



EDITORIAL

Shaping the Future of Higher Education: Practical, Community-Driven Initiatives to Improve Academic Climate





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ABSTRACT: Historically, efforts to improve academic climate have been siloed—many efforts involve the collection of data to understand issues affecting diversity at an institutional level, while others prioritize recruitment and retention of historically marginalized groups. Few initiatives, however, effectively combine the two in order to create concrete action plans to eliminate structural barriers that hinder the retention of minorities in STEM. In this Editorial, we present the history and details of a collaborative effort to improve the academic climate of the Department of Chemistry at University of California, Berkeley. This initiative began in 2016 as a graduate student-led, grassroots movement to develop a method to assess the department's academic climate. Over the past several years—and with support from stakeholders at all levels—it has grown into a department-wide effort to systematically collect data, exchange ideas, and implement goal-oriented interventions to make our academic community more inclusive. With the recent development of a five-year strategic plan and funding increase to provide financial support for student-led programs, we have institutionalized a method to maintain the initiative's momentum. Here, we share our approaches, insights, and perspectives from community members who have shaped this movement. We also provide advice to help other academic communities determine a practical path toward affecting positive cultural change.

BACKGROUND

The resurgence of the Black Lives Matter movement in summer 2020 brought with it an increased awareness of the systemic issues embedded in society, which are the product of systematic exclusion and oppression of historically marginalized groups. In science, math, engineering, and technology (STEM) fields, for example, archaic racist and sexist attitudes govern the perceptions of who are and are not considered successful. The biases and stereotypes that result from such attitudes have created structural barriers and impossible standards that hinder members of marginalized groups from thriving in STEM.

While many institutions have been investing in programs to increase diversity, such efforts fail to change existing perceptions of what a scientist looks like. In order to identify and begin repairing the systemic issues that hinder diversity in STEM, all scientists must become aware of existing inequities, confront their previously held misconceptions, be willing to learn, and engage in consistent efforts to change the policies and practices that govern our social norms.

Recognizing this, two graduate students in the Department of Chemistry at the University of California, Berkeley spearheaded a diversity, equity, inclusion, and belonging (DEI&B) initiative. Their original intention was to obtain quantitative data, which they knew would be critical for helping the administration recognize the problems that existed in the department. The events that have since unfolded started a movement—one that quickly grew to include postdoctoral researchers, faculty, staff, and administration. Active participation and support from department members at every level have helped not only to ensure DEI&B remain a priority for the department but also to distribute the workload necessary for designing and institutionalizing initiatives to address concerns that arose in our data.

In order to identify and begin repairing the systemic issues that hinder diversity in STEM, all scientists must become aware of existing inequities, confront their previously held misconceptions, be willing to learn, and engage in consistent efforts to change the policies and practices that govern our social norms.

Since 2018, our community has prioritized annual data collection to diagnose problems within our academic climate, determine what interventions would be most effective to begin addressing those problems, and monitor quantitatively whether those interventions are effective (Figure 1). The significant, positive changes in our academic climate from 2018 to 2020 are presented in Stachl et al. Here, we provide some background of how this DEI&B effort came to be and present an overview of some of the significant and impactful initiatives that have been implemented in our department since 2018. These incentives include:

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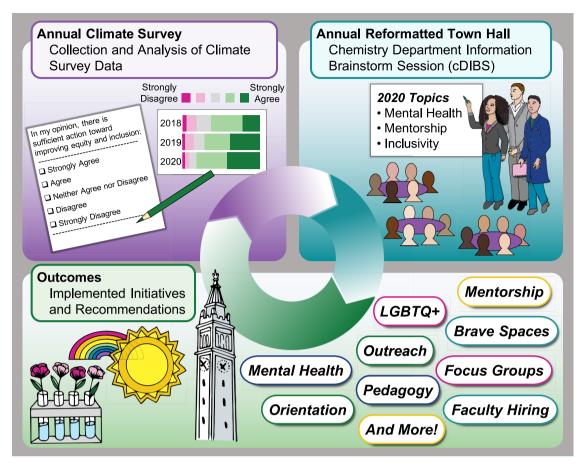


Figure 1. Overview of initiatives implemented in the University of California Berkeley Department of Chemistry: annual climate survey (top left), annual reformatted town hall (top right), and outcomes (bottom). The cyclical nature of these events has ensured accountability and transparency among all stakeholders.

