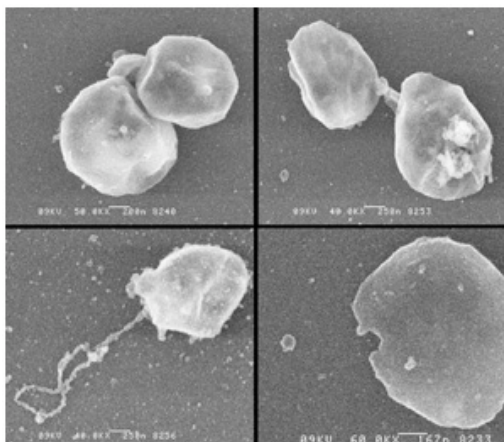


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Featured Story

Bacterium Could Treat PCBs Without the Need for Dredging



Scanning electron micrographs of Dehalococcoides

Credit: F. E. Loeffler. 2007. Appl. Envir. Microbiol. 2007 : AEM.02909-06v1 Copyright 2007, American Society for Microbiology

Researchers at Rensselaer Polytechnic Institute have discovered a tiny bacterium that could one day transform the way we remove polychlorinated biphenyls (PCBs) from our environment. The organism could be the key to developing methods that help detoxify commercial PCB compounds on site — without the need for dredging.

Commercial PCBs, which were banned from production in the United States in 1977, were once commonly used by industry. The compounds are mixtures of 70-90 different molecular forms that vary in the number and positions of chlorine atoms, making them difficult to degrade. To date, the most commonly used method to remove PCBs is to dredge and then deposit the sediments in a landfill.

“For the first time we have been able to cultivate in defined media naturally occurring bacteria that can extensively dechlorinate PCBs right at the site of the contamination,” said Donna Bedard, professor of biology at Rensselaer. “This is a major step toward the development of cost-effective methods for on-site PCB remediation.”

Bedard used sediments from the Housatonic River in Massachusetts — an area known to be contaminated with PCBs — to develop sediment-free cultures and to identify the bacteria that were breaking down the PCBs. Using molecular techniques, the research team determined that the microbes that are dechlorinating the PCBs belong to a group of bacteria known as Dehalococcoides (Dhc). [Read more.](#)

Honors and Awards

Faculty

- **Jim Hendler** (Tetherless World Constellation Professor and Professor of Computer Science) was invited to renew his position as a member of the Board of Reviewing Editors for *Science Magazine*. He is the first computer science professor ever to serve on the board.
- **Wei Zhao** (Dean and Professor of Computer Science) will receive the 2007 IEEE Technical Committee on Distributed Processing (TCDP) Outstanding Achievement Award for significant contributions to the distributed computing community.
- At the Annual Faculty Recognition Dinner held on May 4, several School of Science faculty received awards:
 - **Ron Bailey** (Professor, Chemistry) 45 Years of Service
 - **Charles Boylen** (Professor, Biology) 35 Years of Service
 - **Alan Cutler** (Professor, Chemistry) 25 Years of Service
 - **Charles Gillies** (Associate Professor, Chemistry) Retiring Faculty
 - **Tim Hayes** (Professor, Physics) Retiring Faculty

- **Mark Holmes** (Professor, Mathematical Sciences) Trustees Outstanding Teacher Award
- **Gerald Korenowski** (Professor, Chemistry) 25 Years of Service
- **Harry McLaughlin** (Professor, Mathematical Sciences) 40 Years of Service
- **David Musser** (Professor, Computer Science) Retiring Faculty
- **Toh-Ming Lu** (Professor, Physics) 25 Years of Service
- **Robert Parsons** (Associate Professor, Biology) 35 Years of Service and Retiring Faculty
- **Lester Rubenfeld** (Professor, Mathematical Sciences) 40 Years of Service
- **John Schroeder** (Professor, Physics) Fischbach Travel Award and 25 Years of Service
- **Sam Wait** (Associate Dean, Science) 45 Years of Service

Students

- **Matthew Pelliccione**, graduate student in Physics, was awarded the highly selective Fannie and John Hertz Foundation Fellowship. He is one of 15 students nationally to be named a fellow and will receive a scholarship and full tuition to pursue graduate studies.
- Five undergraduate students from the School of Science won awards at the 2007 Undergraduate Research Forum:
 - **Leanne Ahronian** (Biology) Second Place, Theoretical Category
 - **Elizabeth Frank** (Interdisciplinary Science) First Place, Theoretical Category
 - **Elizabeth Louie** (Biology) Third Place, Theoretical Category
 - **Jennifer O'Neil** (Bioinformatics and Molecular Biology and Biology) Third Place, Applied Category
 - **Zane Van Dusen** (Computer Science and EMAC) Second Place, Applied Category
- Seven students in the School of Science won prizes in the McKinney Writing Contest this year. They are:
 - **Elizabeth Baratta** (Chemistry) Co-Third Prize, Undergraduate Fiction/Drama
 - **Jennifer Earle** (Physician-Scientist Program, Biology and Psychology) Second Prize, Undergraduate Essay
 - **Kyle McDonald** (Computer Science and Philosophy) First Prize, Undergraduate Electronic Media
 - **Jacinda Moore** (Computer Science) Co-First Prize, Undergraduate Poetry
 - **Jane Sprigg** (Physics) Co-First Prize, Undergraduate Fiction/Drama
 - **Zane Van Dusen** (Computer Science and EMAC) First Prize, Undergraduate Essay
 - **Timothy Zander** (Computer Science) Co-Third Prize, Undergraduate Poetry

