September 4, 2020

National Science Foundation
2415 Eisenhower Avenue
Alexandria, VA 22314

Dear Dr. Feldman, Dr. James, and Dr. Meacham:

As leaders of the nation's scientific societies, we stand ready to work with the National Science Foundation to address and surmount the challenges that COVID-19 poses to the research enterprise. We urge your continued support for the valuable programming we provide and encourage you to foster a culture of innovation in order to meet the short- and long-term needs of the scientific community.

Our societies engage in an array of activities, consistent with the goals laid out in the National Science Board's Vision 2030. As a key component of the science and engineering ecosystem, we are in a position to provide our expertise and efforts to reach broad segments of the scientific community in ways that other institutions cannot.

Scientists may move between institutions and between the academic and commercial sectors; professional societies connect with scientists throughout their careers. Regardless of their career stage or employment or geographic location, societies remain scientists' professional homes. This begins with K-12 educational programs and extends to engagement throughout their career.

As institutions adapt to new ways of conducting research, scientific societies are adapting to meet the needs of today's scientific community. For example, the growing role of interdisciplinary "team science" is fueling a revolution in scientific discovery. Yet individuals often find themselves as the only one in a particular discipline within their institution. Scientific societies are the conduit to bring scientists with shared interests together.

Societies provide unrivaled venues for sharing scientific discoveries. While this has traditionally happened through journals and in-person meetings, while facing the COVID-19 pandemic, our societies are developing new and innovative ways to connect scientists together, and we encourage NSF to embrace and support the unique ways in which scientific societies can do that.

As reflected in the attached list of examples of activities, scientific societies reflect NSF's mission within their respective disciplines through:

- Publishing and disseminating peer-reviewed science
- Creating venues for the sharing of scientific information
- Providing professional development to train the next generation of scientists, as well as for scientists at every career stage, without regard to specific institution
- Educating the public about the fundamental role of science

With the proliferation of online meetings necessitated by the pandemic, we encourage NSF to seize this opportunity to support new forms of innovation in this space. Traditional success metrics for meetings will change, and NSF has a role to play in helping the larger scientific enterprise understand what works in this new environment. Additionally, NSF can support our efforts to promote new ways for scientists to connect across disciplines. Whereas it has traditionally been uncommon for scientists to travel to an in-person meeting outside of their discipline, the relatively low-cost investment of attending online

meetings allows scientists to explore new topics and opportunities. Online meetings have the potential to broaden participation in the sciences, as meetings are now more easily accessible to those without funding or who face other barriers to travel.

Finally, as acknowledged in Vision 2030, we need to encourage research as a global endeavor. Our societies bring scientists together, regardless of location. We all know that discovery knows no boundaries. Our members are at the forefront of demonstrating that. With NSF's support we can look for new ways to foster and advance that spirit.

We look forward to working with you as you lead NSF during these challenging times. Together we can find the exciting and innovative opportunities presented by this unusual situation.

Thank you.

American Anthropological Association
American Association for the Advancement of Science
American Association of Physicists in Medicine
American Association of Physics Teachers
American Chemical Society
American Geophysical Union
American Institute of Biological Sciences
American Institute of Physics
American Mathematical Society
American Meteorological Society
American Psychiatric Association
American Psychological Association
American Society for Cell Biology
American Society for Microbiology
American Society for Pharmacology and Experimental Therapeutics
American Society for Virology
American Society of Plant Biologists
American Society of Tropical Medicine and Hygiene
American Sociological Association
Association for Psychological Science
AVS - The Society for Science and Technology of Materials, Interfaces and Processing
Biophysical Society
Consortium of Social Science Associations
Council of Scientific Society Presidents
Council on Undergraduate Research
Ecological Society of America
Entomological Society of America
Federation of American Societies for Experimental Biology
Federation of Associations in Behavioral and Brain Sciences
Geological Society of America
Mathematical Association of America
National Communication Association
National Council for Science and the Environment
PBM Foundation

Sigma Xi, The Scientific Research Honor Society
Society for Industrial and Applied Mathematics
Society for Neuroscience
Society for Personality Assessment
Society for the Psychological Study of Social Issues
Society for the Study of Reproduction
Society of Vacuum Coaters (SVC)
The Gerontological Society of America
The Optical Society (OSA)

Appendix: Scientific Society Activities Aligned with NSB Vision 2030 Priorities

- **Scientific societies develop community-based visions and plans that inform federal priorities**
    - The Federation of American Societies for Experimental Biology (FASEB) is partnering with other scientific professional societies outside of the biomedical and biological community to promote convergence science especially around Geohealth – the intersection of human, agricultural, and ecological sciences with Earth systems sciences. The goal of FASEB's effort is to investigate and pursue areas where convergence research can help us better understand and address challenges across disciplines. As a federation, FASEB is uniquely positioned to convene a broad range of life science societies, and key to this effort will be identifying and establishing collaborative relationships / agreements with other broad-based societies/federations and private and government institutions such as NSF that are also interested in developing this space.

