Improving Mentorship for the American Advanced Technology Workforce

A legislative agenda for the 119th Congress

Bottom Line: We need targeted research, improved data collection, and government-wide guidelines to address the mental health crisis among American graduate students. Legislation introduced in the 118th Congress included important programs and policy updates that, if passed, would allow us to take several major steps to tackle this crisis and strengthen this essential high-tech workforce.

We call on leaders in the 119th Congress to promptly **reintroduce and pass** the **College Transparency Act**, the **Improving Mentorship in STEM Higher Education Act**, and the **MENTOR Act**.

Executive Summary

The Federal Government funds the education and early research careers of over 1 million graduate students and postdoctoral researchers (collectively, research trainees) in advanced science and technology fields every year. This workforce is a fantastic national asset. They do vital work to keep America at the cutting edge in AI, biotechnology, aerospace, and more. They start new companies that ensure products based on these advanced new technologies are built in America. Investment in this high-tech workforce is good for our national security and good for our economy.

This workforce is also facing a terrible, but largely invisible, crisis. Graduate students face a growing mental health crisis, with a rate of serious mental health problems at least three times that of the general population. Nearly half of students report symptoms of anxiety and/or depression, one in five taking medication, and one in ten having suicidal thoughts. The primary factors contributing to the crisis lie in a poor work-life balance and poor relationships with their research advisors. As a result, approximately half of doctoral students drop out before completing their degree.

The **College Transparency Act** (CTA) would improve federal data collection on post-secondary education. We propose additional targeted improvements to include in a new version of the CTA for the 119th Congress.

The **Improving Mentorship in STEM Higher Education Act** (IMA) would improve reporting of possible misconduct by researchers and authorize $5 million in targeted research on mentorship methods for STEM graduate students.

The **Mental Health Enhancement, Navigation, and Treatment for Our Researchers Act** (MENTOR Act) would task the Office of Science and Technology Policy (OSTP) with developing government-wide guidance to prevent problematic treatment of graduate students and improve their mental health.

The data, research, and guidance provided by these bills would enable current and future advanced STEM students to make better decisions about their education and careers and would equip university leaders, federal agencies, and Congress with the information they need to end the graduate student mental health crisis and make the most of the innovative talent embodied in this high-tech workforce.

The College Transparency Act

The CTA was reintroduced in both the House of Representatives (H.R. 2957) and the Senate (S. 1349) in 2023 during the 118th Congress. The purpose of this bill was to provide a data system for post-secondary education, so that enrollment, economic status of students, earning and employment of alumni, etc. can be tracked within higher education. The bill will remove the ban on collecting student-level information from colleges and universities, allowing potential students (both at an undergraduate and an advanced degree level) and their families to determine the best course of action for their futures.

Inclusion of Graduate Students

Graduate students are often excluded in higher education data collection, an egregious oversight as there were over 3.2 million graduate students in the United States in the 2021-2022 school year - more than the population of Iowa.

The CTA would create a Postsecondary Student Data System Advisory Committee that includes postsecondary students, and we strongly encourage that at least 15% of the postsecondary student representatives proposed in the bill should be graduate and professional students, the percentage of graduate students in postsecondary education, as to ensure equitable representation.

Inclusion of Postdocs

Postdoctoral scholars and fellows (collectively, 'postdocs') are intended to perform research under a faculty advisor for a limited time, typically a 2 year term, after completing their Ph.D. and before taking on an independent Primary Investigator (PI) role. However, since the late '90s, it has become commonplace for researchers to take on multiple postdoc appointments, sometimes working as long as 10 years as a postdoc, primarily due to the imbalance between the growing number of postdocs at American universities and the low number of new faculty job openings in a typical year. A large majority of postdocs are federally-funded. In order to better understand career prospects and outcomes of postdoc appointments, postdocs should be included in the CTA data collection system to the greatest extent possible.

Data Inclusion

While research trainees of all kinds will benefit from information collected in the current version of the CTA, graduate students and postdocs require additional information, beyond the types described in previous versions of the CTA, to be collected to meet all of their needs. This includes:

- Welfare and outcomes of trainees with dependents
- Time to degree/certificate (or time spent in postdoc appointments)
- Compensation, and source of compensation (fellowships, research grants, teaching assistantships, etc.)
- Welfare, including mental health statistics.

This information is needed at the most granular level that still maintains student anonymity. Since research trainee success is highly dependent on their relationship with their advisor, it would be ideal to be able to disaggregate data at the research advisor level. Comprehensive, ongoing data collection is a key component of our efforts to address this crisis.

