certified in Modified Barium Swallow Impairment Profile (MBSImP) and SPEAK OUT!.

Ben Schiedermayer, MS, CCC-SLP
Speech-Language Pathologist

Ben Schiedermayer, MS, CCC-SLP is a speech-language pathologist with expertise in voice, airway, and swallowing disorders. He is part of the voice and swallowing team within Head and Neck Surgery at UC San Diego Health. He enjoys evaluating and treating a wide variety of patients and has special interest in treating paradoxical vocal fold movement (PVFM) and providing gender affirming voice care.

Prior to joining UC San Diego Health, Schiedermayer worked in Salt Lake City at the University of Utah as the manager of the Voice, Airway, Swallowing Translational (VAST) Research Lab, and as a per diem speech-language pathologist at the Voice Disorders Center. He was involved in research on topics including vocal tremor, voice disorders in airway populations (subglottic stenosis, asthma), and dysphagia ranging from
pediatric screening to disordered swallowing after unilateral vocal fold paralysis. Schiedermayer also worked as a speech-language pathologist at ENT Specialists.

Schiedermayer earned his undergraduate degree in Communication Sciences and Disorders from Western Washington University, and his graduate degree in Speech, Language, and Hearing Sciences from the University of Arizona. He subsequently attended the Summer Vocology Institute to learn more about the science of the voice and is a National Center for Voice and Speech (NCVS) trained Vocologist. He holds a Certificate of Clinical Competence in speech-language pathology from the American Speech-Language-Hearing Association (ASHA). He is trained in SPEAK OUT! and certified in Lee Silverman Voice Treatment (LSVT) for Parkinson disease.
Hillary Gallagher is the Assistant Department Business Officer for Otolaryngology. Hillary has worked with UC San Diego Health Sciences since 2018, holding various administrative positions including: Clinical Department Administrator for Gastroenterology and Hepatology (2018-2021) and Director of Gastroenterology and Hepatology (2021-2022). Prior to working at UC San Diego Health Sciences, Hillary also worked at University of Chicago Medicine, The Ohio State University, and Michigan Medicine. Hillary holds a bachelor’s degree in Finance and a Master’s in Health Administration.

Ellington Jones currently serves as the chief administrative officer overseeing orthopaedics, urology, otolaryngology, obstetrics-gynecology, reproductive science, and surgical specialties across U.C. San Diego Health. He is responsible for the day-to-day ambulatory and inpatient operations of these areas and is the dyad partner with the department chairs and physician leaders on executing the strategic priorities of the system’s surgical areas.

Before joining U.C. San Diego Health, he was the executive director of the digestive diseases service line at UChicago Medicine. He oversaw the strategy and ambulatory operations of 15 clinical programs across the system. Before his time in Chicago, he worked for Tenet Healthcare and held several leadership positions overseeing initiatives across 65 hospitals.

He has received numerous leadership awards throughout his career, including the University of Florida’s 40 Gators Under 40, the University of Florida Outstanding Young Alumni Award, and the Outstanding Young Alumnus at the University of Florida College of Public Health, Department of Health Services Research and Evaluation.
Policy. He was also a finalist at ACHE’s Richard J. Stull Graduate Essay Competition in Healthcare Management.

Mr. Jones holds a Bachelor of Science in Health Care Management from Florida A&M University, a Master of Health Administration from the University of Florida, a Doctor of Public Health in Leadership from the University of Illinois at Chicago, and an Executive MBA from the Quantic School of Business and Technology. He also serves as an adjunct faculty member in the School of Professional and Extended Studies at American University in Washington, D.C. and teaches in the Healthcare Management graduate program.

He is a fellow in the American College of Healthcare Executives and is a member of the National Association of Health Services Executives. Mr. Jones is a life member of the University of Florida Alumni Association and is also a life member of the Florida A&M Marching 100 Band Alumni Association.
## Extramural Support

**Grant Award July 2022**

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<tr>
<th>PI &amp; Project</th>
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<td><strong>Weissbrod, Philip</strong></td>
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<td><strong>Yan, Carol</strong></td>
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Grand Total $10,251,503.58

Directs and Indirects:

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Cancer Center Awards August 2022:

### Sponsored Projects

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<th>Sponsored Projects</th>
<th>Column Labels</th>
<th>Indirect Costs Total</th>
<th>Grand Total</th>
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<tr>
<td><strong>Califano, Joseph</strong></td>
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<td>1006583 - SP Califano NIH 1R01CA243393</td>
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<td>1006589 - SP Califano NIH 4UH3CA211396</td>
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<td><strong>Guo, Theresa</strong></td>
<td>$36,364.00</td>
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<tr>
<td>2023428 - SP Guo AMERICAN ACADEMY OF OTOLARYNGOLOGY-HEAD NECK SURGERY FOUNDATION 845889</td>
<td>$36,364.00</td>
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<tr>
<td><strong>Nguyen, Quyen</strong></td>
<td>$439,186.00</td>
<td>$216,206.00</td>
<td>$655,392.00</td>
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<tr>
<td>1018926 - SP Lippman NIH 2P30CA023100</td>
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<tr>
<td><strong>Orosco, Ryan</strong></td>
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<td>2015955 - SP Bouvet ACS IRG-19-230-48-IRG</td>
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<td>2000096 - SP F32 DE029990SADDAWIKONEFKA,ROBERT</td>
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### Pending Awards

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<tr>
<td><strong>Califano, Joseph</strong></td>
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<tr>
<td>Neoadjuvant Immunoradiotherapy for p16 negative HNSCC</td>
<td>$3,824,868.00</td>
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<tr>
<td>Point of care oral/oropharyngeal cancer detection in India</td>
<td>$3,734,597.00</td>
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<tr>
<td><strong>Grand Total</strong></td>
<td>$7,559,465.00</td>
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# Programs and Courses Comparison

<table>
<thead>
<tr>
<th>Education Offering</th>
<th>UCSD</th>
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</table>
| **Educational Conferences** | - Otolaryngology Grand Rounds  
- Morbidity and Mortality Conference  
- Chairman’s Conference (led by Dr. Harris; case review, mock oral board exam format)  
- Professor’s Conference (led by individual faculty; case presentations, work-up and management)  
- Facial Plastic and Reconstructive Surgery Conference (led by Dr. Watson; case preparation, mock oral board exam format)  
- Neurotology Conference  
- Head & Neck Surgical Oncology Literature review (led by Dr. Califano with resident team)  
- Resident Core Curriculum Lecture series (lecture series with invited local and national speakers, covering all sub-specialty areas)  
- Head & Neck Tumor Board/Treatment Planning Conference  
- Resident Study Session (led by the chief residents; cyclical review of topics based on AAO-HNS FLEX Learning Modalities, group preparation for annual in-service exam)  
- Journal Club (focused on resident and faculty discussion over case presentations and journal articles) |
| **Hands-on Lab Experience** | Simulation labs, Cadaver dissections, and Robotic training |
| **Clinical Training** | PGY 1 – PGY 6 |
| **Training Grant** | R25 |
| **Fellowships** | Neurotology & Pediatrics |

