

Building a More Diverse and Equitable Research Community in Cornell's Molecular Biology and Genetics Department

A Resource Guide from the MBG Diversity Council

We live in a society shaped by a long and ongoing history of racism, sexism, ableism, classism, homophobia, and other systems of oppression. This history permeates our institutions and requires active dismantling, and not just good intentions. Each one of us has a role to play in building a more diverse and equitable institution — in our labs, our fields, our department, our university, our discipline, and our world.

The purpose of this document is to help facilitate dialogue about the concrete steps that we can take, as individual scientists and as a department to make progress on these issues. Here we lay out **three key areas** that we feel are particularly relevant to discuss:

[Key Area 1: Increasing Diversity in the STEM Workforce](#)

[Key Area 2: Facilitating Discussions about Race, Discrimination, and Equity in Our Lab Environments](#)

[Key Area 3: Addressing Diversity in our Datasets](#)

The outline for each **Key Area** includes both a list of suggested readings and a set of discussion questions. **Resources** were selected to cover a broad range of topics in some depth, and we attempted to highlight articles that could motivate *tangible action items*. This reading list is not intended to be exhaustive, but rather to provide a starting place for learning and thinking about each of the issues raised. If you come across a good resource that addresses a gap in this document, please email it to dm792@cornell.edu.

Some of the **questions** are written at the individual level, while others focus more on departmental or lab policies. You are encouraged to think about all of them — each of us bears an individual responsibility to consider how our actions help to shape the community (and the policies) in our department and our labs.

This document is written primarily with the intention of highlighting directions in which we can make progress toward a more diverse, equitable, and inclusive community in our department. For background on the scope of the problem (and an impressive list of additional references), we direct you to the excellent resource, [Responses to 10 Common Criticisms of Anti-Racism Action in STEM](#), developed by Maya Gosztyla (PhD student, University of California San Diego), Lydia Kwong (MA, Duke University), Naomi Murray (Undergraduate Student, University of California Davis), and Claire Williams (BS, Northeastern University).

Key Area 1: Increasing Diversity in the STEM Workforce

STEM education is a leaky pipeline: at each stage of the academic career, students and researchers from underrepresented backgrounds leave the field in disproportionate numbers. Thus, to increase the diversity of faculty, staff, and students in our department, we must make conscious efforts to slow those leaks **at each stage**. Our efforts must address both **recruitment** of a diverse applicant pool and **retention** of those individuals we do recruit, and they should be self-reinforcing: actions we take to substantively demonstrate our commitment to diversity will help us to attract stronger and more diverse applicants.

Suggested Resources

Known gaps: articles addressing the experiences of Indigenous scientists and disabled scientists. Please forward any that you know of to dm792@cornell.edu so they can be added!

[“How to Actually Promote Diversity in STEM”](#)

Freeman A. Hrabowski III and Peter H. Henderson write in *The Atlantic* about the successful [Meyerhoff Scholars Program](#) at the University of Maryland, Baltimore County. Launched in 1988, this program provides **financial, academic, and social support** to students from underrepresented backgrounds throughout their undergraduate career. A high fraction of the students participating in this program go on to doctoral programs.

[“Making physics more inclusive”](#)

Theodore Hodapp and Erika Brown write in *Nature* about efforts the American Physical Society has taken to recruit graduate students from underrepresented backgrounds in physics. They lay out three principles: **a more expansive view of what makes a qualified applicant, more structured peer mentorship throughout the PhD, and support from national organizations.**

[“Does STEM Stand Out? Examining Racial/Ethnic Gaps in Persistence Across Postsecondary Fields”](#)

Catherine Riegler-Crumb, Barbara King, and Yasmiyn Irizarry report in *Educational Researcher* that Black and Latinx students that enter college intending to major in a STEM field **leave at higher rates than their White peers.** Furthermore, they argue that this loss is substantively different in STEM than in non-STEM fields.

[“Research Culture: Career choices of underrepresented and female postdocs in the biomedical sciences”](#)

Marcus Lambert *et al.* report in *eLife* on a survey of postdocs, regarding their intentions to pursue faculty positions. Underrepresented and female postdocs were more likely to report diminished interest in faculty jobs over the course of their appointment. For postdocs that wanted to continue in academia, those from underrepresented backgrounds were more likely to describe **the role of multiple supportive mentors** in shaping their career decisions.

[“Coming out in STEM: Factors affecting retention of sexual minority STEM students”](#)

Bruce E. Hughes reports in *Science Advances* on a survey of >4,000 LGBTQ undergraduates from 78 institutions. Although LGBTQ students were more likely than peers to participate in undergraduate research, 7-10% dropped their STEM major by senior year. He argues that these results suggest that **negative experiences in extracurricular research** contribute to the loss of these students from STEM programs. *Unfortunately, this paper does not include the experiences of trans, genderqueer, and nonbinary students; future research should include questions of how those individuals experience the leaky pipeline.* Jeremy Yoder and Allison Mattheis’s [article on the workplace experiences of LGBTQ academics](#) is another great resource.

