



**Pacific Northwest
National Laboratory**
Operated by Battelle for the
U.S. Department of Energy

Sharing the Excitement of Science

Breakthrough
Science and
Technology for
the Northwest

Richland, Washington

June 2001

Landmine detector, cellular research win two of Discover Magazine's nine awards

Two scientists at Pacific Northwest National Laboratory who developed innovative technologies were among the nine Discover Magazine Innovation Awards winners for 2001. At a ceremony June 12, Discover Magazine and the Christopher Columbus Foundation recognized Robert Wind and Richard A. Craig, both physicists, for their technologies that address vital health and humanitarian issues.



An engineer tests the Timed Neutron Detector developed by Richard Craig to detect landmines.



Robert Wind and the combined microscope

Wind accepted the top honor in Discover's Health category for inventing a combined optical and magnetic resonance microscope that has potential for improving the detection and diagnosis of diseased cells and in evaluating a patient's response to therapy. The foundation granted Craig a \$100,000 fellowship for development of the Timed Neutron Detector that quickly and inexpensively locates metal and plastic landmines.

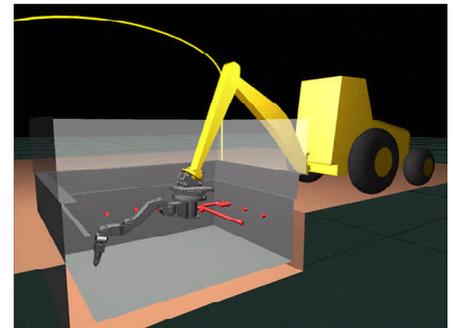
Congress established the Christopher Columbus Foundation in 1992 to "encourage and support research, study and labor designed to produce new discoveries in all fields of endeavor for the benefit of mankind." Each year the foundation chooses a fellowship recipient from among the Discover Awards entries. For more information see www.pnl.gov/news/2001/01-21.htm.

Pit Viper takes a bite out of worker radiation exposures

The Pit Viper, a remotely operated cleanup system unveiled in June, may reduce radiation exposure to personnel working in highly contaminated equipment pits at Hanford by as much 75 percent.

Repairing and refurbishing the tank waste equipment pits that contain the valves and pipe couplings designed to transfer radioactive waste from one underground tank to another is the most dose-intensive work under Hanford's River Protection Program. Sending remote technology into these high radiation zones rather than people minimizes worker exposure. The Pit Viper uses a hydraulic manipulator arm to repair or remove equipment in the pits, conduct radiation mapping, remove debris, and repair cracks, clean, prep and paint walls.

Operated from a console in a control trailer 200 feet away, the operators work in a clean, safe environment while viewing cleanup activities on television monitors captured by four cameras. "It's simple, but very effective technology based on commercially available components performing multiple tasks," said Sharon Bailey, Pit Viper project manager. "The entire process will be much safer and more efficient than ever before." A news release and a video of Pit Viper in action appear at www.pnl.gov/news/2001/01-19.htm.



In this issue

- PNNL scientists honored by Discover Magazine
- Remote cleanup technology unveiled
- New UW faculty tour EMSL
- Plant-growth stimulator ready for testing
- Laboratory technology used in Seattle Art Museum exhibit

New University of Washington faculty visit the Laboratory

More than 30 new faculty members at the University of Washington spent part of June 13 visiting Pacific Northwest National Laboratory and learning about the Laboratory's fundamental science activities. The group toured the Environmental Molecular Sciences Laboratory, a national user facility at PNNL.

Every other year, University President Dick McCormick organizes a tour for new faculty to highlight businesses in the state that collaborate or work with the University. The group's other tour stops in Washington included Intel in Dupont, a farm worker's medical clinic in Yakima, a potato packing plant in Othello and BF Goodrich in Spokane.



The Joint Institute for Nanoscience and Nanotechnology announced in April is just one area where the University and PNNL are working closely together. The joint insititute involves collaborative research, sharing facilities and joining Laboratory staff with University faculty and students.

Giving new meaning to watching the grass grow

Dye Seed Ranch, Inc. of Pomeroy, Wash. and Pacific Northwest National Laboratory signed a project agreement to field-test a plant-growth stimulator developed by the Russian company JSC Bichimmasch. The microbial extract accelerates plant growth, increases seed germination, tilling and seed production for perennial seed crops. It results in dense turf grasses that discourage weed growth, which may be a promising alternative to burning fields to destroy weed seeds, a practice recently banned by the Environmental Protection Agency.

The work with Dye Seed is part of a Cooperative Research and Development Agreement under the Initiatives for Proliferation Prevention. The IPP facilitates the creation of stable, nondefense jobs for former weapons designers and scientists. It is a collaborative program among the U.S. Department of Energy's national laboratories, U.S. industries and the institutes and facilities that formerly produced weapons of mass destruction in Russia, Kazakhstan and Ukraine.

Seattle Art Museum digs virtual reality technology



A computer system developed by Pacific Northwest National Laboratory is taking visitors at the Seattle Art Museum on a virtual archeological dig of Chinese art from Sichuan.

The museum combined PNNL's Human Information Workspace, or HI-SPACE, with technology developed in part by the University of Washington to build a virtual reality experience to help visitors gain an appreciation for the real artifacts on display.

The graphics on each of three projection tables change as visitors pass their hands over the objects, allowing them to "brush" away "dirt." The simulated dig allows visitors to experience excavating layers of an archeological pit at Sanxingdui, China. As part of the dig, visitors uncover and examine an elephant tusk and bronze objects as well as reconstruct a broken sculpture.

The Laboratory's HI-SPACE was designed to recognize and respond to hand gestures. It was combined with ARToolkit software, developed jointly by the University of Washington's Human Interface Technology Lab and Hishomia City University, to create the virtual dig. The exhibition, "Treasures from a Lost Civilization: Ancient Chinese Art from Sichuan," will be at the museum through Aug. 12.

For more information about these items or about Pacific Northwest National Laboratory, contact:

Pamela Harrington, Editor
Phone: 509-375-4506
Fax: 509-375-6550
E-mail: pamela.harrington@pnl.gov

Pacific Northwest National Laboratory
P.O. Box 999, Richland, WA 99352
Toll-free: 1-888-375-PNNL
Web address: <http://www.pnl.gov>



