

Committee on Diversity, Equity and Inclusion (CDEI)

Agenda – August 17, 2020 at 10am

- 1) Roll Call. Time check. Opening comments.
- 2) Membership (Introductions)
 - a. Undergraduate students:
 - i. Dimgi Kottage
 - ii. Melinna Nguyen
 - iii. Junru Su
 - b. Graduate students:
 - i. Phoebe Hertler
 - ii. Ziyue Zhu
 - iii. Istvan Szabo
 - c. Post-docs: ?
 - i. We don't have one yet
 - d. Staff:
 - i. Heather Gardner, Financial Manager DCB
 - ii. Olivia Hwang, Faculty and Administrative Assistant DCB
 - e. Faculty:
 - i. Gabriel Ménard, Chair of CDEI, Assistant Professor
 - ii. Brandon Greene, Assistant Professor
 - iii. Javier Read de Alaniz, Professor
 - iv. Quyen Nguyen, Professor
 - v. Mattanah de Vries, Distinguished Professor
 - vi. Bryanna Sylvester, Lecturer
- 3) A volunteer is needed to take minutes.
- 4) Where do we start (sub-groups and timelines will be useful here)?
 - a. CDEI needs a Strategic Action Plan:
 - i. We need to come up with one. Guidance is provided in [Appendix 1](#).
 - ii. What are our goals? How will we be accountable? What will we push for?
 - b. Implementing Changes to Eradicate Racism in the UCSB Department of Chemistry and Biochemistry ([Appendix 2](#)) – Email from 7/10/20
 - c. CDEI membership and email – Re: Diversity, Equity and Inclusion in the Department of Chemistry and Biochemistry ([Appendix 3](#)) – Email from 7/31/20
 - d. Website and visibility:
 - i. Gab is working with Nicole on this.

- ii. Ideally, our responses to current diversity-related issues, CDEI's activities and meeting minutes, as well as our Strategic Action Plan would all be made publicly available.
 - iii. Ideally, our online anonymous form would also be here where students can detail their complaints (see Development plan of the PRP in [Appendix 4](#) (highlighted section under climate)).
 - 5) Other questions, comments, concerns?
 - 6) Set recurring meeting date/time (weekly for the summer).
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MINUTES

Start: 10:00 AM

End: 11:43 AM

- 1) **Members Present:** Gabriel Ménard, Dimagi Kottage, Melinna Nguyen, Phoebe Hertler, Ziyue Zhu, Istvan Szabo, Junru Su, Bryanna Sylvester, Olivia Hwang, Quyen Nguyen, Mattanjah de Vries, Brandon Greene,

Members Absent: Javier Read De Alaniz, Heather Gardner

Chairs Comments

- This is a different committee with student representation.
- Barriers need to be broken down to have effective contributions from all members of this committee.
- Mitigating power dynamics is a pressing issue and an active discussion topic.

- 2) Brief member introductions
- 3) Brandon Greene volunteered to take the minutes for this meeting.

4) Where do we start?

- CDEI needs a strategic action plan. What to include, and priorities.
- Strategic action plan mandated from MLPS Dean with specific recommendations that should be considered (Appendix I of agenda).
- Panel Review Program (PRP) departmental document provides context (self-assessment), and the department's plan moving forward (development plan, Appendix IV).
- Open floor for discussion on committee direction and items on letter (Appendix II).
 - Addressing the DCB student mandate letter may need to be prioritized and some Student Letter items. Echoed by numerous members of the committee
 - Item 1 is important, but hard to measure progress on. Need to discuss how to make "mandatory" reading. Quiz?
 - Graduate orientation training already being renovated to include anti-racism implicit bias training. General committee support for mandatory faculty training.

Should be short term. Are there issues with making it mandatory? Interactive training?

- Item 3 is broadly supported, should be short term.
- Careers plans for undergrads? A mechanism for educating undergrads on career paths early to encourage more diverse post-graduate study? Doesn't address issues at UCSB.
- Item number 5 on the Student list may be a short-term item, but it is unclear what jurisdiction we have as a committee/faculty. Perhaps an immediate notification system for campus on police? Committee mixed on response.
- Item 6 is discussed long term, in the short term there aren't any actual recruiters attending this year's career day. We will evaluate the impacts. Committee mixed on response.
- Item 7 seems like a very short-term goal.
- Item 8 a space free of faculty is supported generally. Grad lounge only open to 1st years. What about with COVID? Almost necessitates a long-term movement, but short-term considerations going on. Keep space safe. Access to reading room limited by keys. Perhaps the patio in PSBN 4th floor seminar room. Logistics can be discussed with building committee for next stage.
- Item 9 already is being addressed by RUI, higher diversity during summer research. Fellowships for incoming grads is fairly "easy" short term goal. In general, most students that want to come early can. Priority can be given here.
- Item 10 is primarily being addressed by this committee (short-term). Increased student participation in governance also contributes.
- Email will be sent to discuss who wants to work on what element of the Strategic Action Plan. Restructuring education, recruitment, funding, faculty hiring & education, and professional development (from letter). CDEI will be divided into 3 sub-committees (Faculty/Staff Initiatives, Student Affairs Initiatives, Curriculum Initiatives)
- Full meeting agenda not covered; ended at 4b.

Dear MLPS Department Chairs,

The recent events catalyzed by George Floyd's death have led students, faculty, and staff to engage and reflect on issues of diversity, equity, and inclusion (DEI) on our campus. It is an opportune time for each department to take meaningful steps to ensure that our campus community reflects UCSB's commitment to creating an environment free of discrimination.

With this goal in mind, we encourage each department to develop a Strategic Action Plan (SAP) that addresses DEI within each department. Points of consideration for such a Strategic Action Plan can be found in the attached document developed in partnership with the College of Engineering. This would be an ideal task for each department's Committee on DEI to undertake (and if your department lacks such a committee, this would be an ideal time to create one!).

Please do not hesitate to contact the MLPS Faculty Equity Advisor, Joan Shea (shea@ucsb.edu), for guidance in developing your Strategic Action Plan.

We look forward to the positive impact that your Strategic Action Plan will have not only for your department, but for MLPS as a whole.

Points of Consideration for Department Strategic Action Plans for Diversity, Equity and Inclusion
(Adapted from Elizabeth Belding's CoE Document)

In the development of your plan, you may choose to consider a variety of aspects of the department, including but not limited to: (i) climate; (ii) curriculum; (iii) student recruitment and admission; (iv) student retention; (v) faculty recruitment and retention; (vi) training programs; (vii) social events; and (viii) other institutionalized structures. This plan need not address all of these activities, but it should offer concrete forward steps on some critical subset.

