

## Anatomy, Physiology, and Cell Biology

(School of Veterinary Medicine)

Charles G. Plopper, Ph.D., Chairperson of the Department

Department Office, 1321 Haring Hall (530-752-1174)

World Wide Web: <http://www.vetmed.ucdavis.edu/APC>

### Faculty

Hilary P. Benton, Ph.D., Associate Professor

Michael L. Bruss, D.V.M., Ph.D., Professor

Dorothy W. Gietzen, Ph.D., Professor

Michael Guinan, Ph.D., Lecturer

Benjamin L. Hart, D.V.M., Ph.D., Professor

David E. Hinton, Ph.D., Professor

Dallas M. Hyde, Ph.D., Professor

Janine B. Kasper, D.V.M., Lecturer

K. C. Kent Lloyd, D.V.M., Ph.D., Associate Professor

Stuart A. Meyers, D.V.M., Ph.D., Assistant Professor

Kent Pinkerton, Ph.D., Professor in Residence

Charles G. Plopper, Ph.D., Professor

Helen Raybould, Ph.D., Professor

Edward S. Schelegle, Ph.D., Assistant Professor

Susan M. Stover, D.V.M., Ph.D., Professor

Fern Tablin, V.M.D., Ph.D., Associate Professor

Reen Wu, Ph.D., Professor

### Emeriti Faculty

George H. Cardinet III, D.V.M., Ph.D., Professor Emeritus

Donald L. Curry, Ph.D., Professor Emeritus

Leslie J. Faulkin, Jr., Ph.D., Professor Emeritus

Alfred A. Heusner, Docteur-es-Sciences, Professor Emeritus

Walter S. Tyler, D.V.M., Ph.D., Professor Emeritus

### Affiliated Faculty

Michael J. Evans, Ph.D., Research Cell Biologist

Michelle V. Fannucchi, Ph.D., Assistant Research Cell Biologist

Linda Magrum, Ph.D., Assistant Research Cell Biologist

Gary D. Marty, D.V.M., Ph.D., Assistant Research Pathologist

Lisa A. Miller, Ph.D., Assistant Research Cell Biologist

Swee Teh, Ph.D., Assistant Research Aquatic Toxicologist

Laura S. Van Winkle, Ph.D., Assistant Research Cell Biologist

Inge Werner, Ph.D., Assistant Research Aquatic Toxicologist

### Courses in Anatomy, Physiology, and Cell Biology (APC)

#### Upper Division Courses

##### 100. Comparative Vertebrate Organology (4)

Lecture—3 hours; laboratory—3 hours. Prerequisite: Biological Sciences 1A and 1B. Functional anatomy of major organ systems in vertebrates. Each system examined from cellular to gross level in fish, birds, and mammals. Emphasis on how differentiated cell types are integrated into tissues and organs to perform diverse physiological functions. (Same course as Neurobiology, Physiology, and Behavior 123.)—II. Guinan

##### 198. Directed Group Study (1-5)

Prerequisite: consent of instructor. (P/NP grading only.)

##### 199. Special Study for Advanced Undergraduates (1-5)

Prerequisite: consent of instructor. (P/NP grading only.)

#### Graduate Courses

##### 202. Organology (2)

Lecture—2 hours. Prerequisite: course 100 or the equivalent and consent of instructor. Comparative development, growth patterns, and composition of selected organs: liver, kidney, lung, mammary gland, brain, and a skeletal muscle. Offered in alternate years.—(II.)

##### 205. Ultramicroscopic Anatomy (3)

Lecture—3 hours. Prerequisite: histology. The electron microscopic appearance of cells, tissues, and organs of animals emphasizing the structural basis for their physiological functions. Offered in alternate years.—(III.)

##### 215. Veterinary Histology (6)

Lecture—3 hours; laboratory—9 hours. Prerequisite: Biological Sciences 1B. The microscopic anatomy of tissues and organs of mammalian and avian species of veterinary significance.—II. (II.)

##### 220. Physiology and Pathophysiology of the Liver (3)

Lecture—2.6 hours; laboratory—1.2 hours. Prerequisite: systemic physiology; biochemistry or physiological chemistry. Topics in functional morphology, physiology, intermediary metabolism, pharmacology, and disorders of the liver. Emphasis on bile formation; bile pigments; bile acids; drug and toxin metabolism; circulation; carbohydrate, lipid and protein metabolism; trace minerals; basic pathological processes; and function tests. (Same course as 420.)—I. (I.) Bruss