<table>
<thead>
<tr>
<th>YEAR</th>
<th>COURSE</th>
<th>FACULTY</th>
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<tbody>
<tr>
<td>MS1</td>
<td>SOM 224: Clinical Foundations</td>
<td>Coffey</td>
</tr>
<tr>
<td>MS1</td>
<td>PBL facilitator for GI, Pulmonary, and MSK sections</td>
<td>Vahabzadeh-Hagh, Magit</td>
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<tr>
<td>MS1-2</td>
<td>SURG 225 Pre-Clinical Preceptorship in Surgery</td>
<td>Orosco</td>
</tr>
<tr>
<td>Year</td>
<td>Course Code</td>
<td>Course Title</td>
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<tr>
<td>MS1</td>
<td>SOM 226</td>
<td>Core MSK System; Anatomy Thread</td>
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<tr>
<td>MS1</td>
<td>MED 240</td>
<td>Careers in Medicine</td>
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<tr>
<td>MS2</td>
<td>SOMC 237</td>
<td>Mind, Brain, &amp; Behavior II</td>
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<tr>
<td>MS3</td>
<td>SURG 401</td>
<td>Surgery Core Clerkship (Oto core rotation)</td>
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<tr>
<td>MS3</td>
<td>SURG 411</td>
<td>Intro to Head &amp; Neck Surgery (Oto elective)</td>
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<tr>
<td>MS3</td>
<td>SURG 413</td>
<td>Surgical Apprenticeship Selective</td>
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<tr>
<td>MS4</td>
<td>SURG 432</td>
<td>Subinternship In Pediatric Otolaryngology</td>
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<td>MS4</td>
<td>SURG 433</td>
<td>Subinternship in Oto-HNS</td>
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<tr>
<td>MS4</td>
<td>SURG 435</td>
<td>Preceptorship in Otology</td>
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<td>MS4</td>
<td>SOM 415</td>
<td>Residency Transition Course</td>
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<td>Undergrad</td>
<td>MAE156B; ECE191; BENG197 (Biomed Engineering)</td>
<td>Vahabzadeh-Hagh</td>
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<tr>
<th>Oto-HNS Faculty</th>
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<tr>
<td>Dr. Joe Califano</td>
<td>Research mentor, 2 MD students</td>
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<tr>
<td>Dr. Adam DeConde</td>
<td>ISP committee, 3 MD students</td>
</tr>
<tr>
<td>Dr. Rick Friedman</td>
<td>Research +/- ISP mentor, 4 MD students</td>
</tr>
<tr>
<td>Dr. Andrew Vahabzadeh-Hagh</td>
<td>Research mentor, 4 MD students, 20 undergraduate students</td>
</tr>
<tr>
<td>Dr. Carol Yan</td>
<td>Research mentor, 4 MD students; ISP member/chair, 2 students</td>
</tr>
<tr>
<td>Dr. Anthony Magit</td>
<td>Research mentor, 3 MD students; ISP chair, 2 students</td>
</tr>
<tr>
<td>Dr. Philip Weissbrod</td>
<td>Research mentor, 5 MD students, 1 undergraduate, and 2 PhD students; ISP committee, 1 student</td>
</tr>
<tr>
<td>Dr. Ryan Orosco</td>
<td>Research mentor, 6 MD students; ISP committee, 2 students</td>
</tr>
<tr>
<td>Mentor Name</td>
<td>Mentee Description</td>
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<tr>
<td>Dr. David Hom</td>
<td>Research mentor, 8 MD students &amp; 4 undergraduates; ISP, 1 student</td>
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<tr>
<td>Dr. Theresa Guo</td>
<td>Research mentor, 2 MD students</td>
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<tr>
<td>Dr. Elina Kari</td>
<td>Research mentor, 4 MD students</td>
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<tr>
<td>Dr. Charley Coffey</td>
<td>Research mentor +/- ISP committee, 7 students</td>
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<tr>
<td>Dr. Deborah Watson</td>
<td>Research mentor + ISP committee, 8 students</td>
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<tr>
<td>Dr. Jeffrey Harris</td>
<td>Mentor to all Senior Students interested in Otolaryngology</td>
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<th>Visiting Medical Student Virtual Subinternship</th>
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<tr>
<td><strong>Objective</strong></td>
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<tr>
<td>Didactic learning</td>
</tr>
<tr>
<td>1. Weekly journal club</td>
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<tr>
<td>2. Case reviews with faculty &amp; residents</td>
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<tr>
<td>3. Virtual grand rounds</td>
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<tr>
<td>4. Subspecialty-specific lectures</td>
</tr>
<tr>
<td>5. Virtual conferences held by faculty</td>
</tr>
<tr>
<td>6. Exposure to broad spectrum of subspecialties (head and neck surgical oncology, facial plastic &amp; reconstructive surgery, rhinology, laryngology, sleep surgery, salivary surgery, and otology)</td>
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<tr>
<td><strong>Educational Modality</strong></td>
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<tr>
<td>Opportunity for mentorship</td>
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<tr>
<td>Weekly sessions with faculty and residents</td>
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<td><strong>Professional development</strong></td>
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<tr>
<td>1. Interview preparation session</td>
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<td>2. Student slide presentation</td>
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<tr>
<td><strong>Assessing mutual program-applicant “personality fit”</strong></td>
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<td>Virtual happy hour with residents</td>
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<td>Hands-on Lab Experience</td>
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<td>Medical Student Courses</td>
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<tr>
<td>Education Offering</td>
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<tr>
<td>-----------------------------</td>
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<tr>
<td>Educational Conferences</td>
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| Hands-on Lab Experience     | Microvascular Course  
FPRS Sawbones Course  
Temporal Bone Course  
Head and Neck Dissection Course  
Rhinology Course  
ACS Ultrasound Course  
Stryker Mobile Lab |
| Clinical Training           | PGY 1 – PGY 5                                                        |
| Training Grants             | URiM Grants for Sub-Is                                                |
| Fellowships                 | FPRS, Laryngology, Head and Neck Surgery, Global Health Fellowship and Pediatric Otolaryngology |
| Medical Student Courses     | OTOLARYN 130.01 CIEx - ENT Elective  
OTOLARYN 130.02 CIEx - Interprofessional ENT Inpatient Elective  
OTOLARYN 130.03 CIEx- ENT-Interprofessional Care of the Dizzy Patient  
OTOLARYN 140.01M Advanced Otolaryngology Clerkship  
OTOLARYN 140.01P Advanced Otolaryngology Clerkship  
OTOLARYN 140.01S Advanced Otolaryngology Clerkship  
OTOLARYN 140.05 Otolaryngology Surgery Selective  
OTOLARYN 150.01 Research in Otolaryngology  
OTOLARYN 170.01 Introduction to Otolaryngology  
OTOLARYN 198 Supervised Study |
| Student Mentoring           |                                                                      |
| Visiting Medical Student Subinternship | Didactic learning  
1. Weekly Didactics  
2. Case reviews with faculty & residents  
3. Virtual grand rounds  
4. Subspecialty-specific lectures  
5. Virtual conferences held by faculty |
### Educational Offerings

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<th>Educational Offerings</th>
<th>UCI</th>
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<tr>
<td>Educational Conferences</td>
<td>Every Wednesday from 4-6PM, Every Thursday 7-8AM, Every 2\textsuperscript{nd} Friday 7-10AM</td>
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<tr>
<td>Hands-on Lab Experience</td>
<td>Varies – each subspecialty faculty manages a session, but it changes year to year</td>
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<tr>
<td>Clinical Training</td>
<td>PGY 1 – PGY 5</td>
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<tr>
<td>Training Grant</td>
<td>N/A</td>
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<tr>
<td>Fellowships</td>
<td>Non-ACGME Facial Plastics &amp; Reconstructive Surgery</td>
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<tr>
<td>Medical Student Courses</td>
<td>22 Sub-I’s; 10 clerkship MS3’s</td>
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<td>Student Mentoring</td>
<td>Mentoring is offered to students</td>
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<tr>
<td>Visiting Medical Student Subinternship</td>
<td>In person</td>
</tr>
<tr>
<td>Audiology Program</td>
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**Department of Otolaryngology**

