

Restrictive visa policies hurt science

The American Society for Biochemistry and Molecular Biology is an international nonprofit scientific and educational organization that represents more than 11,000 students, researchers, educators and industry professionals. The ASBMB strongly advocates for strengthening the science, technology, engineering and mathematics workforce, protecting international scientific collaboration and sustaining the American research enterprise. The ASBMB has a number of concerns about changes to the J, F and I visa application process and duration of stay proposed by the U.S. Department of Homeland Security and U.S. Immigration and Customs Enforcement. If enacted, the changes would damage the U.S. economy by (A) depleting the STEM workforce of much-needed trainees and talent, (B) discouraging and hindering international scientific collaboration, and (C) reducing American research output and innovation.

Concern A: The United States does not produce enough STEM workers and needs international students and researchers to fill the gap. The proposed rule changes would deplete the American research enterprise of the talent it needs to advance and grow.

The U.S. bioeconomy relies on a robust research enterprise that is driven by [a technically skilled and diverse workforce](#). The [U.S. does not produce enough STEM workers](#) to sustain and continue the growth of the American research enterprise, but foreign-born researchers and international students have [filled this unmet need](#). Indeed, according to the National Science Board, in 2015, almost [35% of all scientist and engineers doctoral students](#) in the U.S. were here on temporary visas.

During the 2016–2017 academic year, foreign students, who pay far more in tuition than domestic students, earned [22% of undergraduate STEM degrees](#) at U.S. colleges and universities. However, international student enrollment at American institutions has been declining since then. New international student enrollment in the [2017/2018 academic year fell by 7%](#). This decline in enrollment cost the U.S. economy [\\$11.8 billion and more than 65,000 jobs](#).

[Foreign nationals account for the majority](#) of graduate students in many STEM fields. In 2015, [56% of graduate students](#) studying pharmaceutical sciences were international students. The contributions of foreign graduate students to discoveries made in [academic research labs](#) cannot be overstated.

It is imperative that the U.S. continue to attract foreign student to its institutions of high learning. The visa application process is already [cited as one of the top reasons](#) for declining international student enrollment. The proposed changes by DHS will only worsen matters.

In addition, changing the fixed time period for international students to two-year and four-year increments would significantly damage degree-completion rates: [Only 41% of undergraduate students](#) finish their degree in four years and the average completion time for doctoral degrees in science and engineering can range anywhere [from five to seven years](#). The visa process must accommodate degree completion outside of the four year time period.

Concern B: International collaboration improves the quality of research and research output but the proposed rule changes will discourage and hinder international scientific collaboration.

Two well-documented [barriers to scientific collaboration](#) are [visa challenges](#) and the [attitude of higher income countries](#) toward researchers from [developing countries](#).

According to one study, [34% of the developing countries' scientists](#) reported losing out on professional opportunities because of visa delays and denials. This already illustrates a loss of talent and diversity to the scientific community. With the proposed changes in place, the number of scientists missing international conferences and important opportunities to collaborate will only increase.

Almost [35% of science and engineering articles](#) published in the U.S. have international collaborators and biomedical research papers with international co-authors have a [significantly greater impact](#) than those without international co-authors. Without incentivizing and encouraging international collaboration, the U.S. shares of articles published will significantly drop. The visa changes proposed by DHS will signal to other countries and potential scientific partners that the U.S. is closed to international collaboration.

[Travel and international collaboration](#) help developing countries strengthen their scientific capacity and provide developed countries, such as the U.S., injections of new ideas and more numerous and more impactful research products, as we'll discuss below.

Concern C: Diverse business and research teams are more innovative and productive than teams that are homogeneous. The proposed rule changes will decrease research output and harm the U.S.'s standing and economy.

It is well documented that international scientific collaboration [leads to](#) a greater number of papers being published, more impact per research product published, and more innovative research ideas. For example, recent essays have demonstrated a direct correlation [between long-distance collaborations and highly qualified science](#).

Diverse research teams are just as important to improve research quality, propel innovation and ensure high rates of publication. Team composition matters; it's positively linked to [higher rates of publication and higher impact](#) to the research community.

Adding unnecessary visa restrictions will deter international researchers from coming to the U.S., ultimately resulting in fewer breakthroughs, medicines and scientific products to market.

If the U.S. aims to continue to be a leader in scientific research and development, then the pace of [American innovation must rapidly accelerate](#). Without an international STEM workforce, it will decelerate.