

Mon 12/5/2011 12:09 AM  
response to Fed Reg notice 62870

Hello,

I am writing to respond to the Request for Information: Building a 21st Century Bioeconomy which appeared in the Federal Register Oct 11, 2011.

Question 5) What are the barriers preventing biological research discoveries from moving from the lab to commercial markets?

There are several causes. One part is due to the lack of training scientists receive in how to commercialize their technology. A second is a lack of funding for the development steps necessary. NIH, NSF, EPA, etc. typically fund research; they do not support development in the same way that a large firm would have separate R&D divisions. In order for more technologies developed in U.S. labs to lead to products there needs to be a fundamental shift in how we fund science and technology so as to raise the profile and financial support for development. This could be achieved by requiring that some proportion of federally funded projects have a path by which the work could lead to commercialization (and have private sector partners). Several agencies took a similar step recently with requirements to include non-federal matching funds for any research project. This does not accomplish the task of furthering development. If the federal science and technology priorities are research, that is what we will have. If the priorities are research and development (and supported in that way), then both will be facilitated by the science community. An important additional factor includes the challenging regulatory steps (and difficulty gaining funding to permit that they be addressed).

Question 6) What changes to SBIR / STTR programs are needed?

These programs are essential for fostering development, but they need to be better connected to the foundational research supported by the agencies. There currently is no direct connection between traditionally supported research and the types of development done in SBIR / STTR programs. An IP bridge needs to be constructed. Also, some firms use SBIR / STTR programs as a frequent stream of support but do not translate many of these projects into products. A comprehensive review of such track record needs to be a part of the proposal review.

Question 9) What modifications should be made to professional training programs to better prepare scientists and engineers for private-sector bioeconomy jobs?

A substantial percentage of graduate students (seeking M.S. and Ph.D. degrees) are not U.S. citizens and are supported by research grants predominantly from federal sources. Many graduate programs do this because there is a lack in the number of U.S. citizens that receive B.S. degrees who desire to continue for an advanced degree since good, high-paying jobs can be had, especially in engineering, with only the B.S. degree. This process inevitably results in federal funds supporting the training of students who then return to their home country due to the large difficulties in obtaining a U.S. work visa after their studies are complete. A change in policy is needed such that any student receiving an advanced degree in an area of technical need (science or engineering or similar) should receive along with their diploma an expedited process for obtaining citizenship. The current process is in effect a brain drain on U.S. resources.

A further step is to support K-12 education on the translation of technologies. Schools focus on the discovery part of science, but very little on the conversion to products. We need to lay the groundwork in science education that science's goal is not just to gain knowledge, but to make improvements in the lives of people. Higher education programs are quite willing to work with K12 (as evidenced by the GK-12 (graduate K-12) programs supported by NSF). These activities need to be expanded.

Mark Riley, Ph.D.  
Professor and Department Head  
Ag. and Biosystems Engineering  
The University of Arizona