[Real Life: A Novel](#)

Brandon Taylor’s debut novel focuses on Wallace, a Black gay biochemistry graduate student from the American South. The novel highlights how each of these identities shapes how Wallace perceives and is perceived by his peers, as well as the challenges of forming community in a PhD program.

Questions to Consider

- Does the department have a **formal statement** of its commitment to fostering a diverse and equitable workplace? Does your lab?
 - Is this statement easy to find? Does it commit to tangible policy initiatives with measurable outcomes? Who participates in defining these priorities and how often are priorities and outcomes re-assessed?
- What efforts do we make to support **programs for undergraduate students** from underrepresented backgrounds?
 - How can the department better support initiatives through the [Office of Academic Diversity Initiatives](#)?
 - Is the department educating a diverse set of undergraduates to be competitive for our graduate programs?
 - What data are available about the efficacy of our [REU](#) in recruiting?
 - How does the department advertise and incentivize participation in training on creating an inclusive classroom environment?
- How can we **recruit** a more diverse pool of applicants for our PhD programs?
 - The [Diversity Preview Weekend](#) model seems to be successful for other programs at Cornell. How can we adopt a similar approach?
 - How can we more effectively recruit at [SACNAS](#) and [ABRCMS](#)? Are there other similar conferences where we could focus recruitment efforts?
 - How can we continue to fund recruitment trips to cities with high populations of underrepresented minority students? (Pilot postponed due to COVID-19.)

- How can we build a **sense of community** where students feel comfortable?
 - The Diversity Council has spearheaded a number of academic support initiatives: the lending library; the Work-in-Progress Seminar (TWiPS); the [A-Exam Guidance](#) document. What other initiatives would be helpful?
 - What are the roles of the MBG Diversity Council, GGD Climate Committee, and the three field GSAs? How can we work *together* to support graduate students professionally, academically, and socially?
 - How can we incorporate issues of diversity and inclusion into existing academic and social events? What types of events can we plan that directly address issues of diversity and inclusion?
 - How can we highlight/celebrate the diversity of our department as it is now? Are there ways we can make everyone feel comfortable enough to bring their full selves to the table?
- How can we work together to assure that the **concerns of underrepresented students** are being heard and taken seriously?
 - What policies are in place to protect students when complaints are raised against people in positions of leadership? This is of particular concern for rotation students who do not have a lab yet and may feel uncomfortable raising their concerns when they lack stability/"a home" in the department.
 - What recourse is available when the complaint involves a tenured faculty member?

Key Area 2: Facilitating Discussions about Race, Discrimination, and Equity in Our Lab Environments

As scientists, we spend a great deal of time in our labs, and with the members of our labs. Thus, fostering a positive and inclusive lab culture is imperative to the happiness and wellbeing of all members of the lab. This lab culture is strongly influenced by the actions and attitudes of the Principal Investigator, but we all share in the responsibility for building a community in the lab that supports everyone. Although conversations about race, discrimination, and equity can be uncomfortable for many of us to participate in, they are also essential and do not have to be politically charged. These conversations allow us to identify and modify unspoken systems and norms that disadvantage minority students in our labs, and to provide adequate professional and social support to the members of our lab community. The first step to being an ally to someone is to validate their experience.

Suggested Resources

["Ten simple rules for building an anti-racist lab"](#)

This preprint, by V. Bala Chaudhary and Asmeret Asefaw Berhe, emphasizes the actions PIs can take to facilitate discussions in their labs and among their colleagues, to amplify the voices of BIPOC students and faculty, and to diversify their research programs (see also: [Key Area 3](#)).

["Let's Talk! Discussing Race, Racism, and Other Difficult Topics With Students"](#)

This booklet, from the Southern Poverty Law Center's [Teaching Tolerance](#) program, is geared toward facilitators of their K-12 *Perspectives for a Diverse America* curriculum. However, their guidance on how to build competency for discussions about bias contain many useful questions and suggestions for all of us.

["Racism in Science: We need to act now"](#)

Michael Eisen writes about facing up to a disconnect between his own words and actions, with regards to racism in science. He writes that despite active engagement in diversity initiatives at the University of California, Berkeley, and as Editor-in-Chief of *eLife*, none of the 50 graduate students he has trained have been Black, none of the faculty members he has participated in hiring are Black, and none of the Senior Editors at *eLife* are Black.

