Testimony of the American Society for Biochemistry and Molecular Biology to the Senate Appropriations Committee Subcommittee on Commerce, Justice, Science and Related Agencies

Testimony in support of the National Science Foundation

Submitted by:
Kevin H. Gardner, Ph.D.
Chair, Public Affairs Advisory Committee Member
American Society for Biochemistry and Molecular Biology

May 19, 2026

The American Society for Biochemistry and Molecular Biology (ASBMB) is a nonprofit professional society that builds and empowers a broad community of molecular life scientists to advance discovery. Its community comprises 11,000 members, including researchers and scientist educators, ranging from senior scientists to students. ASBMB strongly advocates for strengthening the science, technology, engineering and mathematics (STEM) workforce, and supporting sustainable funding for the U.S. research enterprise.

Our members conduct ground-breaking foundational research that leads to medical, agricultural, and technological advancements that make American lives better. With each basic science breakthrough, the scientific enterprise grows, adding new therapies, interventions, and solutions to the most pressing issues affecting the country. To grow and sustain the American research ecosystem, **the ASBMB strongly recommends that policymakers appropriate $9.9 billion to the National Science Foundation** to maintain the agency's pivotal role in laying the foundational research needed to drive cures and innovation and secure this country's global leadership in science and technology.

Federally funded research, such as those conducted by our members, has led to the development of life-saving treatments and foundational discoveries that have propelled the scientific enterprise including:

- Studies on the connection between a high-fat diet and atherosclerosis.
- Research on proteins involved in Parkinson's Disease.
- Research that studies microbes involved in enhancing heat resistance in plants.

Similarly, my research at City University of New York focuses on understanding how cells sense and respond to their environment. When conditions change, like shifts in light or oxygen levels, specialized proteins detect these signals and set off a chain reaction inside the cell, changing how other proteins interact with one another. My lab uses a combination of techniques, including biochemistry and structural biology, to figure out exactly how these molecular "switches" work. The goal is both to understand the basic science of how cells communicate and to apply that knowledge in useful ways, whether as new tools for research or as medical treatments. This foundational work on proteins that respond to light and oxygen has already led to practical

results, including new tools for controlling cells with light (optogenetics) and a first-of-its-kind cancer drug, Merck's belzutifan.

For researchers like myself, NSF funding supports basic research into the intricacies of biological systems and processes that lay the foundation for innovations in therapies, crop development, imaging, and computational algorithms. Basic scientific research is the first step in this process; without it, scientists would not have the vital information to translate into cures or innovations that help the American people.

NSF plays a unique role in basic science as the only federal agency that funds research in all scientific disciplines. Decades-long investments in foundational research from NSF-funded researchers led to many groundbreaking technologies, including Magnetic Resonance Imaging (MRI), Artificial Intelligence (AI), and LASIK eye surgery —all of which have a tremendous impact on the health and lives of Americans. It is only through continued and sustained investments that the agency was able to achieve such success.

Not only has the NSF supported fundamental research that has led to the world's most prominent scientific discoveries, but it has also played an instrumental role in expanding the U.S. STEM workforce. Through the NSF's STEM Education Directorate, the agency funds key research training and workforce development programs such as the Graduate Research Fellowships Program (GRFP) and the Research Experiences for Undergraduates (REU) Program. These programs are pivotal in launching the careers of the nation's top STEM talent. Researchers who have received the GRFP have gone on to become educators, independent investigators in academia, and founders of biotechnology companies. Moreover, graduate support through the GRFP will often catalyze discoveries into NSF-funded start-up companies. For example, Restor3d in North Carolina was co-founded with support from an NSF GRFP-funded graduate student, Cambre Kelly. From this funding, Cambre, alongside her lab's principal investigator, was able to expand her graduate work on a medical device with an antibiotic reservoir to treat bone infections into a successful start-up company. Moreover, through additional funding from the NSF I-Corps and SBIR/STTR programs, the company was able to expand. Now, the company has received over $100 million in private funding and has expanded manufacturing in NC.

Similarly, the REU Program, which exposes undergraduate students to scientific research and research careers, allows students to engage with scientists in multiple career stages in academia and in the private sector, furthering their interest in pursuing a career in science. I know this program particularly well – both from having hosted many REU students within my lab, but also more personally as the son of a REU recipient who got his first exposure to scientific research in the 1960s, helping put him on a path to an outstanding career as a laser engineer.

In addition to bolstering the scientific workforce, NSF is boosting the research capacity in states with historically low federal science funding through the Established Program to Stimulate Competitive Research (EPSCoR) program. Since 2020, the EPSCoR jurisdictions have received over 69 new patents. Importantly, NSF funds research in all 50 states, contributing tens of millions of dollars to state economies each year. The awards to research institutions support personnel, laboratory supplies, and local small businesses, fueling the economies of surrounding communities.

Furthermore, the agency houses national research facilities that contribute to growing the economy and saving costs for Americans. For example, the NSF continues to support MRI advances through research and instrumentation grants, including support for the NSF National High Magnetic Field Laboratory (MagLab), a facility that operates the world's largest and highest-powered magnet laboratory. Each year, the lab creates $709 million in the U.S and is projected to generate $14.2B over the next 20 years, while supporting the research of over 2,300 users from universities, companies, and national labs from across the country

More recently, Congress has recognized NSF's unique position as the epicenter for driving scientific breakthroughs through authorizing the Technology, Innovation and Partnerships (TIP) directorate. TIP houses America's Seed Fund programs that support small business research and development, the Innovation Corps (I-Corps) entrepreneurship training program that empowers scientists to translate their discoveries to the marketplace, and other programs that foster partnerships and workforce development. To date, the TIP directorate has launched over 2,000 startups, created over 6,000 jobs, and trained over 14,000 future innovators. Moreover, these start-ups have gone on to secure over $5.2 billion in subsequent funding from the private sector, showing the impact that early-stage funding has on the return on investment and economic U.S. R&D growth. In high-priority fields like quantum science and AI, the TIP directorate is building bridges across the public and private sectors to promote research and development. The research conducted between these partnerships in fields such as cybersecurity protects the nation's digital infrastructure and keeps the country safe by mitigating the risks of cyberattacks by our adversaries.

Lastly and most importantly, to achieve the mission of the agency and keep pace with science competitiveness, NSF must have a steady flow of funds and leadership to support the scientific enterprise. Currently, NSF continues to fund critical basic science that continues to grow all science disciplines, including social and behavioral research that improves artificial intelligence technologies and aids in national security. However, recent actions to remove the National Science Board strip the agency of external expert-led oversight that is vital for the progress of the scientific enterprise. Without predictable funding and proper steering, the agency is at risk of collapse. Therefore, we strongly urge appropriators to increase the NSF budget to the highest possible level and restore the National Science Board to maintain global leadership, fuel the economy, and train future innovators.