There are multiple resources you may consider using in the formulation of your plan. These include, but of course are not limited to: (i) the department's most recent PRP report; (ii) admission, matriculation, attrition and graduation data for undergraduate and graduate students based on gender and race, particularly relative to national discipline averages; (iii) anonymized student survey feedback; (iv) conversations with graduate and undergraduate student groups; and (v) faculty interviewing and hiring data based on gender and race, particularly relative to national availability pools.

In the text below, we provide examples of some of the types of questions faculty may consider when they craft their plans. We address just a subset of the potential topics listed in the SAP-DEI call. Departments are of course not limited to these particular points.

Here are some example questions departments may explore to formulate and execute their SAP-DEI:

Curriculum considerations:

- are there “weeder” courses that lose a disproportionate number of under-represented students?
- are courses designed to be appealing and engaging to a variety of student learning styles, including those of under-represented students?
- do students of all backgrounds have equal accessibility to the major?
- are there points in the curriculum where disproportionate numbers of under-represented students leave?

Graduate student considerations (note some of these questions are also relevant for undergraduate students):

- Recruitment:
 - how could the applicant pool be expanded?
 - how are student applications evaluated, i.e. who makes the initial and subsequent evaluations? How are decisions made, on what criteria? Is there a rubric? (rubrics have been shown to reduce implicit bias)
 - once admitted, what are the mechanisms in place for student recruitment?
- Retention:
 - what are the matriculation and graduation rates of admitted students, broken down by race and gender?
 - how is student performance measured? how frequently? are these the 'right' measures? what performance feedback is given? what 'rewards'/opportunities vs. 'sanctions'/remediation are available (and are these fair)?

- what mechanisms are in place for student complaints/resolution?
- what are the mechanisms in place for students to switch advisors or research labs?
- how are academic and behavioral expectations conveyed to students?
- what sorts of academic and social support structures are in place for students generally, and under-represented students in particular?
- do students feel well-supported by faculty? By peers?

Faculty recruitment and retention considerations:

- how does the gender and race composition of department faculty compare to national averages in the discipline?
- what are the steps the department has taken in the past few years to increase faculty diversity? have these steps been fruitful? if not, at what point in the process (application review, short list, etc.) are diverse applicants lost?
- does the department use a rubric when evaluating applicants?
- how is implicit bias mitigated when evaluating applicants?
- have diverse faculty left the department in the past X years? Why? What steps were taken to retain these faculty, and how do these steps compare to retention of non-diverse faculty?
- how well does the department support faculty work/life needs?
- does the department mentor junior faculty, formally or informally? Does the department mentor associate professors?
- how are faculty service loads distributed? Do under-represented faculty carry a disproportionate burden of informal service?

Implementing Changes to Eradicate Racism in the UCSB Department of Chemistry and Biochemistry

July 10, 2020

FROM: Alex Touchton and signatories

cc. Dean Jeffrey Stopple

Dear Dr. Steve Buratto and the UCSB Department of Chemistry,

We are a collection of graduate and undergraduate students who are invested in implementing change in the UCSB Department of Chemistry and Biochemistry (DCB) to support and uplift Black community members. While we appreciate your statement of solidarity, we feel that mere words are not sufficient -- we wish to see actual institutional changes within the DCB and at UC Santa Barbara. There is a deeply entrenched culture of white supremacy in academia, especially in STEM fields. Chemistry is no different. In order to address the inequities that Black students, Indigenous students, and students of color broadly face, **we need you to demonstrate your commitment to anti-racism through actually implementing long-term, lasting solutions that will better serve Black graduate & undergraduate students and improve the quality of life for diverse students at the UCSB Department of Chemistry and Biochemistry.**

As such, we put forward a list of items for the department to take immediate action on:

1. Read the statements from Black Quare and from the Black Student Union at the links [here](#) and [here](#). Read the demands issued by Black Lives Matter Santa Barbara [here](#). Read the statement by Black graduate students in the Bren School at UCSB [here](#). Read the statement by Black graduate students in the College of Engineering at UCSB [here](#).

Some concrete steps that the department can take to divest from white supremacy:

2. Mandatory annual faculty and staff anti-racism training, including education about special issues for students, including, but not limited to, students identifying with the following identities:
 - i. *LGBTQIA+ students*
 - ii. *Students with physical disabilities, learning disabilities, and non-neurotypical students*
 - iii. *Non-traditional students*
 - iv. *Graduate student parents*
 - v. *Students for whom English is not a first language*
 - vi. *Black students*
 - vii. *Indigenous/First Nations students*
 - viii. *Undocumented students*

ix. International students

3. Graduate recruitment should include a discussion of racism in the department as well as resources and connections to help Black students, Indigenous students, and students of color build resilience in graduate school
4. Graduate orientation must include anti-racist training for incoming students
5. Disallow UC Police Department from reserving rooms in the Chemistry Building or Physical Sciences Building North
6. Cease recruitment for any branch of the U.S. military, the Department of Defense, and military industries, including Lockheed Martin, Raytheon, Boeing, Northrop Grumman, and others
7. At least 50% of all speakers for department colloquium should be from underrepresented racial minority (URM) backgrounds in chemistry
8. Dedicated lounge/safe-space, with funding, in the department for Black students, Indigenous students, and students of color
9. Summer research fellowships and REUs prioritized for Black students, Indigenous students, and students of color
10. Establishing working groups with including graduate students, undergraduate students, and DCB leadership regarding restructuring education, recruitment, funding, faculty hiring & education, and professional development; these working groups must have decision-making capabilities

These are the first steps in what must be a longer discussion about systemic racism in the department and the broader chemistry and academic communities. Statements are not enough; we must incorporate anti-racism into our practices in the long term.

We, the undersigned members of the Chemistry community at UCSB, will hold the department and ourselves accountable to this commitment.

Sincerely,

Jeffrey Self, Graduate researcher

Hila Benhaim, Graduate student

Serena Seshadri, Graduate student

Phoebe Hertler, Graduate student

Sophia Bailey, Graduate student

James Shaum, Graduate student

Evalynna Ong, Undergraduate

Alexandria Taylor, Biochemistry Undergraduate

Allison Abdilla, Graduate researcher in Hawker & Read de Alaniz groups

Brandon Jonas, Undergraduate

Kelsey Harrison, Undergraduate chemistry student and researcher in the Nguyen group

