FASEB
Quality Life Through Research

Federation of American Societies for Experimental Biology

Member Societies
(in chronological order by date joined)

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American College of Sports Medicine
Biomedical Engineering Society
Genetics Society of America
American Federation for Medical Research
The Histochemical Society

Representing over 100,000 biological and biomedical researchers.

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Shirley Tilghman, PhD
President
Princeton University
Chair, NIH Advisory Committee to the Director Working Group on the Future Biomedical Research Workforce

Dear Dr. Tilghman:

The Federation of American Societies for Experimental Biology (FASEB) 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 Research Workforce." As an organization composed of 24 professional societies that represent more than 100,000 scientists, FASEB recognizes the importance of proactively addressing biomedical workforce needs in order to foster the quality, productivity, and innovation necessary for the United States to maintain its preeminence in biomedical research. Below we provide our perspective as to how NIH could mitigate the challenges facing the enterprise as well as on the potential benefits and drawbacks of some of the policy changes under consideration.

All of the issues identified in the RFI are important considerations in developing a model of the future biomedical research workforce, but the declining attractiveness of a career in biomedical research and its impact on the advancement of science is the primary concern of the FASEB community. As I'm sure you are aware, within the U.S., most academic biomedical researchers rely heavily on extramural grants to fund the research that they conduct, and a system has evolved in which graduate students and postdoctoral scholars provide much of the workforce. For many years this system has worked reasonably well in that trainees develop in-depth knowledge of their research projects both technically and intellectually, and this knowledge combined with didactic training gives them the foundation and experience needed to establish their own successful independent research careers. The symbiotic relationship between the trainer and the trainee has led to tremendous advances in biomedical science while training a workforce for academia, industry, and other sectors.

This system, however, is facing challenges that are compromising productivity of established laboratories and discouraging talented young people from choosing a career in the biological sciences. Declining success rates for NIH grants have increased the time investigators spend seeking funding, thereby decreasing the amount of time available for research. When investigators have prolonged lapses in funding, entire research programs suffer, and promising research is prematurely terminated. Moreover, limited funding for research has stalled growth in research-intensive positions in academia and other sectors. Scientifically gifted people who

are choosing their career paths after college are aware of the problems, and unless changes occur, it will become increasingly more difficult for the U.S. to recruit and retain scientific talent.

NIH could facilitate the recruitment of a sufficient number of graduate students and postdoctoral scholars to fulfill workforce needs by encouraging institutions to provide training applicable to a broader range of scientific careers. Doctoral programs in the biomedical sciences have historically focused on training students to become academic researchers. This model persists even though there are currently far more trainees than positions in academe. By broadening graduate and postdoctoral education to include career and professional development planning and the acquisition of a broad set of transferrable skills, NIH could continue to cultivate the talent necessary to fill research positions in academe, industry, and government while facilitating the entry of trainees into rewarding science-related positions in education, administration, communication, policy, and other professions.

To facilitate training for a broader range of careers, FASEB recommends the following changes to NIH training policies:

1) In evaluating the success of its training programs, NIH should consider how well trainees have been prepared for a broad range of scientific and science-related careers, not just careers as an NIH-funded investigator;

2) NIH should encourage grantee institutions to establish or expand career and professional development programs. These programs should be available to a large number of trainees and focus on the development of core competencies, including problem solving, teamwork, leadership, management, communication, professional conduct, and responsible conduct of research;

3) NIH should develop, or fund the development of, training materials that institutions could use in training programs, courses, and workshops aimed at cultivating these core competencies;

4) NIH should encourage its investigators to develop a plan for training and mentoring graduate students and postdoctoral scholars supported on their research grants. Ideally, these plans would address how trainees would acquire the scientific knowledge and technical skills relevant to their disciplines, as well as training in the competencies listed above;

5) NIH should encourage trainees to develop, in coordination with their research mentors, individual development plans in which they identify short- and long-term career goals and articulate a plan for meeting them;

6) NIH should continue to emphasize that postdoctoral scholars are trainees and should be provided with career and professional development training as well as training in research; and

7) NIH should issue guidance clarifying that trainees supported on research grants can devote effort to career and professional development activities that are not directly related to the research aims of the grant on which they are supported.