**Academic Advancement Guidelines**

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<th>Series</th>
<th>Normal Merit Standards</th>
<th>Acceleration Standards</th>
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<tr>
<td>HS Clinical</td>
<td><strong>Scholarly/Creative Activity:</strong> Expected: 1-2 peer reviewed manuscripts per year, book chapter, abstracts i.e. published proceedings, accepted posters at national meetings or teaching modules.</td>
<td><strong>Scholarly/Creative Activity:</strong> Expected: 2-4 publications per year or PI on major research grant, major new contribution to clinical or teaching program. Consecutive acceleration only considered for extremely special circumstances by approval of DOOCAP of the Chair of Otolaryngology.</td>
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<tr>
<td></td>
<td><strong>Professional Competency/ Clinical Activity:</strong> All HS Clinical faculty are expected to maintain an active clinical practice. Clinical excellence and patient satisfaction is also expected.</td>
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<tr>
<td></td>
<td><strong>Teaching:</strong> All faculty are expected to maintain a standard teaching load established by the Department and are expected to strive for excellence in their teaching.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>University &amp; Public Service:</strong> Faculty are expected to participate in the governance of the Department and/or University through committee service or other administrative work. Most faculty in the Department of Otolaryngology also participate in service outside of UC San Diego in a variety of ways.</td>
<td></td>
</tr>
<tr>
<td>Clinical X</td>
<td><strong>Scholarly/Creative Activity:</strong> Expected: 3 peer-reviewed publications per year (research articles, case reports reviews, invited commentary or book chapter)</td>
<td><strong>Scholarly/Creative Activity:</strong> Expected: 6 peer-reviewed publications per year, with at least one per year as first or senior author. President of society and/or PI on major research grant. <em>(book chapters not included in creative activity for consideration of acceleration)</em></td>
</tr>
<tr>
<td></td>
<td><strong>Professional Competency/ Clinical Activity:</strong> All Clinical X faculty are expected to maintain an active clinical practice with clinical excellence and patient satisfaction. Progressive achievement in clinical recognition beyond UCSD is also expected.</td>
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<td></td>
<td><strong>Teaching:</strong> All faculty are expected to maintain a standard teaching load established by the</td>
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<tr>
<td></td>
<td>Department and are expected to strive for excellence in their teaching.</td>
<td></td>
</tr>
</tbody>
</table>
Department and are expected to strive for excellence in their teaching.

**University & Public Service:**
Faculty are also expected to participate in the governance of the Department and/or University through committee service or other administrative work. Most faculty in the Department of Otolaryngology also participate in service outside of UC San Diego in a variety of ways.

<table>
<thead>
<tr>
<th>IR/Ladder/Adjunct</th>
<th>Scholarly/Creative Activity: Expected: 3-5 peer-reviewed research publications per year, PI on major grant funding, independence.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Professional Competency: All faculty are expected to demonstrate distinction in the special competencies appropriate to the field and demonstrated progressiveness in the development or utilization of new approaches and techniques for the solution of professional problems.</td>
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<tr>
<td></td>
<td>Teaching: All faculty are expected to maintain a standard teaching load established by the Department and are expected to strive for excellence in their teaching.</td>
</tr>
<tr>
<td></td>
<td>University &amp; Public Service: Faculty are also expected to participate in the governance of the Department and/or University through committee service or other administrative work. Most faculty in the Department of Otolaryngology also participate in service outside of UC San Diego in a variety of ways.</td>
</tr>
</tbody>
</table>

**Scholarly/Creative Activity:** Expected: 6-10 peer-reviewed research publications per year (at least 1/yr as first or senior author), PI on R01, President of a society, study section, or have received a national award.

Consecutive acceleration only considered for extremely special circumstances by approval of DOOCAP of the Chair of Otolaryngology.
| L(P)SOE | Scholarly/Creative Activity: Expected: 3-4 publications per year. Examples:  
| Traditional peer-reviewed scholarship/creative activity  
| Development or contributions to: Original materials designed to improve learning outcomes (e.g., new instructional software, videos, websites based on pedagogy); Evidence-based design and evaluation of educational criteria  
| Grants for Educational Activities  
| Requires evidence of consistent and sustained professional and/or scholarly achievement and activity and a profile of excellent teaching that have made the candidate a leader in the professional field and/or in education. May be related to the underlying discipline or pedagogy.  
| Professional Competency: All faculty are expected to demonstrate distinction in the special competencies appropriate to the field and demonstrated progressiveness in the development or utilization of new approaches and techniques for the solution of professional problems.  
| Teaching: All faculty are expected to maintain a significant teaching load established by the Department and are expected to strive for excellence in their teaching.  
| University & Public Service: Faculty are also expected to participate in the governance of the Department and/or University through committee service or other administrative work. Most faculty in the Department of Otolaryngology also participate in service outside of UC San Diego in a variety of ways. | Scholarly/Creative Activity: Expected: 6-8 publications per year; publication of two or more original manuscripts, at least one of which is deemed to have added in a substantial manner to the knowledge base in the specialty, OR publication of one or more book chapters in leading text in the specialty or subspecialty; major new contribution to clinical or teaching program. |

**Date:** 08/05/2020 (effective 2022 academic reviews)
NOTE: Full-time LSOEs are members of the Academic Senate and have the same rights and privileges in the departments and on the campus as Senate Faculty with professorial titles, and whose primary responsibility is teaching and teaching-related tasks. Secondary required responsibilities include professional and/or scholarly activities, including creative activities, especially as they relate to instruction and pedagogy, and University and public service.

<table>
<thead>
<tr>
<th>RANK &amp; STEP</th>
<th>TEACHING</th>
<th>PROFESSIONAL and/or SCHOLARY ACHIEVEMENT</th>
<th>UNIVERSITY &amp; PUBLIC SERVICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>LPSOE (initial appointment)</td>
<td>• A defined teaching role (with examples provided; executed with positive evaluations if already performed)</td>
<td>• Scholarly activity plan required. May include mentored training activities with clear plan to complete scholarly products. Division Head should approve. Defined by candidate and Division Head based on one or more activities that may be pedagogical in nature</td>
<td>• As defined</td>
</tr>
<tr>
<td>LPSOE 4TH YEAR APPRAISAL</td>
<td>• An established well-defined SOM course teaching role • Positive recent evaluations</td>
<td>• As above</td>
<td>• Evidence of significant service • Evidence of emerging national reputation</td>
</tr>
</tbody>
</table>
**LSOE**

- Well-defined SOM course teaching role
  - Development and adoption of evidence-based pedagogical strategies
  - Incorporation and promotion of current pedagogical knowledge into curriculum
- Requires evidence of consistent and sustained professional and/or scholarly achievement and activity and a profile of excellent teaching that have made the candidate a leader in the professional field and/or
- Program leadership helpful
- Evidence of significant service; requires evidence of activity on committees within the professional field, department, school, campus, or University; or service to the public in areas directly related to

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**CRITERIA FOR APPOINTMENT/PROMOTION IN ADJUNCT SERIES**

NOTE: The Adjunct series can accommodate a variable distribution of activities. It should be noted that teaching is an essential component of this series.

