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Publication Date

2004

Peer reviewed

NATIONAL ACADEMIES CONVOCATION ON FACILITATING INTERDISCIPLINARY RESEARCH
NATIONAL ACADEMY OF SCIENCES
Washington D.C.
January 29, 2004

Promoting Interdisciplinary Research: Experiences at the University of California, Davis

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Interdisciplinary research has been a focus at UC Davis since the 1960s when the first "Organized Research Unit" (ORU) was formed. The primary objective of ORUs is to foster research that crosses boundaries between disciplines. UC Davis presently has twelve ORUs, of which just a few are highlighted.

Bodega Marine Laboratory, directed by Professor Susan Williams, is located at Bodega Bay and focuses on ecological processes in the near shore marine and terrestrial environments. It conducts research such as oceanographic influences on marine populations, organismal responses to environmental stresses, and terrestrial coastal ecology.

The Institute of Governmental Affairs, directed by Professor Alan Olmstead, addresses social science and public policy issues. It sponsors research on social and political issues, economics, public policy, and applied data-oriented social science projects.

Professor Dan Sperling directs the Institute of Transportation Studies, a leader in advanced environmental vehicle research and education with a drive in emerging transportation issues with societal significance. Focus includes alternative fuels technology and policy, vehicle emissions and air quality, transportation economics, and travel behavior.

The John Muir Institute of the Environment, led by Professor Dennis Rolston, serves as an integrator for research, education and outreach in the environmental sciences. Its central goal is to improve the scientific basis for policy decisions on environmental issues with a major focus on the protection of Northern California's water resources. The Institute has research programs in ecological health, human health and the environment, integrated watershed science and management, water quality in the Lake Tahoe basin, and natural resource policy analysis.

Innovative interdisciplinary efforts are evolving at UC Davis, and many of these will become new Organized Research Units. Four exciting Centers are highlighted.

Air Quality Research Center, under the leadership of Professor Anthony Wexler, conducts research in air quality. Environmental Science has been a traditional area of distinction at UC Davis, and this Center coordinates research thrusts addressing issues including indoor air quality, occupational health, smog, visibility, ozone depletion, and climate change.

The Center for Biostabilization, under the leadership of Professors John Crowe and Fern Tablin, is developing new approaches to make bio-materials more "durable" and obtain a generally better understanding of the scientific processes involved in bio-material degrading. Research focuses on blood products storage and shipping, stabilization of vaccine storage and delivery, and stabilization of bio-sensors ("cells on a chip").

The Combinatorial Chemistry Center, a concerted research infrastructure led by Professors Kit Lam and Mark Kurth, is envisioned to bring together researchers from biomedical and chemical fields. Two key thrusts of this effort will be focused on understanding the molecular basis of diseases and disease-specific drug development.

The Center for Complex Adaptive Matter, directed by Professor Dan Cox, is gaining insight into the physical processes that characterize "adaptive matter" and into the fundamental processes, underlying physics. The Center will bring together physical and biological scientists studying such diverse phenomena as protein folding, self-assembling materials, and measuring phenomena at the nano-meter scale.