Kala Barron, Chemistry student
Cassidy Peng, Undergraduate
Sheila Kulkarni, Graduate student researcher, Ford group
Alexander Touchton, Graduate student researcher, Hayton group
Kiera Sullivan, Undergraduate
Emily Drew Wein, Undergraduate researcher - Ford group
Joseph August, Undergraduate
Alana Borum, Graduate student
Logan Gonzalez, Undergraduate
Michelle Chiu, Undergraduate
Anthony Smith, Undergraduate
Lindsay Robinson, Graduate student
Danea Palmer, Undergraduate
Ilana Narvaza, Undergraduate
Elizabeth Groetsema, Undergraduate
Naomi Teal, Undergraduate biochemistry student
Isabel Barraza Alvarez, Graduate student
Clara Bailey, Graduate student
Melissa Sanchez, Graduate researcher
Ronnie V Garcia, Graduate student
Friedrich Stricker, Graduate student
Samuel Jacob, Graduate student
Julien Favero, Biochemistry undergraduate researcher and student
Mary Lerner, Graduate student in biochemistry
Michael Chin, Graduate student
Brian Roehrich, Graduate student
Kelsey Koutsoukos, Undergraduate
Alexander Busse, Undergraduate
Lauren Jackson, Undergraduate
Sandy Lam, Undergraduate
Madeline Peterson, Graduate student
Olivia C Langner, Undergraduate researcher
Ben Luginbuhl, Graduate researcher
Raj Chaklashiya, Graduate student in Han Group
Luis Alberto Mejia Ojeda, Staff
Farbod Moghadam, B.S. Chemistry, 2020
Kyle Anderson, Undergraduate researcher
Alexander Lill, Graduate student
Mikiyas K. Assefa, Graduate student
Elena Paola, Graduate student
Jack Hopper, Graduate student
Kyle Anderson, Undergraduate researcher
+5 anonymous signatories

Re: Diversity, Equity and Inclusion in the Department of Chemistry and Biochemistry

July 31, 2020

FROM: Serena Seshadri and BLM signatories

Dr. Buratto,

We appreciate the commitment of DCB faculty to creating anti-racist policy changes within the department through its creation of the CDEI (Committee on Diversity, Equity, and Inclusion) as announced in your email to the department on 7/23/20. As the membership, goals, and decision-making power of this committee are being finalized, we want to raise the importance of including **all DCB community members, including all undergraduate students, graduate students, post-doctoral students, staff, and faculty members in an open application process** to be on this committee. In the application process, we insist that **priority be given to students, faculty, and staff of color with guaranteed membership for Black and Indigenous applicants**. We appreciate Prof. Menard's leadership of the committee and trust that we can move quickly to enact change by Fall 2020.

We are glad the CDEI will be composed of members from diverse roles within the DCB, but we regret that decision-making power in the form of a final vote rests solely with the faculty. **We strongly urge that the CDEI be given more binding decision-making power to ensure that anti-racist policymaking is shaped by all DCB community members.**

Lastly, as the last two points have underscored, we are committed to ensuring that anti-racist policy change in the department: 1) centers Black and Indigenous students, faculty, and staff in considerations, 2) incorporates BIPOC DCB members in decision making and policy changes, and 3) is open and public, for all to see. To this end, we are announcing a Zoom Townhall on Anti-Racist Change within the UCSB Department of Chemistry and Biochemistry to be held on **Thu, Aug 13 at 4pm** ([Link](#), ID: 958 2136 2128) Other departments such as Chemical Engineering and Materials Science have taken similar steps. In the future, we hope that DCB leadership can take responsibility in creating these lines of communication to engage in dialogue and work out solutions to ongoing issues in our department.

Best,

The signatories of the DCB Black Lives Matter letter

On Thu, Jul 23, 2020 at 11:51 AM Steve Buratto <buratto@chem.ucsb.edu> wrote:

Dear DCB Community,

The Department of Chemistry and Biochemistry (DCB) is committed to diversity at all levels in our department. To this end, DCB is creating a new departmental committee, the committee on diversity, equity and inclusion (CDEI), that will develop a strategic action plan and take meaningful steps to create an environment free of discrimination. One of the first action items of the committee will be to address the requests enumerated in the letter to the department dated

7/7/20 and signed by several student members of our community. A copy of this letter can be found [here](#). CDEI will be chaired by Prof. Gab Menard (our department diversity officer). While the membership of the new committee is still being finalized, it will include members from every group of stakeholders in our department including faculty members, graduate students, undergraduate students, postdocs and administrative staff. As most of you already know, any policy decision recommended by the CDEI will be discussed and voted on by the entire faculty. I have asked that CDEI to come up with a strategic action plan and vision before the beginning of Fall Quarter 2020, which means that their work will have to begin during the summer; a highly unusual request in academia but one that is justified by the subject. I will share the names of the committee members once the committee membership is finalized. I would like to thank Prof. Menard for agreeing to chair this important new committee and under his leadership our department looks forward to working together to make a more diverse and inclusive department.

Sincerely,

Steve Buratto

DEPARTMENTAL DEVELOPMENT PLAN

1. FACULTY

DCB's 2020-21 faculty FTE count stands at 31.84; with two separations and two new hires, this count remains the same as in 2018-19, reflects a two-FTE decline over the last decade (Fig. 2). We expect a further 1 FTE decrease at the end of 2020-21, when a colleague (Bazan) currently on a leave of absence will likely relocate to another institution. Given these numbers, the department faces two critical challenges. First is the need to maintain the hard-won recognition of our faculty for research excellence in the face of the pending retirement of many high-stature colleagues (Fig. 1). The relatively small size of our department amplifies the impact these separations will have on our stature. Second, our FTE count is simply too small to adequately meet the campus's needs, placing great stress on our faculty and our students and staff. For example, despite the fact that DCB trains *twice* as many graduate students *per faculty FTE* than, on average, the college as a whole, we constantly struggle to fill our TA positions. As reported in the graduate student survey, this burdens our students, who TA far more quarters than is optimal or is the norm in a top research institution. Likewise, the enormous numbers of students that our existing courses service –we educate the largest number of undergraduates of *any* department in MLPS– leaves us unable to increase the number and diversity of our upper division offerings despite clear demand from our undergraduates (see survey results). That is, despite recently granted FTEs, our faculty remains too small to carry out our mandate efficiently. In support of this argument, we note that peer departments at San Diego and Irvine carry similar teaching loads, yet have 40 and 48 FTE, respectively. Carefully weighing our obligations and opportunities, we believe an **FTE count of 35 is the minimum required for the department to adequately meet its current mandate, and a count of 38 is the minimum needed if the department is to enhance its teaching and research stature.**

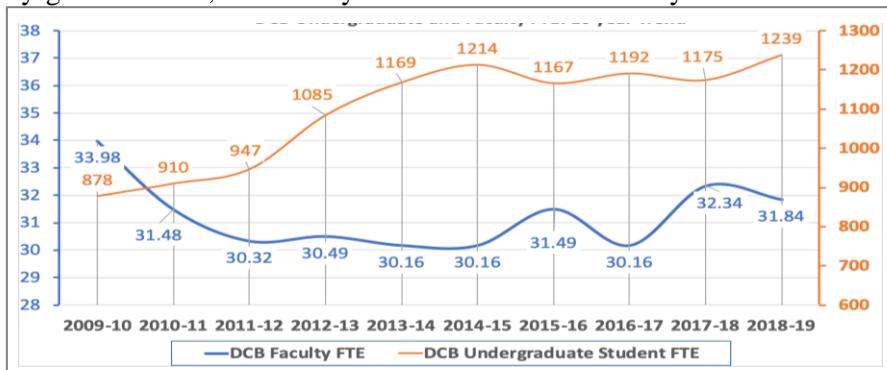


Figure 2: Despite significant expansion in undergraduate enrollment (orange) over the last decade, our faculty (blue) size has declined.