Teaching with either research or professional (i.e. clinical) activity may be combined. In either case, teaching the equivalent of one course per year is an absolute requirement for this series (bench teaching alone does not qualify). Therefore, the manner in which teaching is fulfilled should be explicitly stated and fully documented.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Research (or Creative Activity)</th>
<th>Teaching</th>
<th>Professional Competence and Activity</th>
<th>University Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asst Prof</td>
<td>Some peer-reviewed publications or creative output.</td>
<td>Defined role in clinic, laboratory, or classroom teaching equivalent to at least one course per year. May provide significant contribution to the graduate or undergraduate instructional program. The basis for this equivalence should be carefully documented.</td>
<td>As defined.</td>
<td>Expected to emerge in service consistent with assignments.</td>
</tr>
</tbody>
</table>
| Asst Prof 4th year and 6th year Appraisals | Established focus, ongoing productivity, grant support and emerging identity. | Continued activities as above.  
  - Positive evaluations.  
  - Program leadership helpful. | Significant service consistent with assignment. |
BASIC APPOINTMENT/PROMOTION CRITERIA FOR: FTE (LADDER) RANK & IN RESIDENCE SERIES
Department of Otolaryngology

<table>
<thead>
<tr>
<th>RANK &amp; STEP</th>
<th>RESEARCH PUBLICATIONS CREATIVE &amp; SCHOLARLY ACTIVITIES</th>
<th>TEACHING</th>
<th>CLINICAL AND PROFESSIONAL ACTIVITIES</th>
<th>UNIVERSITY &amp; PUBLIC SERVICE</th>
</tr>
</thead>
</table>
| ASSISTANT PROFESSOR STEP I | • Some publications/in press original research, 1st authored and peer-reviewed  
• Independence and grant support not required  
• Supporting letters positive | • A defined teaching role in SOM courses (executed with positive evaluations if already performed) | • As agreed by Division Head and Department Chair, (executed with positive evaluations if already clinically active) | • Not required at time of appointment. |

<table>
<thead>
<tr>
<th>RANK &amp; STEP</th>
<th>RESEARCH PUBLICATIONS CREATIVE &amp; SCHOLARLY ACTIVITIES</th>
<th>TEACHING</th>
<th>CLINICAL AND PROFESSIONAL ACTIVITIES</th>
<th>UNIVERSITY &amp; PUBLIC SERVICE</th>
</tr>
</thead>
</table>
| Professor I | • Same as Assoc Prof I.  
• Continued productivity.  
• Leadership role.  
• International reputation when there is substantial research effort. | • Same as Assoc Prof I.  
• Well-defined and documented teaching activity.  
• Increased expectation of invited presentations on national/international basis. | • Continued clinical excellence and focus as documented by external letters.  
• Innovations encouraged.  
• Leadership responsibilities expected. | • Continued strong service with national recognition. |

| Professor VI | • As for Professor, with clear evidence of continued excellence and momentum. | • Continued excellence in teaching. | • National and/or international recognition of excellence. | • Continued strong service with national/international recognition. |

<table>
<thead>
<tr>
<th>RANK &amp; STEP</th>
<th>RESEARCH PUBLICATIONS CREATIVE &amp; SCHOLARLY ACTIVITIES</th>
<th>TEACHING</th>
<th>CLINICAL AND PROFESSIONAL ACTIVITIES</th>
<th>UNIVERSITY &amp; PUBLIC SERVICE</th>
</tr>
</thead>
</table>
| Assoc Prof | • Documented evidence of independent contributions, either as a PI or in a pivotal role within a larger research unit.  
• Important established focus.  
• Substantial body of publications or creative support.  
• National reputation with strong external letters of support when there is substantial research effort.  
• Grant support when substantial research effort, may be collaborative. | • Continued activities as above.  
• Positive recent evaluations.  
• Innovations and electives encouraged.  
• External reputation. | • Recognized clinical excellence and focus  
• and Board certification (if clinical component)  
• Program leadership helpful. | • Continued service with increasing external recognition. |
### ASSISTANT PROFESSOR 4TH YEAR APPRAISAL
- Established research focus
- Active research grant support
- Evidence of productivity
- Clear evidence of moving towards independence
- An established well-defined SOM course teaching role
- Positive recent evaluations
- As agreed to by Division Head and Department Chair
- Evidence of significant service.
- Evidence of emerging national reputation by societal/grant review service desirable.

### ASSOCIATE PROFESSOR STEP I
- Important, established research focus
- Continued productivity
- Independence
- Active research support
- National reputation, strong letters
- Well-defined SOM course teaching role
- Strong recent evaluations
- Some training of students/fellow in research
- As agreed to by Division Head and Department Chair
- Strong recent evaluations
- Board certification if clinical component
- Evidence of significant service discharged well
- Societal/journal/grant/review/service as evidence of national reputation

### PROFESSOR STEP I
- As for Associate Professor -plus-
- International reputation
- Leadership role in research
- As above, with teaching role substantial
- Past history and present training of students/fellows in research
- As for Associate Professor
- As for Associate Professor

### PROFESSOR STEP VI
- As for Professor, with clear evidence of excellence and momentum
- As for Professor, with clear evidence of excellence
- As for Professor with clear evidence of excellence
- As above, serving with distinction

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**BASIC APPOINTMENT/PROMOTION CRITERIA FOR: CLINICAL SERIES**

**Department of Otolaryngology**

<table>
<thead>
<tr>
<th>RANK AND STEP</th>
<th>CLINICAL AND PROFESSIONAL ACTIVITIES</th>
<th>TEACHING</th>
<th>RESEARCH, PUBLICATIONS, CREATIVE &amp; SCHOLARLY ACTIVITIES</th>
<th>UNIVERSITY AND PUBLIC SERVICE</th>
</tr>
</thead>
</table>

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| ASSISTANT PROFESSOR, STEP I | Excellence in basic clinical skills as demonstrated by letters from directors of training programs and colleagues. | Participation in teaching of housestaff and students through their clinical activities and other teaching as defined by Division Head. | Scholarly activity plan required. May include mentored training activities with clear plan to complete scholarly products. Division Head should approve. Defined by candidate and Division Head based on one or more activities listed in clinical scholarly activities document. | Not required for appointment. |
| ASSISTANT PROFESSOR, 4th YEAR APPRAISAL | Established clinical focus, active practice or contractual clinical activity, established excellence in clinical care delivery. | Documented effectiveness in teaching of housestaff and students through clinical activities and other teaching as defined by Division Head. | Scholarly activity required. May include participation in collaborative research; publication of case reports or reviews; presentations at local and national meetings (including CME); or development of innovative clinical procedures, teaching methods or clinical curricula. May include evidence of independent or collaborative research, creative or scholarly activities e.g. generation of data on the performance, goals, teaching contributions, or other elements of academic medicine; publication of case reports or reviews; presentations at local and national meetings (including CME); mentoring ISP efforts that are subsequently presented locally or nationally; development of innovative clinical procedures, teaching methods or clinical curricula or guidelines for patient care. | Evidence of University service. |
| ASSOCIATE PROFESSOR, STEP I | Independent clinical excellence and focus, sustaining clinical practice or contractual clinical support or other support, regional recognition for | Excellence in teaching of housestaff and students in above activities as documented in letters and teaching evaluations. | Scholarly activity required, with demonstrated independent contribution to effort. As above for Assistant Professor with | Evidence of participation in University service, or participation in local or national organizations. |

CRITERIA FOR ADVANCEMENT IN THE PROFESSOR OF CLINICAL X SERIES  
Department of Otolaryngology