- (1) An annual department town hall to engage all community members in planning new DEI&B initiatives;
- (2) Monthly meetings to ensure spaces for our community to communicate about topics related to identity, belonging, current social events, and more;
- (3) Prioritizing graduate student mental health and wellness, and breaking related social stigmas;
- (4) Participation in faculty hiring to increase graduate student ownership in the process;
- (5) Institutionalizing structures to support and reward graduate students who serve as agents of change within the department.

We recognize every academic community is shaped by its unique historical narrative. We also acknowledge that the process and outcomes which prove effective for the Berkeley Chemistry community may need to be modified before being implemented by other STEM communities. However, given the noticeable lack of practical methods by which to address the pressing, systemic problems in STEM, we share our approaches to provide practical guidelines for other academic communities hoping to effect positive cultural change.

Reformatting our Annual Department Town Hall. Prior to 2018, there was no recurring forum for graduate students to voice their concerns to faculty and/or administration. Moreover, the few department town halls that had taken place were governed by stark power dynamics—a factor that prevented graduate students from feeling they could safely contribute to the conversation. Additionally, these town halls were markedly

anecdotal—there was no concrete goal to work toward and no quantitative data to ground any potential action plans in. Thus, after disseminating our first climate survey to the community, we knew we needed to work to minimize existing power dynamics so that town hall attendees would feel comfortable discussing the data and their concerns and working together to find solutions.

I remember reading through anonymized comments in the climate survey and thinking—we desperately need space as a community to talk about these issues. People in our community wrote line after line about their feelings and frustrations, including that there was no outlet to talk about their concerns or enact change. So, with faculty support, we organized a way to come together as a community and create a safe space for those difficult conversations.

—Emily Hartman Guthrie, Ph.D., 2019, cDIBS co-organizer We had invested so much time and energy into developing a survey that had been vetted by members of the department at all levels, that was tailored and optimized to gather data that would be beneficial to the department, and that we could use annually to track change over time. The last thing we wanted was to let that go to waste; so we came up with an approach to make sure our community could talk about the data we gathered and use it to pave a path forward.

—Chrissy Stachl, Ph.D., 2020, Founder of DEI&B initiative and cDIBS co-organizer

It was necessary to create a space in which different perspectives and innovative ideas could be shared by everyone in the department. To achieve this, we redesigned our town hall to ensure it was centered around the needs and experiences of our entire community. This event—called the Chemistry Department Information and Brainstorming Session (cDIBS)—is led entirely by students, grounded in our survey data, and makes space for department members to discuss the data in small groups, where they brainstorm practical solutions to improve our academic climate.² The climate survey and cDIBS occur annually and have since resulted in a series of ideas generated collaboratively by faculty, graduate students, postdoctoral researchers, and staff to guide the department's next steps, some of which were implemented successfully over the past three years.

Creating Safe Spaces to Talk about Difficult Topics. The first initiative implemented in the department after the 2018 cDIBS was the monthly Diversity and Inclusion Focus Group (DIFG) series.³ Each DIFG meeting focuses on a topic relevant to our academic climate or the national news (depending on the month). Recent topics include: communicating with advisors; addressing transgender issues in academia; discussing race and racism in the context of elections; challenging mental health norms in academia; and policing in the United States. DIFGs are led by graduate student volunteers, and attendees are asked to engage with preselected materials (literature, podcasts, and/or videos) before the meeting. During each meeting, a presentation of the topic is given by the discussion leader(s) before attendees break out into small discussion groups. Before the end of the meeting, everyone reconvenes to share key points from their small group discussions with the main group.

