

Discovering Drugs and Biofuels in Tropical Seas

10/07/08 Portland, Ore.

OHSU will lead an NIH-funded project to explore the biodiversity of Philippine marine mollusks and associated microbes that offer clues to potential central nervous system, cancer and antimicrobial drugs as well as enzymes for cellulosic biofuels production

The National Institutes of Health has awarded \$4 million to a group of Philippine and American scientists led by Oregon Health & Science University to aid in the discovery of new molecules and biofuels technology from marine mollusks for development in the Philippines.

The project will concentrate its research in the Philippine archipelago whose waters are inhabited by an estimated 10,000 marine mollusk species, or about a fifth of all the known species, and are regarded by marine biologists as the world's epicenter of marine biodiversity. Mollusks are among the most diverse of marine animals and include shelled creatures like snails, clams and slugs.

The wide-ranging Philippine Mollusk Symbiont International Cooperative Biodiversity Groups, or PMS-ICBG, project aims to provide new information to catalog and preserve these diverse mollusk species while providing scientific opportunities for the Philippines. U.S. scientists will work closely with colleagues from the University of the Philippines to uncover interactions between mollusks and their bacterial partners. The project is expected to yield leads to potential central nervous system, cancer and antimicrobial drugs as well as enzymes for cellulosic biofuels production.

The National Science Foundation and the U.S. Department of Energy are also sponsors of the grant. The NSF supports basic research in marine science and biotechnology, and the DOE sees relevance to national energy needs because the shipworm, one species of mollusk the OHSU project will focus on, harbors bacteria that hold the promise of economically converting plant biomass into cellulosic ethanol, one of the holy grails in the quest for viable biofuels. The five-year PMS-ICBG grant is administered by the Fogarty International Center, with additional support from the National Institute on Mental Health, both of the NIH. The lead investigator is **Margo G. Haygood, Ph.D.**, professor of marine and biomolecular systems in the Environmental and Biomolecular Systems division of the Department of Science and Engineering, OHSU School of Medicine. The team includes scientists from the University of the Philippines, the University of Utah, the Academy of Natural Sciences in Philadelphia, and Ocean Genome Legacy in Ipswich, Mass.

"This is a truly unique effort," said **Edward Thompson, Ph.D.**, chairman of the Department of Science and Engineering, OHSU School of Medicine. "Looking at microbes in the ocean has enormous potential. It could contribute to the development of alternative fuels while at the same time opening a path for biomedical research in largely uncharted territory." Thompson's department is where environmental science and biomedical research come together at OHSU.

ICBG grants are designed to guide the discovery and development of pharmaceutical and other useful agents from the earth's plants, animals and microorganisms in such a way that the communities and the countries where those biological resources are found can benefit and, at the same time, promote development of the scientific capacity and economic incentives for conservation and sustainable harvesting of those resources. An estimated 40 percent to 50 percent of currently used drugs originate in natural products.

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