<table>
<thead>
<tr>
<th>Assistan t Profess or Step I (Initial Appointment)</th>
<th>Clinical and Professional Activity</th>
<th>Scholarly Activity</th>
<th>Teaching</th>
<th>Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellence in basic clinical skills: completion of recognized clinical training program; letters from program directors, colleagues. Regional or national recognition.</td>
<td>Potential for excellent scholarly activity with impact beyond our institution, to be documented by letters and/or research or review publications. Roles in collaborative research may be an important consideration, and may be somewhat flexible. Expressed interest in pursuing scholarly activity as a significant component of the academic position, coupled with evidence to support the promise for accomplishment. Evidence may be in the form of recommendation from the Departmental Chair, Division Chief or Program or Fellowship Director, publications to include (but not limited to) case reports, book chapters, prior collaboration with established researchers, and greater weight being given to original research, or completed special</td>
<td>Excellent teaching abilities documented by letters from program directors and, if available, med student/housestaff evaluations and invitations to lecture. Local recognition.</td>
<td>No prior university service expected at time of appointment.</td>
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<tr>
<td>Training</td>
<td>Some scholarly activity is expected, though it may be in the form of clinical innovation rather than traditional research—with demonstrable regional or national dissemination and impact &amp; recognition. Roles in collaborative research may be an important consideration. Evidence of accomplishment or a trajectory that predicts accomplishment in the scholarly arena to include one or more of the following: published original manuscripts, published or presented abstracts that are likely to lead to complete original manuscripts, book chapters, review articles, participation in independent or collaborative research, application or securing extramural funding, appointment on National Society committees, with lesser consideration given to case reports. Excellent teaching—may be clinical and/or classroom or CME/invited presentations documented by student, housestaff and CME evaluations. Innovative programs, new courses or techniques may deserve special consideration. Teaching/training programs directed at peers, including informal peer teaching. <strong>Local recognition.</strong></td>
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<tr>
<td>Assistant Professor 4th Year Appraisal (in some cases, 6th year appraisal)</td>
<td>Recognized clinical excellence, not precluding some limited mentoring if appropriate to developing new skills. UCSD clinical faculty and regional peer referrals, and development of unique clinical programs should be documented in the file. Specialty/subspecialty board certification, as appropriate. Participation on University and community service committees/boards is expected. Actual extent of this will depend on individual's clinical activities. Invitation or election to regional or national committees, journal review boards, etc. is expected.</td>
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<tr>
<td>Associa te Profess or of Clinical X</td>
<td>Independen t clinical excellence and focus, maintaining clinical practice or contractual clinical support or other support, regional recognition for clinical excellence documented e.g., by referrals. Letters from UCSD faculty and regional</td>
<td>Demonstrated and sustained excellence in contributions to knowledge and/or practice in chosen clinical field as indicated by dissemination of a body of publications or teaching material or programs used in other institutions, or the introduction of documented improvements/innovations that advance the</td>
<td>Teaching excellence in clinical care delivery or consultation services or precepting medical students, including: lectures, grand rounds, M&amp;M, primary care or sub-specialty rounds or laboratory instruction in SOM core courses.</td>
<td>Membership on care delivery committees at UCSDMC, VAMC, DOM or SOM, or membership in national and local organizations or committees or boards, or review of manuscripts, or</td>
</tr>
</tbody>
</table>
### Otolaryngology Programs - Faculty Counts

<table>
<thead>
<tr>
<th>Otolaryngology Programs</th>
<th>Assistant Professors</th>
<th>Associate Professors</th>
<th>Professors</th>
<th>Adjunct Professors</th>
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</tr>
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<td>CASE WESTERN RESERVE UNIVERSITY/UNIVERSITY HOSPITALS</td>
<td>Department</td>
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<td>CLEVELAND CLINIC FOUNDATION</td>
<td>Department</td>
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<tr>
<td>EASTERN VIRGINIA MEDICAL SCHOOL</td>
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Clinicodemographic Predictors of Tracheotomy Tube Size and Decannulation: A Multiinstitutional Retrospective Cohort Study on Tracheotomy. Panuganti BA, Pang J, Francis 78


2021


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Frailty Index as a Predictor of Readmission in Patients With Head and Neck Cancer. Voora RS, Qian AS, Kotha NV, Qiao EM, Meineke M, Murphy JD, Orosco RK. Otolaryngol Head Neck Surg. 2021 Sep 14:1945998211043489. PMID: 34520305


High rates of postoperative radiotherapy delay in head and neck cancer before and after Medicaid expansion. Pang J, Faraji F, Risa E, Mell NK, Houlton JJ, Califano JA. Head Neck. 2021 May 17. PMID: 33998088


Association of Race and Health Care System With Disease Stage and Survival in Veterans With Larynx Cancer. Voora RS, Kotha NV, Kumar A, Qiao EM, Qian AS, Panuganti BA, Banegas MP, Weissbrod PA, Stewart TF, Rose BS, Oroscio RK. Cancer. 2021 Apr 2. PMID: 33799314


Changes in treatment trends in the early glottic cancer population after the Affordable Care Act. Panuganti BA, Stuart E, Weissbrod P. Head Neck. 2021 Jan;43(1):137-144. PMID: 32945595


Human Cytomegalovirus Interactions with the Basement Membrane Protein Nidogen 1. Kuan MI, Jaeger HK, Balemba OB, O’Dowd JM, Duricka D, Hannemann H, Marx E, Teissier N, Gabrielli


ACE2 localizes to the respiratory cilia and is not increased by ACE inhibitors or ARBs. Lee IT, Nakayama T, Wu CT, Goltsev Y, Jiang S, Gall PA, Liao CK, Shiht LC, Schürch CM, Mcllwain DR, Chu P,


Resident Publications

2017-2018


2018 - 2019


2019-2020


Audiology Program Student Research Projects

2007-2008

- Evaluation of CHAMP as a Diagnostic Tool for Cochlear Hydrops/Meniere's Disease, Yan Li, 2007, Chair: Erika Zettner, Ph.D. (UCSD).
- Comparison of Results from Speech and Language Screenings with Hearing Screenings with Children Ages 3-7 Years Old, Catherine J. Moyer, 2007, Chair: Peter Torre III, Ph.D. (SDSU).
- Comparison of Continuous and Pulsed Tones in Normal-Hearing and Hearing-Impaired Individuals, Danielle Allen, 2008, Chair: Peter Torre III, Ph.D. (SDSU).
- Prescribed vs. Preferred Output for a Generic Prescriptive Method in Multi-channel Hearing Aids, Stephanie Smith, 2008, Chair: Carol L. Mackersie, Ph.D. (SDSU).
- Stephanie Smith, 2008, Chair: Carol L. Mackersie, Ph.D. (SDSU).
2009-2010

- Bone Conduction Thresholds with and without the Placement of Insert Air-Conduction Transducers, Sierra Bower, 2009, Chair: Steve Kramer, Ph.D. (SDSU).
- The Effects of Footwear on the Sensory Organization and Motor control Tests of Computerized Dynamic Posturography (CDP) in Young, Health Adults, Daniel Finnegan, 2009, Chair: Steve Kramer, Ph.D. (SDSU)
- Ototoxicity Monitoring of Adult Patients with Cystic Fibrosis, Aaron C. Jones, 2009, Chair: Erika M. Zettner, Ph.D. (UCSD).
- Distortion Product Otoacoustic Emission Amplitude Changes following a Controlled Noise Exposure, Lindsay Moneymaker, 2009, Chair: Laura Dreisbach, Ph.D. (SDSU).
- Attitudes Toward Wearing Hearing Protection in High School and College Students, Philip “Chuck” Schulz, 2009, Chair: Peter Torre III, Ph.D. (SDSU).
- Effect of Phosphodiesterase (PDE)-V Inhibitors on Cochlear Hair Cells and Spiral Ganglion Nerve Cells, Barbara Harris, 2010, Chair: Allen F. Ryan, Ph.D. (UCSD).
- Is a Tinnitus Seminar a Successful Treatment Modality, Caton Harris, 2010, Chair: Erik Viirre, M.D., Ph.D. (UCSD).
- Characterization of Spontaneous Otoacoustic Emissions in the Presence of Ulta High-Frequency Distortion-Product Otoacoustic Emissions in Adults, Sandra Romero, 2010, Chair: Laura Dreisbach,
Ph.D. (SDSU).