Although facilitating the entry of trainees into non-research science careers would reduce competition for scarce research jobs and resources, we understand that in order to alleviate the pressure on the enterprise, it may be necessary for NIH to make more significant changes to the size, structure, and mechanisms of support for the scientific workforce. We provide below our perspective on the pros and cons of some of the policy changes under consideration.

Supply of graduate students and postdoctoral scholars
We recognize that the modeling may point to the need to reduce the number of graduate students and/or postdoctoral scholars who are training in the biomedical sciences.
Although reducing supply could reduce competition for research resources and jobs, it could also create a labor shortage for labs, ultimately decreasing scientific productivity and weakening the nation's competitive edge in science and engineering. When research budgets increase in the future, we may not have developed the domestic talent pool to take full advantage of that investment. Reducing the supply of PhDs could also lead to a concentration of research training at large institutions. This would compromise the research programs at smaller institutions, as well as the diversity of biomedical research training overall.

Professional/staff scientist positions
Staffing academic laboratories with more professional/staff scientists and fewer trainees also has benefits as well as costs. Establishing more permanent positions that provide salaries and benefits commensurate with what professionals of equal experience might receive outside of academe could make working in an academic research laboratory more attractive, encourage PhDs to stay in the field, and reduce the need for trainees and the consequent competition for jobs and resources. This model could also increase laboratory productivity and efficiency insofar as investigators would not have to train new groups of graduate students and postdoctoral scholars repeatedly. Greater reliance on high skilled professional staff could, however, increase personnel costs, particularly if those costs are not offset by savings in graduate tuition. This would leave less money for equipment, supplies, and other research expenses, which could actually diminish laboratory productivity. Any increase in the number of staff scientist positions would need to be accompanied by funding policy changes that adjust research project budgets for the additional cost associated with professional staff.

We are also concerned about the impact that a professional staffing model might have on the intellectual environment in laboratories. A continuous, diverse supply of graduate students and postdoctoral scholars working together in a teaching and learning environment infuses novel ideas and energy into laboratories, spurring new research directions and discoveries. Any plan going forward should not negatively affect the intellectual environment of today's research laboratories.

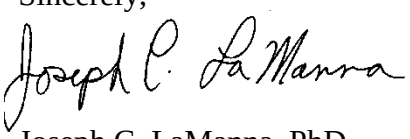
Training supported by training grants and fellowships versus research grants
NIH's National Research Service Award (NRSA) is the gold standard in research training. Drawing on a large group of training faculty, training grants provide more resources and a greater range of experience than can be found in a single laboratory. NIH mandates specific training components and activities for trainees and fellows whereas others are added by the grantee. These efforts are described in the applications and monitored over the life of the grant, ensuring that graduate students and postdoctoral scholars supported on the NRSA receive a high quality training experience. We are concerned, however, that shifting trainees from support on research grants to training grants could make it difficult for institutions that do not have the breadth of resources to compete successfully for training grants to support—and therefore to recruit—graduate students and postdoctoral scholars for training in their areas of special strength.

We strongly encourage NIH to conduct a thorough study of the potential ramifications of these and any other major changes to the size and structure of the research workforce before deciding if they should be implemented. This effort should incorporate the collection of more and higher quality data than is currently available on laboratory personnel supported by NIH, including trainees; a comparative analysis of the career outcomes of trainees supported on training grants, fellowships, and research

grants; and the development of a model of the ramifications of different laboratory staffing configurations that takes into account labor costs, labor recruitment and retention, and research productivity.

Thank you for considering FASEB's comments on these issues. Please do not hesitate to contact us if we can provide you with more information.

Sincerely,



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