IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Interdepartmental Plant Physiology Major

Interoffice Communication

To: Faculty Academic Affairs Council

From: Kan Wang (DOGE, IPPM) on behalf of IPPM Supervisory Committee

CC:

Date: January 28, 2008

Subject: Request for reintroducing name change of Plant Physiology to Plant Biology to the Faculty Executive Board

Executive Summary

In September 2006, Interdepartmental Plant Physiology Major (IPPM) submitted a request to the Graduate Curriculum and Catalog Committee for program name change from "Plant Physiology" to "Plant Biology". This motion was approved by the Graduate Curriculum and Catalog Committee on September 28, 2006, and subsequently by the Faculty Academic Affairs Council on January 30, 2007. However, on March 20, 2007, the Faculty Senate Executive Board declined to send this request forward to the full Faculty Senate, stating that the new title for "Plant Physiology" failed to take into account a number of other disciplines that fall under the broad title "Plant Biology". The Board suggested that the IPPM faculty regroup, include all related disciplines in the discussion, and reframe the name change.

To respond to the Board's request, IPPM supervisory committee invited a number of key faculty members representing various disciplines of plant biology for discussions in April, 2007. During the summer of 2007, the IPPM curriculum subcommittee spent significant amounts of time restructuring the IPPM graduate curriculum to include a number of additional courses that reflect the broader spectrum of plant biology that is present on campus. The subcommittee proposed two re-organized curricula that were presented to the IPPM faculty body for vote in October, 2007. The faculty majority approved a curriculum that retains the rigor of the previous IPPM core curriculum, but includes nine additional plant biology courses that were not in the previous curriculum.

In addition, IPPM has increased the diversity of its faculty by recruiting six new faculty members in more diverse areas of plant biology. This program now represents 7 departments from 3 colleges (previously 5 departments from 2 colleges). After two semesters of active discussion in person and through e-mail communication, curriculum revision and vote, a majority of IPPM faculty favors an improved curriculum that maintains the rigor of the current graduate core curriculum but includes a greater diversity of plant science courses. During the December 2007 IPPM faculty meeting, the program faculty discussed these recent changes that

expand the diversity of both IPPM curriculum and participating faculty. After discussion, the faculty voted to proceed with the name change from "Plant Physiology" to "Plant Biology". Therefore, we respectfully request that the Faculty Academic Affairs Committee reintroduce the name change proposal of "Plant Physiology" to "Plant Biology" to the Faculty Executive Board.

History of Interdepartmental Plant Physiology Major (IPPM)

In accord with the mission of Iowa State University in graduate education and its strength in the agricultural and life sciences, the Interdepartmental Plant Physiology Major (IPPM) was established in 1987 to provide a rigorous, broad-based graduate education in basic plant physiology and plant molecular biology. Prior to the initiation of IPPM, the only opportunity for a student to major in this discipline was as an area of specialization within the Botany Department. There were 15 "charter" members of the IPPM faculty in seven departments from two colleges. Initially, the representing departments were Agronomy, Biochemistry & Biophysics, Botany, Forestry, Genetics, Horticulture, and Plant Pathology.

Research conducted by the faculty and students of this major represents basic plant physiology, biochemistry and molecular biology. The experimental approaches represented in the major span the range of complexity from molecular studies, to cellular, organismal and the ecological level (crop monocultures and natural populations). Although IPPM graduate students are themselves involved in basic plant biology research, the research focus of the faculty and graduate students in the major includes both basic and applied plant biological questions. This mix of basic and applied research in faculty laboratories helps fostering a stimulating environment for graduate training.

Status of IPPM

The Departments of Botany and Genetics have since been merged with the Zoology Department to form the Department of Genetics, Development and Cell Biology. The Department of Forestry has merged with the Department of Animal Ecology to form the Department of Natural Resource Ecology and Management. By 2003, 35 faculty members from the College of Agriculture and the College of Liberal Arts and Sciences cooperate to provide graduate study in IPPM leading to the Master of Science and Doctor of Philosophy Degrees offered through five participating departments: Agronomy, Biochemistry, Biophysics & Molecular Biology (BBMB), Genetics, Development and Cell Biology (GDCB), Horticulture, and Plant Pathology.

Since 2006, IPPM has undergone a process of faculty membership renewal and recruitment. As of the end of 2007, the program has 37 faculty members from 7 departments and 3 colleges. The new participating departments are the Department of Chemical and Biological Engineering (CBE, College of Engineering) and the Department of Ecology, Evolution and Organismal Biology (EEOB). Please see IPPM website: http://www.agron.iastate.edu/ptf/ippm/home.asp.