**2013-2014**

- Simultaneous Recordings of Auditory Brainstem Response (ABR) and Electrocochleographic Response (ECOG) Parameters and Variability in Normal Hearing Adults, Anja Arko, 2013, Chair: Steve Kramer, Ph.D. (SDSU).
- The Effects of Computer-based Auditory Training on Speech Perception by Adults with Hearing Loss, Stephanie Bigler, 2013, Chair: Arthur Boothroyd, Ph.D. (SDSU).
- Wideband Middle Ear Reflectance and Multifrequency Tympanometry in Patients with Meniere's Disease, Collyn Gallant, 2013, Chair: Laura Dreisbach, Ph.D. (SDSU).
- Effects of Personal Music System Use in Quiet and in Noise on Distortion Product Otoacoustic Emissions, Lauren Harrison, 2013, Chair: Peter Torre III, Ph.D. (SDSU).
- The Effect of Competition Type and Hearing Loss on Psychophysiological Measures, Performance and Subjective Ratings of Task Load, Imola Major, 2013, Chair: Carol Mackersie, Ph.D. (SDSU).
- Effects of Hearing Loss, Noise Level, and Unpredictable Auditory Intrusions on Sentence Recognition, Psychophysiological Reactivity, and Subjective Ratings of Task Load, Emily Wilson, 2013, Chair: Carol Mackersie, Ph.D. (SDSU).
- The Effect of Surface Modification of Titanium Substrates on Spiral Ganglion Dendrite Outgrowth, Thomas Ryan, 2013, Chair: Allen Ryan, Ph.D. (UCSD).
- DPOAE Source Contribution in Young Children, Old Children, and Adults, Christine Gagner, 2014, Chair: Laura Dreisbach, Ph.D. (SDSU).
- The Correlation Between Peak, Trough, and Mean Values of Tobramycin and Ototoxicity in Cystic Fibrosis Patients, Elizabeth Harris, 2014, Chair: Erika Zettner, Ph.D. (UCSD).
- Repeatability and Feasibility of Individualized Distortion Product Otoacoustic Emission Growth
Functions, Hang Lam, 2014, Chair: Erika Zettner, Ph.D. (UCSD).

- Physiological Reactivity and Subjective Workload/Stress During Speech Recognition Tasks in Single-source and Spatially-Distributed Noise, Ashley Page, 2014, Chair: Carol Mackersie, Ph.D. (SDSU).

2015-2016

- Early Indication of Noise Induced Hearing Loss in Young Adult Users of Personal Listening Devices, Carol Chou, 2015, Chair: Quyen Nguyen, M.D., Ph.D. (UCSD).
- Speech Audiometry Results in HIV+ and HIV- Adults, Julia Coats, 2015, Chair: Peter Torre III, Ph.D. (SDSU).
- Wideband Middle Ear Reflectance and Multifrequency Tympanometry in Normal Hearing Young Adults, Kelsey Janet, 2015, Chair: Steve Kramer, Ph.D. (SDSU).
- Short-term Repeatability of Tinnitus Assessment Characteristics in Participants Asked to Feign, Steve Liu, 2015, Chair: Steve Kramer, Ph.D. (SDSU).
- Determining Racial Differences in Audiologic Measurements Using an Advanced Calibration Method, Michelle Louie, 2015, Chair: Laura Dreisbach, Ph.D. (SDSU).
- Feasibility of Recording oVEMP Using a Horizontal Surface-Recording Electrode Montage, Laura Rhee, 2015, Chair: Steve Kramer, Ph.D. (SDSU).
- Factors Associated with Ototoxicity in Cystic Fibrosis Patients Treated With Tobramycin, Suzanne Rotan, 2015, Chair: Erika Zettner, Ph.D. (UCSD).
- Relations Between Domain-Specific Sound Tolerance and Executive Function, Stephanie Baxter, 2016, Chair: Carol Mackersie, Ph.D. (SDSU).
- Refining Drug Delivery to the Middle Ear: Examination of a Natural Cellular Mechanism, Kerry Beasley, 2016, Allen Ryan, Ph.D. (UCSD).
- Noise Level Measurements and National City Residents' Attitudes Towards that Noise, Kelly Brennan, 2016, Chair: Peter Torre III, Ph.D. (SDSU).
- The Role of JNK Isoforms in Noise-Induced Hearing Loss and Cochlear Damage, Joseph Hardeman, 2016, Chair: Allen Ryan, Ph.D. (UCSD).
- Effects of Platinum Chemotherapy Across Treatment on Behavioral and Physiological Sensitive Range for Ototoxicity, Melissa Ho, 2016, Chair: Laura Dreisbach, Ph.D. (SDSU).
- The Effects of Noise Types on Subjective Ratings of Acceptance of Background Noise, Megan Lane, 2016, Chair: Carol Mackersie, Ph.D. (SDSU).
• Characterization and Repeatability of Middle Ear Reflectance in Children Young and Old, Joseph Yang, 2016, Chair: Laura Dreisbach, Ph.D. (SDSU).

2017-2018

• The Effects of Social Evaluation and Task Demand on Performance and Indices of Communication-Related Stress, Lucia Kearney, 2017, Chair: Carol Mackersie, Ph.D. (SDSU).
• Audiometric Threshold Changes in Adults with Cystic Fibrosis, Kaitlin Leggins, 2017, Chair: Erika Zettner, Ph.D. (UCSD).
• Effectiveness of Earplug Use in Young Adults, Heather Stenger, 2017, Chair: Peter Torre III, Ph.D. (SDSU).
• Audiometric Impact on ALD Adoption & Satisfaction with Older Adults, Anish Thakkar, 2017, Chair: Erika Zettner, Ph.D. (UCSD).
• Behavioral Audiometric Thresholds and Distortion Product Otoacoustic Emissions in the Ultra-High Frequency Range, Charles Bishop, 2018, Chair: Laura Dreisbach, Ph.D. (SDSU).
• Speech in Noise Performance in Dancers and Non-Dancers, Kendall Caminiti, 2018, Chair: Peter Torre III, Ph.D. (SDSU).
• Word-In-Noise Test Performance in Perinatally HIV-Infected and HIV-Exposed but Uninfected Young Adults, Alyssa Cook, 2018, Chair: Peter Torre III, Ph.D. (SDSU).
• Accuracy of Automated and Self-Estimated Pure-Tone Thresholds Relative to Conventional Audiometry, Mark Datuin, 2018, Chair: Carol Mackersie, Ph.D. (SDSU).
• The Effects of Music Exposure on Distortion-Product Otoacoustic Emissions, Brennan Hefner, 2018, Chair: Peter Torre III, Ph.D. (SDSU).
• Descriptive Analysis of Tinnitus with Normal Hearing and Hearing Loss, Christopher Johnson, 2018, Chair: Erika Zettner, Ph.D. (UCSD).
• The Role of ECRG4 in Early-Onset Hearing Loss and Noise-Induced Cochlear Damage, Lauren Rynders, 2018, Chair: Allen Ryan, Ph.D. (UCSD).
• High-Frequency Evoked Otoacoustic Emissions in Newborns, Rachel Smith, 2018, Chair: Laura
2019-2020 (THROUGH MAY 2020)

