



*Integrating
the Life Sciences
from Molecule to
Organism*

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October 4, 2011

Dr. Shirley Tilghman, Ph.D.

President

Princeton University

Chair, NIH Advisory Committee to the Director Working Group on the Future
Biomedical

Research Workforce

Dear Dr. Tilghman,

The American Physiological Society (APS) appreciates the opportunity to comment on the Request for Information (RFI): Input into the Deliberations of the Advisory Committee to the NIH Director Working Group on the Future Biomedical Workforce (NOT-OD-11-106). The APS is a professional society dedicated to fostering research and education as well as the dissemination of scientific knowledge concerning how the organs and systems of the body work. The Society was founded in 1887 and now has nearly 10,000 member physiologists who conduct research at colleges, universities, medical schools, and other public and private research institutions across the U.S.

The continued success of the American biomedical research enterprise depends on developing a sustainable model for educating a well-trained and diverse workforce that is prepared to meet the country's need for individuals with scientific training. At the outset it must be emphasized that the workforce decisions made now will have very long-term consequences and must be considered with a long-term perspective on needs. Decisions must not be overly influenced by current scientific trends because history has shown that trends change significantly with time. We thus advocate a balanced approach that recognizes the continued importance of research at all levels from molecular to organismal. Below we offer our comments on some of the areas outlined in the RFI.

The balance between supply, including the number of domestic and foreign trained PhDs and post-docs, and demand, i.e. post-training career opportunities.

The APS recognizes the need to balance the number of trainees entering the education pipeline with the post-training career opportunities available. Absolutely fundamental to such a discussion will be the long-term future financial health of the NIH. However, we also wish to caution that determining the optimal number is complex and imposing strict limitations could lead to unintended consequences, particularly in the long term, which could negatively affect our international competitiveness in biomedical research. One approach as outlined below, would be to change the nature of the PhD training process, which could provide added flexibility and will be more readily adaptable to shifts in demand for qualified biomedical researchers.

Consideration should also be given to ensuring balance between disciplines. Some fields of research may have too many students entering training programs for the available number of post-graduate career opportunities, while others have too few students entering the pipeline.

Characteristics of PhD training in biomedical research

Graduate training (at the pre- and post-doctoral levels) should be focused on trainees developing the skills and knowledge required to solve our nation's biomedical and health problems and become productive members of the biomedical workforce. Trainees should be provided with career development resources designed to match the needs of the marketplace.

Currently PhD training programs do an excellent job of preparing students for careers in academic science. But biomedicine needs a broader diversity of professionals to be successful, and PhD programs are not designed to prepare students for these careers. One way to achieve this goal would be to alter pre-doctoral graduate training such that the first two years provide a broad base of knowledge and skills, including program curriculum, research experience and career development. Career development should include the skills necessary to run a successful research program including business skills, project and lab management, as well as resources to prepare students for careers in fields beyond academic bench research. This two year training program may culminate in the award of a Master of Science degree, followed by entry into a PhD program. Given the prior two years of training we would anticipate that the PhD program would be more focused on research with reduced emphasis on course work.

Clearly, new mechanisms of support will need to be developed for the Master's degree portion of training, including scholarships, loans and teaching assistantships; such funding mechanisms will be especially important to ensure that under served minority groups continue to enter the biomedical research work force. Once a student moves to the PhD program we would anticipate that federal support would be available from training grants and other similar mechanisms.

We anticipate that this approach will provide graduate students an additional set of basic skills to expand their career opportunities, as well as result in a more flexible pipeline for biomedical research by effectively increasing the scientific workforce while at the same time providing for increased career opportunities.

Characteristics of clinician-research training

Physician scientists have a critical role to play in advancing basic, translational and clinical research. In particular physician scientists play a unique role in facilitating the understanding of the clinical relevance of basic research as well as making major contributions to both basic and translational research. Physician scientists should be encouraged to enter and remain in the biomedical research workforce, and consideration should be given to the specific impediments which have caused a decrease in this segment of the investigator pool. We encourage the working group to thoroughly survey the factors that contribute to physician scientists' success in developing a career in research, and conversely those factors that cause them to leave the research workforce.

Issues related to the attractiveness of biomedical research careers (e.g. salary, working conditions, availability of research funding)

Maintaining and increasing the attractiveness of research careers should be a central goal of any efforts to reform the current training model. Limited research funding, reduced success rates, fewer available tenure-track academic jobs, increased length of training, and requirements to support a large percentage of their salary from grants have all combined to reduce the attractiveness of research careers. In the long-term this will discourage the most qualified students from pursuing research careers. Therefore, we strongly urge the NIH to examine the potential impact of any proposed changes in support for trainees to try to minimize any long-term negative impact on our international competitiveness in biomedical research.

The effect of changes in NIH policies on investigators, grantee institutions and the broader research enterprise.

As noted earlier, changes to the current training model will have far-reaching impacts on the research enterprise. Therefore prior to implementation of any changes, we strongly urge the NIH to model and consider the immediate and long-term impacts of any changes as well as obtain input from all groups that will be affected by these changes, including investigators, the institutional community and industrial partners.

Maintaining a first rate biomedical workforce now and in the future is critical to the health and welfare of Americans and economic competitiveness. Thank you for considering our comments. We look forward to the report of the working group.

Sincerely,

A handwritten signature in black ink that reads "Joey P. Granger". The signature is written in a cursive, flowing style.

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