The proposed increase in the size of the DCB faculty would strengthen the campus's efforts in many important, forward-looking research and pedagogic areas. For example, UCSB has recently created or is creating numerous centers and Programs in which chemistry plays critical roles (e.g., a Biological Engineering Graduate Program, the BioPACIFIC Materials Innovation Platform, the UCSB NSF Quantum Foundry, and the Institute for Energy Efficiency). Accordingly, augmentation of the DCB faculty would pay dividends to many of our campus's most visionary research initiatives.

With regard to hiring, our vision is to build on exciting opportunities at chemistry's interfaces with biology, bioengineering, biophysics, materials science, quantum physics and information science, while leveraging ongoing campus initiatives and investments. Specifically, our faculty development plan encompasses a coordinated, campus-wide, interdisciplinary effort through which efforts in chemistry, the life sciences and biomolecular engineering augment and support each other, such that our hiring priorities benefit other departments and disciplines. Through such strategic planning the department positions itself to provide leadership at UCSB and beyond in increasingly important areas of research and teaching. This is exemplified in our recent focus on green chemistry and sustainable manufacturing, and is the guiding

principle of our current focus on integrated, life science-inspired chemistry that coalesced around the cluster hiring of faculty over the five years starting in 2018. Our success with this strategic and unified effort motivates taking a similarly concerted approach looking forward. Accordingly, the department proposes hiring faculty in areas broadly referred to as: quantum chemistry; information science; synthetic biology; and, functional materials as key emerging areas, that are consistent with what was proposed in our most recent hiring plan. These focus areas are interdisciplinary, intentionally crossing the traditional divisions of chemistry: organic, inorganic, physical, and theoretical and offer attractive opportunities for crossing into biology, materials, physics, marine and earth sciences, and all branches of engineering.

A key, guiding principle of our hiring is to identify and invest in future leaders of our field, faculty who will be addressing the key challenges of the future in the molecular sciences. Given this, the department believes in a bottom-up approach, and accordingly, has prioritized investing in the talent and imagination of *junior* faculty identified through open searches, as we believe such colleagues are best placed to lead us in new and fruitful directions. Consistent with this, over the last 20 years all but four (DeVries, Dahlquist, Hawker, Abu-Omar) of DCB's hires have been junior, and the department has requested only two exceptions to open recruitment. Given our current demographics, however, we recognize the pressing, current need to build a cadre of mid-career faculty more rapidly than would occur via the natural advancement of junior colleagues. Accordingly, the second of these two exceptions to open recruitment is a currently pending bid to hire Professor Danica Fujimori, a mid-career molecular and structural biochemist, from UCSF. Two of the priorities in our pending FTE plan are, likewise, open-rank positions.

Over the next five years, the department has two pre-approved positions and has requested five additional positions, that are currently under campus review. The pre-approved positions are an Assistant Professor in (bio)materials chemistry and an Assistant Teaching Professor in organic chemistry. The last was prioritized to mitigate the retirement of an internationally prominent Teaching Professor (Bruice), whose nominal teaching load was 2100 students per year. Our first priority among the five new positions we have requested is an open level position in biochemistry, which we requested to retain momentum in our current plan to integrate life science-inspired chemistry, and to bridge a significant age gap in the mid-level faculty destined to become our next generation of leaders. Specifically, with the loss of Professor Irene Chen to UCLA in 2019 the department's six biochemists are all either full Professors with more than 18 years of service or Assistant Professors with fewer than 2. Our second priority is a partnership proposed by College of Creative Studies Dean, Bruce Tiffney, in which the college and the department share a Teaching Professorship split 50/50 between the two. Our third and fourth priorities are junior level hires in quantum chemistry and information science, one with an emphasis in molecular design; and, the second in spin chemistry. Our fifth priority is an open level position in the broad area of functional materials. As described above, DCB has a clear, strategic, and unified vision for these hiring priorities. However, too restricted a definition of a search's target sub-discipline can hamper our ability to attract the best qualified people or to make concerted and quick decisions when a rare and significant hiring opportunity arises. Hence, while we have identified quantum chemistry and information science as an area of interest, we have not narrowly specified the exact sub-discipline (physical, inorganic, etc.) of our priorities 3, 4, and 5 upfront. Instead we will balance the department's teaching needs with our desire to identify "up-and-coming" leaders who will pursue exciting, integrated visions for DCB.

We close this section on a serious and somber note. Despite the compelling arguments in favor significant growth of the DCB faculty, the above-described hiring proposal, which reflects the UC's unprecedented current financial pressures, is unlikely to even *maintain*, much less grow our FTE count. For example, as noted in the self-assessment (Fig. 1) *nine* of our colleagues are over 70. If the separations these demographics will inevitably create are not rectified by the addition of new positions, DCB will face an

FTE deficit so significant that it would create long-term challenges to maintaining our hard-won reputation of research excellence, and would damage our ability to successfully fulfil our educational mission.

2. GRADUATE PROGRAM

We aim to create a nurturing and student-centered climate for our graduate students. Consistent with this philosophy, we overhauled much of our graduate program following input from our 2010 PRP review. For example, to clarify departmental expectations and improve their dissemination, we streamlined and rationalized the graduate program rules and created a detailed, on-line Graduate Student Handbook. The department instituted mandatory first-year rotations in an effort to better match student and faculty adviser interests. To improve student-faculty communication we implemented annual thesis committee meetings and individual first year student meetings with the Chair. In a still more recent effort, we have instituted individual development plans (IDPs) as part of the yearly thesis committee meetings, as a means of providing further structure and guidance for our students. Following these changes, in 2016 we asked the office of the Ombuds to conduct a climate survey. The results of this indicated an encouraging improvement in student morale and climate relative to our 2010 survey results, as did the current survey.

Our significant progress over the last decade notwithstanding, the current survey (103 participants; 63% response rate) nevertheless highlights several concerning issues. For example, while a comparison of the graduate student survey results from our last PRP (2010) to this one (2020) reveals that graduate student morale has increased from 40% (ranked “good” or “excellent”) to 51%, the comparison to the campus average (71% today, 72% in 2010) reveals that we still have work to do. To better understand where our focus should lie, we delved into the 103 responses in more detail. Not surprisingly (although still alarming), nearly half (47%) of respondents rated the TA workload as “fair” or “poor.” We were surprised (given the extensive changes we made in response to our last PRP surveys) that a third (32%) of the respondents ranked the communication of departmental and university rules and policies to be “fair” or “poor.” A quarter (24%) of the respondents characterize departmental assistance in career advising and job placement as “fair” or “poor,” 23% indicated that facilities or resources important for their work are unavailable or inadequate, and 17% commented negatively in their write-in answers regarding their interactions with staff.” Finally, 14% of respondents ranked the department’s overall climate as only being “fair” or “poor.”

