Plant Biology (A Graduate Group)

Neelima Sinha, Ph.D., Chairperson of the Group
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Faculty

Diane Beckles, Ph.D., Associate Professor (Plant Sciences)
Alan Bennett, Ph.D., Professor (Plant Sciences)
Alison Berry, Ph.D., Professor (Plant Sciences)
Arnold Bloom, Ph.D., Professor (Plant Sciences)
Eduardo Blumwald, Ph.D., Professor (Plant Sciences)
Richard Bostock, Ph.D., Professor (Plant Pathology)
Kent Bradford, Ph.D., Professor (Plant Sciences)
Siobhan Brady, Ph.D., Associate Professor (Plant Biology)
Anne Britt, Ph.D., Professor (Plant Biology)
Patrick Brown, Ph.D., Professor (Plant Sciences)
Judy Callis, Ph.D., Professor (Molecular and Cellular Biology) Academic Senate Distinguished Teaching Award
Clare Chipperfield, Ph.D., Assistant Professor (Plant Biology)
Gitta Cooker, Ph.D., Assistant Professor (Plant Pathology)
Luca Comai, Ph.D., Professor (Plant Biology)
Douglas Cook, Ph.D., Professor (Plant Pathology)
Carlos Crisosto, Ph.D., Professor (Plant Sciences)
Abhaya Dandekar, Ph.D., Professor (Plant Sciences)
Katayoon Dehesh, Ph.D., Professor (Plant Biology)
Theodore Dejong, Ph.D., Professor (Plant Sciences)
Savithramma Dinesh-Kumar, Ph.D., Professor (Plant Biology)
Georgia Drakakaki, Ph.D., Assistant Professor (Plant Sciences)
Paul Gef, Ph.D., Professor (Plant Sciences)
Albert Fischer, Ph.D., Professor (Plant Sciences)
Charles Gasser, Ph.D., Professor (Molecular and Cellular Biology)
Matthew Gilbert, Ph.D., Assistant Professor (Plant Biology)

Thomas Gradziel, Ph.D., Professor (Plant Sciences)
Andrew Groover, Ph.D., Assistant Professor (Plant Biology)
John Harada, Ph.D., Professor (Plant Biology)
Academic Senate Distinguished Teaching Award
Stacey Harmer, Ph.D., Professor (Plant Sciences)
Kentaro Inoue, Ph.D., Professor (Plant Biology)
Marie Jasieniuk, Ph.D., Associate Professor (Plant Biology)

Judy Jernstedt, Ph.D., Professor (Plant Sciences)
Daniel Klienbenstein, Ph.D., Professor (Plant Sciences)
John Labavitch, Ph.D., Professor (Plant Sciences)
Clark Lagarias, Ph.D., Professor (Molecular Biology)
Bo Liu, Ph.D., Professor (Plant Biology)
William Lucas, Ph.D., Professor (Plant Biology)
Julin Maloof, Ph.D., Professor (Plant Biology)
Karen McDonald, Ph.D., Professor and Associate Dean (Chemical and Material Engineering)
Maeli Melotto, Ph.D., Assistant Professor (Plant Sciences)

Richard Michelmore, Ph.D., Professor (Plant Sciences)
David Neale, Ph.D., Professor (Plant Sciences)
Sharron O'Neill, Ph.D., Professor (Plant Biology)
Kyaw Tha Paw, Ph.D., Professor (Land, Air and Water Resources)
Daniel Potter, Ph.D., Professor (Plant Sciences)
Marcel Rejmanek, Ph.D., Professor (Evolution and Ecology)
Eliska Rejmankova, Ph.D., Associate Professor (Plant Biology)
James Richards, Ph.D., Professor (Land, Air and Water Resources)
Pamela Ronald, Ph.D., Professor (Plant Pathology)
Jeffery Ross-Ibarra, Ph.D., Associate Professor (Plant Sciences)
Johanna Schmitt, Ph.D., Professor (Evolution and Ecology)
Ken Shackel, Ph.D., Professor (Plant Sciences)
Neelima Sinha, Ph.D., Professor (Plant Biology)
Dina St. Clair, Ph.D., Professor (Plant Sciences)
Venkataram Sundaresan, Ph.D., Professor (Plant Sciences)
Steve Thag, Ph.D., Professor (Plant Biology)
Li Tian, Ph.D., Associate Professor (Plant Sciences)
M. Andrew Walker, Ph.D., Professor (Viticulture and Enology)
John Yoder, Ph.D., Professor (Plant Sciences)
Florence Zakhary, Ph.D., Assistant Professor (Plant Sciences)
Philipp Zerbe, Ph.D., Assistant Professor (Plant Biology)