    - The Plant Science Research Network – a coalition of fifteen plant science societies and allied organizations – has collaborated to develop a comprehensive vision for the future of plant science research. Recommendations from previous reports from the five-year-old network have already been manifest in federal research priorities and programs, and this new comprehensive vision, which integrates research, workforce, and technology components, is sure to do the same.

    - The American Institute of Biological Sciences (AIBS) launched "Building More Resilient Societies and Organizations." A discussion series where leaders from 130 scientific societies and related organizations share resources and identify strategies for tackling issues such as racism and bias in science, building more financially resilient scientific professional associations, and opportunities to deploy new communication tools to foster scientific engagement among scientists from different fields and regions.

- **Scientific societies establish standards for methods and data in scientific disciplines**
    - The American Educational Research Association (AERA) and American Psychological Association (APA) developed Standards for Educational and Psychological Testing (Testing Standards). In a time of wide public concern over high-stakes testing, value-added measures, and testing fairness and validity, this document established standards that underpin effective testing and measurement in schools, the workplace, and other settings.

    - AERA developed *Standards for Reporting on Empirical Social Science Research in AERA Publications*. Beyond the value to education research, the publications standards were cited and helped inform a guidance document from the NSF and Institute of Education Sciences (IES) to define what constitutes transparent and well warranted research for publication reporting and also research proposal development.

- The American Society for Microbiology's (ASM) curriculum guidelines provide a set of concepts and example learning outcomes applicable to any undergraduate general microbiology course. The guidelines can be used as both a benchmark for instructors currently teaching undergraduate microbiology and a guide for instructors developing new courses. The ASM Biosafety Guidelines provide educators with a consistent way to work safely with microorganisms in the classroom and to prevent the further spread of microorganisms.

Deliver Benefits from Research

- **Scientific societies support public private partnerships**
  - Mathematical Association of America (MAA) runs programs (PICMath and StatPREP) to train faculty members to train math students for careers in industry. The latter trains two-year college math profs to use of data-centered methods and pedagogies in introductory statistics courses. This will in turn enhance the preparation of students to meet the demands of a data-driven workplace. More about these found at:

- **Scientific societies connect science to federal policymakers and the public**
  - American Association for the Advancement of Science (AAAS) Science & Technology Policy Fellowships (STPF) provide opportunities to outstanding scientists and engineers to learn first-hand about policymaking and contribute their knowledge and analytical skills in the policy realm. Fellows serve yearlong assignments in the federal government and represent a broad range of backgrounds, disciplines, and career stages. Each year, STPF adds to a growing corps over 3,400 strong of policy-savvy leaders working across academia, government, nonprofits, and industry to serve the nation and citizens around the world.

  - American Institute of Physics (AIP) News and Media Services promote awareness of important scientific research and works to foster a scientifically literate public by producing editorially independent science news for mainstream audiences and brings newsworthy research findings to the attention of the national and international media and the public.

  - The Biophysical Society (BPS) supports wide array of programs to connect science, policy, and the public. Through our advocacy and public affairs programs, BPS and our member volunteers promote the value of basic and biomedical research. Crafting and delivering communications on science through the media, advocacy at both the state and federal levels and to non-scientific audiences through a variety of means. BPS actively supports bringing science to policymakers by sponsoring participation in congressional fellowship programs, putting science directly in legislative offices.

  - The American Meteorological Society's Summer Policy Colloquium is an intense introduction to the U.S. Federal policy process for early and mid-career scientists. It helps develop the capacity of the scientific community for effective and constructive policy engagement. For nearly 20 years, the Colloquium has

engaged speakers at the highest levels of government, including current and former Presidential Science Advisors, members of Congress, agency heads, and key professional staff to interact with Colloquium attendees. Alumni of the program have often moved into key leadership roles, and often credit the Colloquium for providing the impetus for future career pursuits.

