Advice for the new NSF director

A new director, Dr. Sethuraman Panchanathan, takes the helm of the U.S. National Science Foundation (NSF) during a pivotal time for the future of scientific research in the United States. This month marks the 75th anniversary of the seminal report “Science—The Endless Frontier” by Vannevar Bush, director of the Office of Scientific Research and Development, submitted in 1945. The treatise laid the groundwork for the NSF and many other investments that have kept the United States at the forefront of scientific advancement and economic innovation. Today, American science and the United States face similar challenges that center around national security, economic strength, and social justice. To renovate the NSF in ways that address current issues, Dr. Panchanathan should use his position to build on the time-tested partnership between science and the U.S. government. To this end, I offer the following advice for improving the NSF in the coming years.

In his new role, the director should position himself as the nation’s leading public advocate for science. Although American society relies on scientific research and investment more than ever before, the coronavirus disease 2019 (COVID-19) pandemic has exposed in the American populace a vast and dangerous ignorance about science. Because the NSF supports all science and engineering disciplines, the director is uniquely positioned to be America’s spokesperson for the promise of science—and government investment in science—to solve vexing problems and grow the economy. The NSF director can also speak about the nature of scientific research and how both successes and failures create new knowledge and innovations worthy of taxpayer investments. To use this bully pulpit for effectively communicating with policy-makers and the public, the director should rely on the agency’s communications resources.

Current events have refocused attention on the fact that all fields of scientific research in the United States have been far too White and male for far too long. The director should address the need for greater diversity in the scientific workforce. Drawing on a diverse talent pool can provide a key strategic advantage for the United States because scientists from diverse backgrounds ask different questions and in serving as role models, increase public support for science. The new director should seize this moment in our social consciousness to make science more inclusive by building on existing programs (such as the NSF ADVANCE and INCLUDES initiatives). He should also follow the recommendations of the National Science Board Vision 2030 report, which encourages institutional change and the adoption of proven science, technology, engineering, and mathematics (STEM) pedagogy and practices that boost diversity and inclusion. Such remodeling should prioritize inclusiveness and innovation in the way the NSF reviews and awards grants. The NSF’s merit-based review system is the world’s gold standard, but even gold needs occasional polishing. Streamlining the current grant application process will benefit applicants from all backgrounds by reducing structural barriers to entry that often hinder minority scientists and minority-serving institutions.

Innovations that result from NSF investments must serve the public good. Building on successful programs such as the NSF Innovation Corps, the new director should seek ways to help faculty and students move scientific discoveries into the marketplace efficiently for the public good. For example, providing researchers with relatively modest supplemental awards to support market analysis or other aspects of technology transfer could help science faculty advance NSF-funded research with potential applications in both the public and private sectors. And the director should guide the NSF to focus on emerging fields such as artificial intelligence, quantum mechanics, and cognitive neuroscience—all of which are crucial to America’s national security and economic competitiveness.

These suggestions are starting points. Dr. Panchanathan should take advice not only from longtime scientists and university leaders like myself, but also from NSF career staff and the many university faculty members who rotate through NSF. Fortunately for all scientists and citizens, Dr. Panchanathan has a world-class track record of leadership on diversity, reform, and advancing emerging fields of science. For instance, at Arizona State University, Dr. Panchanathan developed assistive devices for the visually impaired, and demonstrably sharpened the university’s focus on innovation and entrepreneurship. At this crucial juncture for America’s scientific enterprise, NSF’s future is in extremely capable hands.

—Mary Sue Coleman

Mary Sue Coleman is president of the Association of American Universities, Washington, DC, USA. marysuec@aaau.edu

10.1126/science.abd7626
Advice for the new NSF director
Mary Sue Coleman

Science 369 (6501), 229.
DOI: 10.1126/science.abd7626