Emeriti Faculty

Don Durzan, Ph.D., Professor (Plant Sciences)
David Gilchrist, Ph.D., Professor Emeritus (Plant Pathology)
Donald J. Nevins, Ph.D., Professor (Plant Sciences)
Donald Phillips, Ph.D., Professor (Plant Sciences)
Carlos Quiros, Ph.D., Professor (Plant Sciences)
Michael Reid, Ph.D., Professor (Plant Sciences)
M.W. Silk, Ph.D., Professor Emeritus (Land, Air and Water Resources)
T. Tsiao, Ph.D., Professor Emeritus (Land Air Water Resources)

Affiliated Faculty

Carlos Crisosto, Ph.D., Pomologist and Specialist (Plant Sciences)
Andrew Groover, Ph.D., Associate Adjunct Professor (Plant Biology)
Cai-Zhang Jiang, Research Plant Physiologist (Crops Path & Genetic Research)
Takao Kasuga, Ph.D., Molecular Genetist (Plant Pathology)
Ann Powell, Ph.D., Professional Research Biochemist (Plant Sciences)
Alan Rose, Ph.D., Associate Project Scientist (Molecular & Cellular Biology)
Thomas Tai, Ph.D., Associate in the Agricultural Experiment (Plant Sciences)
Allen Van Deynze, Ph.D., Professional Researcher (Plant Sciences)

Graduate Study. The Graduate Group in Plant Biology offers programs of study and research leading to the M.S. and Ph.D. degrees. The program prepares students for careers in teaching and research at universities and colleges, government and industrial laboratories. The graduate curriculum provides both a breadth in the discipline and in-depth study and research in one of the areas of specialization: cell and developmental biology; environmental and integrative biology; molecular biology, biochemistry and genetics; and systematic and evolutionary biology. These areas of specialization permit individual study and research into diverse aspects of plant biology, including anatomy, biochemistry, biotechnology, cell biology, cytology, developmental biology, ecology, genetics, genomics, molecular biology, morphology, paleobotany, physiology, population biology, systematics, and weed science. The graduate advisor, the major professor, and the student will design a program of advanced courses to meet individual academic needs within one of the specializations.

Preparation. For both the M.S. and Ph.D. programs, a level of scholastic development equivalent to a Bachelor's degree in a recognized college or university is required. Courses in the following areas are considered to be prerequisites for the advanced degrees in Plant Biology: biology, inorganic chemistry, organic chemistry, introductory physics, genetics, plant development and structure, biochemistry, introductory plant physiology, calculus, introductory statistics, ecology/systematics/evolution, and cell biology. Limited deficiencies can be made up after admission.

Graduate Adviser. Contact the Group office.
Courses in Plant Biology (PBI)

Graduate

200A: PBGG Core Course Series—Fall quarter (5)
Lecture—3 hours; discussion—2 hours. Prerequisite: graduate standing; a broad background of undergraduate-level coursework in Plant Biology is recommended. The first of three PBGG graduate core courses. Coverage includes (1) plant genes, (2) biotechnology, (3) genomes and gene flow, (4) principles of plant systematics, and (5) the evolution of flowering plants. —F (F) Comai, Gepts, Jernstedt, Potter

200B: PBGG Core Course Series—Winter quarter (5)
Lecture—3 hours; discussion—2 hours. Prerequisite: course 200A. The second of three PBGG graduate core courses. Coverage includes (1) embryo development, (2) cytoskeleton and vesicle trafficking, (3) cell walls, (4) cell growth, and (5) plastids and (7) senescence. —W (W) Bradford, Drakakil, Gilchrist, Harada, Inoue, Lavabich, Sundaresan, Tian

