



september-october 2023

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behind the bioscience mentoring study

an interview with Reena Debray, Emily Dewald-Wang, & Katherine Ennis



by Maya Samuels-Fair
PhD candidate

In 2021, Reena Debray, Emily Dewald-Wang, and Katherine Ennis administered a survey on graduate mentorship in IB, ESPM, MCB, and PMB. Their insightful work highlighted critical points of disparity within our department. Female and non-binary students, students who started their PhD later in life, and non-traditional students (e.g., parents, caregivers, first-generation

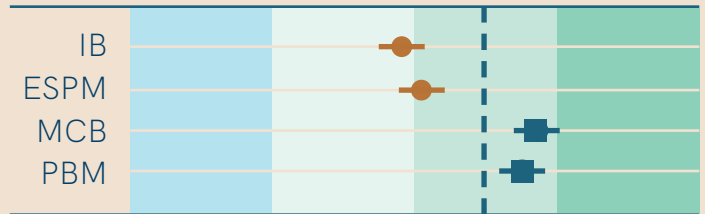
students, students with disabilities, and veterans) reported significantly less support from their advisors and labs. Their results also found key aspects of mentorship that can help close the gap. Students whose advisors were available to meet more frequently and students who felt a stronger sense of support from other faculty and peers were more satisfied with their work environment and felt more prepared for a career afterwards. Students from underrepresented demographic backgrounds had more positive



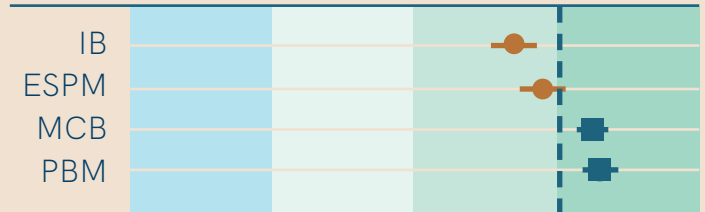
credit: Melinda Young Stuart

1. IB & ESPM fall behind on key metrics of graduate student well-being.

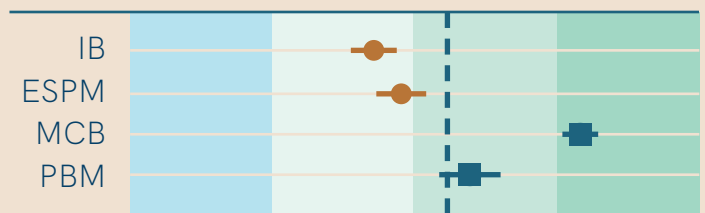
I feel I belong in my program



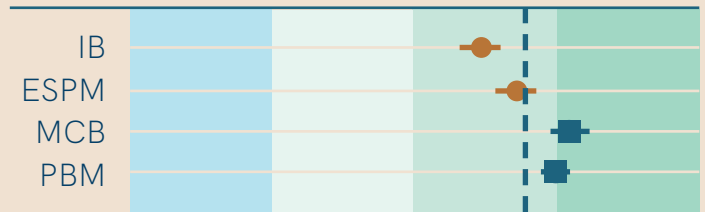
Advisor meetings are constructive & helpful



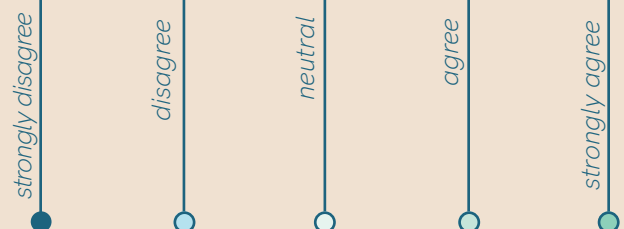
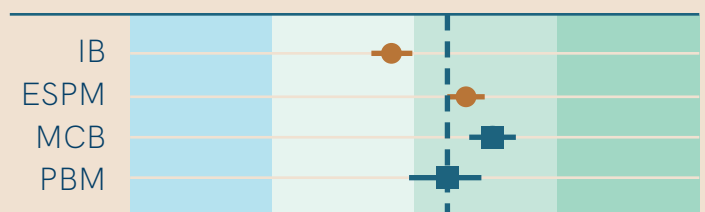
My department fosters an environment that encourages collaboration between labs.



My program has adequately prepared me for an academic research career.



My program has adequately prepared me for a scientific career outside of academia.



"While we can't pinpoint the exact reasons for the differences from this type of data, we've noticed there are some differences in departmental policies. MCB and PMB have a lot of core classes, which may facilitate cohort cohesion in early years"

relationships with advisors who were from similar backgrounds. The authors presented their insightful findings at an IB faculty meeting and the IB Symposium. DEI Newsletter asked them what they personally have learned about education research, policy, and mentorship from undertaking this study, which is now in **review for publication**.

This research required you all to learn social science research methods—particularly when formulating and analyzing qualitative survey questions. For other students and faculty interested in conducting similar research, how would you recommend they get started?