The Improving Mentorship in STEM Higher Education Act

The IMA was first introduced in the House of Representatives by Congresswoman Jennifer McClellan (D, VA-04) on July 25th, 2024, as H.R.9134. The purpose of this bill is to ensure participants in research projects funded by the National Science Foundation (NSF) know where and how to report possible misconduct by their supervisors or colleagues and authorize $5 million in targeted research on mentorship methods for STEM graduate students. The bill calls for a formal assessment of the research results after 5 years that could lead to permanent implementation of new mentorship programs, if specific new methods are found to be effective.

NSF Mission and Mentorship

Several bills over the last 20 years, including the America COMPETES Act (Pub. L. 110-69, 2007) and CHIPS and Science Act (Pub. L. 117–167, 2022) have established that the NSF has a responsibility to understand how research trainees whose work is funded by NSF grants, including both postdoctoral and graduate student researchers, are being trained and mentored by project leaders. Primary investigators (PIs) are nominally required to discuss mentorship in both grant applications and final reports on NSF-sponsored projects. Definitions of who should be mentored by project leaders have broadened multiple times in recent years.

In practice, these requirements are very easy to satisfy, and effective mentorship is not incentivized by the merit review process that determines which grant applications will be funded.

Impact of the IMA

Passage of the bill would provide for much-needed research on mentorship methods and require that participants on NSF-funded projects are informed about resources, like the NSF Office of Equity and Civil Rights Awardee Program Complaint Form, where they can report possible misconduct by supervisors or colleagues. We note that the National Institutes of Health (NIH) have maintained a similar simple, online webform for reports of potential misconduct for many years and have a track record of investigating complaints and taking meaningful action to address substantiated reports. Resources like this can be effective at discouraging misconduct when the research community is aware of the available outlets and agency staff actively respond to investigate credible reports.

The Mental Health Enhancement, Navigation, and Treatment for Our Researchers Act

The MENTOR Act, was first introduced in the House of Representatives by Congressman Paul Tonko (D, NY-20) on December 11th, 2024, as H.R. 10374. The purpose of this bill is to establish "policy guidelines for federal research agencies to address mental health crisis among graduate researchers and postdoctoral researchers" (Section 2, H.R. 10374). The bill tasks the Office of Science and Technology Policy (OSTP) with developing government-wide guidance for federal research agencies (FRA) on improving mentorship of graduate and postdoctoral researchers by federally-funded primary investigators (FFPIs); preventing bullying, harassment, and other problematic treatment of graduate and postdoctoral researchers; and improving the mental health of graduate and postdoctoral researchers. It calls for data collection and reports from OSTP, the National Science Foundation (NSF), the National Institutes of Health (NIH), and Government Accountability Office (GAO).

The Need for Better Data

Several major data gaps make it difficult to analyze patterns in the graduate student mental health crisis (is it less severe in certain universities or fields of study?) or measure our progress toward solving the crisis. The biggest gap is the lack of a nationwide survey of graduate student mental health, which would be solved by the study called for in Subsection 2.d. of the MENTOR Act. The second biggest gap is the lack of a nationwide census of doctoral students, which makes it difficult to calculate graduation rates of doctoral students precisely or track changes over time. We expect the GAO report and OSTP updates called for in the MENTOR Act will contribute to closing this gap.

A Comprehensive Framework for all Fields of Research

No single FRA can solve this crisis on its own. A framework that gathers information on the mentorship practices of all FFPIs, documents the experiences of research trainees, leverages complete nationwide data, and sets strong incentives for FFPIs and university leaders to actively follow best practices in training and mentorship is needed. This is exactly why we established the FAARM Project, and we're excited to see many of the key elements of this framework called for in the MENTOR Act. Designating OSTP as the coordinating agency for this effort is appropriate, and requiring them to seek broad input from many experts and stakeholders, including graduate and postdoctoral researchers, is the right approach. A lot of work remains to be done; passage of the MENTOR Act will set us on the right path.

The FAARM Team urges Congress to pass the MENTOR Act.

About the Authors

The Framework for Accountability in Academic Research and Mentoring (FAARM) Project is a student-led independent effort to improve the teaching, training, and mentorship offered to research trainees in the United States. We are motivated by the well-documented nationwide mental health crisis among graduate students, and our goal is to establish better incentives for federally-funded primary investigators (PIs) who mentor graduate students and other research trainees to ensure that talented researchers complete their advanced degrees; proceed with healthy, productive STEM careers; and contribute their utmost to the American economy and national security. Check out our policy proposals at faarmteam.org or connect with us at faarmteam@gmail.com (and also on Facebook, X, Instagram, and BlueSky!).