

**NIGMS TRAINING STRATEGIC PLANNING**  
**BPS RESPONSE**  
**April 21, 2010**

*The Biophysical Society public affairs committee solicited feedback from its membership on these questions. The responses here reflect that feedback as well as discussions of the public affairs committee. The responses are not a consensus statement of the Society, but rather important points we hope NIGMS will consider as they undertake the strategic planning process.*

**WHAT CONSTITUTES "SUCCESS" IN BIOMEDICAL RESEARCH TRAINING FROM THE PERSPECTIVES OF AN INDIVIDUAL TRAINEE, AN INSTITUTION, AND SOCIETY?**

*A successful training program*

- (a) supports trainees who are prospects for science-related careers,*
- (b) provides them with an introduction to the scientific community, the scientific background and a comprehensive research experience required for a successful science-related career, technical and communication training, and professional values they need to contribute meaningfully over their careers, and*
- (c) then helps them to get appropriate science-related jobs. Subsequent positions do not have to be academic to be considered "successful."*

**WHAT CAN NIGMS DO TO ENCOURAGE AN OPTIMAL BALANCE OF BREADTH AND DEPTH IN RESEARCH TRAINING?**

*Based on the comments The Biophysical Society collected, there are at least two views, on how NIGMS can encourage an optimal balance of breadth and depth in research training. Two of those views are presented here.*

*A) Institutional predoctoral training grants should continue to have pride of place in the NIGMS portfolio. Training grants provide first- and second-year students the flexibility to explore several labs through rotations. These grants also provide support for students who enter graduate school either from a different field, or not directly from an undergraduate institution, and do not have the resources to prepare an application for an individual fellowship before beginning graduate school. More advanced trainees get the chance to explore detailed training in areas that could not be justified within the specific aims of a results-oriented R01 awarded to the mentor's lab. These programs should continue.*

*B) NIGMS can encourage balance of breadth and depth by providing grants to trainees, rather than to institutions and/or academic departments. Competitive predoctoral and postdoctoral grant programs, similar to the F30, F31, and F32 programs, which fund individuals, would require institutions to compete for the best students and in turn focus on how well they actually train students. It would also remove financial pressures from the trainee and encourage students and their mentors alike to pursue more creative, innovative experiments rather than rote, safe ones- because a student can take an extra year to perform a revolutionary, go-for-it experiment without sinking the lab financially. In addition, NIGMS could encourage trainees to take risks and, in turn, learn how to do so responsibly.*

### **WHAT CAN NIGMS DO THROUGH ITS TRAINING PROGRAMS TO PROMOTE AND ENCOURAGE GREATER DIVERSITY IN THE BIOMEDICAL RESEARCH WORKFORCE?**

*We believe that in addition to the results of many current efforts to accomplish this goal, diversity in the biomedical research workforce will increase in part when trainees understand the many and varied careers available to them. When these careers are presented to trainees at all levels—from recruitment, through seminars for trainees, through follow-up surveys, this will expand the training pool, help to retain trainees, and lead naturally to contacts outside the training institution.*

### **RECOGNIZING THAT STUDENTS HAVE DIFFERENT CAREER GOALS AND INTERESTS, SHOULD NIGMS ENCOURAGE GREATER FLEXIBILITY IN TRAINING, AND IF SO, HOW?**

*NIGMS should encourage greater flexibility in training. To enable more career choices, the training of students and postdocs must include education in writing in professional and technical contexts, and instructional support for those interested in teaching to learn how to do that well. These are skills that benefit the greater scientific community in the long run.*

*The NIH now has programs for postdocs interested in taking on teaching roles, such as the SPIRE program at UNC, however, these are small and could benefit from more publicity. Expanding these programs, encouraging the development of others, and integrating the most successful aspects of these programs into F32 awards would help expand access to teaching training and opportunities.*

*To encourage greater diversity in the outcomes of training, NIGMS itself should issue RFAs that broaden the definition of success in training, explicitly including industrial research, teaching, administration, science journalism, and policy, as successful career paths for former trainees. While the goal should be first and foremost to train future researchers, the current reality is that the growth in academia is not sustainable and expecting all graduates to find a home in academic research is unrealistic. If NIGMS*

*needs more explicit definitions, the Institute could refer to The US Department of Labor's Bureau of Labor Statistics' "standard Occupational Classification" and highlight appropriate occupations.*

**WHAT SHOULD NIGMS DO TO ENSURE THAT INSTITUTIONS MONITOR, MEASURE, AND CONTINUOUSLY IMPROVE THE QUALITY OF THEIR TRAINING EFFORTS?**

*Institutions already monitor, measure, and continuously improve the quality of their training efforts, spurred on by existing stakeholders such as accrediting organizations, professional societies, alumni, trustees, and prospective students.*

*It may be appropriate to suggest a minor increase in the compliance responsibilities of the training institution. If students do not continue in research careers, many training programs stop following them carefully at present. The Training Tables that accompany renewal applications contain entries such as "not in research". We suggest that the standard Training Tables could include a column referring to the job classifications discussed in Section 5.*

*Additionally, the NIH, much like HHMI and the Hertz foundation, should enable trainees supported by the NIH to update a database that tracks the careers of its trainees. This would allow for a better understanding of the careers trainees have and which institutions are successfully training members of the scientific community.*

**DO YOU HAVE OTHER COMMENTS OR RECOMMENDATIONS REGARDING NIGMS-SPONSORED TRAINING?**

*NIGMS is the basic science arm of the NIH and we suggest the institute continue its emphasis on graduate and postdoctoral training in the basic sciences.*

*At the same time that NIGMS broadens the definition of acceptable career outcomes, NIGMS, in its instructions to Training Grant Study Sections, must also pro-actively counteract any peer review system's tendency to select against risk-taking. Teaching graduate students and postdocs to recognize high-risk, high-reward science is vital for producing scientific leaders. Training Grant Study Sections now count the number of first-authored papers (regardless of journal quality), calculate the time to graduation, and analyze the structure of advisory committees; but Study Sections do not ask whether trainees have produced transformative, high-impact research. Scientific innovation and scientific impact should take their place in training program evaluations, as in research grant reviews.*