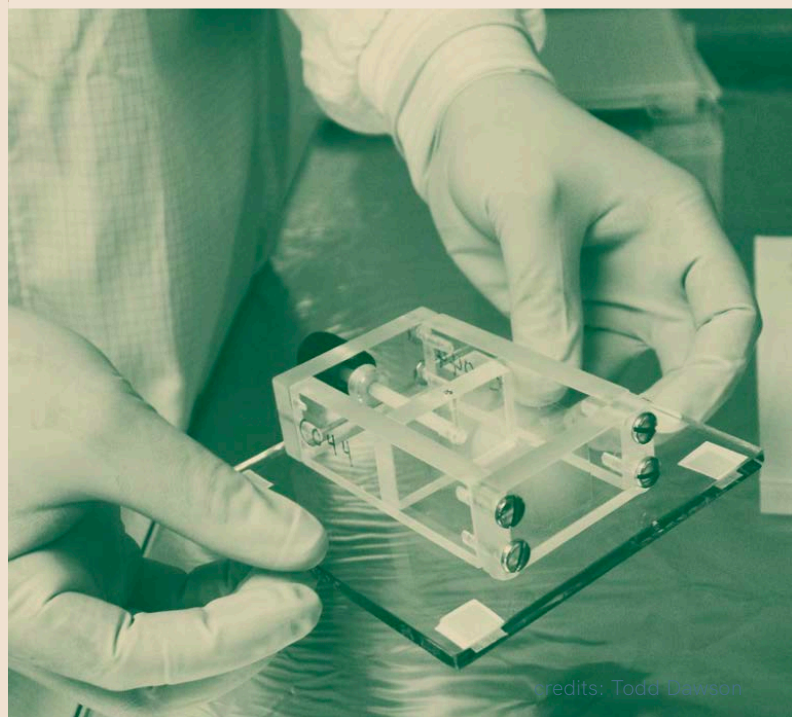
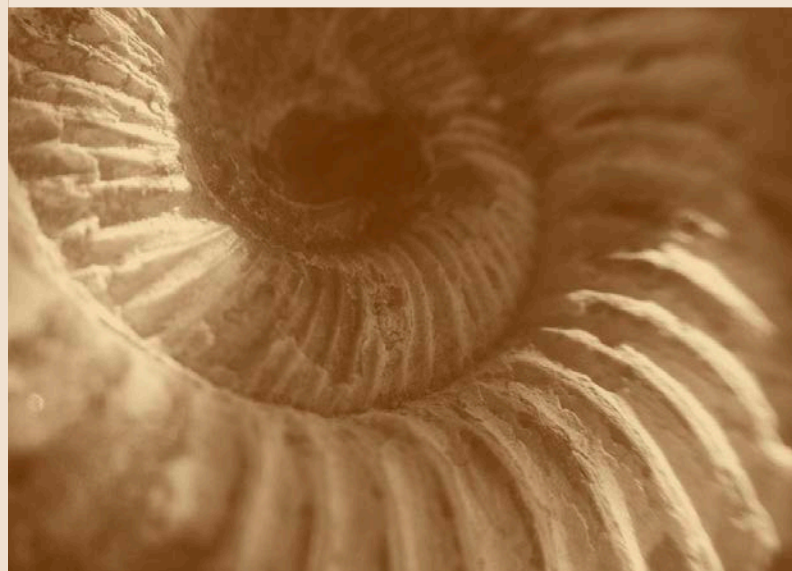
We started by contacting the **Office of Planning and Analysis**, a division of UC Berkeley that analyzes the data that the university collects on its students and employees. A representative from the OPA advised us on how to develop the survey, particularly on how to collect potentially sensitive or identifying data without de-anonymizing students. He also directed us to publicly available census data from the UC system. We used the census data to ensure that our sample was representative of the demographics of the departments that it drew from. Because we were surveying human subjects, we had to seek approval from the **Institutional Review Board (IRB)**. The IRB is very particular about phrasing. We found it helpful to read a previous proposal that another group in the department shared with us so we could use the language they were looking for. Finally, we solicited a lot of feedback from members of the department on the content of the survey and interpretation of the data.

How did your DEI Small Projects Grant make this research possible?

The DEI Small Projects Grant provided small GSR stipends for the student members of the project and funded an event where we discussed the results with the graduate student community.

Despite the fact that MCB and PMB have larger average lab sizes, their graduate students generally rated their experiences more highly than IB and ESPM. What are some factors you think improve the graduate student experience in MCB and PMB, and do you think that IB can emulate them?

While we can't pinpoint the exact reasons for the differences from this type of data, we've noticed there are some differences in departmental policies. MCB and PMB have a lot of core classes, which may facilitate cohort cohesion in early years and explain why their students were more likely to agree with statements like "I am happy and well-adjusted in my program" and "I feel that I belong in my program" (figure 1.)



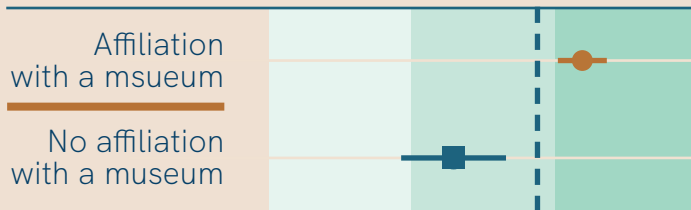
In these programs, entering students also rotate through several labs before choosing one, which lets them get to know other faculty besides their eventual advisor. This may be why these students were more likely to agree that “My department fosters an environment that encourages collaboration between labs” (figures 1 & 2.)

Both MCB and PMB have a funding model that is primarily based on GSRs rather than GSIs. This may improve the extent to which advisors

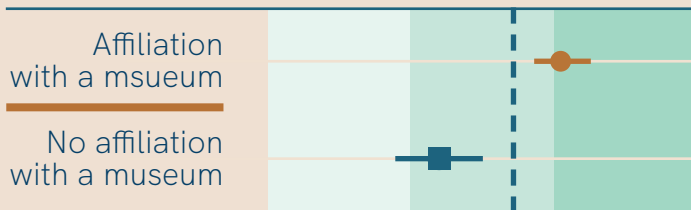


2. impacts of museum affiliation on graduate student sense of belonging.

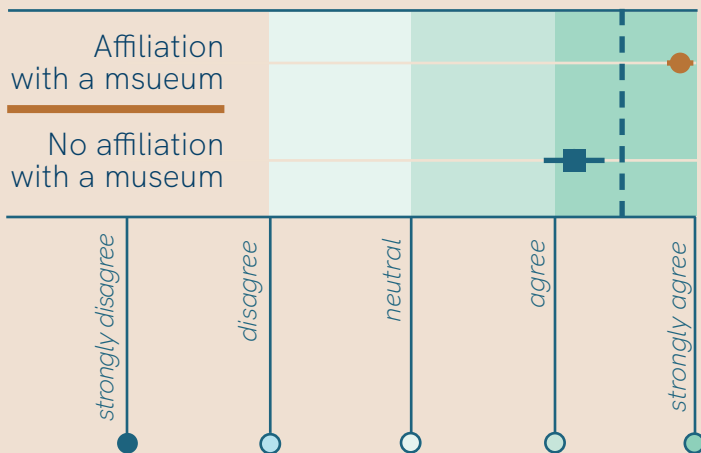
My department fosters an environment that encourages collaboration between labs.