Surrounded by community guidelines, DIFG provides a space for individuals to share their own and learn from others' experiences. Our department chair, faculty members, and staff regularly attend. It is great to be in an environment where students, faculty, and administration actively support efforts related to DEI&B. Many of our participants identify tasks that we can accomplish on an individual, lab, departmental, and institutional level and feel comfortable bringing those action items to the department as agents of change. Survey feedback from our participants allows us to continue to modify and improve the structure of our DIFG meetings.

-Susan Knox, fifth-year Ph.D. Candidate, DIFG Chair

We have a movement with both faculty and students, where they're working collaboratively to address DEI&B issues. And really, the secret behind it has been all the data collection and analysis that has been done. Not only do we get to see our own data and progress during every town hall, but we have monthly DIFG meetings that provide a supportive and low stakes venue for engagement between faculty and students on difficult DEI&B issues. The small breakout group discussions during DIFG meetings enable faculty to listen to students, talk about their own perspectives, and learn as members of the community, rather than solely as responsible parties for the institution. This greatly reduces the power dynamic between students and faculty, and has really built a bridge between them in a way that would not have been possible without these spaces.

—Matthew Francis, Professor of Chemistry and Department of Chemistry Chair

These regular meeting spaces that focus explicitly on the social aspects of science have provided a crucial stepping-stone

The evident commitment from the faculty and administration, paired with the expansion of the CGLC, has helped catalyze the growth of the DEI&B movement in our department.

for promoting positive cultural change. Since 2018, there has been a significant increase in community members' perceptions of the amount of discussion and action toward improving equity and inclusion, and we believe DIFG meetings have played a strong role in this positive change.¹

Although some of the topics are undoubtedly difficult to navigate, I really appreciate the graduate students and faculty who are willing to share their stories and perspectives with the department community. They've helped destigmatize issues that aren't always openly discussed in academia, especially in an R1 STEM environment.

—Hikaru Mizuno, fifth-year Ph.D. Candidate, Climate Survey Committee Member

Breaking Stigmas Related to Mental Health and Wellness. Mental health and work-life balance are recurring themes that surface in our climate survey data. For example, on average, graduate students and postdoctoral researchers expressed they could not easily talk to their mentors about their mental health challenges, and some faculty admitted not knowing how to effectively help their students or where to guide them to seek support. As a result, we redesigned the incoming graduate student orientation starting in Fall 2018 to include discussions of mental health challenges and workshops with members of the UC Berkeley Counseling and Psychological Services to destigmatize seeking help and providing strategies for self-care. The pedagogy course required for first-year graduate students now also includes sessions on imposter phenomenon and stereotype threat.

After the 2018 cDIBS, we spent some time considering what the goals of our incoming graduate student orientation were and how we could best accomplish them. This led us to redesign our orientation, and even partner with Respect is Part of Research (RPR)—a Title IX sexual violence and sexual harassment (SVSH) prevention workshop led by trained, graduate student volunteers. The workshop covers legal definitions while also building community between incoming students and the College at large, demonstrating that SVSH behavior is unacceptable in our College community. In 2020, we expanded this model and included an LGBT+ workshop to introduce incoming students to the LGBT+ community in Berkeley and similarly frame harassment and discrimination against this group as harmful to the larger College community.

—Mark Babin, fifth-year Ph.D. Candidate, RPR Coordinator, Social Chair (2017–2019), Recruitment Chair (2018–present)

Addressing mental health, harassment, and general well-being during orientation felt like the most rapid and practical way to normalize mental health challenges among incoming graduate students. We have since seen a significant positive shift among graduate students regarding their comfort in disclosing mental and/or physical health conditions to their advisors, suggesting our community has made progress toward destignatizing these topics.¹

Prioritizing Mentorship and Diversity in Faculty Hiring.