The department is committed to addressing all of the issues raised in the surveys both via specific, concrete changes to our program and, more broadly, by expanding our governance to make it more responsive. We describe the former below. Our efforts regarding the latter will consist of: (1) the creation of a committee comprised of faculty, students, and staff that will be tasked with formulating proposals addressing the above-listed issues and (2) a long-term commitment to greater inclusion of students in departmental structures. This will extend the role of the students in departmental functions, including faculty recruitment, TA workload and management, safety, diversity, and colloquia.

Graduate teaching burdens. The survey uncovered significant, well-justified concerns regarding TA workload, both in terms of the amount of work required to TA specific courses, and the number of quarters spent as a TA. For some courses, for example, grading pushes TA workloads well beyond the expected 20 hours per week, reducing time our students can spend on their research and studies. Additional concerns focus on the excessive number of quarters some of our students spend as TAs, and the uneven distribution of these responsibilities. To some extent, this reflects inequities in group funding, but we believe the primary issue is the limited size of our graduate program relative to the large number of TA slots we must staff to fulfil our teaching mandate. Specifically, a direct result of the massive increase in the number of undergraduates we are educating is that the average time our students serve as TA is now 7 to 8 quarters, or half their time in the program. In contrast, while we require a minimum of 3 quarters because teaching is part of the skill set learned in graduate school, a healthy graduate program requires a low teaching load

for the graduate students. Our view is that more than six quarters spent as a TA during one's PhD studies is excessive. Unfortunately, however, despite being *the largest graduate program on campus*, were we to limit our students to 6 quarters as TA we simply would not be able to staff our undergraduate courses. As a result, many students serve as TAs for 10 or more quarters, while a sizable fraction of our students only do so for the minimum 3 quarters, hence generating great disparity between the graduate students.

We are taking a number of steps to reduce sometimes excessive TA workloads. First, we are creating a "TA committee," which will include graduate student representation selected by the students. This committee will be charged with the responsibility to evaluate the TA workload associated with our courses and to suggest curricular changes and compensatory adjustments to TA assignment numbers. We will also investigate the option of senior undergraduates serving as readers and graders. Finally, we will encourage the department to move towards on-line grading platforms, quizzes, and lab reports.

The problems of reducing the average number of quarters our students spend as TAs and the large inequities between students regarding this burden is particularly recalcitrant. The department's grad-student/faculty ratio is already the highest in the division –we train twice as many graduate students per faculty FTE than average in our college— and thus simply hiring more graduate students is untenable unless we grow the size of our faculty. In the short term, however, we are considering the following options. First, to reduce the average number of quarters our graduate students spend as TAs we are exploring the option of employing undergraduates in these positions. While this is unprecedented on our campus, and is constrained by union rules, undergraduates are employed in TA roles at some of our sister campuses. We are also investigating the option of increasing the minimum number of TA quarters required during PhD training. However, while this will help in staffing our required TA positions and will likely reduce inequities between students, it will make our program less competitive and will reduce the productivity of some students. Moreover, reducing the number of TA quarters for those who teach the most is desirable, but this requires increased funding or smaller groups for their mentors, both of which would further exacerbate perennial TA shortages.

Transparency and Communication. After concerns regarding this were expressed in the 2010 review, the department initiated an extensive TA training and evaluation program, created a clear and concise Graduate Student Handbook, and added a page to the departmental website detailing degree requirements, timelines, deadlines, etc. In parallel, the Chair initiated regular meetings with graduate students. Despite these efforts, it appears a significant fraction of our students remain dissatisfied with our communication. In response, we will begin sending a quarterly email to each student reminding them of their responsibilities and deadlines for that year, with consistent follow up. We will also add a "governance" section to our web site, which will enumerate departmental committees and their membership to foster communication, and, as described above, are moving to increase student participation in departmental governance.

To codify our expectations for our graduate students, we have also developed a set of Program Learning Outcomes (Appendix F). To confirm that our curriculum achieves these, we are conducting systematic assessments on a three-year cycle. Our first, which focused on effective oral communication, concluded that our graduate students excel at oral presentations to a wide range of audiences. Consistent with this, 88% of our PhD graduates felt that the program meets this objective. Moving forward, we will continue these periodic assessments and address any deficiencies in our program that they might identify.

Staff relations. We believe our graduate students' complaints about the staff stem from the fact that a *single staff person* is simply insufficient to run the largest graduate program on campus (currently 177 students), especially given that this same staff person is simultaneously overall manager of our entire student affairs staff. We are off-loading some work to other student affairs staff, but this is not a long-term solution, as the remainder of the staff has responsibility for administering our quite sizable undergraduate program. Improved communication and further streamlining and codifying of procedures will also help, as will the

establishment of the above-described TA committee, which will work together with the curriculum committee and instructors to reduce some staff workload. Nevertheless, DCB is clearly understaffed, a problem that creates a “ripple effect” throughout our graduate program.

Climate. While 86% of respondents ranked the departmental climate as at least “good,” only 48% ranked it as “very good” or “excellent,” numbers that compare poorly to the campus average of 63% for these same rankings. The fifteen (of 103) respondents who ranked the departmental climate as either “fair” or “poor” in any of five categories (general, URM, women, LGBTQ, international) also provided written comments. Of these, five simply (and accurately) noted that URMs are under-represented. The comments of two others were more focused, with one noting concern regarding the general climate (“everyone is depressed”), and the other listing only a lack of extracurricular employment opportunities for international students. Eight students, however, expressed concerns regarding the specific climate for women, URM, and LGBTQ students. While we are pleased that the majority of our students are at least satisfied with the department’s climate, we are nevertheless concerned that this fraction is not. We are particularly troubled that in practically all categories our department scores at least slightly below campus-wide averages.

In part in response to the survey we are taking the steps detailed below. In parallel, we will commission the campus Ombuds to conduct a climate survey every three years to track progress and flag any new concerns.