- Marijuana Use as a Risk Factor for Hearing in Young Adults, Mallery Eppler, 2019, Chair: Peter Torre III, Ph.D. (SDSU).
- Speech Recognition in Varying Levels of Noise: Talker/Recording effects, Allison Hong, 2019, Chair: Arthur Boothroyd, Ph.D. (SDSU).
- Individual Differences in Noise Tolerance domains: Associations with personality, Noise Sensitivity, and Cardiac Responses to Noise, Kayden Kim, 2019, Chair: Carol Mackersie, Ph.D. (SDSU).
- Sensitivity of Different Otoacoustic Emission Paradigms for Monitoring Ototoxicity in Patients Receiving Platinum Agents as Treatment, Brittany Vlosich, 2019, Chair: Laura Dreisbach, Ph.D. (SDSU).
- Role of Pinocytosis in the Action of Neurotrophins on Spiral Ganglion Dendrite Growth, Shannon Doolittle, 2020, Chair: Allen Ryan, Ph.D. (UCSD).
- Preferred speech spectrum and its dependence on overall level change, Jason Duda, 2020, Chair: Arthur Boothroyd, Ph.D. (SDSU).
- CE: Chirp Effects on ABR Components in those with and Without Meniere's Disease, Nicholas Faillace, 2020, Chair: Laura Dreisbach, Ph.D. (SDSU).
- Headphone Type as Indicative of Risk Factors for Hearing in Young Adults, John Parsons, 2020, Chair: Peter Torre III, Ph.D. (SDSU).
- An Analysis of the Form Equivalence, Practice Effects, and Noise-Performance Function of the Consonant Contrast Test, Christine Nguyen, 2019, Chair: Carol Mackersie, Ph.D. (SDSU)
- Relations Between Resting Heart-Rate Variability and Measures of Self-Esteem in Adults with Hearing Loss, Brittany Thrall, 2020, Chair: Carol Mackersie, Ph.D. (SDSU).
- The Effect of Controller Configuration on Self-Adjusted Amplification Output by Individuals with Hearing Loss, Jennifer Retana, 2020, Chair: Carol Mackersie, Ph.D. (SDSU)
2020-21 (THROUGH MAY 2021)

• The Role of CD44 in Noise Exposure and Cochlear Damage, Molly Cooper, 2020, Chair: Allen Ryan, Ph.D. (UCSD).
• Relations Between the Patterns of Cardiac Reflexive Responses and Subjective Noise Tolerance and its Associated Criteria, Belinda Baroody, 2020, Chair: Carol Mackersie, Ph.D. (SDSU).
• Hearing Sensitivity in Perinatally HIV-Infected Children of Cape Town, South Africa, Nicolette Dome, 2021, Chair: Peter Torre III, Ph.D. (SDSU).
• Outer Hair Cell and Neural Function in Perinatally HIV-Infected Children (PHIV) of Cape Town, South Africa, Shaina Jones, 2021, Chair: Peter Torre III, Ph.D. (SDSU).
• Changes in Cochlear and Neural Function in Young Adults After Music Exposure, Amanda Kaae, 2021, Chair: Peter Torre III, Ph.D. (SDSU).
• Characterization of Distortion-Product Otoacoustic Emission Levels at Ultra High Frequencies by Stimulus Level, Age, Sex, and Test Ear, Sky McIntyre, 2021, Chair: Laura Dreisbach-Hawe, Ph.D. (SDSU).
• Preferred Listening Level Using Earphones and Change in Outer Hair Cell Function, Carlee Michaelson, 2021, Chair: Peter Torre III, Ph.D. (SDSU).
• Changes in DPOAEs and Differences in Objective Listening Levels With and Without Background Noise, Shannon O’Donnell, 2021, Chair: Peter Torre III, Ph.D. (SDSU).
• The Clinical Utility of Multi-frequency Tympanometry in the Diagnosis of Meniere’s Disease, Shelby Smith, 2021, Chair: Erika Zettner, Ph.D. (UCSD).
• The Effects of Person-Related Factors on Individual Differences of Cognitive Performance in Noise, Jocelyn Yang, 2021, Chair: Carol Mackersie, Ph.D. (SDSU).

2021-22 (DECEMBER 2021 THROUGH MAY 2022)

• Development of Materials for a Self-Administered 8-Alternative Forced-Choice Word-Recognition Test, Elena Shur, 2021, Chair: Arthur Boothroyd, Ph.D. (SDSU)
• The Relationship Between Extended-High Frequency DPOAE Level, Extended-High Frequency Behavioral Thresholds and Speech in Noise Performance. William Hansen, 2021, Chair: Laura Dreisbach Hawe, Ph.D. (SDSU)
• Noise Acceptability Criteria Used by Persons with Hearing Loss, Jenna Bradley, 2021, Chair: Carol Mackersie, Ph.D. (SDSU)
• Development of Multifrequency Typanometry Normative Data for Sensorineural Hearing Loss, Lindsey Bernard, 2021, Chair: Erika Zettner, Ph.D. (UCSD)
• Development of 2000 Hz Susceptance Normative Data in Normal Hearing, Taylor Beck, 2021, Chair: Erika Zettner, Ph.D. (UCSD)
• Predictors of Hearing-Related Stress of Persons with Acquired Hearing Loss, Kiri Rao, 2022, Chair: Carol Mackersie, Ph.D. (UCSD)
• Rethinking the clinical utility of distortion-product otoacoustic emission (DPOAE) signal-to-noise ratio, Nicholas Portugal, 2022, Chair: Laura Dreisbach-Hawe, Ph.D. (SDSU)
• Music and Hearing Aids, Jacob Hohsfield, 2022, Chair: Arthur Boothroyd, Ph.D. (SDSU)
• Noise Exposure and the Use of Hearing Protection in College Music Major Students, Da Mok Min, Chair: Peter Torre III, PhD
Re: Proposal for Otolaryngology to become an academic department

Carethers, John <jcarethers@health.ucsd.edu>
Mon 4/3/2023 7:24 AM
To: EVC Simmons <evc@ucsd.edu>
Cc: EVC Simmons <evc@ucsd.edu>, Khosla, Pradeep <pkhosla@ucsd.edu>

Dear Elizabeth, I support Otolaryngology becoming a separate academic department. This will make them stronger and more competitive as a UC San Diego entity, including more attractive for recruitment of trainees and faculty. This has been the trend over the past 25 years for otolaryngology to split off of general surgery (and at my old institution, help raise the specialty into the top 10 in the country).

I believe I have touch based with the Chancellor on this and believe he has been briefed on this movement to form a separate department.

John M. Carethers, MD, MACP
Vice Chancellor for Health Sciences
Distinguished Professor of Medicine
UC San Diego

From: EVC Simmons <evc@ucsd.edu>
Date: Monday, April 3, 2023 at 1:21 AM
To: Carethers, John <jcarethers@health.ucsd.edu>
Cc: EVC Simmons <evc@ucsd.edu>, Khosla, Pradeep <pkhosla@ucsd.edu>
Subject: Proposal for Otolaryngology to become an academic department

Dear John,

I’ve received the attached proposal and my office has been undertaking the administrative review, which happens before Senate does the academic review.

The proposal was submitted by the interim VC-HS just before you became VC-HS and there is no letter from you in the file. Changing from a clinical to an academic department is a significant step, so documenting the support of the current VC-HS is important.

If you haven’t already done so, please discuss this proposal with the Chancellor; if you then believe that supporting the proposal is appropriate, please update the package by adding a letter of support and return it to me for completion of the administrative review.

