September 29, 2020

Sethuraman Panchanathan, PhD
Director, National Science Foundation
2415 Eisenhower Avenue
Alexandria, Virginia 22314

Dear Dr. Panchanathan,

I am writing on behalf of the American Society for Cell Biology, which represents more than 7,000 cell biologists in all 50 states and more than 60 nations around the world. Many of our members are supported by the National Science Foundation (NSF), and many have benefited from the NSF Graduate Research Fellowship Program (GRFP), either personally or when fellowships were awarded to members of their labs. The NSF GFRP is one of the gems of STEM education in the U.S., supporting promising students in areas of the NSF research portfolio. It has also helped to engage the public and diversify the scientific community through the Broader Impacts criterion. We were, therefore, concerned to learn about substantial changes in this fellowship program, when this year’s Program Solicitation (20-587) was released.

The NSF’s stated purpose for the GRFP is to “help ensure the quality, vitality, and diversity of the scientific and engineering workforce of the United States.” This is a very laudable goal that the GRFP has helped promote since its first class of fellows in 1952. These fellows have ranged across the many STEM fields supported by the NSF, including cell biology. As scientists, we know that it is very difficult to predict where the next important breakthroughs will emerge from. By emphasizing breadth and focusing on the applicant rather than the field, the GRFP has fueled important advances in many areas. That broad scope has been a strength of the program over the decades but now seems to be undercut in the recent, highly focused announcement.

Our concern focuses on a significant change in focus for the program. According to the solicitation, “in FY2021, GRFP will emphasize three high priority research areas in alignment with NSF goals. These areas are Artificial Intelligence, Quantum Information Science, and Computationally Intensive Research.” We are concerned that applications in other fields will not receive as much attention as those in the newly announced areas of research.
The current COVID-19 pandemic highlights the need for ongoing support for a wide range of research areas. Predicting when or where the next important advance will emerge is difficult and unwise. Looking back, America has benefited from supporting science broadly rather than deeply and that should be our goal for the future. Who would have predicted the importance and impact of work on a relatively obscure family of viruses that until 2003 were known only to cause the common cold, or research on the immune systems of bats?

In response to a swift reaction from the scientific community, including petitions and group letters, the NSF clarified its policy, stating, “GRFP applicants will be and always have been selected based on their individual merit. The revision reflects NSF’s move to align with a coordinated federal strategy to secure America’s position as a global leader in research and innovation in Artificial Intelligence, Quantum Information Science and other emergent areas. These changes are not intended to exclude any areas of science supported by NSF. Nor is it unusual: NSF has previously underscored agency-wide areas of emphasis while continuing to support a broad range of research. NSF will continue to encourage and accept applications in all eligible fields of science and engineering as indicated in the solicitation.”

Maintaining the U.S. as a “global leader in research and innovation” will be better ensured by maintaining the long-standing approach of the NSF GFRP on funding the most promising young STEM scientists, regardless of their area of research. Certainly the life sciences and biotechnology are also a major point of U.S. competition with China and the rest of the world, as demonstrated by ads in *Nature* and *Science*. The U.S. is arguably the world leader in this area, but is at serious risk of losing that position if investment is curtailed.

The recent explosion of basic and applied research related to CRISPR-CAS gene editing technology (some key aspects of which have been NSF-funded) is an excellent example of how basic biological research can lead to major technological advances with wide-ranging impacts. Many fields supported by the NSF have their own “emerging areas”—synthetic biology fits that description in our own area, for example.

By issuing an announcement that highlights specific areas to be focused on also reduces the confidence potential applicants have in the success of any application they submit. This focus on specific areas of research may reduce the diversity of awardees, at the level of Institution, geographical region, gender and race/ethnicity, at a time when our nation needs all of its talent represented at the table.

One resolution to the current situation would be to revise the program announcement to include “Artificial Intelligence, Quantum Information Science, and Computationally Intensive Research as research areas eligible for support by the GRFP *in addition* to the areas of research currently supported by the program.” This modification would highlight specific areas of science of current interest to you while maintaining the historic value of the GRFP.

We strongly urge you to reconsider this substantial change in one of the nation’s premier STEM fellowship programs. We believe the modest proposal we suggest would maintain the
historic breadth of the program while allowing new areas of science to be considered for future support.

We hope to hear from you soon.

Sincerely,

Holly Goodson, Chair
On behalf of the Public Policy Committee
The American Society for Biology
Professor, Departments of Chemistry & Biochemistry and Biological Sciences
University of Notre Dame