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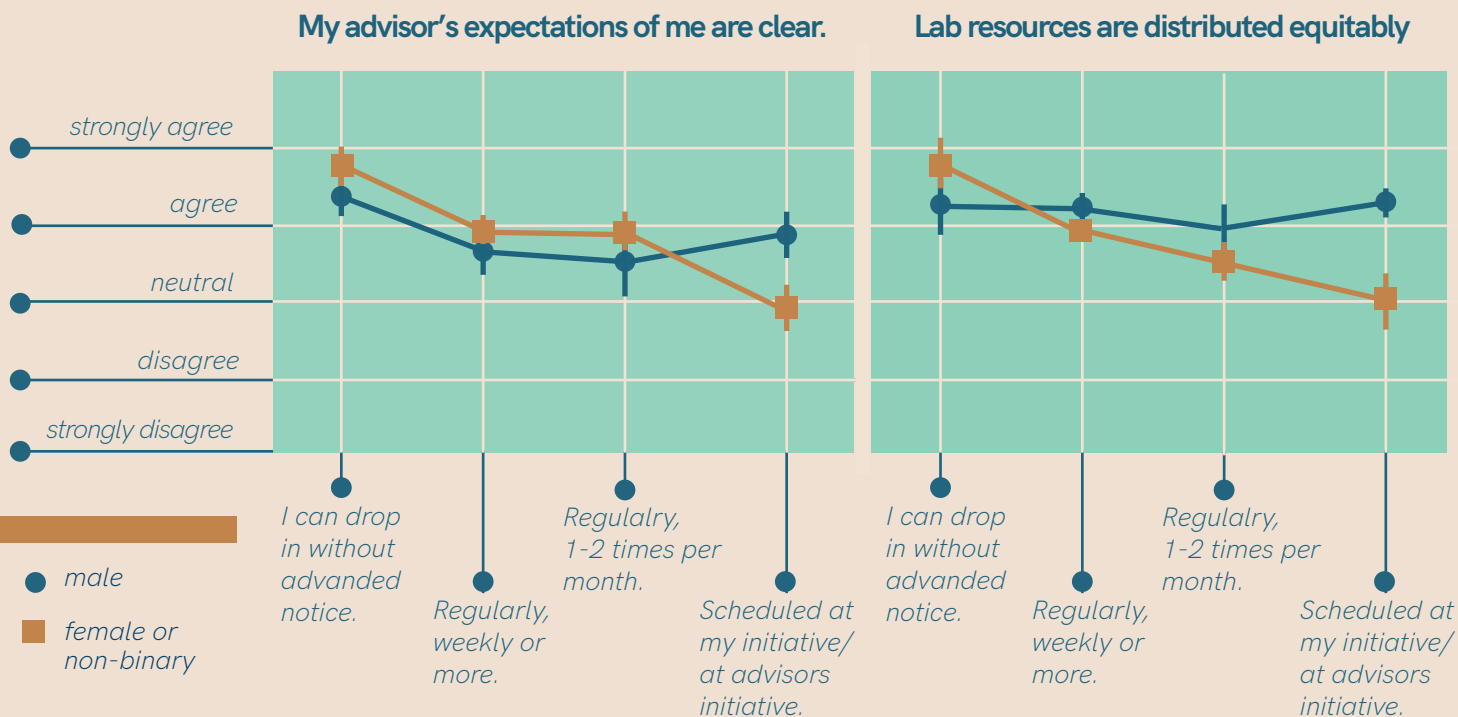
invest in their students, since students work on projects closely aligned with the lab’s main research program. Maybe this is why students in MCB and PMB were more likely to agree that “Meetings with my advisors are constructive and helpful” (figure 1.)

While we didn’t ask about funding specifically, we are also aware that PMB and MCB have higher minimum stipends for their graduate students than ESPM and IB. Because we don’t have this data we can’t assess if this played a role, but it seems reasonable to think that funding disparities could contribute to the differences in overall graduate experiences between the departments.

You all found that the graduate student experience is significantly different depending on whether one’s lab is museum-affiliated. What have you observed that museum communities provide that the unaffiliated labs lack, and how do those things affect the PI-student relationship? What do you think the unaffiliated labs in IB could do to emulate the museum communities?

Museum communities often have separate social events, seminars, retreats, from the rest of the department, as well as lab/office space that is shared across labs. The IB department as

3. impacts of gender on interactions with lab space and advisor



a whole already has its own happy hour and seminar series, but we only started holding an annual retreat last year (after the survey data was collected) and we don't normally combine office space across labs. Some departments place all first-year graduate students in offices with their cohorts rather than their labs. Doing this in IB might improve the sense of community for non-museum students (figure 2.)

As academic scientists, we receive little formal training in how to be mentors. Based on your results, what kinds of mentorship training do you think it would be beneficial for us to receive?

Very true! I think it's important to first recognize that there is a widespread misconception among many people that opportunity equals equity. The reality is that equity requires more than just access to opportunities—and mentoring is a critical component of improving equity.

A few aspects of mentorship that I think could be improved with formal training are communication,

setting shared goals and providing increased structure. Regarding communication, some advisors probably feel hesitant to give honest feedback in case it is perceived as too harsh. But in our data, students who indicated that they received clear, honest feedback from their advisors didn't necessarily view them as less approachable or empathetic. Context is very important; students are more likely to respond positively to critical feedback when it comes from someone who is genuinely invested in their success and well-being (figure 3.)

