

Written Statement
Oswald Steward, PhD, President, Society for Neuroscience
Subcommittee on Commerce, Justice, Science and Related Agencies
Appropriations Committee
In Support of FY24 Appropriations for the National Science Foundation

Chair Rogers, Ranking Member Cartwright, and members of the Subcommittee, on behalf of the Society for Neuroscience (SfN), we are honored to present this testimony in support of robust appropriations for biomedical research at the National Science Foundation (NSF). SfN urges you to provide at least \$11.9 billion, an increase of approximately \$2.4 billion, in funding for NSF in FY24. For researchers across the nation, the ability to make life-changing advancements in the field of neuroscience is contingent upon sufficient federal funding.

One area of my lab's research at the Department of Anatomy and Neurobiology at the University of California-Irvine focuses on the biological processes that help repair the central nervous system, particularly the spinal cord. My lab discovered that modifying a critical cell growth pathway can revert neurons in adult brains to a youthful state, facilitating regeneration of the spinal cord after injury. Our research is now applying this principle to neurodegenerative disorders like Alzheimer's Disease by testing whether rejuvenated neurons will resist neurodegeneration. Basic research, like my own, provides understanding about the brain at a deep level, which paves the way for the development of novel therapeutics that will prevent and treat debilitating medical disorders. Continued progress depends on sustained federal funding at a level that at a minimum, keeps pace with inflation.

SfN believes strongly in the research continuum—a pipeline, in which basic science leads to clinical innovations, which leads to translational uses impacting the public's health and reducing long-term medical costs. Basic science is the foundation upon which all health advances are built. For example, our RNA vaccines, which likely saved millions of lives, were made possible by decades of research by chemists and chemical engineers on lipid nanoparticles. To cure diseases, we need to understand them through fundamental discovery-based research. SfN is grateful to Congress for its support of the important mission of the NSF, which includes a focus on promoting the progress of science and advancing the national health, prosperity, and welfare, through increased appropriations in recent years.

The Importance of the Research Continuum

NSF funding for basic research is not only critical for enabling groundbreaking discoveries; it is essential for building our workforce of researchers at the bench. For the United States to remain the world leader in biomedical research, Congress must continue to fund the training pipeline of the scientific workforce. Young trainees today are the ones who will make the key discoveries of the future. The deeper our grasp of basic science, the more successful those focused on clinical and translational research will be. Neuroscientists use a wide range of experimental, animal, and human models not used elsewhere in the research pipeline. These opportunities create discoveries – sometimes unexpected discoveries – expanding knowledge of biological processes,

often at the molecular level. This level of discovery reveals new targets for research to treat all kinds of brain disorders affecting millions of people in the United States and beyond.

NSF basic research funding is also a key economic driver of science at universities and research organizations across the country. Federal investments in scientific research fuel the nation's pharmaceutical, biotechnology and medical device industries. The private sector utilizes basic scientific discoveries funded through NSF to improve health and foster a sustainable trajectory for American's Research and Development (R&D) enterprise. Basic science generates the knowledge needed to uncover the mysteries behind human diseases, which leads to private sector development of new treatments and therapeutics. Industry typically does not fund research on this important first step given the long-term path of basic science and pressure for shorter-term return on investments. Congressional investment in basic science is irreplaceable in the pipeline for development of drugs, devices, and other treatments for brain related diseases and disorders.

The BRAIN initiative is an example of NSF's success by developing remarkable technologies for the entire research community enabling discoveries across neuroscience and related scientific disciplines that would have previously been un-imaginable. By including funding in the 21st Century Cures Act, Congress helped maintain the momentum of this endeavor. However, it's important to emphasize that using those funds to supplant regular appropriations would defeat their purpose. There is no substitute for robust, sustained, and predictable funding for NSF and SfN appreciates Congress' ongoing investment in the BRAIN Initiative. A recent exciting advancement in NSF-funded neuroscience research includes the following:

Researchers develop training module to counteract the negative effects of stress on adolescents

The mental health crisis affects more and more American adolescents each year. Using funding from two NSF grants, researchers at the University of Texas created an online training module that can teach students stress management and how to build resilience. The findings of their study will lead to low-cost interventions for adolescents affected by stress. When applying these interventions, they found it led to improved academics as well as increased self-esteem in thousands of adolescent students. These interventions are cost-effective to implement on a regional or national scale to aid adolescents in overcoming a variety of stressors.

Funding in Regular Order

SfN joins the biomedical research community in supporting an increase in NSF funding to at least \$11.9 billion, a \$2.4 billion increase over FY23. This proposed increase is necessary to provide certainty to the field of science, allow for the exploration of new scientific opportunity, train the next generation of scientists, and foster increased economic growth and further improvements in the public's health. Potential cuts to discretionary investments would have a devastating impact on NSF-funded research and would hurt the country's ability to maintain its international competitiveness in this space. Equally important is ensuring that funding is enacted before the end of the fiscal year. Continuing Resolutions have significant consequences on research, including restricting NSF's ability to fund grants. For some of our members, this means waiting for a final decision to be made on funding before knowing if their perfectly scored grant

will be realized or operating a lab at a diminished capacity until appropriations are final. These delays can be devastating for trainees seeking to begin their careers. All the positive benefits research provides in this country are negatively impacted by these real time considerations. SfN strongly supports the appropriation of NSF funding in a timely manner, to avoid delays in approving new research grants or reductions in funding for already approved research funding.

SfN thanks the subcommittee for your strong and continued support of biomedical research and looks forward to working with you to ensure the United States remains the global leader in neuroscience research and discovery. Collaboration among Congress, the NSF, and the scientific research community has created great benefits for not only the United States but also people around the globe suffering from brain-related diseases and disorders. On behalf of the Society for Neuroscience, we urge you to continue this critical cooperation and support of biomedical research.