

GLOBAL TALENT FLOWS

America's Brain Drain: International Scientists and the Shifting Global Landscape

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Despite their central role in US research and innovation, international doctoral students now face significant instability, as restrictive immigration policies, declining research funding, and an unwelcoming climate push international scientists to seek careers abroad. Competing nations are seizing the moment through targeted recruitment of scientific talent and funding incentives. Without reform, the United States risks ceding its long-held edge in science and technology to global competitors.

The United States has long led the world in training and employing global scientific talent—a cornerstone of its research leadership. That dominance is now under threat. An antiquated immigration system, declining federal investments in science, and a growing climate of hostility toward immigrants are pushing international STEM PhDs trained in US universities to pursue careers abroad. At the same time, global demand for STEM expertise is rising, and competing nations are investing heavily to attract high-skilled scientists. If not addressed, the erosion of US talent advantage could undermine the country's scientific and technological leadership.

The Scale of International Talent in US Science

International scientists are a key demographic in US research. Temporary visa-holders make up a significant share of the graduate student and postdoctoral population. According to the 2023 NSF Survey of Graduate Students and Postdoctorates in Science and Engineering, the international graduate student population (master degrees and PhDs) has grown sixfold over the past forty years, from 13.7 percent (50,302) in 1980 to 39.4 percent (322,287) in 2023. Among STEM PhD students specifically, 40.7 percent (125,030) were on temporary visas in 2023. Postdoctoral appointments are even more dependent on international talent: 57.9 percent (38,149) were international in 2023, compared with 35.4 percent (6,506) in 1980.

This pipeline feeds directly into the scientific workforce. Data from the 2023 NSF Survey of Earned Doctorates show that international STEM PhD graduates of US universities grew 2.5 times over the past half century, from 14.7 percent (2,656) in 1978 to 36.8 percent (16,768) in 2023. Most international graduates want to remain in the United States, at least in the short term. In 2023, for example, 76.2 percent (19,393) indicated intent to stay. STEM PhDs are also more likely than PhDs in the humanities and social sciences to remain in the United States:

only 15.2 percent of STEM PhDs, compared with 30 percent in non-STEM fields, reported career plans abroad in 2023.

These figures underscore the fact that international scientists have long been crucial to US research productivity and innovation. However, that foundation is now becoming unstable.

Barriers to Retention: Immigration and Climate

Despite their centrality, international scientists face steep barriers to building stable careers in the United States. The immigration system is restrictive, slow-moving, and poorly aligned with the realities of scientific training and careers. For many, particularly from India and China, country-based caps on green cards can mean decades-long waits for permanent residency. These backlogs blunt career agency, delay entrepreneurial ambitions, and deter risk-taking.

The 2023 NSF SED data reveal early warning signs. Among Chinese-born PhDs, intent to stay in the United States dropped from 81 percent in 2016 to 77.5 percent in 2023, reflecting both immigration frustrations and China's growing career opportunities, fueled by increased R&D investments. Anti-Asian sentiment and safety concerns have further weakened the appeal of staying. By contrast, 89 percent of Indian-born PhDs expressed interest in remaining in the United States despite the long waitlists—likely due to fewer scientific career opportunities in India.

Policy changes are compounding these pressures. The second Trump administration has enacted sweeping restrictions in 2025: [revoking visas](#), [pausing visa appointments \(disrupting fall enrollments\)](#), and signaling a desire to reduce international student numbers. New proposals would impose [fixed durations of stay](#) for graduate and postdoctoral training, eliminate

Optional Practical Training (OPT)—a vital bridge to employment—and **alter H-1B visa criteria to favor high salaries** that disadvantage early-career scientists. These measures not only destabilize lives but actively drive talent away.

Immigration policy is not the only driver of international scientists' career decisions. The broader research climate in the United States is deteriorating. The second Trump administration has cut scientific funding, leading to layoffs, hiring freezes, and growing precarity for early-career researchers. In a [2025 Nature poll](#) of 1,600 scientists, 75 percent said they were considering leaving the United States, with Europe and Canada as top destinations.

Patterns of scientific mobility suggest that these intentions could translate into actual migration. [A study](#) tracking 3.5 million scientists over six decades found that relocations across long distances are most common early in a career, tapering off with professional age. In other words, instability in the early career stage has an outsized impact on long-term mobility. Further, international scientists are more comfortable with global mobility due to prior experience.

Incentives Abroad: The Global Race for STEM Talent

The United States is competing with other countries that are investing strategically to recruit disillusioned scientists, particularly those trained in American universities. Global demand for STEM expertise is accelerating, with R&D intensity—R&D spending as a share of GDP—serving as a key indicator. The [2023 AAAS Report](#) shows China, Korea, Taiwan, and Israel with the steepest growth in R&D intensity over the past twenty years. While the United States leads in absolute R&D spending, Korea, Taiwan, and Israel surpass it, relative to GDP. China, aiming for 3 percent of GDP in R&D, already produces the most scientific publications and employs the largest scientific workforce.

Governments are pairing these investments with targeted recruitment. The European Union launched its “Choose Europe for Science” initiative, backed by €500 million (2025–27),

offering grants, mobility fellowships, and relocation support, visible through the Euraxess portal. China continues to expand global talent programs, such as the High-End Foreign Expert Recruitment Program and the Excellent Young Scientists Fund, alongside its new K visas. Other countries are also leveraging immigration as a recruitment tool: Australia's Global Talent Visa, the United Kingdom's High Potential Individual and Global Talent visas, Germany's GAIN network, and South Korea's “Brain Return 500.”

A 2023 [Nature global survey](#) of 2,300 scientists highlighted the incentives most likely to drive mobility: research funding, quality of life, and higher salaries. Barriers included authoritarian politics, limited freedoms, and visa difficulties—factors that increasingly describe the US environment.

What Is at Stake

The implications extend beyond graduate programs or postdoctoral positions. International scientists fill critical gaps in the US workforce and drive innovation in emerging technologies central to economic competitiveness and national security. Restrictive policies, unwelcoming climates, and funding volatility threaten to erode this foundation, leaving the United States vulnerable as other nations capitalize on the opportunity. The question is not whether international scientists will thrive; it is where. Scientists are drawn to ecosystems with strong R&D investment, dynamic career pathways, and supportive immigration policies. Increasingly, those ecosystems are outside the United States.

Fork in the Road

International scientists trained in the United States are assets. They expand the nation's capacity for discovery, innovation, and problem-solving. Yet the current trajectory risks accelerating brain drain just as global competition for talent intensifies.

The United States faces a choice: reform its immigration system to reflect the realities of scientific careers, restore stability to federal research funding, and rebuild an environment that welcomes global talent—or concede its leadership in science and technology to nations ready to seize the moment.

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