Nurturing Young Scientists

THE UNITED STATES NATIONAL ACADEMIES HAS CONVENED A BLUE-RIBBON COMMITTEE TO RECOMMEND ways to keep research universities healthy.* It will be important for this panel, and for universities, to recognize the value of early career scientists—the transformative discoveries they will make and the students they will influence—as key to America’s future. The good news is that federal and private funding for breakthrough research and innovative approaches in science education are growing for early career researchers. Now, universities must step up to the plate and create frameworks in which interdisciplinary research and synergistic teaching can thrive. Achieving these goals will require a fundamental cultural change.

Academia must do more to nurture early career scientists by reevaluating promotion and tenure policies. The criteria should affirm and reward cross-boundary collaborations that are essential to breakthrough science. This entails redefining what constitutes original and independent contributions to a research agenda that involves multiple partners, and rewarding those who forge robust interactions among groups.

Most universities have a department-centric organization. Each department’s faculty judges its peers according to the norms of their own discipline, a perspective that makes it difficult for interdisciplinary faculty to receive a fair hearing. Therefore, universities need to give science departments a stake in the success of collaborative ventures by rewarding individuals and departments that build bridges to other groups, are community-minded, and share credit. Important departmental benefits include broadened research boundaries, new tools for research, more diverse faculty and students, research funds from non-traditional sources, and curricula that engage more students.

Currently, a handful of schools address collaborative/interdisciplinary research for early career faculty. At the University of Wisconsin, cross-departmental committees oversee progress for untenured faculty in both research and teaching. At Brandeis University, there are explicit expectations that collaborative/interdisciplinary research is a value-added contribution to a candidate’s tenure profile. And at the University of Arizona, written agreements among department heads, deans, the provost, and newly hired faculty define the role of collaborative/interdisciplinary research in tenure and promotion. The common policy denominator is early, close, and continual communication among untenured and senior faculty and institutional administrators. This constant consultation is essential to overcoming bias and sustaining agreed-upon, progressive evaluation pathways.

Beyond a proclivity for innovative research, early career professors often seek to integrate their research and teaching, eager to bring the vitality of their own science into the classroom to engage students. Unfortunately, great teaching skills are still considered to be of secondary value to career success at research universities. This long-standing problem must be solved. Carl Wieman, the Nobel Prize–winning physicist recently nominated by President Obama to be the Associate Director for Science in the Office of Science and Technology Policy, testified before the U.S. Senate in May that “To maintain U.S. economic competitiveness and leadership in innovation, we need to also have leadership in STEM [science, technology, education, and mathematics] education.” The National Academies and several private foundations have an annual institute where research university faculty teams collaborate to improve student learning in introductory college biology classes. The key here is building a critical mass of individuals for long-term cultural change within a given department, something that can only be sustained through appropriate tenure and promotion policies.

It is imperative to grow our economy through global leadership in science. To accomplish this goal, the National Academies panel must look well beyond funding issues, toward creating incentives that foster new collaborative communities of early career scientists and the students they teach.

— James Gentile and Sherwood Boehlert
