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UMass nets \$2.4M in defense grants

BY TOM MARSHALL STAFF WRITER

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AMHERST - Two scientific projects at the University of Massachusetts got a boost Wednesday with news of \$2.4 million in federal Defense Department funding.

Professor Derek Lovley won \$1.2 million to support research on Geobacter and other microorganisms that have been found to be highly efficient conductors of electricity. And Daniel Schaubert, professor of electrical and computer engineering, won another \$1.2 million grant for research into microwave technology and antennas.

'Researchers at UMass are leading the way on cutting-edge science that could make a big difference in our daily lives,' U.S. Rep. John W. Olver, D-Amherst, said in a statement.

'As a recognized leader in microwave engineering and antenna research, UMass has had a long-standing collaboration with Hanscom (Air Force Base's) antenna technology branch,' he added. 'In the microbiology department at the university, we are seeing research that could have far-reaching implications, from industry and farms to households.'

The funding was part of a defense appropriations bill signed last month by President George W. Bush.

Lovley, who discovered Geobacter at the muddy bottom of the Potomac River in 1987, has since brought in nearly \$50 million in sponsored research funding, making him one of the university's top generators of research dollars.

The microorganisms use metals to gain energy, and have proven useful in cleaning up toxic waste sites by rendering petroleum and heavy metals insoluble and environmentally benign.

But they have also been found to turn renewable biomass or animal wastes into electricity, transferring electrons outside the cell onto metals or electrodes using tiny 'nanowires.'

The U.S. Navy is experimenting with using the technology to power undersea monitors. The Pentagon is also interested in the potential for fuel cells that could allow vehicles to roam the land powered only by vegetation, Lovley said.

He said the Defense Department funds would be used to optimize Geobacter's ability to transfer electricity. Until now, the microorganism has been unable to produce enough current to keep a light bulb powered.

'The process is very efficient but it's just too slow for some applications,' Lovley said. 'It just can't transfer the electricity fast enough.'

Schaubert's research through the Center for Advanced Sensor and Communication Antennas at UMass has developed antenna technology used for defense and homeland security, wireless communications and air traffic control.

'The center will also strengthen high-tech industries in Massachusetts, spawning developments needed throughout the nation and the local economy,' Olver's office said.

Schaubert said he was grateful for the support, which enables research not easily pursued under other funding sources.

As an example, he cited work on global positioning devices as small as a wristwatch.

Tom Marshall can be reached at

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