Regarding shared goals, it is important for both students and advisors to recognize that their individual goals might not always align. For example, faculty generally rely on their students to publish high-impact publications, but for students pursuing non-academic careers, the number or impact factor of publications may not be the most important determinant of their success. Similarly, high-risk, high-reward projects are important for the research programs of many faculty members, but may not produce

results within the typical timelines that students need to demonstrate progress to their committees. Situations like these are an inevitable feature of the academic model that treats graduate students simultaneously as mentees and employees, and there is not an easy solution. It is best for graduate students and their advisors to communicate about expectations, which may depend on the funding structure in the lab as well as the student's reason for pursuing a graduate degree. For faculty specifically, who mentor many people simultaneously, it might be important to learn more about common biases in mentoring so as to reduce perceived inequities within a lab group. Our data indicate that female identifying respondents may feel less comfortable asking for meetings with their advisor relative to male respondents. By establishing regular, standing meetings with your mentees you may prevent some of the perceived inequities within a lab. It is possible that many inequities within a lab group are preventable with additional lab structure.

Are there aspects of IB's hiring, promotion, admissions, curriculum, or funding practices that you think could be changed to enable better mentorship?

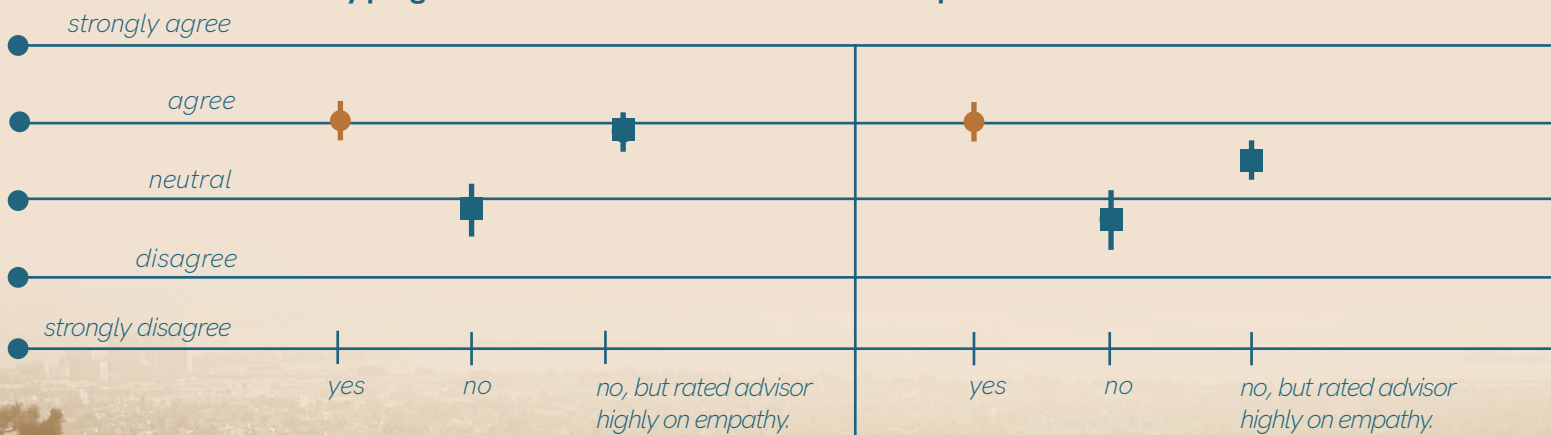
I am really partial to requesting letters from trainees and/or peers in cases of faculty hiring and promotion. A common concern about this is that the power imbalance could lead to retaliation for negative reviews, but if candidates are required to list many references, it would be harder for them to trace back the outcome to any specific recommender. In most other industries, candidates for promotion are evaluated both from "above" and "below" with the understanding that you need both types of references to get the full picture.

Another way of looking at mentoring success would be to consider how many students (or what proportion of students) you have had that have graduated or are on track to graduate in normative time. Some mentoring issues might also be improved by requiring that faculty attend

4. advisor impact on graduate student satisfaction within program.

I am happy and well adjusted in my program.

My program has adequately prepared me to pursue an academic research career.



represented by advisor



mentoring and management workshops. On the whole though mentoring practices are most likely to improve if the incentive structures (e.g., tenure and promotions) emphasize mentoring as much as research and service (figure 4.)

After sitting with these results for some time, what additional questions do you have?

In developing the survey, we intentionally avoided specific questions about their demographic identity to avoid de-anonymizing students. But we are well aware that the broad categories we used (e.g., East Asian, South Asian, or Pacific Islander) represent a wide range of backgrounds and lived experiences. There were also questions, like family socioeconomic status, that we decided not to ask at all to protect anonymity. I wish I could know what important variation we missed by doing this.

Another question I have is about a specific result from the survey. Students who felt that their advisors represented some aspect of their demographic identity—gender, race, disability, parenthood, etc.—were happier, more confident, and more productive by almost every metric we asked. Clearly, representation is important in mentorship, but as long as faculty diversity lags behind