- American Psychological Association (APA) hosted two virtual briefings for staff of the U.S. House of Representatives Science Committee and for the Senate Commerce, Science Committee to discuss issues related to the pandemic, including threat perception, social context, science communication, aligning individual and collective interests, governance and leadership, and stress and coping. Featured were psychologist Jay Van Bavel, PhD, and sociologist Robb Willer, PhD, authors of the Nature Human Genetics review article "Using Social and Behavioral Science to Support COVID-19 Pandemic Response."

- The American Chemical Society (ACS) has been a conduit between federal agencies such as the NSF and the practicing scientists who make up its stakeholders, sharing COVID-19 information and opportunities in both directions. In June 2020, ACS hosted a webinar, "Understanding Your Research Needs: Restarting Academic Research with COVID-19." This highlighted the federal COVID-19 response for researchers and support available to chemists, such as communication with their program managers, while also soliciting feedback from attendees on what resources would be useful to them, including guidance on lab opening procedures. ACS continues to work to inform and connect its members, federal agencies, and Congress through an ongoing series of webinars and outreach across these communities.

- **Providing access to scientifically-vetted information to address urgent needs**
  - In response to the urgent need for sharing peer-reviewed scientific research on COVID-19, the ASM created a curated database in April 2020 for scientists to find the most timely and valuable research from the latest journal articles and preprints. In the three months since its creation, researchers have screened 2500 articles each week and over 30,000 users have visited the registry. The COVID-19 Research Registry continues to serve as a trusted resource for all scientists working to address the current challenge and to be better prepared for future coronavirus epidemics.

  - The American Meteorological Society creates a STEM workforce pipeline and contributes to the scientific-literacy of the American public by offering K-12 educators professional development in weather, ocean, and climate science and certifying teachers who in turn introduce science and technology to millions of students. The STEM pipeline is further reinforced with programs for students at all levels and early career scientists.

  - AIBS partnered with the Natural Science Collections Alliance and the Society for the Preservation of Natural History Collections to conduct a series of surveys to identify the financial and human resource impacts of COVID-19 related

disruptions on the scientific and educational programs of natural history museums, university natural science collections, botanical gardens, herbaria, tissue collections, living collections, and other related scientific infrastructure.

- APA created a webinar series "Staying on Track During a Pandemic," which has thus far included sessions on: 1) managing research and research grants during COVID with panelists from the National Science Foundation, NIH's Office of Behavioral and Social Science Research, and NIH's Office of the Director, and 2) adapting research methods in response to COVID-19 featuring psychological scientists describing their experiences reopening their labs following pandemic-related shutdowns.

- The Society for the Psychological Study of Social Issues (SPSSI) is expanding virtual programming in the form of webinars. In the past, SPSSI has hosted several free, widely attended webinars a year. This fall, they are ramping up their webinar programming to better ensure that the results of scientific research are disseminated--not only to SPSSI members but also to the broader research community and relevant practice and policy communities. They will be hosting webinars this fall on reproductive justice research methodology, ageism and COVID-19, and social justice scholarship and activism in the time of COVID-19 and racial injustice. They hope that these three webinars will kick off a year of web-based learning for fellow scholars, practitioners, and policymakers.

- The Ecological Society of America compiled a virtual collection of disease-ecology research papers to help better understand the spread of COVID-19 and the emergence of zoonotic disease; created a special COVID-19 and Ecology blog series; compiled a list of virtual teaching resources; and, held over twelve "Water Cooler Chat" webinars for ecologist to discuss a wide variety of pandemic-related topics with their peers.

- The Society for Personality Assessment (SPA) produced a survey regarding how COVID-19 was impacting the state of the personality assessment field. SPA also developed a guidance document on the Tele-Assessment of Personality and Psychopathology.

- ACS made all of its COVID-19 related published research freely and immediately available in the National Institutes of Health PubMed. To support the current research and development on COVID-19 therapeutic agents and vaccines, the ACS's Chemical Abstract Services (CAS) also produced a special report to provide an overview of published scientific information. The report highlights antiviral strategies involving small molecules and biologics targeting complex molecular interactions involved in coronavirus infection and replication.

