Animal Biology

(College of Agricultural and Environmental Sciences)
Department of Entomology and Nematology

Faculty
Edward P. Caswell-Chen, Ph.D. Professor
Joanna Chiu, Ph.D., Assistant Professor
Brian R. Johnson, Ph.D., Associate Professor
Neal M. Williams, Ph.D., Associate Professor
Robert Kimsey, Ph.D., Lecturer

The Major Program
The Animal Biology major offers students training in the biological and natural sciences as they apply to animals. The major covers the basic biological sciences that explain animal evolution, systematics, ecology, physiology and molecular biology. Students in the Animal Biology major are encouraged to think beyond particular groups of animals in which they are interested and to consider science as a process and a way of advancing society. Emphasis is on biological principles that can be used in research or in solving societal problems associated with animals in agriculture, urban areas, or environments.

The Program. The Animal Biology major consists of core courses in the biological sciences that build an understanding of animal biology from the molecular to the ecological and evolutionary levels of organization. After completing these core courses, students have the option of specializing in various interdisciplinary aspects of animal biology, and plan their chosen emphasis of study as part of a required discussion course and in consultation with an advisor. The Animal Biology major emphasizes courses on biological principles as opposed to courses on animal care and husbandry. This program includes a senior thesis, which each student designs to bridge the disciplines of the major.

Internships and Career Alternatives. The program and interests of each student in solving societal problems guides him or her to logical internship and career choices. On- and off-campus internship opportunities are available in research laboratories, in field situations, with governmental agencies, with private industry, and in international programs. A degree in Animal Biology prepares students for careers in research, teaching, governmental regulation, health or agriculture as each relates to the integrative biology or ecology of animals. Careers in veterinary medicine, animal husbandry and animal management are open to Animal Biology majors, however, other preparation may be required. Students in the major gain research experience and may choose to continue their training at the graduate or professional level in a variety of biological disciplines.

B.S. Major Requirements:

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<th>UNITS</th>
<th>Biological Sciences 2A, 2B, and 2C .......................................................... 14</th>
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<tr>
<td></td>
<td>Chemistry 2A-2B-2C, and 8A-8B or 118A-118B .................................................................. 21-23</td>
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<td>Mathematics 16A-16B-16C or 17A-17B-17C ........................................................................ 9-12</td>
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<td>Statistics 13 or 100 or 102 or 134 or 135 ...................................................................... 4</td>
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<td>Animal Biology 50A, 50B, 50C ...................................................................................... 8</td>
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Depth Subject Matter ........................................................................ 29-38

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<tr>
<th>UNITS</th>
<th>Biological Sciences 101 .................................................................................. 4</th>
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<td>Animal Biology 102 and 103 or Biological Sciences 102 and 103 ...................................... 6-10</td>
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<tr>
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<td>One course from: Neurobiology, Physiology, and Behavior 101, 117, Entomology 102, Wildlife, Fish, and Conservation Biology 121 ...................................................................................... 3-5</td>
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Quarter Offered: Fall, Winter, Spring, Summer; 2015-2016 offering in parentheses.

Pre-Fall 2011 General Education (GE): Arts—Arts and Humanities; Sciences—Science and Engineering; Social—Social Sciences; Div—Diverse Domains; WRT—Writing Experience

Fall 2011 and on Revised General Education (GE): AH—Arts and Humanities; SE—Science and Engineering; SS—Social Sciences; AGCM—American Cultures; DD—Diverse Domains; OL—Oral Skills; GL—Quantitative; SL—Scientific; VL—Visual; WC—World Cultures; WRT—Writing Experience
Neurobiology, Physiology, and Behavior 123 .............................. 3-4
Evolution and Ecology 100 .................................................................. 4
One course from: Environmental Science and Policy 100, 121; Evolution and Ecology 101, 102 ........................................................................ 4
Animal Biology 189 ....................................................................... 3-5
Restricted Electives......................................................................... 25

Focused specially upper division courses as outlined in the student’s major proposal (from course 187) with approval of an advisor.