Because recruitment, diversity, and climate are interconnected, we have created a Committee for Diversity, Equity, and Inclusion (CDEI) as our first step towards improving the departmental climate. The committee, which will be comprised of 5 faculty members, 2 undergraduates, 2 graduate students, 1 postdoc, and 1 member of the staff, is tasked with organizing and promoting diversity training and handling diversity-related complaints. Specifically, CDEI will coordinate with on-campus resources, such as the Office of Diversity, Equity, and Inclusion, and the Resource Center for Sexual & Gender Diversity to organize in-person training sessions and seminars for faculty and staff and for the DCB community as a whole. These will start first with members of the Graduate Admissions Committee and our Faculty Hiring Committees. CDEI will hold quarterly town-hall style events where the entire DCB community can present and discuss current issues. Similar meetings have been held in an *ad hoc* fashion recently within our department to, for instance, hear graduate students’ concerns related to the Cost of Living Adjustment (COLA) movement within the UC system. For students who prefer to share their concerns in a less visible way, CDEI will also create an anonymous online form to express concerns and suggestions for improvement. Should complaints about an individual PI become numerous, we propose that CDEI be empowered to present these at faculty merit promotion discussions, thereby providing a mechanism for accountability.

We believe improved diversity will improve climate and, in turn, further improve diversity. To this end, we note that, because our retention rates for women and URM students are effectively equal to the average retention rate of our entire graduate class, retention is not the key problem. Rather, to achieve the diverse and inclusive community we wish to foster, we must increase the enrollment of such students. Upon discussion, our stated goals are to achieve gender parity and, among our domestic students, 30% URM representation, as the latter would match the diversity of our campus as a whole. With regard to gender balance, we note that women outnumber men in our last two entering classes, and we may be approaching gender parity. With regard to ethnic diversity (we currently stand at 13% URM among our domestic students), we have initiated the following changes. To improve the diversity of our applicant pool, a number of faculty are involved in activities such as our UC-HBCU initiative with Jackson-State University (92% African American undergraduates), University of Southern Mississippi (29% African American undergraduates) and the UC-LEADS and NSF Bridges to the Doctorate programs. Each of these has had some success in attracting students, but to achieve our long-term goal clearly more work is needed. This will include more recruitment visits to feeder schools, such as the California State University system, for

which a budget needs to be made available. We have also altered our admissions process. In recognition that GRE scores are uncorrelated with measures of success in graduate school and are strongly correlated with socio-economic background, we stopped considering GRE scores in 2018 and formally abolished them as an admission requirement in 2019 and have moved towards holistic admissions practices based on well-defined rubrics. Finally, we believe that, by improving the climate for URM students in the department, per the ideas listed above, we will improve the rate with which accepted URM students enroll.

Several comments in the surveys described a lack of community within the department. In response, we will develop new initiatives in which students can socialize in addition to the existing activities, such as the Chemical Sciences Student Seminar, GSDS (Graduate Students for Diversity in Science) meetings, and the occasional department tea or BBQ. Drawing on examples from other departments on campus, as well as chemistry departments at other Universities, we will also encourage our graduate students to create a *graduate* Chemistry Student Association (the “Grad Chem Club”). In many other schools, these clubs help to build community both within the graduate student population, and between students, staff, and faculty. This could be particularly useful for certain groups (e.g., international students) who have noted a lack of community within the department. Similarly, we will invite students to nominate and host some of the department colloquium speakers and participate in the Science Pub Night, a monthly event held at the local pub to connect scientists to the general public. Lastly, since international students, who represent a third of our graduate community, expressed particular feelings of isolation in the survey, we will create a faculty international student advisor, whose role will be to ensure the department better serves their specific needs.

It is clear from the survey responses that the mental health of our students requires attention. This is a well-known problem among graduate programs nationwide. Our faculty are trained to refer students with perceived problems to Counseling and Psychological Services (CAPS), however, that does not always provide a satisfactory solution. We will consult with CAPS to provide our faculty and staff with additional training and to help us develop better protocols.

Career planning. While support for students seeking academic careers is excellent, that of students seeking industry jobs is less well developed. In response, in 2019 we initiated a major program, called Chemistry Professional Development (ChemPD), in which a group of senior graduate students work with the faculty and staff to provide Professional Development opportunities for all students, including professional development seminars, networking with industry, and an annual ChemPD-organized Career Fair. The department is also implementing individual development plans (IDP), to be discussed at the yearly thesis committee meetings. This approach helps students formally focus on career objectives early in the process.

Facilities. Students working in the Chemistry Building have expressed concerns about the outdated laboratories, which, understandably, we share. The state of our buildings and facilities, for example, impede our chances to recruit the best students and colleagues. Because building renovation funds are rarely ever provided by our campus, building upgrades are a top priority for our development team. In parallel, the department is leading a campus proposal to create a new instructional laboratory building. Other students expressed a desire for better experimental facilities, including Mass Spec, XRD and NMR. In response, the DCB faculty has been quite pro-active in seeking extramural funding for instrumentation. Recent examples include a 2015 ARO DURIP grant supporting the purchase of a femtosecond laser, a 2017 AFOSR-MURI supporting the purchase of a Hyperspectral imager, a 2019 NSF Major Instrumentation grant supporting the purchase of a 500 MHz NMR spectrometer with a Prodigy Coldprobe and a second, 400 MHz spectrometer, and a 2019 ONR DURIP for the acquisition of a streak camera for time-resolved infrared spectroscopy of materials. Moving forward, we are redoubling our submission of instrumentation proposals (e.g., see the UC Santa Barbara Structural Biology Cryo-EM Shared Facility description in section 4 below).

Stipend. Finally, while not a commonly raised concern in our surveys, we nevertheless recognize that the cost of living (particularly housing) is high in Santa Barbara, and that this puts additional stress on our graduate students. Periodic readjustment of our stipend, now at \$30,000, is necessary. We are currently considering raising this to \$32,000 to address these increasing costs.

3. UNDERGRADUATE PROGRAM

Pre-major and service courses: As the number of students that DCB serves steadily increases, the department continues its strong commitment to undergraduate education. We are fully invested in providing the students enrolled in our classes, be they in our majors or in the 37 other majors that require DCB courses, a positive experience and education to apply their chemistry knowledge to other classes and to their futures.

An ongoing departmental concern is retention rates in our lower-division and pre-major classes, and the effect these retention rates have on student diversity. If the retention rate is too low, we risk losing students who could have productively contributed to STEM. Conversely, if it is too high, we may be placing students on tracks for which, ultimately, they have limited aptitude or interest. In Fall of 2019, the passing rate for advancing to the next course (C or higher) for CHEM 1A was 77%, which has remained constant over many years. Given that CHEM 1A is often among the first college classes that science pre-majors take, we believe this pass rate is reasonable. This said, we are nevertheless concerned that some potentially strong science students, especially URM students, are performing poorly, not due to a lack of interest or innate skill, but because of inadequate preparation. We believe that this is a cadre of intellectually strong, but ill-prepared, students for whom earlier intervention would lead to success in STEM majors, likely bringing increased diversity to the scientific community. For example, while the demographics of students *enrolled* in CHEM 1A mirror the diversity of our campus, an alarming percentage of those who earn a C- or poorer are URMs and/or first-generation students: in contrast to the 82% retention rate of non-URM students, the retention rate for URM students is just 55% (Table 1; note, there is no significant difference between the retention rates of African-American and Latinx students -data not shown). This discrepancy is particularly

concerning given that poor performance in a science class early in college often results in students switching to non-science majors. It is also largely specific to CHEM 1; the achievement gap between URM and non-URM students shrinks significantly by the first quarter of organic chemistry (CHEM 109), disappearing by the second.