Develop STEM Talent for America

- **Scientific societies help train scientists**

- Each summer, the American Mathematical Society runs Math Research Communities. Since the inception of the MRC program in 2008, over 1,400 alumni from 43 different topical areas have participated.

- AIP's Student Programs support young physicists and advocate high-quality science education for all students. This includes a community for physics undergraduates and their mentors via the Society of Physics Students (SPS), the physics honor society Sigma Pi Sigma and career resources. Additional Career Resources for all career levels include a Careers Toolbox, a guide for graduate programs in the physical sciences and engineering and a physical sciences job board.

- The AAAS Catalyzing Advocacy in Science and Engineering (CASE) workshop is an annual program organized to educate STEM graduate students who are interested in learning about the role of science in policy-making, to introduce them to the federal policy-making process, and to empower them with ways to become a voice for basic research throughout their careers.

- The American Association of Physics Teachers (AAPT) Virtual Coffee Hours are offered on a weekly basis. Their goal is to provide opportunities for their members and the community to meet virtually in an informal setting to discuss and share teaching methods and practices with peers. They began these events as a response to COVID19 and the sudden need for many teachers to quickly adapt to online teaching. The calls typically involve anywhere between 35 and 50 physics educators engaged in dialogue - a healthy mix of live conversation and posting of helpful links and resources in the chat box. Several AAPT committees (Diversity in Physics, Laboratories, Physics in Two-Year Colleges, and Physics in High Schools) have led the conversations during one of the virtual coffee hours.

- AAPT emails a weekly list of online teaching resources to the physics education community. AAPT has collected more online resources to help assist physics educators in the process of learning and teaching online.

- The Society for Neuroscience (SfN) provides a wide range of scientific training, professional development, and other resources and information in addition to offering two peer reviewed journals for publication. During the COVID-19 pandemic, SfN has increased its programming around scientific skills building and professional development efforts in order to help laboratories keep their researchers engaged and trained during the shutdown. SfN provides articles, webinars, and other opportunities for researchers to directly connect and interact from their remote locations. These opportunities are highlighted in weekly emails and other regular communications, and include issues of scientific discovery and collaboration, maintaining scientific rigor remotely, and discussions on diversity and equality within neuroscience. The materials are collected and collated at www.sfn.org/covid19.

- Sigma Xi provides grant support to student researchers through their Grants in Aid of Research program (GIAR) and provides ethics training and curricular support through ethics publications, including Sigma Xi popular booklet, Honor in Science. In addition, recognizes the mental health challenges faced by researchers young and old, Sigma Xi is exploring a mechanism to provide mental health counseling to their members.

- The APA 2020 Convention went fully virtual. In addition to many live, main stage and keynote talks, registration also included access to an on-demand library of content including thousands of symposia, workshops, and award presentations. These on-demand resources are available to registered attendees until August 1, 2021 and have already been accessed almost 60,000 times. The virtual platform expanded accessibility for attendees from other countries and people with caregiving responsibilities or jobs that do not typically permit travel; enhanced flexibility to watch sessions when convenient; and improved networking, including live session chats, that made many attendees feel more connected than being on site.

- The APA 2020 Technology, Mind, and Society conference will also now be a virtual showcase. The TMS conference brings together attendees from around the world and representing a wide range of disciplines to explore the synergy between psychological science and the development, evaluation, and impact of technology. This year's virtual event will also feature a panel on funding opportunities, a virtual career fair, and an online training course on science communication.

- **Scientific societies increase diversity across scientific disciplines**
  - American Geophysical Union **(**AGU) has a Diversity and Inclusion Strategic Plan that includes specific programs and strategies in increases. Four major goals were outlined in the 2002 plan: (1) Educate and involve the AGU membership in diversity issues; (2) Enhance and foster participation of scientists, Earth and space science educators, and "pre-service scientists" from underrepresented groups in AGU activities; (3) Increase the visibility of the Earth and space sciences and foster awareness of career opportunities in these fields for underrepresented populations; and (4) Promote changes in the academic culture that remove barriers and disincentives for increasing diversity in the student and faculty populations and that reward member-faculty wishing to pursue these goals.

  - The Ecological Society of America's (ESA) Strategies for Ecology Education, Diversity and Sustainability (SEEDS) is a flagship award-winning education program. Its mission is to diversify and advance the ecology profession through opportunities that stimulate and nurture the interest of underrepresented students to participate, and to lead in ecology. Focused mainly at the undergraduate level, with extension services for communities, high schools, graduate students, and international collaborations, the SEEDS program

promotes an ecology profession with wide representation to ensure environmental understanding and a sustainable future for all.