200C: PBGG Core Course Series—Spring quarter (5)
Lecture—3 hours; discussion—2 hours. Prerequisite: course 200A and 200B. The third of three PBGG graduate core courses. Coverage includes (1) plant water relations, (2) cellular & long-distance transport processes, (3) mineral nutrition, (4) environmental impacts on growth & development, (5) stress perception & responses, (6) canopy processes, and (7) plant interations with other organisms. —S (S) Blumwald, Brown, Cook, Dejong, Gilbert, Shackel

203N: Biology of the Plant Cell (4)
Lecture—3 hours; discussion/laboratory—2 hours. Prerequisite: Plant Biology 111 or Biological Sciences 104, or the equivalent. Open to senior undergraduate students in Plant Biology major. Recent progress in plant cell biology. Intracellular motility in plant cells. Common techniques associated with the progress of plant cell biology. Offered irregularly. —(S/U grading only)—Liu

210. Plant Ecophysiology (3)
Lecture—3 hours. Prerequisite: Plant Biology 111, 112, 117. Study of the mechanisms of physiological adaptation of plants to their environment. Offered in alternate years. —W

212. Physiology of Herbividal Action (3)
Lecture—3 hours. Prerequisite: Plant Biology 112, 122. Study of the fundamental processes involved in the physiological action of herbicides. Detailed consideration of the fate of herbicides in plants. Offered in alternate years. —S

214. Higher Plant Cell Walls (3)
Lecture—2 hours; discussion—1 hour. Prerequisite: Plant Biology 112. This course in biochemistry. Lectures focus on the structure, analysis, synthesis, and development-related metabolism of cell walls. Discussions center on analysis of scientific papers related to lecture topics. Offered in alternate years. —F Drakakil, Labavich

220. Plant Developmental Biology (4)
Lecture—3 hours; discussion—1 hour; term paper. Prerequisite: plant anatomy, physiology, and biochemistry. A survey of the concepts of plant development and organization. Examines plant cells, tissues, and organs with special emphasis on experimental evidence for mechanisms regulating developmental processes. Offered in alternate years. —Sina

223. Special Topics in Scientific Method (2)
Discussion—2 hours. Examine the historical and philosophical background of the scientific method. Analyze the rational, perceptual, causal, and social aspects of scientific knowledge. Clarify the roles of reason, experimentation and creativity in scientific research. —(S/U grading only)—F (F) Bradford

227. Plant Molecular Biology (4)
Lecture/discussion—4 hours. Prerequisite: Molecular and Cellular Biology 121 or 161. Molecular aspects of higher plant biology with emphasis on gene expression. Plant nuclear and organelle genome organization, gene structure, mechanisms of gene regulation, gene transfer, and special topics related to development and response to biological and environmental stimuli. Offered in alternate years. —Britt, Sina

229. Molecular Biology of Plant Reproduction (3)
Lecture—3 hours. Molecular genetic basis of plant reproduction. Emphasis on understanding developmentally regulated gene expression as it relates to the major changes that occur during plant reproduction and control of flowering. Offered in alternate years. —O'Neill

290A. Faculty Seminar (1)
Discussion—1 hour. Restricted to Plant Biology (PBGG) graduate students. Discussion of research area of seminar speakers in Plant Biology Graduate Group Seminar Series. May be repeated six times for credit. —(S/U grading only)—F, W, S. (F, W, S)

290B. Seminar (1)
Seminar—1 hour. Seminar presented by visiting scientists on research of current interest. —(S/U grading only)—F, W, S. (F, W, S)

290C. Research Conference in Botany (1)
Discussion—1 hour. Prerequisite: graduate standing and/or consent of instructor. Presentation and discussion by faculty and graduate students on research projects in botany. May be repeated for credit. —(S/U grading only)—F, W, S. (F, W, S)

291. Graduate Student Seminar in Plant Biology (1)
Seminar—1 hour. Prerequisite: graduate student standing. Student-given seminars on topics in plant biology, with critiques by instructor and peers. How to give a seminar, including preparation of visual and other teaching aids. Topic determined by instructor in charge. May be repeated for credit. —(S/U grading only)—F, W, S. (F, W, S)

292. Seminars in Plant Biology (1)
Seminar—1 hour. Prerequisite: consent of instructor. Review of current literature in botanical disciplines. Special topics will be announced quarterly. Students prepare and analyze assigned topics. May be repeated for credit. —(S/U grading only)—F, W, S. (F, W, S)

293. Seminar in Postharvest Biology (1)
Discussion—1 hour. Prerequisite: consent of instructor, open to advanced undergraduates. Intensive study of selected topics in the postharvest biology of fruits, vegetables, and ornamentals. May be repeated for credit. —(S/U grading only)—F, W, S. (F, W, S)

297. Tutoring in Plant Biology (1-5)
Tutorial—3–15 hours. Offers graduate students, particularly those with no graduate assistant, the opportunity to gain teaching experience. —(S/U grading only)—F, W, S.

