

Plant Biology

An interdisciplinary graduate program housed in the College of Natural Sciences and Mathematics offering the M.S. and Ph.D. in Plant Biology.

■ The Review Process

This was a standard AQAD review. Reviewers were:

Winslow R. Briggs, chair (Carnegie Institution for Science)
Sarah M. Assman (Pennsylvania State University)
Rebecca S. Boston (North Carolina State University)
Daniel R. Bush (Colorado State University)

■ Main Issues

Overall, the team was “unanimous that the Plant Biology Program was of exceptionally high quality.” The faculty were found to have an “exceptionally good” track record of publications and grant support; the program is “doing a very good job of student mentoring;” the “great breadth” of the program was seen as a “major asset;” and recently hired faculty are “outstanding.” The team reported that these recent hires “were unanimous that the breadth of the plant biology program was an important factor in their decision to come to the University of Massachusetts.” The team’s “single recommendation” with respect to program quality was to call for strengthening in the area of ecology. The team noted that this is an area in which student interest outstrips faculty capacity, and urged the program to engage existing ecologists more effectively and seek to influence departmental hiring so as to emphasize ecology.

The team made a number of specific findings and recommendations:

- **Graduate student recruitment.** The team noted PB’s success in attracting “extremely strong” students, but also observed that there has been a “relatively small number of qualified applicants.” They offered a number of suggestions for improving program visibility and strengthening recruiting strategies, including taking greater advantage of high quality undergraduate institutions in the New England area. The team also noted that faculty hiring in ecology would support student recruiting efforts.
- **Graduate student training.** Students were reported to be “very enthusiastic” about the new core course sequence, and indicated that “stipends were adequate and the need to work for pay did not interfere with their moving steadily toward completion of their degrees.” The team identified two issues for improvement. First, students reported that there should be more opportunities for learning specific techniques utilized by plant biologists, and recommended two-week modular courses focusing on different issues or techniques. Second, and the “main issue raised by both students and faculty,” the growth in undergraduate enrollment in the life sciences has undercut the graduate program. The team found that “the faculty did not have time available (and perhaps were not encouraged/rewarded) to teach true graduate level courses.” The team therefore recommended that the University “ensure that pressures from undergraduate enrollments do not dilute the quality of the graduate program.”

- **Program administration.** The team found that “lines of communication between the faculty and the administration are neither clear, regular, nor consistent.” Given the “diffuse ‘ownership’ of the Plant Biology program,” the team observed that “better and more stable lines of communication with the administration are essential.” The team suggested that the director of the program be included in the regular meetings of the directors and department heads in the College of Natural Sciences and Mathematics, and that the directors of the four interdisciplinary life sciences graduate programs “work together to identify issues of common concern.” Annual reports from all four programs, presented in a common session, could bring greater focus to issues of importance to the programs. “Because the interdisciplinary programs “are funded at the discretion of multiple administrative units ... this negatively impacts cooperation and even leads to direct conflict with Plant, Soil, and Insect Science.” The team urged the University “to implement a mechanism by which the graduate training programs can be viewed not as being in competition but as enabling faculty to be successful.” The team did not, however, endorse placing Plant Biology permanently under a single dean, as this “would run the risk of having the other college lose ‘ownership’.” The team expressed the view that “it is critical for the success of an interdisciplinary program that it have its own identity for students and faculty,” and that “having a staffed office for the Plant Biology program is essential.”

The team also urged re-examination of the list of faculty associated with the program. The 19 “core” faculty formed “an effective unit that actively participates” in the life of the program, while other associated faculty are “currently less active in the program, causing occasional confusion in recruiting and the perception of a larger working faculty than the program has in practice.”

■ Student Outcomes Assessment

The Plant Biology program offers graduate degrees only, and therefore does not employ the kinds of student outcomes assessment tools appropriate to undergraduate education. Plant Biology is a laboratory science discipline, in which learning outcomes are established in the framework of comprehensive exams, dissertation development, and identification of a research program with the faculty sponsor. Achievement of these outcomes is evaluated through the oral and written exams, individual faculty evaluation of laboratory work on an ongoing basis, participation in work leading to peer-reviewed publications, the comprehensive exam, and the major culminating experience of the dissertation and its oral defense.

In addition, success in fulfilling the program’s graduate training philosophy, to “train students to become excellent researchers,” is evaluated with special emphasis on students’ success in developing publications from their graduate work and their job placement.

■ Response to the Review

The program concurred with most of the team’s findings and recommendations, and was “enthusiastic” about following up on them. Specific plans were reported to seek greater emphasis on ecology in faculty hiring; improve the admissions recruitment process; pursue techniques-based-modules, perhaps in common with the other interdisciplinary programs; and clarify the participation of faculty. The program indicated it was “particularly keen to be involved in the current discussions pertaining to the ‘lead dean’ models.”

The Dean reported that “The deans of NSM, SBS, and NRE have already started a process to ... modify reporting lines, solidify the position of a non-rotating Coordinating Dean, and regularly scheduled meetings to improve communications between Deans and Program Directors.” The Dean also generally agreed with the recommendations on student recruiting and curriculum.