[Massive Science's Community Engagement Guidelines](#)

The popular-science website [Massive Science](#) outlines a set of eight principles for participants in their online community. These principles can easily be applied to conversations in lab meetings, as laid out in Devang Mehta's article ["Lab heads should learn to talk about racism"](#) in *Nature*.

[“Departmental Discussions of Diversity and Inclusion”](#)

Edmund Bertschinger writes in the MIT Faculty Newsletter about a series of discussion groups he started while serving as Head of the Physics Department. These discussions bring together faculty, staff, and students over a catered lunch to talk about topics such as race, gender, implicit bias, and work-life balance. He emphasizes how easy this was to implement and how enthusiastic participants were after they started.

[“Moving toward inclusion”](#)

Namandje Bumpus writes in the *Science* blog about the difference between diversity and inclusion. Specifically, she argues that recruiting a diverse group of graduate students will not solve the problem of underrepresentation in STEM, if it is not coupled with efforts to make the environment they have been recruited to more inclusive. She articulates how faculty resistance to discussing social issues with graduate students can make students feel increasingly isolated or alienated.

[“Ten easy ways you can support diversity in academia”](#)

This list of ten actionable items, from ecologist Jacquelyn Gill’s blog, includes suggestions like writing a lab diversity statement (see examples at Cornell: [Sethupathy Lab](#), [Zamudio Lab](#)) and having open conversations with members of your lab about your own struggles.

Questions to Consider

- What holds you back from participating in conversations about discrimination at Cornell?
 - How can you better educate yourself on the history of these issues?
 - Do you view discussions about identity in the workplace as “unprofessional”? Where does that sense of discomfort come from?
- What actionable steps can you take to improve the culture in your own lab?
 - What holds you back from starting/participating in conversations about culture in your own lab?
- What resources exist at Cornell to help us build competency around facilitating more productive discussions on difficult topics?
 - How can the department support the creation of new resources, including those focused on issues specific to STEM?
- How can we incentivize more people to participate in the [My Voice, My Story](#) workshop and the [Intergroup Dialogue Project](#)?

Key Area 3: Addressing Diversity in our Research

Although we might like to think that science is apolitical, the history of molecular biology and genetics is deeply entwined with the history of oppression. Biology has been used to justify racism, sexism, and homophobia, and biases in what is considered worth researching continues to perpetuate inequity in society. Because we participate in creating this systemic inequality, we have an obligation to find ways to subvert it. One direct action that we can take is to focus more attention on issues of diversity in the data we generate and study. This is not just the right thing to do; it will also help us to do better science.

We should also be motivated by and mindful of the fact that Cornell University is located on the indigenous lands of the Cayuga Nation, a part of the Haudenosaunee Confederation. By extension, so are our research programs. For that reason, we have an obligation to consider how our work can be of use to the original inhabitants of the land we occupy.

Suggested Resources

Known gaps: these resources are skewed toward genomics research.

[“Genomics is failing on diversity”](#)

Alice Popejoy and Stephanie Fullerton report in *Nature* an analysis showing the dramatic underrepresentation of non-European individuals in genome-wide association studies.

[“The Missing Diversity in Human Genetic Studies”](#)

Giorgio Sirugo, Scott Williams, and Sarah Tishkoff write in *Cell* about how the vast majority of genetic studies are conducted using only individuals of European ancestry. Their commentary argues that this narrow view of human genetic diversity severely limits our ability to draw conclusions about human biology.

["To overcome decades of mistrust, a workshop aims to train Indigenous researchers to be their own genome experts"](#)

Lizzie Wade writes in *Science* about the fraught history of genetic research and Indigenous North Americans. She also describes the [Summer Internship for Indigenous Peoples in Genomics](#), a program designed to involve Indigenous communities in genomics. This program is funded by the NIH and NSF and has run every summer since 2011. **Why is there mistrust? [The case of the Havasupai tribe sheds light on the historically fraught relationship of genomics research and Indigenous communities in the United States.](#)**

Questions to Consider

- How can we incorporate questions about diversity and health inequity into our research grants and publications?
- Are there existing datasets that capture a broader diversity of human genetics that we can include in our research?
 - Are there collaborations we could develop to pursue these aims?
- If you study a disease model, does that model apply equally well to impacted humans of all genetic ancestries?
 - Has anyone ever asked that question before about your model?
 - Does your model capture ancestry-specific disease phenotypes? Of which ancestry?
 - If applicable, who does your work impact/benefit?
- How could your research/skills be put to use to benefit members of the Cayuga Nation?
 - How can we better involve members of the Cayuga Nation in our research, from conceptualization to completion?
 - What are the research priorities of the members of the Cayuga Nation?
 - How can the department encourage this type of work?