Another prominent department-wide concern that comes up repeatedly in our climate survey data is related to the lack of faculty diversity. Over the past three years, we have modified—and continued to optimize—the faculty hiring process to include graduate student input. A student committee is selected to interview the faculty candidates in each field of hire to understand each candidates' experiences and approaches to teaching, mentorship, diversity, and equity, in addition to their research. Since 2020, each candidate has also been required to dedicate 10—15 minutes of their department-wide seminar to present their DEI efforts.

Faculty candidates' past experiences and future plans regarding mentorship, teaching, and equity have a huge impact on graduate students' success and well-being. In the past, many students felt that these aspects of the professoriate weren't being adequately considered during the hiring process. Giving graduate students a voice in the hiring process has helped increase transparency and accountability. While there have been challenges and changes in the student committee's role over the past three years, we have worked to increase communication between the student and faculty committees to ensure that our concerns are being addressed and our feedback is being incorporated into hiring decisions. I'm hopeful we can continue to strengthen this initiative in order to hire faculty who are committed to fostering positive research and learning environments in addition to performing excellent research.

—Dipti Jasrasaria, fourth-year Ph.D. Candidate, Faculty Hiring Graduate Student Coordinator

Valuing and Supporting Graduate Student Contributions to DEI&B Efforts. In 2020, the College of Chemistry was awarded a Graduate Diversity Program grant from UC Berkeley's Graduate Division to create the College of Chemistry Graduate Diversity Program (CGDP). This program provides one year of structured support and a stipend to graduate students to contribute to DEI&B activities. It also helps to create a supportive community of scholars for ongoing discussions and engagement around DEI&B issues. Importantly, this program creates a visible structure, recognized by the College, that rewards students for their efforts toward DEI&B, both socially and financially.

We were excited to read the first set of DEI&B proposals that graduate students submitted in their applications to participate in this program. In this first year, we are supporting 11 projects led by nearly 30 graduate students. The scope and impact of these projects are tremendous, ranging from developing outreach programs for high schools, designing a math "boot camp" for incoming chemistry graduate students, and designing monthly mentorship meetings for faculty. The CGDP provides a formal structure for students to continue engaging with College leadership and other faculty, which will facilitate implementation of their initiatives. As part of the program, participants are supported to develop assessment and sustainability plans. We believe the graduate student-led projects will have a tremendous impact on our College climate, and we are excited to foster this community where we can all learn from each other.

—Prof. Anne Baranger, College of Chemistry, Associate Dean for Diversity, Equity, and Inclusion

Identifying Allies and Harnessing Community Power.

These community-driven initiatives would not have been nearly as successful without department support at every level. Initially, this

DEI&B initiative grew out of the graduate student-ledorganization known as the Chemistry Graduate Life Committee (CGLC). The CGLC originally existed to host department social events and help the administration with graduate student recruitment and orientation. While it was not initially focused on leading DEI&B efforts, the CGLC's position as a liaison between graduate students and faculty has enabled it to become the catalyst for change.

Through the CGLC, I was able to connect with other graduate students outside of my cohort and make sure that their opinions and feedback were incorporated into the climate survey and other efforts I was leading. The CGLC was well-connected with the administration and had insight into department bureaucracy—both of which were critical for building additional bridges between graduate students and faculty.

—Chrissy Stachl, Ph.D., 2020, Founder of DEI&B initiative and CGLC President (2017–2020)

Given the energy and momentum that sprung from the 2018 cDIBS, it became necessary to expand the scope of efforts and programming that the CGLC was involved in. This, in turn, necessitated the recruitment of younger students to the CGLC and the establishment of an internal mentorship structure, to spread the labor necessary to plan and execute new initiatives.