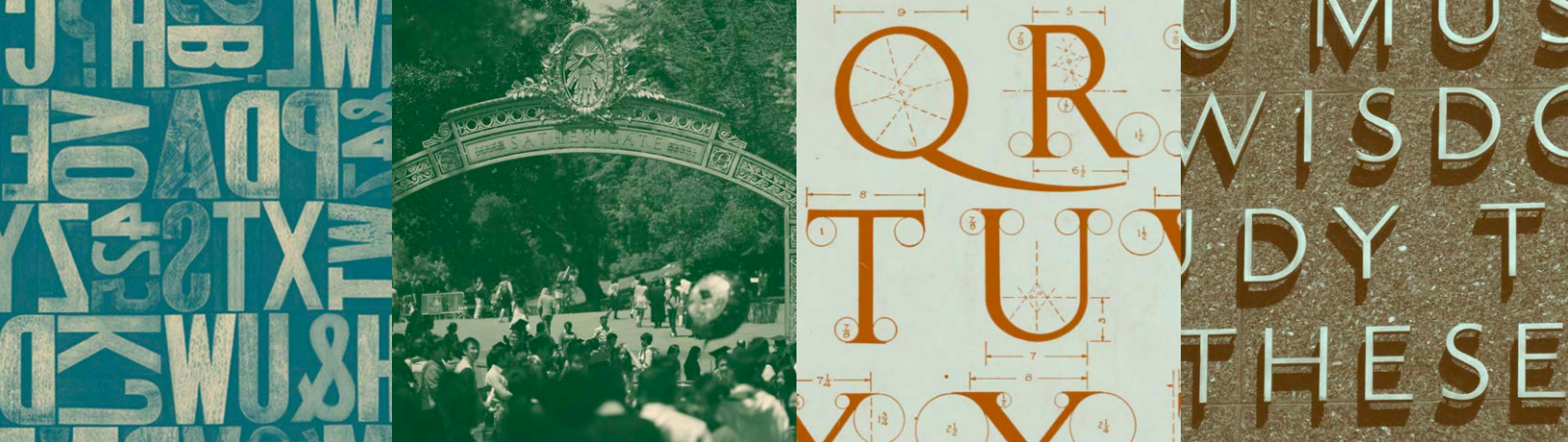
student diversity, there will be more students from minority backgrounds than faculty who can mentor them. How can we support diverse students without over-exerting the small number of URM faculty?

What would you still like to learn to improve your own mentoring skill set?

I'd like to learn how to support students who plan to pursue non-academic careers. In our study, students generally became more confident throughout their time in the program in skills related to academic research (applying for funding, leading a research project, giving a research presentation). But their confidence in other skills, like teaching or developing new courses, stayed the same or decreased over time. Students were also less confident over time that they were prepared for a non-academic career or that their advisor was knowledgeable enough to advise them on one.

reflection questions:

1. How has community shaped your ability to attain your goals?
2. In what ways do you feel ill-equipped for the work you do? What sorts of trainings or workshops could change that for you?
3. What role should institutional frameworks play in equalizing mentorship outcomes?



everyone's type

by Gregory Arena
PhD candidate

How we choose to convey our words is just as important as the words themselves. Expressing the right tone and meaning when we communicate with colleagues or students through text is a marriage of content and visual construction. But selecting typeface and compositional style is much more than an aesthetic decision; it will determine who has access to what you have to say. To this end, UC Berkeley's Division of Equity & Inclusion has prepared **accessibility standards** for visual content and typography as informed by guidelines set by the Americans with Disabilities Act of 1990.

In a series of **studies** conducted at MIT in 2008, participants with good vision and without any diagnosed learning disabilities completed a simple reading comprehension test after reading a selected article. While the content of the article was the same for all participants, the presentation of the text in that articles—or typography—was different. Participants either read the article with clean, well structured type setting or they read a version with poor structure and layout. Participants exposed to clean, crisp typography scored 70% higher on their subsequent reading comprehension quiz while also reading at a rate 12.5% faster than their counterparts exposed to poor typography. The researchers also found that typography and design substantially affected

examples of the Roman alphabet seen on Berkeley campus: Bancroft Library, Sather Gate, Doe Library, and Berkeley Law School. Type appears in many place serving many functions and render in countless styles and mediums.

the participants' self-reported confidence in their capacity to perform simple cognitive tasks, as well as the participants capacity to follow instructions and complete those cognitive tasks. Imagine then how reading comprehension, lab safety, and competency is impacted when students or employees read an MSDS or SOP with bad typography or **layout**?

how to talk with typefaces

“When I put my pen to a blank sheet, black isn't added but rather the white sheet is deprived of light...Thus I also grasped that the empty spaces are the most important aspect of a typeface.”

—Adrian Frutiger, type designer

The term typeface refers to a cohesive lettering scheme, such as **Futura** or **Trajan**. Font refers to the variations of that typeface via specific weight—bold, book, light, italic—and also point size. For cohesive graphic identity when publishing content for public consumption UC Berkeley uses the typeface Freight, which includes the fonts Freight Sans, Freight Text and Freight Micro. The typeface and its fonts may be downloaded for free via Adobe Fonts through the Creative Cloud desktop application. While these

fonts are not required for use outside public communication and university branding, the typeface was selected in part because of its high readability, so understanding the strengths of Freight can be helpful when selecting typefaces for your work, and when making design choices.

Freight Text has a finishing stroke called a serif. The benefit of the serif is that it may allow for the reader to more easily track across a page and is best for copy with a high character count per line. While the serif is a vestige of Roman engraving techniques and the broad-pen it can also help call the reader's attention to ascenders and descender which may help the reader distinguish between lowercase **d**, **a** and **q**. Other accessible serifs include **Centaur**, **Garamond**, **Baskerville** and **Goudy Old-style**.

Freight Sans lacks a finishing stroke and it is therefore called a sans-serif. Sans-serif faces are more legible when read at greater distances, in smaller point-size, and as a reverse type (when the text is lighter than the background.) Other readable sans-serifs include **Helvetica**, **Optima** and **Akzidenz-Grotesk**—a facsimile of which is the primary typeface used by this newsletter.

Freight Micro is also a serif font, but here the finishing strokes are much more robust. This font is considered a slab serif. Historically, the slender strokes of classic serif typefaces such as Garamond had the added utility of drawing ink to the edges of the letter forms during the letterpress printing process. However the spindly serifs of typefaces like Times New Roman can sometimes get lost when reproduced digitally.

That is because, $1/6$ of an inch is 1 pica and 1 pica is 12 points. For a 12 point font, this is equivalent to the height of the lower-case letter **x**. 1 square point is the dimension of a pixel on most phones and computers. If your serif is $1/2$ the width of a pixel then that pixel will appear as a compromise between the color of the text and the background. Understandably then, the serif can detract rather than improve legibility.