Research Accomplishments

- **Donna Bedard** (Research Professor, Biology), **K. Ritalahti** (Research Scientist, Georgia Institute of Technology), and **F. E. Loffler** (Carlton Wilder Professor of Environmental Engineering, Georgia Institute of Technology) recently published their work on "The Dehalococcoides Population in Sediment-Free Mixed Cultures Metabolically Dechlorinates the Commercial Polychlorinated Biphenyl Mixture Aroclor 1260," in *Applied and Environmental Microbiology* (see the featured story above). It was also reported on by the Associated Press, National Public Radio, local TV, radio, and newspapers, and will appear in the New York Times and on Microbiology Radio. Two patent disclosure letters and a provisional patent application were also filed on this work.
- **Chris Bystroff** (Associate Professor, Biology), **Jonathan Dordick** (Howard P. Isermann Professor, Chemical Engineering), **Yao-Ming Huang** (Graduate Student, Biology), and **Philippa Reeder** (Graduate Student, Chemical Engineering) submitted a provisional patent, titled "Programmable Fluorescent Peptide Biosensors."

- **Russ Ferland** (Assistant Professor, Biology) published a paper in *Science*, titled “Ongoing adaptive evolution of ASPM, a brain size determinant in Homo Sapiens,” 316(5823):370-373, 2007. Co-Authors include, Y. Fuli, R. S. Hill, S. F. Schaffner, P.C. Sabeti, E. T. Wang, A. A. Mignault, R. K. Moyzis, C. A. Walsh, and D. Reich.
- **Fern Finger** (Assistant Professor, Biology), gave a talk, titled “Septin functions in *C. elegans* axonal dynamics,” at the EMBO Workshop of the 2nd International Conference on the Molecular Biology and Biochemistry of Septins and Septin Function, in Ascona, Switzerland.
- **Lee Ligon**, (Assistant Professor, Biology) gave an invited talk to the Hudson-Berkshire Chapter of the Society for Neuroscience at Albany Medical Center.
- **Boleslaw Szymanski** (Director, Center for Pervasive Computing and Networking), presented the results of the current research on sensor networks in invited lectures at the Biowires 2007 Workshop at Cambridge University, U.K and at a research seminar at the National Research and Academic Network Institute in Warsaw, Poland.

Other News

- Representatives from the Universidade Federal de Sao Joao del-Rei in Brazil, visited Rensselaer on April 23-24 to learn about our classroom technologies. Among their stops were learning about the “clicker” technology used in our Introduction to Biology class, and the “studio” approach used in the department of Physics, Applied Physics, and Astronomy. The representatives were Murilo Cruz Leal, Academic Provost and Adelaine LaGuardia Resende, Director of International Affairs. Universidade Federal de São João del-Rei is located in the southeastern part of Brazil. As part of an expansion project, the university is creating a new campus, where a range of courses in the area of engineering and technology will be offered beginning in 2008.
- Faculty in a number of departments in the School of Science are considering the use of “clicker” technology in the classroom for immediate assessment and feedback of student learning. For more information about “clicker” technology, contact Bruce Laplante in the Anderson Center for Innovation in Undergraduate Education.
- A meeting of the Science Advisory Council was held recently. The new Dean of Science, Wei Zhao, was introduced to the Council and the Council reviewed a number of research programs in the School of Science, enrollment trends, EMPAC, international programs, and REU programs.
- The External IT Advisory Council met recently to review the Master of Science degree program in IT, recruitment of women into IT, and organization structures for IT. The new Dean of Science, Wei Zhao, was also introduced to the Council.
- The *2007 Academic Ranking of World Universities by Broad Subject Area* lists Rensselaer’s Natural Science and Mathematics in the group 76-110. In Engineering, Technology and Computer Science, Rensselaer is ranked 51-75. The full rankings can be found [here](#).

Upcoming Events

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- President’s Commencement Colloquy, May 18, 4:00 - 5:30, DCC 308 (all faculty, staff and students are encouraged to attend).
- Commencement Ceremony, May 19, 9:30, Harkness Field.
- Reunion 2007, June 7-10.

This newsletter is prepared monthly and distributed to faculty, staff and students in the School of Science to keep everyone informed of accomplishments and events within the school. Corrections and items for the next newsletter should be sent to spoon@rpi.edu.