The most active plant scientists engaged in research and graduate training at ISU are members of the IPPM program. Plant science research is a recognized strength of the ISU graduate programs in the life sciences. In 2007, the ISU Plant Science graduate program ranked #6 in the nation by "the Chronicle of Higher Education" based on faculty productivity such as journal/book publication and awarded grants (http://chronicle.com/stats/productivity/page.php?year=2007&institution=1290&byinst=Go). In the past 5 years (January 1, 2003 to December 31, 2007), the IPPM faculty members have

generated approximately $70 Million ($69,786,568) extramural funding (Data from Janet Brodie, College of Agriculture and Life Sciences).

Name change justification

During FY2005, the IPPM faculty voted overwhelmingly in favor of a name change for the IPPM graduate program. Ninety-two percent of the voting faculty voted "yes" to the name change. Sixty percent of the faculty voted either for "Plant Biology" or "Interdepartmental Plant Biology Major (IPBM)" as the new name. The motion for the name change from "Plant Physiology" to "Plant Biology" was approved by a majority faculty vote on June 27, 2006.

A number of compelling reasons for the name change are listed as follows:

1) The name "Plant Physiology" is no longer reflective of the diversity and complexity of the participating faculty research programs. ISU has been recognized nationally for its strength in plant biology research, yet there is no official Plant Biology graduate program.
2) American Society for Plant Physiologists (ASPP), a scientific society many IPPM faculty members are affiliated with, changed its name from ASPP to ASPB (American Society for Plant Biologists) in 2000. During an external review process for the IPPM program in 2002, the reviewers recommended a name change for our graduate program from "Plant Physiology" to "Plant Biology" to better represent the faculty research programs and advance of the science.
3) Because the name Plant Physiology can be viewed by some people as a rather narrow subject, the change to "Plant Biology" is hoped to enhance graduate application and increase enrollment of the program.
4) Similar interdepartmental graduate programs in "Plant Biology" that we consider to be among our peers exist in other major universities across the USA (*i.e.* these are some of the top programs that we compete with for graduate students). These universities include University of California-Davis (http://www-plb.ucdavis.edu/pbgg/index.html) on the west coast, Cornell University (http://www.plantbio.cornell.edu/grad.php) on the east coast, and the University of Minnesota (http://www.cbs.umn.edu/plantbio/gradprog/) in the Midwest.
5) Neither of our fellow regent universities has a graduate program in Plant Biology. The University of Iowa has a Biological Sciences graduate program and the University of Northern Iowa has a Biology graduate program, but there are no areas within these that are specifically focused on the Plant Biology.

Curriculum consideration and modifications

IPPM has a history of providing its graduate students with a rigorous education related to plant fundamentals including courses such as biochemistry, plant metabolism, plant growth and regulation, along with statistics methodology, and many available genetics, molecular biology, physiology courses. While students are required to complete these core fundamental courses, they are provided with ample flexibility and opportunities to take courses directly relevant to their research programs per guidance from the student Program of Study (POS) committee.

The IPPM PhD curriculum was modified (by reducing six core courses to five) in October, 2006, to enforce this concept of being "rigorous but flexible".

In responding to the Faculty Executive Board request (March 20, 2007), a 7-member Curriculum Subcommittee led by Dr. Madan Bhattacharyya (Agronomy), re-examined current IPPM curriculum and available life science related graduate courses on campus. The purpose is to construct a rigorous and board spectrum curriculum for plant biology graduate students.

After extensive discussion and communication, the Committee proposed two curricula for a vote. In November of 2007, the faculty voted and approved a curriculum that maintains the rigor of the previous IPPM curriculum but includes nine additional plant biology related courses to provide more options for current and future graduate students in this major. (http://www.agron.iastate.edu/ptf/ippm/coursePhD2008Jan.asp). The IPPM Faculty are confident that the revised curriculum contains sufficient flexibility to accommodate a wide range of plant biology students without loss of rigor.

Concluding remarks

By this memo, the IPPM supervisory committee requests that the Faculty Academic Affairs Committee reintroduce the name change of "Plant Physiology" to "Plant Biology" to the Faculty Senate this spring. Our program has taken the Executive Board's previous suggestions very seriously. We have re-evaluated the IPPM graduate program and have broadened its curriculum. This newly approved curriculum will further strengthen the graduate program. We also initiated and engaged active discussion among plant scientists on campus. We have recruited additional faculty to our program who work in areas of plant biology not previously represented in our program, thereby diversifying the program. The name change from "Plant Physiology" to "Plant Biology", supported overwhelmingly by IPPM faculty, most appropriately reflects the research activities of the majority of the participating faculty members. We anticipate that the new name will attract more faculty members and enhance graduate student recruitment to the program.