Freight
text

Freight
text, italic

Freight
sans

Freight
micro

Because of the limitation of reproducing serif typefaces at small point size in digital mediums, slab-serif is ideal for accessible online content. Other accessible slab-serifs include **Adelle**, and **Egyptienne**. For a slightly more Humanist look consider using the more calligraphic **Jenson**, or a wedge-serif typefaces like **Plantin** or **Garbaldi**, which is used in the DEI Newsletter chop.

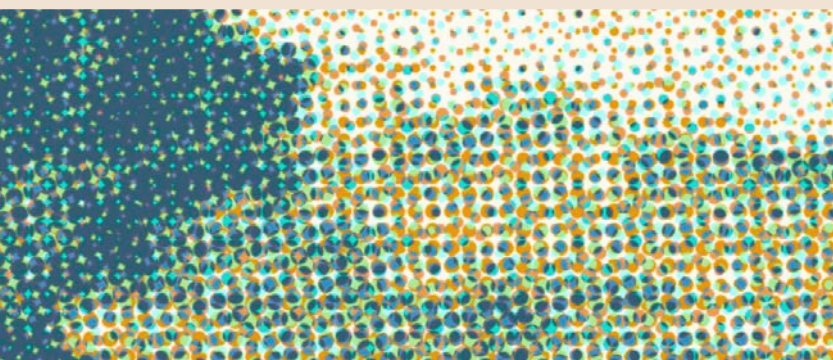
When selecting a typeface make sure to consider the contrast in line weight, which can dramatically affect readability regardless of whether your content is reproduced digitally or as print media. Hyper contrast in line weight merges the appearance of the lowercase letters **e** and **c** in **Bodoni** (figure 1) which is a modern-serif. At the other extreme, Futura (figure 1) which is a sans-serif geometric typeface uses consistent line thickness throughout and does not have this problem. Yet, the unrelenting consistency and simplicity in line weight and letter shape of Futura offers the

figure 1.

ec ■ ec
fl ▶ fl

contrasting weights with:
(left) Bodoni, &
(right) Futura

sample of a ligature,
HK Grottesque



halftone dot pattern used in offset lithography printing. When composing type, it is vital to know how that text will ultimately be displayed.

readers fewer visual cues to distinguish between the different characters, meaning the reader will spend more time on each word. While modern serif and Geometric typefaces are both used for body copy, they can be a great challenge to decipher for people with astigmatism. Using a typeface that has moderate variation in line weight can therefore maximize accessibility for this community.

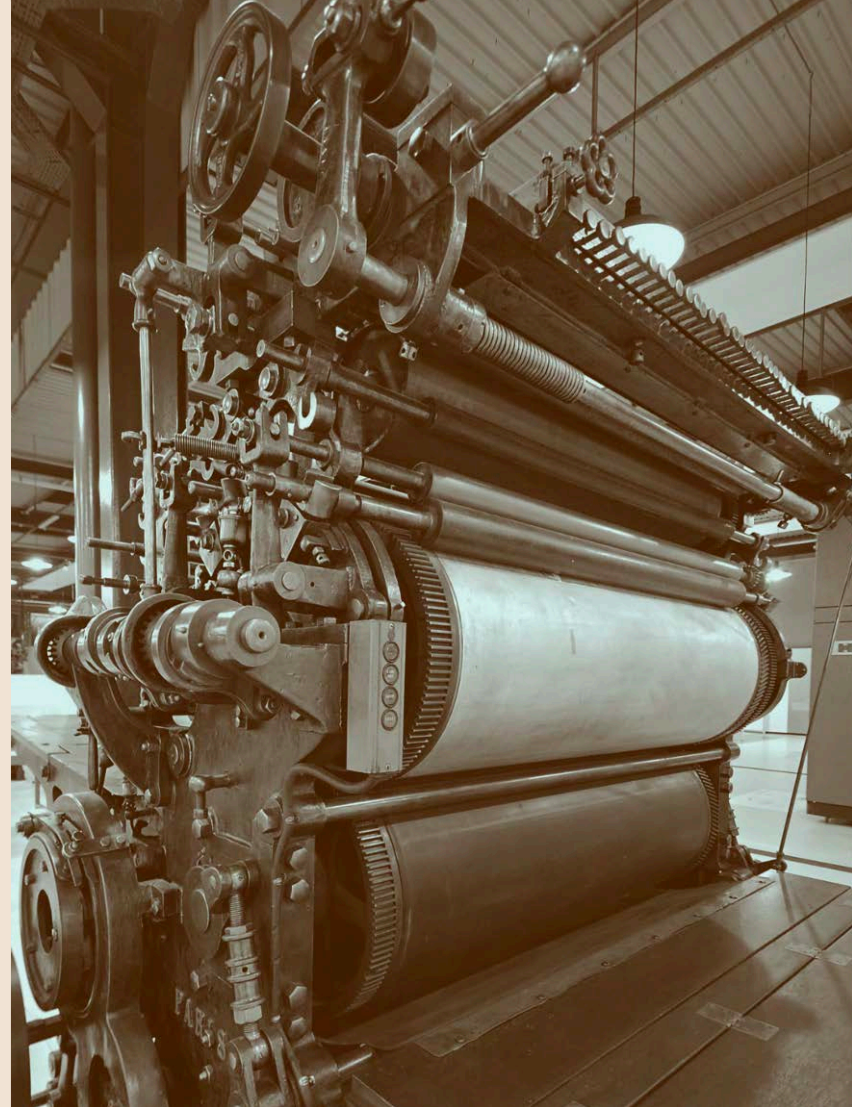
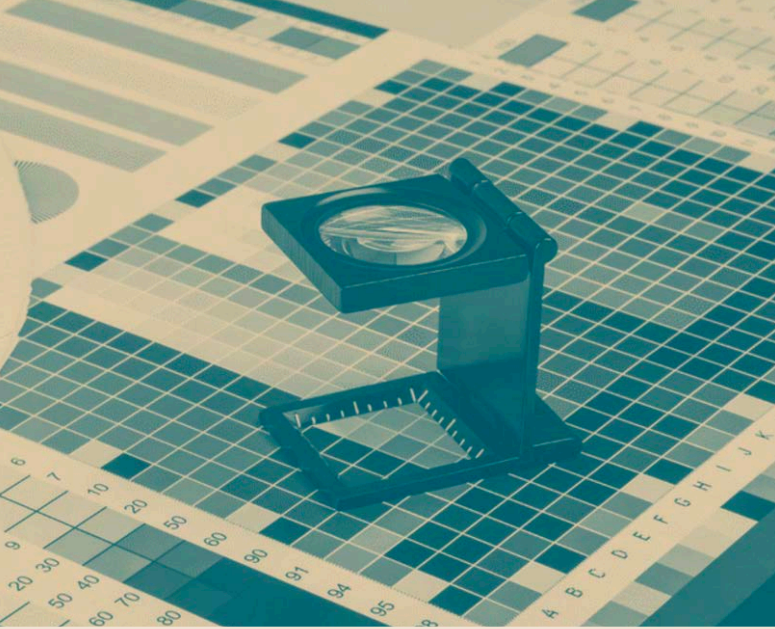
Typefaces that are highly stylized or decorative are often referred to as display typefaces and should be used sparingly, and never for body copy. For your body copy, avoid typefaces with non-traditional characters, letterforms or added flourishes. Broad shouldered letters like lower-case **f** and **t** often get combined with the letters **i**, **l** and **t** for aesthetic purposes in what is called a ligature. Ligatures can present a challenge for readers who do not speak English as a first language or for readers who have less familiarity