##### 284. Ruminant Nutrition and Physiology (3)

Lecture—2.7 hours; laboratory—0.9 hours. Prerequisite: graduate or veterinary student standing. Upper division nutrition courses (e.g., Nutrition 110), upper division systemic physiology (e.g., Neurobiology, Physiology and Behavior 110), Biochemistry (e.g., Biological Sciences 102 and 103) or the equivalent. Basic and applied aspects of ruminant nutrition and physiology, nutritional and metabolic disorders of ruminants. (Same as course 484.)—III. (III.) Bruss, Bacbus

##### 285. Morphometry of Cells, Tissues and Organs (2)

Lecture—1 hour; laboratory—3 hours. Prerequisite: course 100 or the equivalent, and Statistics 13. At the end of the course, students will be able to define what critical data need to be collected to estimate volumes, surfaces and lengths of organs and their components (e.g., vessels, ducts and airways). Students will also learn how to estimate the number of cells in an organ or tissue, their volumes, products and gene expression using morphometry. Offered in alternate years.—(III.) Hyde

##### 286. Basics of Microscopy and Cellular Imaging (2)

Lecture—10 sessions; laboratory—10 sessions. Prerequisite: graduate standing. Practical applications of basic microscope techniques used to image cells and tissues with the goal of using these techniques to generate publication quality images. Principles of light, epifluorescent, confocal and electron microscopy, their applications and limitations. Offered in alternate years.—III. Van Winkle

##### 290. Seminar (1)

Seminar—1 hour. Discussion and critical evaluation of advanced topics and current trends in research. (S/U grading only.)—I, II, III. (I, II, III.)

##### 291. Topics in Biology of Respiratory System (1)

Seminar—1 hour. Prerequisite: graduate standing and consent of instructor. Topics concerning structure and function of respiratory system. Possible topics include: lung growth, pulmonary reaction to toxicants, pulmonary inflammation, lung metabolism, biology of lung cells, tracheobronchial epithelium, nasal cavity structure and function. May be repeated for credit. (S/U grading only.)—I, II, III. (I, II, III.) Hyde, Plopper, Wu, Pinkerton

##### 292. Topics in Neuroscience Research (1)

Seminar—1 hour. Prerequisite: graduate standing and consent of instructor. Students will examine current topics in neuroscience research literature, as well as evaluate rationale, methods, results, interpretation of data, and relevance of studies. Possible topics include pain, autonomic nervous system, neuroendocrinology, neurotransmitter regulation of gene expression, neuroendocrine-immune interactions, stress. (S/U grading only.)

##### 298. Group Study (1-5)

Laboratory—6-15 hours. Prerequisite: consent of instructor.

##### 299. Research (1-12)

Laboratory—6-36 hours. Prerequisite: consent of instructor. (S/U grading only.)

**Professional Course****397T. Tutoring in Veterinary Anatomy, Physiology and Cell Biology (1-5)**

Lecture—1 hour; laboratory—3 hours; discussion—2 hours. For graduate or professional students who desire teaching experience, but are not teaching assistants. May be repeated for credit. (S/U grading only.)

**Professional Courses****410. Equine Locomotor Anatomy (2)**

Lecture—10 sessions; laboratory—10 sessions. Prerequisite: Veterinary Medicine 401 with a grade of C– or better. Normal anatomy of the equine fore and hind limb bones, joints, muscles, ligaments, tendons, nerves and vessels with emphasis on clinically applicable structures.—III. (III.) Stover

**420. Physiology and Pathophysiology of the Liver (3)**

Lecture—2.6 hours; laboratory—1.2 hours. Prerequisite: systemic physiology; biochemistry or physiological chemistry. Topics in functional morphology, physiology, intermediary metabolism, pharmacology, and disorders of the liver. Emphasis on bile formation; bile pigments; bile acids; drug and toxin metabolism; circulation; carbohydrate, lipid and protein metabolism; trace minerals; basic pathological processes; and function tests. (Same course as 220.)—I. (I.) Bruss

**458. Behavior Therapy in Companion Animals (2)**

Lecture—20 sessions. Prerequisite: third year standing in the School of Veterinary Medicine. Clinical application of behavior modification procedures, management and drug therapy to resolve common behavioral problems of companion animals including dogs, cats, horses, and birds.—III. (III.) Hart

**484. Ruminant Nutrition and Physiology (3)**

Lecture—2.7 hours, laboratory—0.9 hours. Prerequisite: graduate or veterinary student standing. Upper division nutrition courses (e.g., Nutrition 110), upper division systemic physiology (e.g., Neurobiology, Physiology and Behavior 110), biochemistry (e.g., Biological Sciences 102 and 103) or the equivalent. Basic and applied aspects of ruminant nutrition and physiology, nutritional and metabolic disorders of ruminants. (Same as course 284.)—III. (III.) Bruss, Bacbus