To better understand the drivers of CHEM 1A retention rates, in 2010 we began to

evaluate student preparation prior to the first day of class using the online adaptive homework system ALEKS. This evaluation, which covers math and basic chemistry skills, begins with an adaptive assessment to determine their initial content knowledge. Students are then asked to complete exercises to fill in gaps in their knowledge. After completing 20 topics, they are given a second assessment to determine whether or not they retained this knowledge. The findings of this curricular enhancement were documented in a 2015-2016 study, which concluded, in part, that the higher students scored on the initial assessment, the more likely they were to earn a grade of C or higher in CHEM 1A. However, while such studies can identify the students who are less likely to pass CHEM 1A, a key issue is the need for a preparatory chemistry class. In response, the department is reinstating CHEM 25, an optional course designed to prepare students for the general chemistry series by enhancing math and basic chemistry skills, thus improving student retention. We will use the ALEKS pre-CHEM 1A assignment to identify students that might benefit from enrolling

Table 1: CHEM 1A demographics (Fall 2019)

	Overall representation in class	Representation among grades of C- or poorer	Passing rate
All	100% (2,135)	100% (491)	77%
Non-URM	71% (1516)	43% (212)	82%
URM	29% (619)	57% (279)	55%
First-gen	37% (790)	62% (304)	62%

in this preparatory course. In Fall 2020 there will be up to 300 spots available in CHEM 25; in the following years will re-evaluate the course size to determine if adjustments are necessary.

Our CHEM 1 instructors are, to a person, concerned by and actively helping to improve our URM retention rates. Many, for example, are working with Campus Learning Assistants Service (CLAS) to design and implement Academic Communities of Excellence (ACE) tutor groups (~10 students) that target URMs to build both conceptual chemistry knowledge and study skills. Many also hold office hours and participate in table talk and mentoring workshops focused on first generation, URM, and transfer students at the campus's Opening New Doors to Accelerating Success (ONDAS) center. Other efforts include consulting with the Promise Scholars and Guardian Scholars programs to provide assistance to their recipients and completion of the participating in the inclusive teaching workshops produced by the Center for Inclusive Teaching, Research and Learning (CITRAL). While not all of our CHEM 1 instructors participated in each of these activities, all are committed to improving URM retention rates and thus each, along with many other members of the DCB faculty and staff, have participated in many of these retention-building activities.

Upper division courses: In order to strengthen and codify our expectations for the education of our majors in upper division classes, in 2012 DCB developed a set of Program Learning Outcomes (PLOs) (Appendix F) and a curriculum map that denotes which classes cover each PLO. To confirm that our curriculum achieves our PLOs, we carry out systematic assessments on a three-year cycle. Our first assessment focused on whether or not our majors could find and integrate scientific references into their work. From this we learned that most of our upper division students are comfortable searching for and reading scientific literature. This said, we also learned that our students would prefer learn these skills earlier in their majors. In response, we are working to integrate this skill earlier in the curriculum, likely in our lab courses. As we continue PLO assessments, we expect to identify –and address– other deficiencies in our programs.

The use of a curriculum map to identify which PLOs are being taught in which classes has identified the need for increased upper division elective courses for both our chemistry and biochemistry majors. Unfortunately, however, due to the limited size of our faculty and the department's large lower-division teaching load, our teaching FTE are limited. For example, to address the need for increased electives we have merged many upper division undergraduate courses with graduate courses, which increases the number of electives our limited faculty can offer. This approach, however, is not ideal for either our graduate or undergraduate students as evidenced, for example, by the student surveys. The surveys also drew attention to the heavy demands on the upper division labs, which for many students represent the capstone of their undergraduate studies in our majors. We have already begun the process of up-grading the instrumentation in those laboratories and are working on strategies to minimize overcrowding.

Diversity: The department takes seriously its mission to enhance diversity in the STEM workforce. Consistent with this, the diversity of our incoming pre-majors closely mirrors that of UCSB as a whole (Appendix G). The diversity of our graduates, however, does not. Specifically, only 21% of DCB graduates are URMs and only 41% are female, versus 30% and 54%, respectively, for the campus as a whole. Given this, it appears that retention (particularly in the first year) rather than recruitment is our more significant problem, thereby motivating the above-described efforts to improve retention in our general chemistry course. This said, a criticism raised by a small, but worrisome number of respondents to the undergraduate survey suggest that perceived racist and misogynist attitudes among some instructors (both faculty and teaching assistants) are also contributing to our poor diversity. We find this criticism alarming: there is simply no room for such attitudes, and even the perception of such attitudes is damaging in the extreme. In response, DCB has recently constituted the above-described committee on diversity, equity, and inclusion.

Climate: Our reading of the undergraduate survey clearly indicates that another important concern is building a sense of “belonging” within the department. Optimally, this would start early in students’ college

experiences. Unfortunately, however, most of our lower division classes are quite large (200+) and are populated predominately by non-majors, thus making it difficult for our pre-majors to develop a sense of belonging with their fellow majors, much less with our faculty. An appealing solution would be for the department to offer a section of CHEM 1A open only to pre-majors (~200 students). The challenge is that, because this class would be significantly smaller than a typical CHEM 1A class, it would increase the already strained teaching load on the department. A second concern is that it is difficult to find a single time that is available for all of our pre-majors. Another contribution to building community would be to offer more freshman seminar courses focused on chemistry. These small, one-unit classes allow students to become familiar with a faculty member. While any major can enroll in these classes, we will e-mail our pre-majors to promote these courses as a way to build a support network with faculty and their fellow pre-majors. We will also make a more concerted effort to increase involvement in the department's extracurricular activities, such as the Chemistry Club (an American Chemical Society student affiliate) and our K-12 outreach programs. These organizations allow students to give back to the community while simultaneously networking with fellow majors and with faculty members. Our efforts to further build these will start during pre-major orientation and will continue via quarterly e-mail reminders.

Another powerful mechanism by which to create a sense of community is participation in undergraduate research. This also broadly enhances chemistry education by providing a better understanding of what their degree means in terms of jobs and graduate school. In addition, this allows students to build relationships with more senior scientists. Such relationships are especially valuable when it is necessary to solicit recommendations for employment or graduate school. An entry point to involvement in undergraduate research is the honors section of our organic chemistry labs (CHEM 6BH/6CH). These courses, which are typically taken at the end of students' sophomore year and are only available to majors, provide opportunities to carryout research in a lab, while simultaneously fulfilling a course requirement. While the large majority of our research groups accept undergraduate researchers (in addition to those associated with the honors organic laboratory classes) demand nevertheless outstrips capacity. We are considering hiring an undergraduate intern help create a database tracking student research involvement. The information gathered will assist us in ensuring that we are providing equitable opportunities to all. We will also better communicate (e.g., via e-mail in the winter quarter of sophomore year) information regarding the benefits of taking the honors organic lab. Finally, as part of our development plan we will solicit funds to create undergraduate research fellowships, such as the newly established Kirtman and Bruice fellowships, which allow students supporting themselves through college the opportunity to work within their field.

