

Make America Great for Science: Stemming the American Brain Drain

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OF AMERICAN
SCIENTISTS

A Capitol Hill briefing with the Bipartisan House R&D Caucus



On Tuesday, July 22nd, 2025 the Federation of American Scientists hosted a bipartisan House Research and Development (R&D) Caucus Briefing - "Make America Great for Science: Stemming the American Brain Drain." This timely briefing brought together Hill staffers and stakeholders in the science R&D community to discuss the impacts of the recent assault on the science talent and workforce that power the American R&D enterprise.

Congressman Foster, Bipartisan R&D Caucus co-chair and the only PhD physicist in Congress, gave remarks on the urgency of the moment and a status update on how Congress is approaching the issue. A distinguished panel of subject matter experts across key domains in the field shared their observations and insights that are summarized below.

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Science makes America great. Scientists make science. And right now, the U.S. is not a great home for the scientific enterprise. We are losing our scientists and researchers to our competitors at unprecedented rates and therefore losing the very essence of what made America great, and has kept it great, throughout our lifetimes.

This erosion of the science and technology workforce threatens U.S. economic competitiveness, national security, and global leadership. A lack of sustained federal funding, deteriorating research infrastructure and networks, restrictive immigration policies, and waning international collaboration are driving this erosion into a full-scale “American Brain Drain.”

Recommendations

As identified in this briefing, stemming the brain drain and reclaiming the U.S. as the scientific center of gravity will require:

Federal Investment. Support for the federal research enterprise provides resources for scientists, but it also gives the United States a say in how American innovations and technologies are managed. We need to better the efforts of what the U.S.’s primary competitors are willing to do to secure American scientific talent and grow their own domestic workforce.

Modernizing R&D Infrastructure. Pass legislation that improves research facilities like the [Restoring and Modernizing our National Labs Act](#), ensure competitive pay and benefits for scientists, and reinvigorate international collaboration on ambitious science goals.

Reforming STEM Immigration Policies. Visa processing for STEM talent needs reworking — from the beginning stages with identification and targeting of priority workforces to the mechanisms that allow long-term residency. Current DHS policies aimed at reducing intake of foreign talent need reform, such as ending the long-standing H-1B visa cap exemption for U.S. colleges and universities. Legislation like the [Keep STEM Talent Act](#) needs to be advanced.

Science Comes from Scientists

Scientific innovation sprouts from the creativity of individuals and teams with novel ideas for scientific theories or products. Federal funding or research infrastructure alone cannot supplant the experience and inspiration drawn from scientific talent.

Policy barriers like green card denials, federal funding challenges, and layoffs have forced notable departures of scientists including ChatGPT developer Kai Chen (moved to Canada), spaceflight safety expert Jonathan McDowell (moved to the UK), and carbon capture expert Yi Shouliang (moved to China).

Other countries are seizing the opportunity to claim American scientific talent as their own. A senior NIH-funded scientist was offered 20 years of funding in the PRC in ‘any city, any university’ after being cut off from funding as part of the recent federal policy actions.

Global Competitiveness

In order to overtake American leadership in key industries like AI and quantum computing, Chinese President Xi Jinping is going ‘all in’ on his bet that technology-based solutions can help him address China’s myriad domestic challenges and push China toward global power leadership. For example, Xi’s “New Quality Productive Forces”

framework leverages investment in and growth from technology industries to modernize China's economy, drive productivity gains in traditional manufacturing sectors, eliminate dependencies on foreign countries for critical technologies, and secure leadership in [frontier technology sectors](#).

The history of America's global leadership in computing highlights the importance of federal investment in early-stage, scientific research. In many areas, research began in U.S. universities many years before the first products were introduced. It also can pay off in unanticipated ways, as developments in one sector often enable advances in others. Federal investments like these have demonstrated extraordinary payoff for the country — in the explosion of new technologies, and in the creation of new industries, and millions of new jobs.

Artificial intelligence, a technology critical to global competitiveness, the research field dates as far back as the 1940s and 50s, with many foundational breakthroughs happening in the 1980s and 90s. We are only just now reaping the benefits of decades of investment in AI research.

The U.S. as the Scientific “Center of Gravity”

The United States is ceding its position as the “Center of Gravity” for global science that has made it the premier destination for scientists and researchers across the world. Countries like the People's Republic of China (PRC) and those in the European Union are [investing heavily](#) to attract U.S.-trained talent and shift that [gravitational pull in their favor](#). The U.S. must strengthen the systems that made it the global science leader in the first place, if it hopes to rebalance that gravitational shift.

American science and technology leadership is built upon a robust research ecosystem – what the National Academies of Sciences, Engineering, and Medicine described as “an [extraordinarily productive interplay](#) of U.S. universities doing federally funded research, industry and federal labs, and the flow of people and ideas between them.”

Three factors determine where the science “center of gravity” is located, and thus where a scientist or engineer chooses to work and their prospects of success:

- **Pay and Benefit.** “Can I get the support that I need in order to do my work?” Other countries are focusing on quality of life to incentivize scientists.
- **Access to facilities and other infrastructure.** “Am I able to do my work in a safe and productive environment?” National labs, for example, are facing massive maintenance backlogs.
- **Access to networks.** “Are there collaborative networks such as getting to work with a particularly accomplished individual, or personal networks like family and friends?” the EU and China have invested heavily in developing instruments that facilitate international scientific network development.



OUR ATTENDEES, RAPT WITH ATTENTION

International talent and domestic talent complement each other to achieve outcomes impossible with only one or the other. The share of foreign born professionals working in key industries has risen to 36% from 26% in 2000. Most of these professionals came to the US through educational programs and graduate school.

