



Office of Undergraduate Research and Learn through Discovery

Faculty Mentoring Handbook



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Faculty Mentor Handbook

Welcome! Thank you so much for volunteering to mentor students. As a mentor, you will impact student experience as well as your own as a faculty member. This handbook describes and explores questions of diversity, equity, and inclusion in undergraduate research. The learning outcomes for this handbook are:

- i) Understand the impact of quality mentorship on both students and faculty in research
- ii) Learn how to integrate Diversity, Equity, and Inclusion in your mentorships.

OUR Mission & Vision

The OUR's mission is to:

Increase the awareness of, participation in, and opportunities for undergraduate research across the disciplines and for students who are traditionally underrepresented in research: lower-division students, and first-year transfer students, as well as under-represented and first-generation students. Support faculty members who mentor undergraduate student researchers. As an umbrella office, coordinate efforts of programs that provide undergraduate research opportunities.

The OUR's vision is to:

Support a diverse culture of experiential learning, discovery, and innovation by ensuring access to research for every undergraduate student.

Introduction

What is Mentoring?

Mentoring can look very different in each setting. Mentoring can come in two types: informal and formal. For the purposes of this handbook, we will be exploring formal mentoring in relation to the Office of Undergraduate Research (OUR). When you sign up as a faculty mentoring, you are expected to:

- Establish expectations with the mentee
- Effectively communicate with mentee
- Commit to diversity, equity, and inclusion in your research lab

Three general phases of mentoring include: mentoring in, mentoring through, and mentoring onward (McKinsey 2016). Mentors should first build the relationship with the mentee by supporting them and welcoming them into the discipline. Then, during the time in the program, mentors should assist the student with their projects but also advise regarding career and personal aspirations. After the formal program is over, mentors should try to keep in touch with mentees and help in mentees' subsequent journeys whether it be a professional job or graduate school.

Benefits of Quality Mentoring

Students

Data from the OUR (2015-2019) has shown that students who participate in undergraduate research are twice as likely than their peers to graduate from Cal Poly Pomona (CPP). However, this same study revealed that historically underrepresented groups such as students of colour, Pell-eligible, and first generation are less likely to participate in research than their peers. Faculty mentoring plays an imperative role in increasing diversity and inclusion in undergraduate research. Underrepresented students build a better sense of belonging in research and academia with quality, meaningful faculty mentorship (Ahmad *et al.* 2019). Increasing sense of belonging in historically underrepresented students is integral to increasing diversity and inclusion in research and academia. Personal and social science identity are important factors in one's motivation and sense of belongingness which affects retention rates in the STEM field (Camacho *et al.* 2021). Furthermore, faculty mentoring results in positive learning and contributes to student success (McKinsey 2016).

Faculty

There are many benefits for being a faculty mentor. Mentoring undergraduate students has shown personal satisfaction and fulfillment, professional rejuvenation and networking opportunities for faculty mentors (Vandermaas-Peeler 2013). By mentoring students outside of the classroom, faculty can learn and develop their teaching skills and critically explore their intrapersonal skills. By getting to know one's students, faculty can better understand student life and perspective (McKinsey 2016). This professional development will help faculty further their career and can improve sense of belonging on campus by building meaningful faculty-student relationships. Also, identity is a key contributor to motivation and career aspirations. Faculty mentors can contribute to student personal and social identities in their academic discipline. Faculty mentors can help underrepresented students develop a sense of belonging and incorporate social and cultural components to increase persistence in research (Camacho *et al.* 2021). When students feel a sense of belonging and are motivated, they are more likely to be productive in the research work. It has been shown that appropriate time and guidance from faculty mentors has led to more success in terms of publication for marginalized students (Ahmad *et al.* 2019). Having a diverse team that brings many different skills, experiences to the lab has been shown to increase productivity in terms of publications (Ahmad *et al.* 2019).

Furthermore, the OUR has a Faculty Mentor Research stars program that recognizes faculty that have mentored students who have been awarded the Research Distinction. Faculty research stars are awarded for every mentored student who completes the Research Distinction requirement. More information can be found [here](#). OUR will be hosting faculty workshops that can be found [here](#). These workshops will be centered around diversity, equity, and inclusion and will be announced on the OUR website. For each workshop attended, faculty will receive a badge on Canvas, noting their participation and commitment to mentoring. Badges can be seen

by all Canvas users. Badges are a great way to exhibit a willingness to learn and practice diversity, equity, and inclusion to other faculty and students.

OUR Data

Cognitive Dissonance

Before embarking on the rest of this handbook, it is important to discuss the topic of cognitive dissonance. When presented with concepts of diversity, equity, and inclusion, some may feel uncomfortable that their beliefs are being challenged and/or don't match their behaviours. The disconnect one experiences between thoughts can be described as cognitive dissonance ("Cognitive Dissonance"). An example of cognitive dissonance is when one recognizes their comment was a microaggression but internally, this goes against their self belief that they are anti-racist. In order to alleviate the discomfort between the disconnect, one can change one of the two contradicting actions/values. Cognitive dissonance gives us a chance to recognize these inconsistencies within ourselves and encourages self growth.

OUR Student Data

In order to look at the OUR's progress of ensuring research access for every undergraduate student at CPP, we collect student data on demographics and student type (underrepresented, Pell grant recipient, and 1st generation) and compare it to campus data. Please [click here](#) to see current OUR Demographics data.

For the purpose of this handbook, we will be specifically focusing on the Hispanic/Latinx community as well as 1st generation, Pell grant recipients, and underrepresented minorities. We will be focusing on historically underrepresented communities guided by our data.

