

HIGHLIGHTS FROM THE BIOTECH CENTER

July 2009

Faculty Activities and Accomplishments

Biotech Center member Max Haggblom (Chair, Biochemistry and Microbiology) was selected as the recipient of the American Society for Microbiology 2009 Indo-US Professorship in Microbiology. He will teach a course as part of the International Short Course on Bioremediation with Dr. Mutnuri at the Birla Institute of Technology and Science in Goa, India.

Three bacterial species isolated by the Haggblom group were selected for whole genome sequencing by the U.S. Department of Energy Joint Genome Institute. The three strains represent novel psychrophilic species in the Acidobacterium phylum, which are dominant and resilient members of the bacterial microbiota in Arctic tundra and forest soils. Genomic analysis of these Acidobacteria combined with physiological analysis and ecological field studies will provide an understanding of the mechanisms promoting dominance of the Acidobacterium group in Arctic and sub-Arctic soils and their roles in carbon and nitrogen turnover. The information will allow for better predictions of the microbial response to global warming and changes in temperature regimes.

Student Activities and Accomplishments

Several students from New Jersey high schools and Rutgers are working on research projects in Biotech Center labs this summer. Sandra Korn, a rising senior at Ridge High (Basking Ridge), and Rutgers undergraduate Alexander Conicella, a Molecular Biology and Biochemistry major and an Aresty Summer Science student are working with Assistant Research Professor Rong Di and Professor Eric Lam on biofuels-related research. They are cloning genes encoding the cellulosic biomass-degrading enzymes and initiating tissue cultures for tobacco and cassava transformation.

In Ilya Raskin's lab, Deborah Rothbard is working with Graduate Assistant Rocky Graziose on collecting NJ native plants that have once been used for antimalarial remedies. She is preparing extracts and sending them to South Africa to test their *in vitro* antiplasmodial activity. Deborah is a student at Livingston High School, taking part in a special science research program.

Two more high school students are working in Nilgun Tumer's lab this summer. Tabor Nelson from Byram Hills High School in Armonk, New York is working with Postdoc John McLaughlin on Dr. Tumer's ricin transformation project. They are screening for deletion mutants that are resistant to the toxin, and Tabor will also be working independently with yeast strains. He was awarded a grant from Rutgers to cover his dormitory stay during the summer. Meyrolin Garcia from Irvington High School is supported by the Project SEED program. She is working with Graduate Assistant Jia-Chi Chiou on the effect of Shiga toxin on P proteins of the ribosome.

Grants and Fundraising Efforts

Nilgun Tumer and her collaborators, Drs. Yuan-Ping Pang from the Mayo Clinic College of Medicine and Charles Millard from the Walter Reid Army Institute of Research have received a 4-year U01 grant from NIH for \$2.9 million to develop small molecule inhibitors of ricin and Shiga toxins. Dr. Tumer's share of the NIH-funded project is \$991,871 over four years. She

will work on developing second-generation small molecule inhibitors of Shiga-like toxin 2 and ricin, both category B agents. Currently there are no effective vaccines or therapeutics that can protect against either toxin.

Nilgun Tumer and Wendie Cohick received a stimulus funding supplement of \$53,766 to their NIH R01 award to support three undergraduate students in their labs over two summers. This summer the supplement is supporting Maria Montano, a Rutgers Biotech Major, and Henry Ma, who is a Biomedical engineering major at Johns Hopkins University, both working in Dr. Tumer's lab. Dr. Cohick's student is Jillian Boden, who is a Rutgers Genetics major. The students are assisting with research on the mechanism of cytotoxicity of ricin.

Elisabetta Bini received a \$45,000 grant from the Charles and Johanna Busch Memorial Fund to work on a project on antibiotic pollutants and selection of antimicrobial resistance. The grant is for 2 years.

Hemalatha Saidasan, Research Assistant working in Michael Lawton's lab, received a grant of \$32,000 from the NIH-funded Botanical Dietary Supplement Research Center at Louisiana State University. The Core project of this major research center is located at Rutgers and led by Ilya Raskin, who solicits pilot research studies from Rutgers investigators. Dr. Saidasan's one-year project will focus on insulin-dependent onset of neurological degeneration and Alzheimer's disease.

Conferences, Seminars, and Other Events

Max Haggblom was an invited speaker at the 10th International Symposium on Bacterial Genetics and Ecology (BAGECO) held in Uppsala, Sweden June 15-19. He presented a talk entitled "Anaerobic Bacteria with an Unusual Appetite for Methyl tert-Butyl Ether (MTBE)".

Max Haggblom served as Vice-Chair for the Gordon Research Conference on Applied and Environmental Microbiology (Chair: Nicole Dubilier) July 12-17, Mt. Holyoke MA. He will Chair the 2011 conference. Post-Doctoral Associates Joong-Wook Park and Duong Minh Vien participated in the conference with poster presentations.