Total Units for the Degree .......... 122-137

Master Adviser. R. Kimsey

Major Advisor. E. Galvan Hack

Advising Center for the major, including peer advising is located in 150 and 152 Hutchison Hall 530-752-7277, abi-advising@ucdavis.edu.

Courses in Animal Biology (ABI)

Lower Division

50A. Animal Biology Laboratory (2)
Lecture/laboratory—4 hours. Scientific methods for answering questions in animal biology by doing exercises to demonstrate hypothesis testing and reporting, short laboratory, population and field experiments. Maintain notebook, analyze data, interpret results and write reports. —I. (I) Kimsey

50B. Animal Biology (3)
Lecture—3 hours. Prerequisite: Biological Sciences 1A, Biological Sciences 1B (may be taken concurrently). Basic biological disciplines important to an understanding of practical animal biology issues including the evolution of animal groups, genetic mechanisms, animal physiology as it relates to maintenance and survival, and aspects of comparative anatomy, behavior and ecology. —II. (II) Caswell-Chen, Johnson, Williams

50C. Animal Biology (3)
Lecture—3 hours. Prerequisite: Biological Sciences 18, courses 50A, 50B. Animal management and conservation. Societal concerns arising from management and conservation issues, including economics, aesthetics, regulations, safety, public perspectives and advocacy. —III. (III) Chu, Lanzaro

92. Internship in Animal Biology (1-12)
Internship—3.36 hours. Prerequisite: consent of instructor. Office, laboratory or fieldwork off or on campus in research, governmental regulation, policy making, and private enterprise dealing with animal related issues of production, welfare, pest management, biodiversity and the environment. All requirements of internship Approval Request form must be met. (P/NP grading only.)—I, II, III, (I, II, III).

198. Directed Group Study (1-5)
(P/NP grading only)

99. Special Study for Advanced Undergraduates (1-5)
(P/NP grading only)

Animal Biology (A Graduate Group)

James D. Murray, Ph.D., Chairperson of the Group
Group Office, 1249 Meyer Hall 530-752-3710, Fax 530-752-0175