Our expansion came with an increase in work for all of us in the CGLC, so we made a point to recruit younger students who showed interest in our initiatives and pair them with older students to train them in these roles and provide support. Now that a full generation of graduate students have cycled through the CGLC, we're seeing a lot of growth and introspection in how we're serving our graduate community, and how to continue to improve. I'm so impressed with the passion and enthusiasm everyone has brought to the group and cannot wait to see what the new members accomplish.

—Mark Babin, fifth-year Ph.D. Candidate, RPR Coordinator, Social Chair (2017–2019), Recruitment Chair (2018–present)

In addition, after the 2018 reformatted town hall (cDIBS), our Department Chair, other faculty, and staff started coming to CGLC meetings. Starting in Fall 2018, the CGLC faculty advisor role also became a formal position, which is given to the new faculty hires for a given year. These changes made it evident the DEI&B initiative had become a department-level priority.

As a new faculty member, I could not have wished for a more insightful first committee assignment. DEL&B stands out as one of the most complex topics for our community. The regular and ongoing interactions I've had while serving as a faculty member on the CGLC for more than a year have strongly influenced my appreciation for the needs of students and the way I interact with them. I came to realize the significance and impact my actions have as a role model and mentor to students. In that context, I found the DIFG meetings extremely enriching because they provide a safe space to discuss topics relevant to DEL&B, allow us to hear firsthand from individuals in historically marginalized groups about their experiences, and enable us to learn how to correctly and impactfully make them feel included.

—Prof. Michael Zuerch, Assistant Professor of Chemistry and CGLC Faculty Advisor (2019—Present)

The evident commitment from the faculty and administration, paired with the expansion of the CGLC, has helped catalyze the growth of the DEI&B movement in our department (Figure 2).

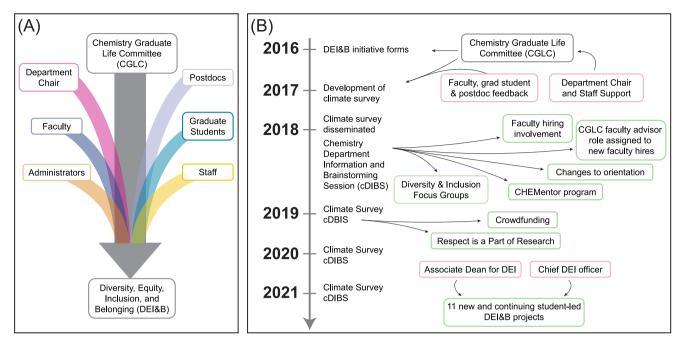


Figure 2. (A) Support and participation from stakeholders at all levels of the department community are integral to distribute the labor necessary to implement and continue DEI&B efforts. (B) Timeline of key developments in the DEI&B movement within the Department of Chemistry at the University of California Berkeley.

I started graduate school in 2018 and was drawn to the CGLC, not just because they host integral department events but because students involved in the organization have strong opinions and a vision to make the department a better community, which expand into concrete programs that I am very grateful to be involved with. The fact that the CGLC's efforts have had such tangible effects has been instrumental in recruiting students, despite the pandemic. I am confident that there is sufficient culture of student ownership and an investment in DEI&B issues that the CGLC's efforts will continue to positively impact the department in the coming years.

—Tarini Hardikar, third-year Ph.D. Candidate, CGLC Vice-President (2019–2020), CGLC President (2020–Present)

As a new graduate student, my impression has been that initiatives like DIFG and the mental health orientation events are valued, integral components of the department community; considering that they are so new speaks to how important and impactful these cDIBS discussions have been.

Sonja Bumann, first-year Ph.D. Student, Climate Survey
 Committee Member

Changing departmental practices feels less adversarial between graduate students and faculty members—we understand that we are working together towards a common goal.

Overall, having commitment and support from graduate students, postdoctoral researchers, and faculty has enabled us to gather data representative of the department sentiment on various issues; having the administration on board allowed us to find feasible and practical

ways to modify our department's structure and policies; and perhaps most importantly, having the entire community work together to set priorities from which to move forward allowed us to distribute the labor necessary to implement new initiatives.