The international science talent pipeline in the U.S. is hampered by an outdated selection process: only 7% of new lawful permanent residents each year are selected based on skills and possible contributions to the country. It is also working with an outdated H-1B visa selection program: massive green card backlogs force prospective talent to obtain H-1B visas first if they have a desire to stay in the U.S. permanently.

The Department of Homeland Security (DHS) is moving forward with proposing policy shifts that will hurt the ability of the U.S. to attract and retain talent further:

- **International students.** DHS has [a proposal under review](#) now for publication that would eliminate eligibility for international students and post-doctoral fellows to maintain their status for however long their program lasts.
 - Instead, DHS will give all students at all educational levels, as well as post-doctoral fellows, a fixed time, not more than 4 years, that they can pay to have expanded by DHS.
- **H-1B Salary Prioritization.** A new DHS rule expected to be published soon as a proposed regulation would revise the H-1B lottery selection process to prioritize higher salaries thus [closing out H-1B eligibility](#) for most early career professionals including newly minted Masters and PhDs earning degrees in the U.S.
- **Post-Ed Occupational Training.** DHS is working on a proposed rule to [rescind all programs](#) that provide for international students earning degrees in the U.S. to have employment authorization for post-educational occupational training.

As far back as early 2022, OECD had found that published authors were increasingly migrating to China, and that they had overtaken the United States—by a significant amount—in 2020. We know from multiple sources that China and the EU have become much more attractive destinations for researchers in recent years.

As of 2024, the number of international scholars in the United States, as measured by the International Institute of Education's Open Doors report, was down 18% against 2018 levels. Most of these data suggest that the inflection point for the United States [happened after the 2018/2019 academic year](#).

China has significant talent gaps that it is aiming to fill with a combination of: (1) in the short-term, looking to foreign academia; and (2) in the long-term, bolstering the domestic STEM education ecosystem.

Short Term. The risks from PRC actors can be broken down into three concentric circles:

- Inner Circle. Smallest in scale, closest connection to the PRC government, military, and intelligence.
 - i.e. PRC intelligence services and co-optees; less than a "percent of a percent" of Chinese students and scientists in the U.S.
- Middle Circle. Medium scale, medium links to the People's Republic of China Intelligence Services (PRCIS) and the People's Liberation Army (PLA).
 - i.e. PRC Talent Programs
- Outer Circle. Largest scale, limited links to PRCIS/PLA, competitive concern

- i.e. PRC overseas students and researcher links. The overwhelming majority of students seek study for legitimate reasons. They come home to China for family, pay, and benefits.

Long Term. Education, education, education. Specifically, China is robustly investing in:

- K-12 STEM Education
- Vocational Schools
- Postsecondary STEM education

Conclusion

The choice for the nation is clear: either the United States continues to invest in the people and foundational research that has historically powered our progress, or the nation risks falling behind our international competitors and losing out on the future.

International STEM talent is an essential component of the American scientific R&D enterprise, and without it the domestic workforce will suffer and the entire innovation ecosystem along with it.

The aggressive actions and strategy of China, Europe, and other competitors over the years towards establishing dominance as the global science and technology leader is a threat worth taking seriously, and our actions here in the United States now and in the near future will determine if they are successful or not. The science community must communicate the urgency of this moment to the public, and push policymakers to make the investments and policies necessary to keep and attract the greatest scientific talent in the U.S.

Additional Recommendations and Reading

[Bringing Transparency to Federal R&D Infrastructure Costs.](#) Using the NIST as an example, the Radiation Physics Building (still without the funding to complete its renovation) is crucial to national security and the medical community. If it were to go down (or away), every medical device in the United States that uses radiation would be decertified within 6 months, creating a significant single point of failure that cannot be quickly mitigated.

[Agenda for an American Renewal.](#) America is in need of a new economic paradigm that renews and refreshes rather than dismantles its hard-won geopolitical and technological advantages. The trade paradigm must support manufacturing communities and their core strengths.

[Fortifying America's Future: Pathways for Competitiveness.](#) For the U.S. to maintain our competitive advantage, national security professionals must partner with educators, and “we must invest both in the sectors that are most critical to our national security..and, importantly, in the human talent that will support those sectors and the innovations to come.

[National Security AI Entrepreneur Visa.](#) Congress must act to support high-skilled entrepreneurs by creating a National Security Startup Visa specifically targeted at founders of AI firms whose technology is inherently dual-use and critical for America's economic leadership and national security.

[Building an Evergreen \\$1B Fund for S&T Career Advancement.](#) Since its creation two decades ago, the ACWIA fund has been a valuable and reliable resource to support STEM workforce training and education programs at DOL and NSF. Congress should grow this annual funding stream to \$1 billion—at no cost to taxpayers—by modernizing the ACWIA fee structure to keep up with inflation and reflect the size of the large corporations petitioning for most H-1B professionals.

[A Digital Military Talent Initiative for Noncitizen Technologists.](#) A new Digital Military Talent Initiative could help address the military's digital-talent gap by providing an expedited path to U.S. citizenship through military service for noncitizen technologists aligned to NSCAI archetypes. Modernization of an already-existing DOD program and military enlistment policy updates could infuse digital talent by providing vetted noncitizens a pathway to accelerated naturalization through military service.

[What Happens When the Nuts and Bolts of Science Diplomacy Come Loose?](#) The United States has focused on preventing the transfer of sensitive technology to adversarial nations rather than on improving its ability to collaborate internationally.

[World Scientists Look Elsewhere as U.S. Labs Stagger Under Trump Cuts.](#) With the welcome mat withdrawn for promising researchers from around the world, America is at risk of losing its longstanding pre-eminence in the sciences.