Barriers to Undergraduate Research (UR)

UR Structure

First, awareness of available research programs on campus is a barrier to students, especially if students aren't full-time or on campus due to other commitments. Outreach activities should be scheduled at the best possible time for all students. Offices should be mindful of class, work, and other commitments. Furthermore, students who have to work multiple jobs do not have the capacity to take on unpaid research programs. Appropriate funding for student researchers helps alleviate the financial barrier that UR presents. The selection criteria for students applying to UR can be a barrier as well. It is important to think about what criteria you are using to select

your mentee and researcher. Traditionally looking at GPA or test scores undermines students' abilities to succeed in research. There may be many barriers to why students may not achieve high GPAs or test scores such as but not limited to available time to prepare, economic factors, cultural factors, and psychological factors (Ahmad *et al.* 2019). Expanding your criteria to include student motivation, interest, and commitment to research can better help predict a student's success in UR (Ahmad *et al.* 2019). Students may not be aware of the benefits of UR as well. Understanding that UR participation increases retention rates, professional development opportunities, and likelihood of pursuing a graduate degree can motivate underrepresented students to seek out UR (Longmire-Avital 2018).

Perceived Faculty Dynamics

If students know about available research programs, another barrier that exists includes the perceived culture around research and faculty. Historically underrepresented students tend to feel disconnected to faculty, which can discourage students from reaching out for research opportunities (Ahmad *et al.* 2019). In mentoring relationships, power dynamics such as credibility, expertise, and trust can present challenges (Cowin *et al.* 2019). It is important to encourage and affirm students' abilities and skills. Instead of thinking of faculty mentoring as passing down knowledge to students, a more symbiotic relationship in which the mentee can bring their full selves and experiences in the research work can be beneficial. To decrease the hierarchical nature of faculty mentee relationships, faculty can provide affirmations, encouragement, commitment to students' success and work (Cowin *et al.* 2019). Concerns regarding how power and control will play a role in their faculty mentoring relationships can cause hesitancy underrepresented minority students, especially in cross-race/ethnic mentorships (Hansman 2002). When mentees feel comfortable enough to express their ideas and opinions it can benefit both the mentor and mentee (Cowin *et al.* 2019).

Incorporating diversity, equity, and inclusion in your research lab

The following is adapted from Ahmad *et al.* 2019 "Evidence based strategies for Improving Diversity and Inclusion in Undergraduate Research Labs".

Recruitment

Organizational psychology studies have shown that a diverse recruitment process that encourages underrepresented students to participate increases the organization's welcomeness and perceived compatibility. At CPP, we have specific research programs that target underrepresented students such as Research through Inclusive Opportunities (RIO). RIO offers underrepresented, first-generation, and/or low income students a comprehensive undergraduate research experience with ample faculty mentor and staff support, a stipend, professional development workshops, and more. Find out more about the program [here](#). Faculty, whether you decide to serve as a mentor or not, have a role in these programs' successes since you

work directly with students. Sharing these programs with your students and encouraging students of all backgrounds to apply (we have different research programs for all students) can help with diverse recruitment. When sharing these research programs or your own research lab's opportunities, it is important to mention any structural aspects such as flexible work hours, meeting formats (in person vs. virtual), stipends, etc.

Selection

Biases can negatively affect underrepresented students' opportunities to participate in undergraduate research. A study revealed faculty biased preference toward White male students compared to females and students of colour in terms of responsiveness and offering mentoring opportunities (Milkman *et al.* 2015). Another study showed faculty rating White male lab managers as more deserving of a higher salary and more mentorship than female students and students of colour (Moss-Racusin *et al.* 2012). It is important to note that faculty who are also underrepresented and/or believe they do not have biases **do** carry biases.

In efforts to actively combat one's implicit biases, it is imperative to recognize that we all have implicit biases. To limit the effect of implicit biases in your research lab, you can periodically look at how representative your lab is to campus demographics. It is important to have selection criteria that do not solely rely on GPA and standardized test scores, two factors that ignore underrepresented students' struggles (e.g. socioeconomic restraints). A criteria factor to consider is motivation to commit time and effort. This has been shown to predict minority medical students' success (Pacquiao 2007). Asking prospective lab members to write about their interests and reasons for wanting to join the lab can be a way to measure one's motivations.

Retention

Once undergraduate students are in your research, you can work towards high retention rates including providing opportunities for professional development and taking the time to mentor marginalized students. For example, sharing your experience and helping underrepresented students apply to graduate school helps expose students to higher education and increase accessibility.

Allyship

To be an effective ally, one should educate themselves on marginalized populations, attend diversity, equity, and inclusion events, acknowledge one's own privilege, examine one's own biases, and more. As a faculty mentor, you can encourage allyship behaviours by modeling acceptance and support for diverse groups. Think about ways you can be more inclusive in your lab such as sharing diversity related events with lab members, post ally/diversity commitment stickers in your office or virtual learning space, and more. It is important to avoid performative actions and take the time and effort to learn how to support your mentees.

Commitment to Inclusivity

Creating an inclusive environment can encourage students to share their hidden identities. Being in a space where one feels comfortable enough to disclose hidden identities has shown positive effects for marginalized students. They are more satisfied and committed, and their workplace health benefits. Being colour-blind blatantly ignores the diversity and the backgrounds of each and every lab member. It has been shown that diversity issues in society affects specifically oppressed students' motivation and work. Issues of social justice arise every day in our world and creating a space for your mentee to share and discuss can help model inclusive practices.

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