

Written Statement
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Subcommittee on Commerce, Justice, Science and Related Agencies
Appropriations Committee
In Support of FY25 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 \$2.8 billion, in base-level funding for NSF in FY25. For researchers nationwide, the ability to make life-changing advancements in neuroscience depends on significant and sustained federal funding.

One area of my lab's research at the Department of Psychiatry at Yale School of Medicine focuses on the role of single molecules and circuits in complex behaviors related to learning and motivated behaviors. We are also interested in the relevance of these processes to addiction and mental health processes. With key federal funding, my lab recently discovered neurons that respond consistently to a primary reward and that the response of these neurons scale with the size of the reward. Our research is now clarifying the role these neurons and others play in behavior and motivation. 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.

The Importance of the Research Continuum

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, reducing long-term medical costs and generating new jobs across the country. Basic science is the foundation upon which all health advances are built. For example, the first mRNA vaccine to receive FDA approval, which likely saved millions of lives during the COVID-19 pandemic, were made possible due to decades of prior research by chemists and chemical engineers on lipid nanoparticles. To cure diseases, we must first 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. NSF funding for basic research is not only critical for enabling groundbreaking discoveries; it is essential for building our scientific workforce. For the United States to remain the world leader in biomedical research and to maintain and grow opportunities across areas of science, 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. 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 and generates jobs in all states across the nation. 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 America'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 Understanding the Brain project is an example of NSF's success by enabling scientific understanding of the full complexity of the brain through targeted, cross-disciplinary investments in research, technology, and workforce development. NSF's strategic investments will support research and infrastructure designed to transform our view of who we are and SfN appreciates Congress' ongoing investment in NSF to continue this work. Additionally, a recent exciting advancement in NSF-funded neuroscience research includes the following:

Researchers Find Deep Brain Stimulation During Sleep is Linked to Memory

With an aging U.S. population, memory is becoming an ever more important area to study. Using funding from NSF, researchers at the University of California, Los Angeles and Tel Aviv University used a novel system to deliver electric pulses that activated part of the brain and were synchronized with brain activity recorded in the hippocampus where memories are stored. Importantly, these researchers found evidence that targeted deep brain stimulation during a critical time during sleep improves memory consolidation. This critical finding provides new insights into memory consolidation during sleep and can be used to create new therapies for memory disorders such as Alzheimer's disease.

Funding in Regular Order

SfN joins the biomedical research community in supporting an increase in NSF funding to at least \$11.9 billion in FY25. This proposed increase is necessary to provide certainty to the field of science, allow for the exploration of new scientific inquiry, train the next generation of scientists, and foster increased economic growth and further improvements in the public's health. Further 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 in a reasonable time frame. Long-term 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, in order 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.