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Source: BioScience, 63(4) : 254

Published By: American Institute of Biological Sciences

URL: https://doi.org/10.1525/bio.2013.63.4.4

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PULSE: Implementing Change within and among Life Science Departments

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Many efforts are under way to support individual faculty-member development and course revision to achieve the outcomes described in the American Association for the Advancement of Science's *Vision and Change: A Call to Action* (2011) report. For their contribution, staff from the National Science Foundation (NSF), the Howard Hughes Medical Institute (HHMI), and the National Institutes of Health's National Institute of General Medical Sciences (NIH-NIGMS) wanted to support systemic institutional change for entire departments. To that end, they formed the Partnership for Undergraduate Life Sciences Education (PULSE) to collaboratively focus their resources on catalyzing departmental change at all institutions of higher learning. Shawn Gaillard, PULSE Steering Committee member and program director at NIH-NIGMS, said that it is the partnership of the three agencies working together that makes PULSE distinct.

In September, the PULSE Steering Committee selected 40 faculty members with expertise in leading change from 2-year colleges, liberal arts colleges, regional and comprehensive universities, and research universities to serve as fellows for a yearlong project. "We decided to name them the Vision and Change Leadership Fellows because we wanted to anchor it to the *Vision and Change* report," said Judith A. Verbeke, PULSE Steering Committee member and acting director of the NSF Division of Biological Infrastructure. The fellows were charged with leading a national conversation on how to implement changes at the department level, explains Cynthia Bauerle, another PULSE Steering Committee member and assistant director of precollege and undergraduate education at the HHMI.

Soon after their selection, the fellows participated in a workshop at the HHMI to develop an action plan. Although an implementation framework was the product originally envisioned, the fellows chose four projects in response to their charge. Together, the projects form a cohesive plan to support college and university departments, regardless of where they are in terms of implementing the *Vision and Change* report's recommendations, said Teresa Balser, a fellow and dean of the College of Agricultural and Life Sciences at the University of Florida.

One project is "Raising the PULSE" by increasing awareness within the life science community and introducing the *Vision and Change* report to leaders of departments who are not yet familiar with it. According to a letter from the fellows to the community, this group is "celebrating the good work already under way around the country and inspiring other departments to embrace the challenge."

A second project is "Taking the PULSE" of departments already engaged in implementing changes by sharing assessment evidence, developing new tools, and establishing a certification and recognition program for exemplary departments. The certification process would act as a guide for departments seeking to engage in substantive curricular change and would be flexible enough that departments at all institution types would be able to envision recognition for adopting the recommendations of *Vision and Change*. "Inclusion of fellows from all types of institutions provides tremendous recognition by the PULSE Steering Committee that undergraduate life science students at every school can and should benefit from the ideas behind *Vision and Change*," commented Kate Marley, a fellow and chair of the Science, Mathematics, and Information Science and Technology Division at Doane College, in Crete, Nebraska.

The "Faculty Networks" project is building a toolkit of resources, making connections between existing faculty-development initiatives both nationally and regionally, and hosting events so that departments can share knowledge. The fourth project is "Spreading the PULSE" by recruiting and training members from the community to serve as *Vision and Change* ambassadors. The ambassadors will use the benchmarks developed by the "Taking the PULSE" group and the toolkit of resources to guide departments in implementing changes.

"It is important to emphasize that the PULSE initiative is a subset of the broader *Vision and Change* activities," says Loretta Brancaccio-Taras, fellow and chair of the Department of Biological Sciences at Kingsborough Community College, in Brooklyn, New York. The fellows' projects are a critical piece of the work that is needed to achieve the kind of large-scale institutional change envisioned in the *Vision and Change* report. "The goal of the fellows is to provide a framework to catalyze this change and build a mechanism to sustain the changes departments make," adds Akif Uzman, fellow and interim dean at the College of Sciences and Technology and professor of biology and biochemistry at the University of Houston–Downtown.

As the fellows continue their work, they will reach out to the life science community on a regular basis. They are facilitating conversations at local, regional, national, and global events through an online network (*http://pulsecommunity.org*) that had over 800 members as of January 2013. All stakeholders in undergraduate life science education are encouraged to contribute their expertise and ideas as the fellows work with the community to improve life sciences education for all students.

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doi:10.1525/bio.2013.63.4.4

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