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October 8, 2021

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

The Honorable Maria Cantwell
Chairwoman
Senate Committee on Commerce,
Science, and Transportation
254 Russell SOB
Washington, DC 20510

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

The Honorable Roger Wicker
Ranking Member
Senate Committee on Commerce,
Science and Transportation
512 Dirksen SOB
Washington, DC 20510

Dear Chairwoman Johnson, Chairwoman Cantwell, Ranking Member Lucas and Ranking Member Wicker:

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 to advance several critical pieces of legislation that will help ensure our nation’s continued global leadership in science, technology and innovation.

APS is encouraged by the strong bipartisan support in both the House and Senate that led to the passage of key pieces of legislation aimed at strengthening the US scientific enterprise. We appreciate both chambers recognizing that a significant increase to our federal investments in research – both curiosity-driven and use-inspired – is essential to our economic competitiveness. We strongly support your ultimate goal to accelerate innovation while ensuring more equitable approaches to talent recruitment, development and retention.

As you and your colleagues work to conference a set of bills impacting the US research and development ecosystem, including the *National Science Foundation (NSF) for the Future Act* (H.R. 2225), the *Department of Energy (DOE) Science for the Future Act* (H.R. 3593), the *National Institute of Standards and Technology (NIST) for the Future Act of 2021* (H.R. 4609), the *United States Innovation and Competition Act of 2021* (S. 1260), the *MSI STEM Achievement Act* (H.R. 2027), and the *Combating Sexual Harassment in Science*

Act (H.R. 2695), we want to express our strong support for having the following provisions included in the final bill:

- **Enhancing Partnerships with Emerging Research Institutions (H.R. 2225 Sec. 6(e), H.R. 3593 Sec. 3167B.(c) and S. 1260 Sec. 2203):** Participation in research is a high-impact practice for workforce strengthening and diversification. Yet, historically, the majority of federal research funding has been distributed to only a fraction of our country's research universities. In 2018, for example, of the more than 600 institutions of higher education that received federal science and engineering funding, approximately 25% received more than 93% of the total federal science and engineering funding. Moreover, these institutions serve less than half of all students, less than 40% of underrepresented minority (URM) students and only about one-third of Pell grant recipients. The result: large majorities of URM students and Pell grant recipients have either limited or no opportunity to engage in research, which effectively excludes them from being part of the future US STEM workforce. These stark inequities cannot be addressed by EPSCOR alone.

To address this issue, we must provide students research opportunities at their home institutions. Our nation needs a large-scale program that enables building research capacity at emerging research institutions (ERIs) – institutions of higher education with an established undergraduate program and less than \$35 million dollars in federal research funding, as defined in H.R. 2225 – through the creation of meaningful, lasting research partnerships between research-intensive institutions and ERIs that require a significant portion of funding be used to build research capacity at ERIs.

A partnership program is essential because ERIs located in **non-EPSCOR states educate more than half** of the total URM and Pell grant recipient students. Ensuring that these students have an opportunity to engage in meaningful research at their home institutions will help ensure a stronger and more diverse future US STEM workforce.

- **Expanding our Domestic STEM Workforce:** Supporting US STEM talent at key early stages in their education and careers is crucial to bolstering and diversifying our future STEM workforce. Authorization increases and wider recruitment strategies to the NSF Graduate Research Fellowship Program (H.R. 2225 Sec. 5 (d)(2)) will create opportunities for more of our talented students. The *Supporting Early Career Researchers Act* (H.R. 144 and S. 1260 Sec. 2212) will ensure that more young talented individuals persist in their STEM careers by providing support during a critical point in their careers, and the *MSI STEM Achievement Act* (H.R. 2027) will identify, support and propagate best education, research capacity and competitiveness practices at MSIs. Additionally, DOE developing a 10-year education and outreach plan (H.R. 3593 Sec. 3167B) will increase the impact of DOE research and education activities in expanding the future US STEM workforce.
- **Addressing the Liquid Helium Crisis (H.R. 2225 Sec. 8(c) and H.R. 3593 Sec. 13 Sec 314):** There is no replacement for helium. It is unique among all elements for its ability to reach ultra-cold temperatures, making it one of our nation's most-valuable, non-renewable and irreplaceable natural resources. During the last several years, however, unsustainable price increases and increasingly common global shortages are having negative effects on the US scientific enterprise. Establishing programs that will provide support to researchers to purchase, install, operate and maintain equipment and instrumentation that will reduce their consumption of helium will help secure the future of critical areas of research, including quantum information sciences, and our ability to train the associated workforce.
- **Combating Sexual Harassment in STEM (H.R. 2695 and S. 1260 Sec. 2521):** Inclusive and productive career environments in STEM are critical for the career advancement of all members of

the US scientific enterprise. Sexual harassment in the US R&D ecosystem not only deters women from joining and persisting in the STEM workforce, but it also undermines the career advancement for women in STEM, in particular for women who are members of racial or ethnic minority groups. The *Combating Sexual Harassment in Science Act* represents a significant step forward, taking concrete steps to coordinate interagency efforts in this space, authorizing research programs aiming at reducing sexual harassment and updating the National Academies' report titled "On Being A Scientist: A Guide to Responsible Conduct in Research."

- **Increasing Funding for the Robert Noyce Teacher Scholarship Program (H.R. 2225 Sec. 4 (a)-(e)(2)(B)(i) and Sec. 6(b)):** The United States continues to face an alarming shortage of qualified K-12 STEM teachers, which jeopardizes the US domestic STEM workforce pipeline. In 2018 alone, for example, the projected US production of qualified STEM teachers was 110,000 short of demand. Authorizing a doubling of the funding for the NSF Robert Noyce Teacher Scholarship Program over five years will allow for an essential scaling of teacher preparation programs and of teacher trainees to help address the enormous shortage in qualified STEM teachers across the United States.

We thank you for considering our priorities, all of which aim to strengthen the US scientific enterprise, and we urge you to include these policy provisions in the conference committee's final bill. Thank you again for your leadership in working to ensure the United States remains a global leader in science, technology and innovation. If you have questions or would like to further discuss our priorities, 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