A final issue raised by respondents to the undergraduate surveys is potential inadequacies in our advising, although given the structure of the survey it is possible that some of these complaints might have been directed toward college-level advisors. This said, at key times of the year (i.e., the start and end of quarters), the enormous number of non-major students enrolled in our courses clearly stresses our advising system, rendering it difficult for our staff to find time to specifically support our majors. The department takes this concern seriously, and will establish a committee to evaluate the problems and possible solutions. A possibility we are exploring is to employ upper division undergraduate Peer Advisors during these periods.

4. SUPPORT SERVICES

Three areas of support-services development rise to the highest priority level for DCB: (1) expand staffing support, especially in the area of student affairs; (2) increase and improve our teaching laboratory facilities to accommodate our steeply increasing undergraduate enrollments; and (3) modernize shared *research* facilities, especially to boost biochemistry infrastructure. These are recognized to be critical needs not only by DCB faculty and staff, but also, by our undergraduate and graduate students. Here we briefly describe the challenges, as well as the multi-pronged approach we are taking to address these needs, which involves

campus support to the department, our efforts in leading an inter-departmental teaching building proposal, and the pro-active work the department is performing to establish philanthropy-based development.

Indirect cost return (ICR) and administrative funding. The ICR that DCB receives is about ~1.5% of the total IDC, amounting to \$109k in 2018-19. These funds are not allocated to individual faculty members. Instead they are used by the department to support research support via purchase of required consumables not allowed on grant funding, the rudimentary upkeep of research labs, urgent instrumentation repair, and safety costs. That said, these funds are insufficient to fulfill its purpose by a large margin.

Staffing. The DCB staff are an effective, cohesive team, and yet are increasingly overstretched. Although enrollments and mandated departmental responsibilities continue to increase, positions in response to the 2008 recession have not always been back-filled, and thus the department runs lean (the campus recently created a “Staff Expansion Program,” but DCB did not benefit from this). Our most urgent need is enhanced student affairs staffing: as noted above, a *single* staff person is responsible not only for the management of the largest graduate program in our college (currently 177 students), but also for the management of the student affairs staff responsible for the undergraduate program (e.g., the 2300 students in CHEM 1A, the ~750 majors and pre-majors). This workload is simply too much for one person and creates significant problems for the department and its educational programs. Unfortunately, however, with the next budget crisis looming, the staff expansion program has been frozen.

Teaching laboratory. In response to the campus’s increasingly dire need for teaching laboratory space, the department is leading a long-term effort to create a new teaching laboratory building. Specifically, DCB and MCDB have formed a joint committee, led by DCB faculty member Hayton, to plan and advocate for the construction of a new teaching laboratory building in support of chemistry and biology instruction. The creation of the proposed large, modern teaching lab space would support the use of the most innovative and effective teaching pedagogies. It would also support increasing the number of lab course sections, which in turn would eliminate wait lists and decrease our time-to-degree. Accounting for the increase in DCB and MCDB undergraduate student FTEs over the past decade, and considering the size of our existing teaching laboratory space, we believe the construction of a 75,000 to 100,000 square-foot building is long overdue.

Philanthropic support. The campus is not the only –and in many cases, not a likely– source of funds to support many critical departmental needs. This is particularly true regarding additional student support and for support in modernizing our research infrastructure. In response, DCB is vigorously pursuing philanthropic funding. For example, the department inaugurated a Development Committee in 2019, the goal of which is to improve instructional and research infrastructure and to support the recruitment and retention of world class faculty. The committee is comprised of four faculty members (Buratto and Han as co-Chairs, Reich, Sepunaru) and two staff (Gardner and Hwang) and is assisted by the MLPS’s Director of Development, Lead Director of Development, and Managing Senior Director of Foundation Relations. The committee meets monthly to “brainstorm,” and has, to date, organized two major events: an inaugural DCB Alumni Dinner (November 2019), in which several new development and alumni outreach initiatives were launched, and a “Braintrust lunch” (January 2020), in which senior and emeriti faculty and alumni work to enhance and sustain a network of donors and patrons. Upon reflection, we believe that these mark a successful first year in our focused development efforts. The activities have already produced, for example, an endowment for student fellowships through the Stanley and Leslie Parsons fund in biochemistry donated by an emeriti faculty member (Parsons), and enhanced prospects towards securing endowed Chairs, raising funds to renovate the cryo-EM laboratory and establishing additional named undergraduate student research fellowships. More importantly, though, both events are designed to be sustainable, thus *changing the development culture of the department, and how the campus views development opportunities in DCB.*

The focus of our development efforts is divided into low and high investment objectives, with the low investment/high impact goals including support of the following, currently under- or unfunded activities:

- SciTrek and 5th Grade Outreach (<https://www.chem.ucsb.edu/outreach>)
- Chemistry Professional Development (<https://www.chem.ucsb.edu/graduate/professional/chem-pd>)
- Chemical Sciences Career Day (<https://www.chem.ucsb.edu/graduate/professional/career-day>)
- Chemical Science Student Seminar – CS³ (<https://www.chem.ucsb.edu/graduate/professional/csss>)
- Next Generation Chemist Fellowships to support graduate and undergraduate student research
- Upgrade Graduate Student Lounge
- Travel grants to support graduate and undergraduate student attendance at national conferences
- Undergraduate research fellowships

High investment/high impact goals critical to elevate DCB's national and international standing include:

The UC Santa Barbara Structural Biology Cryo-EM (SB²EM) Shared Facility: A NIH major instrument grant to purchase a Glacios™ cryo-transmission electron microscope (cryo-EM) to achieve single particle analysis, cryo-electron tomography and electron diffraction is pending upon resubmission (PI: Han). If granted, this would be the first cryo-EM facility at UCSB and the California Central Coast. Additional fundraising effort is ongoing to launch and sustain the SB²EM facility.

Named endowed chairs: To recruit and retain outstanding faculty, who will serve as ambassadors and program builders for our department, we are working with development to generate endowed named chairs.

Open research labs: DCB has a long-standing culture of operating with shared facilities. Still, there is a need to modernize our existing multiple user equipment and instrumentation (beginning with enhancing those used by the biochemistry-oriented research groups), to inaugurate new facilities (SB²EM is one example), and to create modern, integrated, multi-group research spaces.