University of California Press

Most recognizable from UC Press publications of the last century, and in the UC Berkeley wordmark is the face **University of California Old Style**. Today that typeface can be purchased as ITC Berkeley Old School and Monotype, California. University of California Old Style was commissioned by Berkeley in 1937 for exclusive use in university publications. The face was created by one of America's most revered and prolific type designers, Frederick Goudy. In 1958, the typeface left the exclusive domain of the University, since becoming one of Goudy's most popular typefaces. The fonts are clean, elegant, and highly accessible and legible on the printed page. While many universities have customized typefaces based on existing fonts, UC Berkeley is one of a handful of universities—Yale, Oxford and the Rhode Island School of Design—to claim a wholly original typeface. Sadly, because of the ubiquity of University of California Old Style derivatives among colleges, the typeface is no longer in use by UC. But the typefaces and its facsimiles are still used by at least 12 other North American colleges and universities.

with the Roman alphabet (figure 1.) Abbreviations and technical jargon in your best management practices or lesson plans may be difficult for native English speakers unfamiliar with that jargon to decipher if that text includes atypical letterforms or ligatures.

Regarding text color, avoid the combined use of complementary colors at equal or similar value and saturations. This is especially true for red and green which can be unpleasant to the eye and will be difficult to read for individuals with visual limitations or color blindness. If you are uncertain if your figures or text will be legible for all audiences, import your file to Photoshop and convert your file to **grayscale**. Once in grayscale, confirm that text color and background have a minimum **contrast** of 70%. For reverse



clockwise from upper left: color correction is integral to good communication arts and prepress. An offset lithography printing press. The UC Press Building on Berkeley Way.

type (where light text appears on a darkened background) avoid using serif fonts smaller than 18 point. Overlay of text on photographs with dappled contrast or the use of drop shadows should be limited.

layout & design

W *Type is a beautiful group of letters, not a group of beautiful letters."*

—Matthew Carter, type designer

The arrangement of words on a page is just as integral as the type you choose, and will have

important ramifications for those with dyslexia and ADHD. Beyond choosing a typeface, we must focus on the composition of our words. Spacing between letters is called kerning. Bad kerning makes the word **AWARD** appear as two words, **A WARD**. Are we talking about a prize, or is this someone in the protective custody of the state? Spacing between words is called tracking. If you're using word processors such as Affinity Publisher and Adobe InDesign, kerning and tracking can be auto and manually adjusted with satisfactory outcomes.

But, even with professional word-processors, problems will crop up when working with narrow columns of text or when justified margins



Diller Scofidio



number of characters per line of text and use ragged-edge margins when possible. You will find justified margins with low character count used throughout the DEI Newsletter. This is because, if you take the time to manually typeset your text, both justified margins and a lower character count per line of text can improve accessibility by allowing your reader to more easily move between lines of text and keep their place within the paragraph.

Leading, the spacing between the lines of text, is best if set between 20% and 50% greater than the point size of that text. This Newsletter uses 12/14.4 or 12 point font over 14.4 point leading for all body copy. If the Newsletter instead used “double spacing” or 12/24—rendered at 12/28 in Microsoft Word—the reader will be more likely to lose themselves on the page. When working with more rudimentary word processors, 1.5 spacing is your most accessible leading option.

From both a perspective of aesthetics and accessibility, words fit together like bricks in a wall. If the bricks don’t nest together the wall is weak and crumbles. If the words do not sit

are used. This is especially the case with programs such as Microsoft Word, Google Docs, and LibreOffice. These word processors lack finesse, and will take Procrustean steps to fit words into the shape of your paragraphs. This can lead to inconsistency in text display, and excessive hyphenations. Adobe InDesign and Affinity Publisher are preferable for creating visually pleasing and accessible layouts because with these programs you can personally adjust kerning and tracking.

If you are not working with InDesign, or some other processor that will allow for manual typesetting, maximize column width to increase the

ore his captivity, Dantès' mind had re
es of prisoners, made up of thieves, v
now wished to be amongst them, in
besides that of his jailer; he sighed
us costume, the chain, and the brand
es breathed the fresh air of heaven,
very happy.

above: an example of a river. The column of negative space in the text is a symptom of poorly justified text.
bottom right: composing stick for letterpress typesetting.

evenly on the page the paragraph falls apart. Next time you are reading, flip the page on its side and study the pattern of the words, not as text, but as masonry. In well-set text, the words appear evenly spaced. In poorly set text there may appear gaping holes, which are especially egregious when these empty spaces match-up across multiple lines of text.

