

California State University, Fresno – Department of Biology
Graduate Degree Programs

01/17/03

Research Activities

Faculty expertise spans the range of biology from molecular to ecological. Our faculty is actively engaged in research in the following two foci:

Ecology and Evolution focus:

The Ecology and Evolutionary Biology research group within the CSU, Fresno Department of Biology is involved in a diverse array of research disciplines that focus upon the plant and animal communities of the California Coast. These beautiful and often pristine aquatic and terrestrial environments provide nearby natural laboratories with which to study an array of biological systems and processes. In particular, ecological research includes studies of plant population and community ecology, systems analysis of freshwater ecosystems, wildlife ecology and physiological ecology. Evolutionary research includes the study of insect-microbe interactions, population dynamics of plant-associated bacteria, evolution of bacterial catabolic pathways, and molecular systematics and biogeography of marine algae.

Molecular Cellular and Developmental Biology and Physiology focus:

Research opportunities in the Molecular, Cellular and Developmental (MCD) Biology and Physiology realm at CSU, Fresno exploit the newest technologies to address scientific questions, within three major groups - Microbiology & Immunology, Animal Physiology, and Plant Genetics & Development. Both medical and environmental issues occupy the Microbiology group. Specific topics of study include:

- bacterial pathogenesis and cholera vaccine production
- the role bacteria may play in the pathogenesis of the autoimmune disease, Lupus
- the microbial catabolic pathways useful for bioremediation of man-made chemicals, e.g., herbicides

Research interests in the Animal group focus on cellular physiology, particularly membrane transport studies and the endocrinology of reproduction.

Within the Plant group, the predominate issues are plant genomic evolution of vascular and non-vascular plants, using both classical genetic and molecular systematic approaches, and higher plant development mechanisms, using cellular fine structure and studies of programmed cell death. More applied endeavors of plant molecular biology include the genetic basis of both starch biosynthesis and disease resistance. Studies on DNA fingerprinting in grapes, in cooperation the Agricultural College, open a new area of agricultural forensics.

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Faculty and Research Interests

Raymond H. Abhold, Ph.D., Rutgers University. Neurochemistry, the action and interaction of neuropeptides in control of blood pressure.

David M. Andrews, Ed.D., University of Maine. Science education; applying and evaluating the constructivistic model of teaching learning and assessment in national K-16 science education reform projects and systemic initiatives.

Steve Blumenshine, Ph.D., University of Notre Dame. Aquatic ecology; food webs; role of predation and nutrient enrichment on the structure and dynamics of aquatic communities and ecosystems; fish growth and bioenergetics.

Alejandro Calderon-Urrea, Ph.D., Yale University. Developmental biology. Study of developmentally regulated programmed cell death in plants using genetic, molecular and cellular approaches.

David L. Chesemore, Ph.D., Oklahoma State University. Wildlife management and animal ecology, natural resource management, applications of biometry, scientific and nature photography.

Paul R. Crosbie, Ph.D., University of California, Davis, Parasitology Parasitology: host-parasite interactions, parasite life history strategies and ecology, parasite systematics and phylogenetics using both molecular and morphological approaches.

Stephen Ervin, Ph.D., University of California, Santa Barbara. Avian ecology; island ecology; passerine population dynamics.

David Grubbs, Ph.D., University of California, Irvine. Mammalian physiological ecology, behavior, and conservation; computer interfacing for experimental biology.

Ethelynda E. Harding, Ph.D., New Mexico State University. Microbial ecology; plant microbiology; bacterial population dynamics.

Ruth Ann Kern, Ph.D., Duke University. Terrestrial Plant Ecology; Plant population and community ecology of montane ecosystems.

Shirley A. H. Kovacs, Ph.D., Oregon State University. Immunology and cell and molecular biology; molecular structure and function of antigens associated with autoimmune connective tissue (arthritic) disease; evolution of RNA splicing.

Thomas E. Mallory, Ph.D., University of California, Davis. Growth and development of vascular plants; plant morphology.

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James P. Prince, Ph.D., Cornell University. Plant molecular genetics and crop improvement; Genome evolution and disease resistance in plants.

Fred E. Schreiber, Ph.D., Ohio State University. Forensic entomology, plant insect interactions, insect pathology.

Brian Tsukimura, Ph.D., University of Hawaii. Comparative physiology, reproductive endocrinology, environmental factors affecting reproduction.

Alice D. Wright, Ph.D., University of Michigan. Bioremediation, microbial physiology, metabolism of argichemicals in microorganisms, microbial ecology and diversity.

Lenore W. Yousef, Ph.D., University of California, Berkeley. Membrane physiology; Membrane transport and the nervous system.

Frederick W. Zechman, Ph.D., Louisiana State University. Molecular and morphological approaches to systematics and biogeography; molecular evolution; marine and freshwater phycology.

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Biology Department Adjunct Faculty

In addition to the regular Biology faculty, the department maintains close associations with professionals in the community. More than two dozen local scientists, many of them internationally known, serve as Adjunct Faculty. Adjunct Faculty from the UC Medical Education Program, US Department of Agriculture, US Forest Service, Endangered Species Recovery Program, California Department of Fish and Game, several regional medical institutions, and other agencies and programs offer classes, advise CSUF students, and sponsor cooperative research. Following is a list of some of the Adjunct Faculty.

Brian L. Cypher, Ph.D. Zoology, 1991, Southern Illinois University, Carbondale. Research Ecologist for the Endangered Species Recovery Program. Current research efforts include ecology and conservation of endangered San Joaquin kit foxes.
Phone: 661-398-2201

Ellen A. Cypher, Ph.D. in Plant Biology, 1993, Southern Illinois University, Carbondale. Principle plant ecologist for the Endangered Species Recovery Program.
Phone: 661-398-2201

Patrick A. Kelly, Ph.D. Zoology, 1990, University of California, Berkeley. Director of the Endangered Species Recovery Program in Fresno, California.

Kathryn Purcell, Ph.D. in Ecology, Evolution, and Conservation Biology from the University of Nevada, Reno. Research Wildlife Biologist with the US Forest Service, Pacific Southwest Research Station, Forestry Sciences Lab in Fresno, CA. Research interests include wildlife-habitat relationships, dealing with issues of habitat quality and response to habitat alteration.

Kent T. Yamaguchi, Md. University of California, San Francisco. Clinical Professor of Plastic Surgery at the University of California, San Francisco. Chief of Plastic Surgery at the University Medical Center and the Veterans Medical Center in Fresno, California.