298. Group Study (1-5)
May be repeated up to four times for credit. —(S/U grading only)

299. Research (1-12)
Prerequisite: graduate standing. —(S/U grading only)

Professional

390. The Teaching of Plant Biology (2)
Discussion—2 hours. Prerequisite: graduate standing; concurrent appointment as a teaching assistant in Plant Biology. Consideration of the problems of teaching botany, especially of preparing for and conducting discussions, guiding student laboratory work, and the formulation of questions and topics for examinations. —(S/U grading only)—F, W, S. (F, W, S)

Plant Pathology

Department Office. 354 Hutchison Hall 530-752-0300; http://plantpathology.ucdavis.edu/

Faculty

Richard M. Bostock, Ph.D., Professor Gitta Cooker, Ph.D., Associate Professor Clare Casteel, Ph.D., Assistant Professor Douglas R. Cook, Ph.D., Professor Lynn Epstein, Ph.D., Professor Bryce W. Falk, Ph.D., Distinguished Professor Robert L. Gilberth, Ph.D., Professor Thomas R. Gordon, Ph.D., Professor Johan Leveau, Ph.D., Associate Professor James D. MacDonald, Ph.D., Emeritus Neil McRoberts, Ph.D., Associate Professor David Rizzo, Ph.D., Professor Pamela C. Ronald, Ph.D., Professor Ioannis Stergiopoulos, Ph.D., Assistant Professor Neal K. VanAlten, Ph.D., Professor Emeritus

Emeriti Faculty

George Bruning, Ph.D., Professor Emeritus Robert N. Campbell, Ph.D., Professor Emeritus R. Michael Davis, Ph.D., Professor Emeritus John J. M. Durniway, Ph.D., Professor Emeritus Raymond G. Grogan, Ph.D., Professor Emeritus Clarence T. Kado, Ph.D., Professor Emeritus Sreeko John M. Miricelch, Ph.D., Lecturer Emeritus (USDA) Jerry K. Uyemoto, Ph.D., Lecturer Emeritus (USDA) Robert K. Webster, Ph.D., Professor Emeritus Valerie Williamson, Ph.D., Professor Emeritus

Affiliated Faculty

Kendra Baumgartner, Ph.D., (USDA) Greg Browne, Ph.D., (USDA) Daniel Klupfel, Ph.D., (USDA) Deborah A. Golino, Ph.D., Lecturer and Specialist in Cooperative Extension W. Douglas Gubler, Ph.D., Lecturer and Specialist in Cooperative Extension Themis Michailides, Ph.D., Lecturer and Plant Pathologist in the Agricultural Experiment Station Adib Rowhani, Ph.D., Lecturer and Project Scientist Krishna Subbarao, Ph.D., Lecturer and Specialist in Cooperative Extension Mysoor Sadasurathna, Ph.D., (USDA) Takao Kasuga, Ph.D., Lecturer (USDA) Florent Trouillas, Ph.D., Lecturer & Assistant Specialist in Cooperative Extension

Related Major Program. See the major in Plant Biology, on page 509.

Graduate Study. The Department of Plant Pathology offers programs of study and research leading to the M.S. and Ph.D. degrees. Information can be obtained from the graduate adviser. See also the Graduate Studies, on page 120.

Graduate Advisers. L. Epstein, G.L. Cooker, R.M. Bostock

Courses in Plant Pathology (PLP)

Lower Division

40. Edible Mushroom Cultivation (2)
Lecture—1 hour; laboratory/discussion—3 hours. Prerequisite: Biological Sciences 10 or Microbiology 20 recommended. Principles and practices of growing edible mushrooms, including culture maintenance, basic mushroom substrate preparation, composting, spawn generation techniques, inoculation methods, harvesting, and pests and pest management. —W (W)