

COMPARATIVE MEDICINE

Chair: Linda C. Cork

Professor: Linda C. Cork

Associate Professor: Shaul Hestrin

Assistant Professors: Donna Bouley, Paul Buckmaster, Sherril Green, Glen Otto, Ravi Tolwani

The Department of Comparative Medicine is a clinical department and does not offer degrees, but its faculty offer courses and participate in teaching in other departments at the undergraduate and graduate level. Faculty members, most of whom are specialists in some veterinary medical specialty, also accept students to participate in ongoing research projects within the department and assist students with special research projects.

The discipline of Comparative Medicine utilizes the differences and similarities among species to understand basic biologic and disease mechanisms. Comparative Medicine incorporates the use of spontaneous or induced disease models as one of several approaches to research. Faculty members have expertise in anesthesiology, infectious diseases, molecular genetics, neuropathology, neuroscience, rodent biology, and so on.

COURSES

Course work and lab instruction in the Department of Comparative Medicine conform to the Policy on the Use of Vertebrate Animals in Teaching Activities as stated in the front of this catalog.

81Q. Stanford Introductory Seminar: Comparative Anatomy and Physiology of Mammals—Preference to sophomores. Comparative approach to common mammals, laboratory, and domestic species. The unique adaptations of each species in terms of its morphological, anatomical, and behavioral characteristics. How these species interact with humans and the historical relationships between humans and these animal species.

3 units, Spr (Bouley)

82Q. Stanford Introductory Seminar: Animal Models in Biomedical Research—Preference to sophomores. Overview of the usefulness of animal models in biomedical research (both naturally occurring animal models that mimic human disease and induced models developed by transgenic techniques) as tools to study mechanisms of disease and develop new therapeutic approaches. Examples of animal models in medical disciplines. The techniques utilized to develop animal models, including transgenic technology.

3 units, Aut (Tolwani)

83Q. Stanford Introductory Seminar: Horse Medicine—Preference to sophomores. Overview of the most common equine diseases, ranging from colic to lameness. Equine anatomy and physiology relevant to selected topics in equine medicine. Equine infectious diseases, respiratory disorders, care of the newborn foal, a “what’s your diagnosis”

problem series, and emergency first aid strategies.

3 units, Win (Green)

105/206. Principles of Animal Research—(Graduate students register for 206.) Overview of the methodology and principles of animal models in biomedical research: the comparative biology, anatomy, and physiology of a variety of animal models, and an introduction to animal genetics and the current methodology of producing transgenic animals. Examples of spontaneous and induced animal models of disease. The effects on research of underlying factors, e.g., disease, environment, and genetic background. The principles and methods of animal handling, anesthesia, surgery, analgesia, and necropsy. Wet labs provide a basis for proper animal procedures in biomedical research.

5 units, Win (Cork, Otto, Green, Tolwani, Bouley, Buckmaster)

UNDERGRADUATE INDIVIDUAL WORK

198. Directed Instruction/Reading—May be taken as a prelude to research and may also involve participation in a lab or research group seminar and/or library research.

1-3 units, any quarter

199. Undergraduate Research—Individual research taken by arrangement with department faculty.

FOR GRADUATE STUDENTS

299. Directed Reading—Prerequisite: consent of instructor.

1-18 units, any quarter

399. Research—Opportunities are available in comparative medicine and pathology, immuno-histochemistry, electron microscopy, molecular genetics, quantitative morphometry, neuroanatomy and neurophysiology of the hippocampus, pathogenesis of intestinal infections, immunopathology, biology of laboratory rodents, anesthesiology of laboratory animals, gene therapy of animal models of neurodegenerative diseases, and development and characterization of transgenic animal models. Enrollment limited to six. Prerequisite: consent of instructor.

1-18 units, any quarter

459. Frontiers in Interdisciplinary Biosciences—(Cross-listed in multiple departments in the schools of Humanities and Sciences, Engineering, and Medicine; students should enroll directly through their affiliated department, if at all possible.) Introduction to cutting-edge research involving interdisciplinary approaches to bioscience and biotechnology; for specialists and non-specialists. Associated with Stanford’s Clark Center for Interdisciplinary Bioscience, and held in conjunction with a seminar series meeting twice monthly during 2000-01. Leading investigators from Stanford and throughout the world speak on their research; students also meet separately to present and discuss the ever-changing subject matter, related literature, and future directions. Prerequisite: keen interest in all of science, with particular interest in life itself. Recommended: basic knowledge of biology, chemistry, and physics.

2 units, Aut, Win, Spr (S. Block)