### Feature Editorial Update

# Next Steps for *Vision and Change*: Moving from Setting the Vision to Change

### Erin L. Dolan

University of Georgia, Athens, GA 30602

A large part of the biology community, including faculty, students, and administrators, as well as representatives of professional societies and funding agencies, met in Washington, D.C., in 2009 to discuss how to bring biology undergraduate education into the 21st century. The aim was to ensure that biology faculty teach in a way that reflects exciting changes in the discipline and current knowledge about how people learn, while making use of new technologies. The initial results were Vision and Change in Undergraduate Education: A Call for Action, a document summarizing the need for change and proposing how that need could be met, and a Web presence to encourage continual dialogue (http://visionandchange.org). The print copy of the document has been distributed to more than 6000 people thus far, and the Web page has had more than 11,000 hits. Many life sciences societies and departments are using Vision and Change as a basis for discussions of how to improve undergraduate education within their field, and there is increasing reference to it in national reports (National Research Council, 2012; President's Council of Advisors on Science and Technology, 2012). Funding agencies are also reporting that many proposals are citing Vision and Change, and the projects they describe reflect recommendations made within that document.

Now that the vision is set, the next step is to identify mechanisms for catalyzing change and to document the outcomes of change. Such change is not easy to achieve or catalogue, because it must occur on a scale that crosses institutions and spans the discipline. The agencies involved in the original effort are now supporting a three-pronged effort to 1) understand how change takes place, 2) catalogue and analyze

Address correspondence to: Erin L. Dolan (eldolan@uga.edu).

"ASCB<sup>®</sup>" and "The American Society for Cell Biology<sup>®</sup>" are registered trademarks of The American Society for Cell Biology.

change, and 3) provide some of the instructional resources necessary to support change. Each of these efforts is described below.

### Partnership for Undergraduate Life Science Education and Vision and Change Leadership Fellows

The Partnership for Undergraduate Life Science Education (PULSE) is a joint effort by the National Science Foundation (NSF), the National Institute for General Medical Sciences/ National Institutes of Health (NIGMS/NIH), and the Howard Hughes Medical Institute (HHMI) to address the substantial barriers to achieving national, systemic transformation of undergraduate biology.<sup>1</sup> This yearlong effort is involving 40 Vision and Change Leadership Fellows in discussions of barriers to systemic change and how such barriers can be overcome. The Fellows come from departmental or divisional leadership positions at research universities, regional/comprehensive universities, liberal arts colleges, and community colleges. Their initial discussions will produce a preliminary implementation framework setting forth a set of strategies for change. This will be posted on the PULSE website from November 2012 to May 2013, which will be the *fieldwork period*. Because PULSE is intended to be an ongoing effort to both produce a strategy for change and catalyze that change, it is designed to include interaction with the larger biology community. During the fieldwork period, the biology community is urged to enrich the posted framework through conversation and critique. Based on community feedback and response, the Fellows will further develop drafted strategies to generate a vetted

DOI: 10.1187/cbe.12-06-0082

<sup>© 2012</sup> E. L. Dolan. *CBE—Life Sciences Education* © 2012 The American Society for Cell Biology. This article is distributed by The American Society for Cell Biology under license from the author(s). It is available to the public under an Attribution–Noncommercial–Share Alike 3.0 Unported Creative Commons License (http://creativecommons.org/licenses/by-nc-sa/3.0).

<sup>&</sup>lt;sup>1</sup>Representatives to PULSE are: Katherine J. Denniston, Acting Division Director, Division of Undergraduate Education, Directorate for Education and Human Resources, and Judith A. Verbeke, Acting Division Director, Division of Biological Infrastructure, Directorate for Biological Sciences, NSF; Shawn Drew Gaillard, Program Director, NIGMS/NIH; David J. Asai, Director, Precollege and Undergraduate Science Education, HHMI; and Jermelina Tupas, Division Director, Division of Community and Education, National Institute of Food and Agriculture, U.S. Department of Agriculture (USDA).

implementation framework that reflects institutional and funding priorities and describes an agenda for concerted action into the next decade. This working version of the implementation framework will be released in Summer 2013. For more information about this effort, see http:// pulsecommunity.org.

## Vision and Change in Undergraduate Education: The Changes

To document the changes that are already occurring, the American Association for the Advancement of Science (AAAS) will 1) conduct an online follow-up survey with Vision and Change conference participants and individuals who requested the Vision and Change report, and 2) organize a follow-up conference in Summer 2013 for institutional teams to share innovations. In Fall 2012, AAAS will issue a call to the biology community at large to submit short summaries of projects related to Vision and Change, chronicling the outcomes of their efforts and noting how they documented these outcomes and changes that have been effected at a departmental level or beyond. A sampling of those submitting summaries (~150) will be invited to bring a colleague—a faculty member contemplating but not yet engaged in the change effort, a change-enabling administrator, or a student who can give insight into the change process and outcomesto the 2013 meeting. Conferees will engage in deep discussion of the changes they have effected in terms of outcomes at the level of courses and at more systemic levels. They will also engage in discussion of the efforts of the PULSE Vision and Change Leadership Fellows. The findings from the AAAS follow-up survey, summaries, and conference will be documented in an online report, which can inspire others to attempt change and will help funding agencies and professional societies understand what happens when a large-scale effort such as Vision and Change is undertaken. Look for more information at http://visionandchange.org. Representatives from the USDA have joined the group planning this meeting.

#### CourseSource

As part of the Vision and Change process, faculty called for a user-friendly website of instructional materials designed according to how people learn. In response to this call, Peter Bruns of HHMI is working with scientific societies to create CourseSource. This will be a unified website organized by courses and based on the highly successful design principles noted in Vision and Change and promoted by the National Academies Summer Institutes on Undergraduate Education in Biology. Each course will be represented by a series of learning objectives that will serve as the anchor for modules composed of assessments and learning materials. A set of learning objectives for a cell biology course has been developed and vetted by the Education Committee of the American Society for Cell Biology Education Committee. These objectives will serve as the basis for an initial call for modules, which will be expanded as new course sets of objectives are developed and go live on the site. Module submissions will be reviewed by the CourseSource editorial board, led by representatives from CBE—Life Sciences Education.

As when the vision was set, change will only be successful if a large segment of the biology community becomes engaged and provides input to the efforts described above. Please follow the links and participate.

#### REFERENCES

National Research Council (2012). Discipline-Based Education Research: Understanding and Improving Learning in Undergraduate Science and Engineering, Washington, DC: National Academies Press. www.nap.edu/openbook.php?record\_id=13362&page=1 (accessed 9 June 2012).

President's Council of Advisors on Science and Technology (2012). Report to the President: Engage to Excel: Producing One Million Additional College Graduates with Degrees in Science, Technology, Engineering, and Mathematics, Washington, DC: Executive Office of the President. www.whitehouse.gov/sites/default/files/ microsites/ostp/pcast-engage-to-excel-final\_feb.pdf (accessed 9 June 2012).