- AIBS is actively researching gender bias in grant peer review. Findings from this work will inform the development of best practices for increasing equity in the grant peer review processes used by funding organizations and agencies.

- ASM manages the Annual Biomedical Research Conference for Minority Students (ABRCMS), one of the largest communities of underrepresented minorities in science, technology, engineering and mathematics. Students attend this conference to present their research, enhance professional development skills, explore graduate schools, and network.

- AIP's Statistical Research Center collects, analyzes and disseminates data on education, careers and diversity in physics, astronomy and other physical science fields. Recent reports have focused on the skills used by people with physics PhDs, data on underrepresented groups and the faculty job market in physics and astronomy departments.

- BPS strives to increase diversity and opportunities in science, not only for minorities, but for women in science. BPS actively works to enhance the visibility and career opportunities of existing underrepresented biophysicists, promoting the advancement and retention of women and minorities in biophysics; fostering development of professional communities; raising awareness of the scientific contributions of women and minorities in biophysics; and promoting fair and equitable treatment.

- SPSSI is spurring and highlighting new scholarship on the disproportionate effects of COVID-19 through their journal publications. SPSSI publishes three peer-reviewed journals. Their flagship journal, the Journal of Social Issues, has two active calls for papers that relate directly to the COVID-19 pandemic. The first call for papers is for a special issue of JSI on "Magnifying Inequity: Women's Lives During the COVID-19 Pandemic." The second call for papers is for a separate special issue of JSI on the "Psychosocial Impact of COVID-19 Pandemic in the Global South."

- The AAAS program SEA Change aims to address STEM Diversity, Equity and Inclusion (DEI) at scale by working to create practical tools and professional development resources to enable colleges and universities to continue and better operationalize their institutional commitments to student and faculty diversity.

- SPSSI is collaborating with other American Psychological Association (APA) divisions to shape higher education in the time of COVID-19. In partnership with many other APA divisions, several SPSSI members have been working to complete a report on COVID-19 and higher education that will be submitted to the APA Board of Educational Affairs in advance of their fall 2020 meeting. The report focuses on particular populations within higher education that might be

especially adversely affected by the effects of COVID-19 (e.g., students, staff, and faculty of color; early career faculty who also have caregiving responsibilities; contingent faculty) and makes recommendations for what APA can do as an accrediting body to ensure that the effects of COVID-19 are not most felt by those most vulnerable.

- ACS adapted Project SEED (Summer Experiences for the Economically Disadvantaged), a paid summer internship program, to a virtual internship experience, in the wake of the COVID-19 pandemic. Internships are a vital entry point into future careers, and ensuring that students had the ability to participate in these experiences with remote access and additional resources, allowed for continued support to underrepresented communities.

Foster a Global S & E Community

- **Scientific societies collaborate across borders to improve health and well-being**
  - ASM's Global Report outlines how ASM leverages its extensive global membership to provide high-quality training, mentorship, and cost-effective public health solutions in over 20 countries. With its extensive network of laboratory experts, ASM local teams ensure their countries are prepared to face a multitude of public health threats.

  - BPS brings together biophysicists from the US and abroad to advance basic and biomedical research for the advancement of health, scientific research and innovation. BPS believes that leadership in global scientific and technological research requires the talents, skills, and ideas of STEM professionals with different backgrounds, experiences, cultures, and perspectives.

- **Scientific societies bring together international scholars**
  - The Optical Society (OSA) held a virtual CLEO 2020 conference and reached 20,000 participants from 75 countries in early May 2020, compared with 3,800 registrants for the in-person-only 2019 conference held in San Jose, CA.

  - As labs were shuttered across the country and researchers faced travel restrictions, FASEB launched the 2020 FASEB Science Research Conference Series online. Pivoting from in-person conferences to virtual conferences because of the COVID-19 pandemic, the virtual Science Research Conferences underscored the need, now more than ever, to continue to share and collaborate on research findings. Six online conferences were offered providing educational sessions, digital forums to ask presenters questions in live Q&A, time to engage with the speakers in roundtable discussions, and the ability to browse poster presentations. The online conferences offered discounted rates for students and trainees and the virtual format allowed for increased participation by researchers outside of the United States.