Faculty
Danika L. Bannasch, Ph.D., Associate Professor (Population Health and Reproduction; School of Veterinary Medicine)
Trish Berger, Ph.D., Professor (Animal Science)
Chris C. Calvert, Ph.D., Professor (Animal Science)
Ernie Chang, Ph.D., Professor (Animal Science; located at Sodegane Marine Lab)
Bruce W. Cronin, Ph.D., V.M.D., Professor (Population Health and Reproduction; School of Veterinary Medicine)
Alan J. Conley, Ph.D., Professor (Population Health and Reproduction; School of Veterinary Medicine)
Richard E. Connan, Ph.D., Professor (Anatomy, Physiology & Cell Biology; School of Veterinary Medicine)
Mary E. Delany, Ph.D., Professor (Animal Science)
Edward J. DePeters, Ph.D., Professor (Animal Science)
Sergei I. Doroshenko, Ph.D., Professor (Animal Science)
Holly B. Ernest, D.V.M., Ph.D., Associate Professor (Population Health and Reproduction; School of Veterinary Medicine)
James G. Fadel, Ph.D., Professor (Animal Science)
Thomas R. Famula, Ph.D., Professor (Animal Science)
Nann A. Fangue, Ph.D., Assistant Professor (Wildlife, Fish and Conservation Biology)
Andrew J. Fascetti, V.M.D., Ph.D., Professor (Molecular Biosciences; School of Veterinary Medicine)
Russell C. Hovey, Ph.D., Associate Professor (Animal Science)
Silas S.O. Hung, Ph.D., Professor (Animal Science)
Amy S. Kapalkin, D.V.M., Professor (Surgical & Radiological Sciences; School of Veterinary Medicine)
Ermias Kebreab, Ph.D., Professor (Animal Science)
Kirk C. Klausing, Ph.D., Professor (Animal Science)
Dietmar Kuehn, Ph.D., Professor (Animal Science)
Elizabeth Maga, Ph.D., Associate Researcher and Lecturer (Animal Science)
Brenda J. McCowan, Ph.D., Adjunct Associate Professor (Veterinary Medicine Teaching and Research Center and California National Primate Research Center)
Juan F. Medrano, Ph.D., Professor (Animal Science)
Joy A. Mench, Ph.D., Professor (Animal Science)
Deanne Meyer, Ph.D., Specialist in Cooperative Extension and Lecturer (Animal Science)
Stuart Meyers, Ph.D., Professor (Anatomy, Physiology and Cell Biology; School of Veterinary Medicine)
Michael R. Miller, Ph.D., Professor (Animal Science)
Frank M. Miltoenher, Ph.D., Associate Professor (Animal Science)
James D. Murray, Ph.D., Professor (Animal Science)
Anita M. Oberbauer, Ph.D., Professor (Animal Science)
James W. Olten, Ph.D., Specialist in Cooperative Extension and Lecturer (Animal Science)
Peter H. Robinson, Ph.D., Specialist in Cooperative Extension and Lecturer (Animal Science)
Jan F. Roser, Ph.D., Professor (Animal Science)
Pablo J. Ross, Ph.D., Assistant Professor (Animal Science)
Heidi A. R ossow, Ph.D., Assistant Professor (Population, Health, and Reproduction; School of Veterinary Medicine)
Benjamin N. Sacks, Ph.D., Assistant Adjunct Professor (Population, Health, and Reproduction; School of Veterinary Medicine)
Rober t D. Sainz, Ph.D., Professor (Animal Science)
Susan A. Stover, D.V.M., Ph.D., Professor (Anatomy, Physiology, and Cell Biology; School of Veterinary Medicine)
Carolyn L. Stull, Ph.D., Specialist in Cooperative Extension (School of Veterinary Medicine)
Brain D. Todd, Ph.D., Professor (Wildlife, Fish, and Conservation Biology)
Anne T odgham, Ph.D., Professor (Animal Science)
M. Cecilia Torres-Penedo, Ph.D., Associate Research Geneticist (Veterinary Genetics Laboratory; School of Veterinary Medicine)
Cassandra B. Tucker, Ph.D., Associate Professor (Animal Science)
Alison L. Van Eenennaam, Ph.D., Specialist in Cooperative Extension and Lecturer (Animal Science)
Hsuijanzhou, Ph.D., Assistant Professor (Animal Science)
Richard A. Zinn, Ph.D., Professor (Animal Science; located at Desert Research and Extension Center)

Graduate Study. The Graduate Group in Animal Biology offers programs of study and research leading to the M.S. and the Ph.D. degrees. The Animal Biology Graduate Group focuses on an integrated animal biology. Each student individually tailors his/her program of study to meet individual needs. The Animal Biology Graduate Group is unique in encouraging a multidisciplinary interdisciplinary approach involving physiology, nutrition, genetics, ecology and/or behavior within the context of organismal animal biology.

Preparation. Applicants should have undergraduate preparation in a field appropriate to the course of study selected, including upper division coursework in most of the following subjects: biochemistry, genetics, nutrition, physiology, and integrative animal biology such as animal management.

Graduate Advisers. R. C. Hovey, S.S.O. Hung, E.A. Maga, C.B. Tucker, J.D. Murray

Quarter Offered: I-Fall, II-Winter, III-Spring, IV-Summer; 2015-2016 offering in parentheses.

Pre-Fall 2011 General Education (GE): ArtHum—Arts and Humanities; SciEng—Science and Engineering; SocSci—Social Sciences; AGCH—American Cultures; DD—Domestic Diversity; WRT—Writing Experience

Fall 2011 and on Revised General Education (GE): ArtHum—Arts and Humanities; SciEng—Science and Engineering; SocSci—Social Sciences; AGCH—American Cultures; DD—Domestic Diversity; OL—Oral Skills; QL—Quantitative; SL—Scientific; VL—Visual; WC—World Cultures; WRT—Writing Experience

E.A. Maga, C.B. Tucker, J.D. Murray