June 1, 2011

The Honorable Barbara A. Mikulski
United States Senate
Washington, DC 20510

Dear Senator Mikulski,

The American Physiological Society (APS) thanks you for your sustained support of science at the National Science Foundation (NSF) and NASA. The APS is a professional society, numbering 10,000 members, dedicated to fostering research and education as well as the dissemination of scientific knowledge concerning how the organs and systems of the body function. In this letter we offer our recommendations for FY 2012 funding levels for both the NSF and NASA.

- The APS recommends that Congress fund the FY 2012 NSF budget at a level of $7.8 billion. Funding at this level will maintain the current program capacity and allow for modest growth.
- The APS urges Congress to restore cuts to NASA’s life sciences research budgets and make every effort to fully fund the proposed 12% increase in the Human Research Program.

The APS recognizes that the economic challenges facing the country demand that government resources be used judiciously. NSF and NASA support scientific research and technology development programs that are critical to the future technological excellence and economic stability of the United States. Federal investment in research is critically important because breakthroughs in basic and translational research are the foundation for new technologies that help patients, fuel our economy, and provide jobs.

**NSF funds outstanding research and education programs**

The basic science initiatives funded by the NSF are driven by the most fundamental principles of scientific inquiry. The agency provides support for approximately 20% of federally funded basic science and is the major source of support (68%) for non-medical biology research, including integrative, comparative, and evolutionary biology, as well as interdisciplinary biological research. The majority of the funding NSF provides is awarded through competitive, merit-based peer review, which ensures that the best possible projects are supported. NSF has an excellent record of accomplishment in terms of funding research endeavors that have produced results with far-reaching potential. It has been shown time and again that the knowledge gained through basic biological research is the foundation for more applied studies that lead to improvements in the lives of humans, animals and ecosystems.

In addition to funding innovative research in labs around the country, the NSF also fosters the next generation of scientists through education programs. The APS is proud to have partnered with NSF in this program to provide training opportunities and career development activities to enhance the participation of underrepresented minorities in science. The APS was recognized for these efforts in 2003 with a Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring (PAESMEM), funding for which was provided by NSF and was reinvested in our education programs. We believe that NSF is uniquely suited to
administer science education programs of the highest quality, and we recommend that Congress continue to provide federal funds for science education through the NSF.

In order to maintain the momentum generated by the ARRA investment and sustain the agency’s research capacity, the APS joins the Federation of American Societies for Experimental Biology to recommend that the agency be funded at a level of $7.8 billion in FY 2012.

**Support for Life Sciences Research should be increased at NASA**

NASA sponsors research across a broad range of the basic and applied life sciences, including gravitational biology, biomedical research and the Human Research Program (HRP). The gravitational biology and biomedical research programs explore fundamental scientific questions through research carried out both on Earth and aboard the space shuttle and International Space Station, environments that offer the unique ability to conduct experiments in the space environment. The HRP at NASA conducts unique research and develops countermeasures with the goal of enabling safe and productive human space exploration.

During prolonged space flight, the physiological changes that occur due to microgravity, increased exposure to radiation, confined living quarters, and alterations in eating and sleeping patterns can lead to debilitating conditions and reduced ability to perform tasks. APS scientists are actively engaged in research that explores the physiological basis of these problems with the goal of contributing to the identification of therapeutic targets and development of countermeasures. The knowledge gained from this research is not only relevant to humans traveling in space, but is also directly applicable to human health on Earth. For example, some of the muscle and bone changes observed in astronauts after prolonged space flight are similar to those seen in patients confined to bed rest during periods of critical illness as well as during the process of aging.

NASA is the only agency whose mission addresses the biomedical challenges of manned space exploration. Recently the amount of money available for conducting this kind of research at NASA has dwindled. The overall number of projects and investigators supported by NASA through the HRP, National Space Biomedical Research Institute and Exploration and Technology Development program has decreased markedly over the last 5 years, falling from more than 900 projects funded in FY 2005 to only 338 in FY 2011 ([https://taskbook.nasaprs.com/Publication/](https://taskbook.nasaprs.com/Publication/)). In the past, appropriations legislation specified funding levels for biomedical research and gravitational biology, but recent internal reorganizations at NASA have made it difficult to understand how much money is being spent on these programs from year to year. The APS recommends that funding streams for these important fundamental research programs be clearly identified and tracked within the NASA budget.

The FY 2012 budget request to Congress includes a planned 12% increase in the HRP budget. We applaud this proposal and urge you to make every effort to fully fund that request. The APS also recommends restoration of cuts to peer-reviewed life sciences research.

As highlighted above, investment in the basic sciences is critical to our nation’s technological and economic future. The APS urges you to make every effort to provide these agencies with increased funding for FY 2012.

Sincerely,

Joey P. Granger, Ph.D.
President
American Physiological Society