Naturally, the eye is drawn to these areas of negative (blank) space. We call these rivers, and they create a confluence of confusion on the page. It may seem like minutia, but as you read your eye catches on these gaps and holes predisposing you to accidentally drop, or entirely skip lines of text while reading. This is why kerning, tracking, and leading are all incredibly important in effective typographical communication.

Not only is the attention we give to the layout of our words a matter of inclusion that will impact readability and legibility it also affects how that message will be received. A nuanced use of typeface and layout can be just as important in establishing the right **ethos and credibility** as the way in which you have composed your sentences. Clean, inviting, and visually pleasing layout will be more enticing and enjoyable to read, and more likely to be saved, revisited, and shared with others.

Adapted from a presentation and BMP prepared by the author for NPS Pacific West Regional Office, May 2019.



Making the right impression

*If you intend to print make sure to check with UC Berkeley's **guidelines** for file preparation. Office printers and copy-shops will produce a lower quality product than professional offset lithography or digital-offset printing—adjust design-choices, contrast, as well as point size accordingly. With an office copier, the output will be reduced in size or else cut off along the edges to account for grip bars, which hold the paper as it moves through the copier. For this reason, make sure that you have checked your printers settings and that your file also includes adequate margins. When possible, always work from the original file. Every time a copy is made from an existing copy some information is lost or distorted. Artifacts of the paper may also carry through. Copying from copies can make text and figure increasingly illegible and muted.*



deezen design

resources to know from the 2023 iBio symposium

by Maya Samuels-Fair
PhD candidate

For a second year, a team graduate students, faculty, and staff from IB and MCB put together a day-long series of speakers and workshops under the umbrella of inclusivity in Biosciences. In case you missed it, check out these resources and opportunities:

office for graduate diversity:

Inclusive Excellence Hub—did you know we have a dedicated graduate student workspace with free dissertation writing and professional development workshops at 2515 Channing Way?

Path to the Professoriate (P2P) is targeted toward first-year graduate students, and it comes with a small stipend.

STEM*FYI offers community building and small grants for conference travel and technology.

Diversity and Community Fellows Program is a graduate student fellowship opportunity to work for the Office for Graduate Diversity

Diversity Fellows Office Hours—get advice from a current Diversity Fellow!

partnered services:

Restorative Justice Center—offers community building workshops and restorative responses to conflict and harm, services for students, staff, and faculty.

Dragonfly Mental Health—mental health resource specifically for academics, created by an MCB alum Dr. Wendy Ingram

Dr. Ingram's recommended books _____

- *Life of the Mind Interrupted: Essays on Mental Health and Disability in Higher Education*, by Katie Rose Guest Pryal
- *Just Human: The Quest for Disability Wisdom, Respect, and Inclusion*, by Dr. Arielle Silverman

UC Berkeley Disabled Students' Program is where to apply for accommodations and services. You can also contact the graduate student disability specialists—**Rebecca Whitney** and **Julie Greene**.

Tara Lepore's universal design for learning:

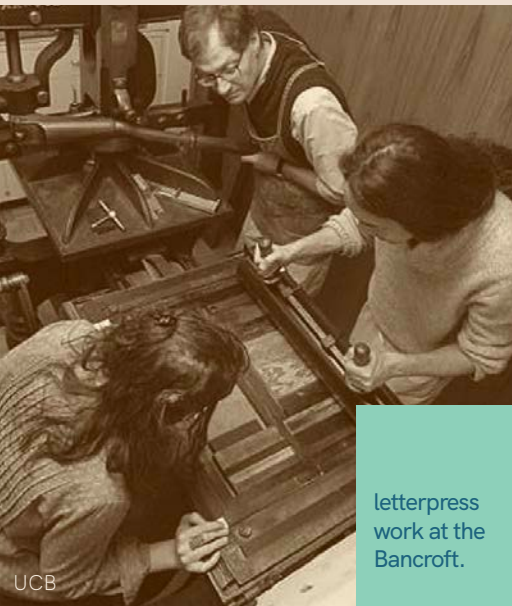
Disability Cultural Community Center—located in the Hearst Field Annex

Center for Applied Special Technology (CAST)—guidelines and resources for implementing Universal Design for Learning (UDL) in your courses

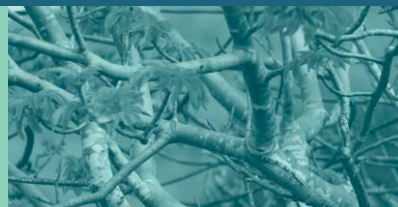
This year offered phenomenal keynote talks by Professor Rodolfo Mendoza-Denton and professor tyrone b. hayes. Thank you to the organizers for such a fantastic symposium—I hope everyone can attend next year!

upcoming events + campus resources

- 1 Sept.—**Oakland First Friday**, Street Festival, Telegraph & 27th, 5.00-9.00pm (free)
- 1 Sept.-22 Dec.—Centering Philippine and Filipinx American Histories. **The Bancroft Library Gallery**.
- 23 September.—free admittance all National Parks (ferry and other transit costs not included.)
- 1 Oct.—Ashara Ekundayo: AfroPortals Project Space & Archive, **Black Life**, BAMPFA (free)
- 13 Oct.—East Bay Bike Party. Location to be announced. Every second friday. (free)



letterpress work at the Bancroft.



DEI Newsletter is always looking for writers, copy-editors and artists to bring you balanced perspectives on community in the Biological Sciences at Berkeley. Interested in working with us, or have a story or event you would like to see featured in upcoming newsletters? Email us at dei.news.biology@berkeley.edu.

Supervisors—please circulate this newsletter to lab members and staff who may not be on our listserv.