Understanding how the priorities of graduate students, postdocs, and faculty align in issues of DEI&B has allowed us to frame departmental change as a collective movement. Changing departmental practices feels less adversarial between graduate students and faculty members—we understand that we are working together towards a common goal.

—Dan Brauer, fifth-year Ph.D. candidate, Graduate Life Committee Diversity & Climate Chairperson

CONCLUSIONS AND FUTURE DIRECTIONS

Longitudinal data since 2018 show that, overall, graduate students, postdoctoral researchers, and faculty in the College of Chemistry at the University of California, Berkeley feel more valued and included as members of the department, their work environments are more collaborative, and they know who to talk to about department climate concerns. Additionally, advisees feel their ideas are now more likely to be treated with respect. We are excited to see these positive changes within our department's climate and interpret these successes as evidence that our efforts have had a measurable impact. Thus, we believe other departments and programs will be able to model productive actions for their own communities based on our activities and findings.

At the same time, we recognize there is a lot of work left to do. While we now have structures in place to enable this DEI&B work to continue, it is important to highlight that we have not been able to fully understand the experiences of racial and ethnic minorities, LGBTQ+ individuals, students with disabilities, student parents, and other marginalized groups. The perspectives and experiences of these individuals do not stand out when data are collected in aggregate in a predominantly white, male department; yet, their input is critical to creating a

welcoming, inclusive academic space. Thus, we plan to conduct qualitative studies to better understand their experiences. Additionally, the initiatives that have begun since the 2020 cDIBS—which include the Chemistry Graduate Diversity Program (CGDP)—have prioritized this limitation.

In Fall 2020, the College of Chemistry appointed its inaugural Associate Dean for Diversity, Equity, and Inclusion (DEI) and hired its first Chief DEI Officer. Together, they have started developing a five-year strategic plan for initiatives to continue and build upon the ongoing DEI efforts within the College. The Chief DEI Officer has also created brave spaces to hear the experiences of members of the department, including staff and marginalized students. In addition, a new climate survey for faculty and staff has been developed to assist in recognizing the College's areas of strengths, weaknesses, and opportunities for growth.

Many department members at every level have since shown tremendous courage and vulnerability in expressing their own needs and experiences, which has empowered others to do the same.

The five-year DEIB Strategic Plan comprises four leading goals, each with specific strategies and actions items we've developed to accomplish those goals. Having a pulse of the College climate is integral as we continue to enhance DEI&B efforts. We want to demonstrate, as well as highlight, our DEI&B efforts in truly striving to be a College that is welcoming to all individuals.

—Brice Yates, Ph.D., College of Chemistry, Chief Diversity, Equity, and Inclusion Officer

Lastly, we want to emphasize again that this DEI&B initiative was established in the department after two students made a decision to challenge the status quo, and because a critical mass of individuals served as their allies and supported their efforts. Many department members at every level have since shown tremendous courage and vulnerability in expressing their own needs and experiences, which has empowered others to do the same. This has brought awareness to the importance of hearing and learning from others' perspectives, and of being open to being wrong. We do not have all the answers and are still learning, but we do want to emphasize the positive outcomes that have ensued after deciding to use quantitative data to ground conversations, and to subsequently use those conversations to guide action.

I vividly remember the fear and anxiety I felt during the first cDIBS in 2018. When my colleague and I were analyzing survey data and planning the reformatted town hall, it felt like we were climbing a foggy, uphill battle; alone and totally unsure of how our department would respond to us asking them to be vulnerable and work together to address community concerns. We've all done a 180-degree turn since then. And the joy I feel—especially after watching this initiative persist and become a department-wide priority—is completely unreal.

—Chrissy Stachl, Ph.D. 2020, Founder of DEI&B initiative and CGLC President (2017–2020)

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