

\$17.2 Million Environmental Grant Awarded To School Of Medicine

April 25, 2005

Sue Pondrom

An innovative environmental research and community outreach program led by the UCSD School of Medicine has received a five-year \$17.2 million renewal of its grant from the National Institute of Environmental Health Sciences, along with accolades for high quality scientific investigations and an outstanding community outreach program.

First funded with \$15 million in 2000, the UCSD Superfund Basic Research Program has successfully developed cellular, yeast, plant and animal biological tools that could potentially be used in the detection of toxic substances in waterborne hazardous waste. Continuing studies during the next five years will refine the use of these detection tools and will include a community outreach component with cross-border populations and with local tribal communities who are affected by hazardous waste sites and toxicants.

"We understand that toxic exposure leads to illness," said Robert Tukey, a UCSD professor of pharmacology, chemistry and biochemistry, and director of the UCSD Superfund Basic Research Program. "The objective of our studies is to find out from a biological standpoint, what genetic components lead to disease, and then to utilize biological models to detect harmful toxic components in water."

In San Diego, the UCSD School of Medicine coordinates the research efforts of UCSD scientists from multiple departments, including the medical and pharmacy schools, the departments of Biology, Chemistry & Biochemistry, Urban Studies and Planning, and The Scripps Institution of Oceanography, plus projects directed by collaborators at the Salk Institute and The Scripps Research Institute.

Just a few examples of work by participating researchers in the program are the following:

Director Robert Tukey, has developed cell lines and mice that can be used as sensors to detect exposure to environmental contaminants.

UCSD biologist Julian Schroeder, has developed a strain of plants that can absorb metals out of the soil.

Pharmacology professor Michael Karin, has developed mice that are sensitive in detecting certain toxicants that cause liver cancer.

Professor Palmer Taylor, who is also dean of the UCSD Skaggs School of Pharmacy and Pharmaceutical Sciences, has generated a strain of mice sensitive to enzymes important in nerve transmission in muscles; these enzymes are damaged by contaminated run-off water in agricultural communities.

Paul Russell, at The Scripps Research Institute, is studying oxidative stress in yeast as a model that could potentially be a biological screen for toxicants.

Ronald Evans, the Salk Institute, studies the molecular mechanism by which environmental substances found at hazardous waste sites can activate nuclear receptors and genes that ultimately lead to toxic responses.

Professor Bradley M. Tebo, from UCSD's Scripps Institution of Oceanography, has identified novel bacteria that resist toxic levels, and which are useful in evaluating the fate of various toxic substances in our coastal environments.

An equally important component of the Superfund grant is the community outreach program, working closely with local American Indian communities, and led by Keith Pezzoli, UCSD Urban Studies and Community Planning.

"As a research institute, we will use these funds to further an understanding of the impact of waterborne toxicants on health, but we are also responsible as an institution of higher education to apply what we can learn through research to help those impacted by environmental exposure," Tukey said.

The community outreach program will collaborate locally with the Campo Indian Reservation, part of the Kumeyaay Nation; the tribal environmental lab located at the Twenty-Nine Palms Band of Mission Indians, and nationally, the Superfund Project Group of the National Tribal Environmental Council. The goal is to create a tribal information system with datasets, information and knowledge integration tools to support online analysis, visualization and communication of environmental justice and quality of life issues. Research translation activities will apply toxicogenomics and biomolecular technologies to environmental monitoring, risk assessment and bioremediation.

For more information about the Superfund research projects, see the UCSD Superfund Basic Research Program.

Media Contact: Sue Pondrom (619) 543-6163