With best regards,

Elizabeth

________________________________________________________________________

Elizabeth H. Simmons
Executive Vice Chancellor, Academic Affairs
Distinguished Professor of Physics
University of California, San Diego
June 27, 2023

ELIZABETH H. SIMMONS  
Executive Vice Chancellor, Academic Affairs

SUBJECT: Review of Proposal to Establish a Department of Otolaryngology

Dear EVC Simmons,

The proposal to establish a Department of Otolaryngology was distributed to Senate standing committees and discussed at the June 12, 2023 Senate Council meeting. Senate Council approved the proposal, and voted to place it on a Representative Assembly meeting agenda. Senate staff will follow up with proposers regarding the Representative Assembly meeting once the 2023-24 schedule is available.

The Committee on Academic Personnel, Committee on Diversity and Equity, Committee on Research, Committee on Planning and Budget, Educational Policy Committee, Graduate Council, and Undergraduate Council reviewed the proposal. Their responses are attached.

Sincerely,

Nancy Postero  
Chair  
San Diego Divisional Academic Senate

Attachments

cc: John Carethers, Vice Chancellor, Health Sciences  
   Robert Continetti, Senior Associate Vice Chancellor, Academic Affairs  
   Steven Garfin, Interim Dean, School of Medicine  
   John Hildebrand, Senate Vice Chair  
   Lori Hullings, Senate Executive Director  
   Kim James, Operations Manager, Vice Chancellor Health Sciences Central Services  
   Brandon Rhodes, Chief of Staff, Health Sciences  
   Robert S Ross, Assistant Vice Chancellor, Health Sciences Academic Affairs  
   Alison Sanders, Assistant Vice Chancellor, Academic Affairs
May 05, 2023

NANCY POSTERO  
Academic Senate, San Diego Division

SUBJECT: Proposal to Establish Department of Otolaryngology

The Committee on Academic Personnel (CAP) met on April 26, 2023 to review the proposal to establish a Department of Otolaryngology. CAP has no objections to the proposal and unanimously supports the creation of a Department of Otolaryngology. CAP was pleased to see the proposed departmental criteria for promotion and advancement included as part of its planning process.

Frank Biess, Chair  
Committee on Academic Personnel

Cc: J. Hildebrand  
L. Hullings  
J. Lucius
June 2, 2023

NANCY POSTERO, CHAIR
Academic Senate, San Diego Division

SUBJECT: Proposal to Establish an Academic Department of Otolaryngology

The Committee on Diversity and Equity (CDE) reviewed the proposal to separate the Clinical Department of Otolaryngology from its current home within the Department of Surgery to become its own Academic Department of Otolaryngology at its May meeting. The proposal is extremely well written and presents a very compelling case. The primary points of rationale for having a separate existence from the Department of Surgery is not fiscal but based on several robust considerations. These include enhanced faculty and resident recruitment and retention, greater national visibility and reputation, further strengthen representation at institutional level, improve diversity and collaboration, and importantly, put the Department in a better position to attract extramural philanthropic funding. Further, such a dis-ambiguous stature will put it on par with not only the other UC campuses but all similar departments of Otolaryngology around the country.

The department has shown significant and impressive growth since its inception. In the past three years it has risen from 61st to 21st ranking in the US NWR rankings. Presently its 48% female faculty proportion is well above the 24.5% overall in UCSD. It has been successful in attracting eminent specialists, as well as garnering several sizable grants. Surgical volumes have grown substantially, by nearly 40% in the last two years, which is impressive.

It has been quite upfront about its success or rather lack thereof in its DEI efforts. It presents a clear DEI statement, promising to promote fostering, cultivating and preserving a culture of DEI in all its efforts. But it admits that it has not fared well in attracting URM’s. Unfortunately, the national success in this effort is not particularly encouraging either, with Black and Hispanic American representing only 6.3% and 5.1% of enrolled US medical students, while they are 13.4% and 18.1% of US population. But it promises to exert all possible effort to adhere to its lofty DEI goals.

In conclusion, given the extremely high level of success of the present Division of Otolaryngology in all the areas in which the performance and standard of a Department can be judged, particularly in a School of Medicine, the CDE very strongly and unconditionally supports the creation of this new Department of Otolaryngology.

Sincerely,

Shantanu Sinha, Chair
Committee on Diversity & Equity

cc: J. Hildebrand
May 25, 2023

NANCY POSTERO, Chair
Academic Senate, San Diego Division

SUBJECT: Review of Proposal to Establish a Department of Otolaryngology

The Committee on Research (COR) discussed the Proposal to Establish a Department of Otolaryngology at their May 11, 2023 meeting. The Committee has no objections to the proposal and supports the establishment of a Department of Otolaryngology.

Sincerely yours,

Jing Yang, Chair
Committee on Research

cc:  G. Fuller
     J. Hildebrand
     L. Hullings
     J. Lucius
May 25, 2023

PROFESSOR NANCY POSTERO, Chair
Academic Senate, San Diego Division

SUBJECT: Proposal to Establish a Department of Otolaryngology

At its May 15, 2023 meeting, the Educational Policy Committee reviewed the proposal to establish a Department of Otolaryngology. The Committee has no objections to the proposal.

Sincerely,

Geoffrey Cook, Chair
Educational Policy Committee

cc: J. Hildebrand
    L. Hullings
    J. Lucius
    S. Mel
May 31, 2023

NANCY POSTERO, Chair
Academic Senate, San Diego Division

SUBJECT: Proposal to Establish a Department of Otolaryngology

At its May 8, 2023, meeting, the Graduate Council reviewed the proposal to establish a Department of Otolaryngology. The Council has no objections to the proposal and notes that the new department will continue to serve graduate students in existing programs.

Sincerely,

Timothy Gentner, Chair
Graduate Council

cc: J. Hildebrand
    L. Hullings
    J. Lucius
May 23, 2023

PROFESSOR NANCY POSTERO, Chair
Academic Senate, San Diego Division

SUBJECT: Proposal to Establish the Department of Otolaryngology

At its May 12, 2023 meeting, the Undergraduate Council reviewed the proposal to establish the Department of Otolaryngology. The Council is pleased with the potential on-going connections this Department can and will make with undergraduate students through research opportunities. We endorse this proposal to establish a Department of Otolaryngology and appreciate the opportunity to complete this review.

Sincerely,

Mirle Rabinowitz Bussell, Chair
Undergraduate Council

cc: J. Cooke
J. Hildebrand
L. Hullings
J. Lucius
May 31, 2023

NANCY POSTERO, CHAIR
Academic Senate, San Diego Division

SUBJECT: Proposal to Establish an Academic Department of Otolaryngology

The Committee on Planning and Budget (CPB) reviewed the proposal to separate the Clinical Department of Otolaryngology from its current home within the Department of Surgery to become its own Academic Department of Otolaryngology at its May meeting. Dr. George Cheng was the lead reviewer and took a very positive view of the proposed change.

Committee members noted the supportive letters within the proposal, and the rather more critical letter of Surgery Department head Dr. Bryan Clary. Committee members noted that based on the financial information we received, the proposed department would function on thin profit margins, and yet would probably require additional expenditures to replicate staff and administrative support previously received as part of the Department of Surgery.

The proposal claimed a principle benefit of departmental status would be liberation from the 3.25% tax paid to the Department of Surgery business office, amounting to about $250,000 annually. CPB wonders if the benefit of separation will outweigh the costs of duplicating administrative and staff support.

Dr. Bryan Clary, though critical in principle, notes the clinical program is tremendously successful and thus a good candidate for independence. He further notes that only about 10% of US medical schools still have Otolaryngology within Surgical Departments.

To conclude, CPB is pleased to support the proposed change.

Sincerely,

Michael Provence, Chair
Committee on Planning & Budget

cc: J. Hildebrand