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May 10, 2021

The Honorable Eddie Bernice Johnson
Chairwoman
House Committee on Science, Space, and Technology
2321 Rayburn HOB
Washington, DC 20515

The Honorable Frank Lucas
Ranking Member
House Committee on Science, Space, and Technology
2321 Rayburn HOB
Washington, DC 20515

Dear Chairwoman Johnson and Ranking Member Lucas:

On behalf of the American Physical Society (APS) – the nation’s largest physics membership organization with more than 50,000 members in academia, the private sector and national labs – I want to thank you and your staff for your efforts in crafting and introducing the bipartisan *National Science Foundation for the Future Act (NSF for the Future Act)*. This legislation is a clear indication of your commitment to ensure robust federal investments in scientific research and the US STEM workforce, which fuel our economic engine. **APS strongly supports the NSF for the Future Act, which was informed by significant conversations with – and feedback from – the scientific community and additional stakeholders.**

For more than half a century, the US government’s commitment to funding early-stage research through the National Science Foundation (NSF) at our colleges, universities and research institutions has helped build our innovation-driven economy and ensure our position as the global leader in science, technology and innovation. But today’s global landscape is remarkably different and significantly more competitive.

For the United States to remain a global leader, simply continuing the status quo will not suffice. Doing so will result in the United States steadily losing its most critical R&D assets – talented and diverse human capital, both domestic and international, and the innovations they generate. New approaches are required, and the *NSF for the Future Act* provides a framework to both accelerate innovation and ensure that more equitable approaches to talent recruitment, development and retention are central in our competitiveness strategies going

forward. As recently stated by the National Science Board in its Vision 2030, “Talent is the treasure on which America’s S&E enterprise and the nation’s prosperity, health, and security depend.”

The *NSF for the Future Act* – the first comprehensive NSF reauthorization in more than ten years – demonstrates your recognition that to maintain our nation’s global leadership in science, technology, and innovation we need to: (1) think broadly about NSF’s role in our innovation ecosystem and the types of research it supports and (2) recruit, educate and retain a future STEM workforce that is significantly more representative of our national demographics. This legislation includes provisions that address these two points, as well as a number of other pressing needs for our community, which will improve the United States’ global competitiveness. These provisions include:

- **Accelerating American innovation by expanding NSF’s use-inspired research and strengthening NSF’s curiosity-driven fundamental research:** Authorizes increases to NSF’s core programs by nearly \$2 billion in fiscal year 2022 (\$10.5 billion) and provides 6% average annual increases through fiscal year 2026. This robust and sustainable growth is paired with the creation of – and additional authorized funding for – a new Science and Engineering Solutions Directorate.
- **Training more high-quality STEM teachers:** Authorizes doubling the funding for the NSF Noyce Teacher Scholarship Program over 5 years, an essential scaling of teacher preparation programs and of teacher trainees to rectify the enormous shortage in qualified STEM high school teachers across the United States.
- **Building research capacity to broaden participation in STEM:** Creates a pilot program that incentivizes the creation of meaningful, lasting research partnerships between research-intensive institutions and emerging research institutions (ERIs) by requiring that multi-institution awards above \$1 million include at least one ERI, with 25% of the award directed to building research capacity at the ERI(s).
- **Supporting talented domestic STEM students:** Authorizes increased funding for the Graduate Research Fellowship Program, which currently funds less than 15% of the thousands of excellent candidates. Includes a “Sense of Congress” to increase the number of new graduate fellowships to at least 3,000 annually by 2026, an increase of approximately 50%, and a call to actively recruit candidates from a wider set of institutions from all regions of the country and from underrepresented populations in STEM.
- **Addressing the liquid helium crisis:** Authorizes NSF to support researchers purchasing equipment to dramatically reduce their helium consumption through the Major Research Instrumentation (MRI) program. As our nation pursues the goal of creating a quantum workforce, the wide availability of helium is central to obtaining the ultra-low temperatures needed for this technology’s creation.
- **Improving research integrity and security:** Codifies the NSF Office of Research Integrity and Security; requires the development of an online resource for researchers to provide guidance potential security risks and mitigation, as well as examples of appropriate international collaborations; and requires the National Academies to update its report titled “On Being a Scientist: A Guide to Responsible Conduct in Research” to include how to mitigate potential research security risks.

Thank you again for leadership in working to ensure the United States remains a global leader in science, technology and innovation. The *NSF for the Future Act* provides the agency a framework to continue its support of curiosity-driven research, while also accelerating technology development and commercialization to help address pressing, societal challenges. Additionally, this legislation will create the diverse US STEM workforce necessary to lead in today’s much more competitive world, enabling discoveries, innovations and technologies that will unlock a brighter future for all Americans.

If you have questions or would like to further discuss our strong support, please do not hesitate to contact APS Director of Government Affairs Mark Elsesser (elsesser@aps.org; 202.662.8710).

Sincerely,

A handwritten signature in black ink that reads "Sylvester J. Gates, Jr." in a cursive script.

Sylvester James Gates, Jr.
President, American Physical Society