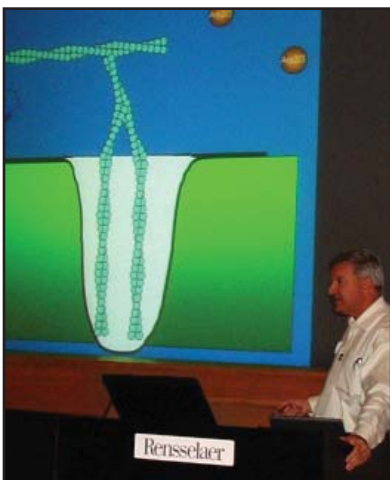


**SWEET SUCCESS WITH INVENTION OF ARTIFICIAL GOLGI:** Among the most important and complex molecules in the human body, sugars control not just metabolism but also how cells communicate with one another. Jeffrey Martin, a graduate student in biochemistry and biophysics, has put his basic knowledge of sugars to exceptional use by creating a lab-on-a-chip device that builds complex, highly specialized sugar molecules, mimicking one of the most important cellular structures in the human body: the Golgi Apparatus. "Almost completely independently he has been able to come closer than researchers with decades more experience to creating an artificial Golgi," said Martin's adviser Robert Linhardt, Professor of Chemistry and Chemical Biology at RPI. "He saw a problem in the drug discovery process and almost instantly devised a way to solve it." ---> <http://www.rpi.edu/about/inside/issue/v2n9/martin.html>



**THE FUTURE OF THE WEB - TETHERLESS WORLD CONSTELLATION:** On June 11, leading authorities on the World Wide Web gathered at RPI for a public discussion about the future of the Web. The debate, streamed live via an interactive Webcast, was part of a daylong event to celebrate the launch of the Tetherless World Constellation at Rensselaer, a new academic center devoted to the emerging field of Web Science. The debate covered a wide range of issues from sustaining the usefulness of the current Web to creating a next-generation Semantic Web, as well as the role of politics, education, and sociological factors in the Web's continued evolution. President Shirley Ann Jackson gave the opening remarks, followed by the keynote address by Tim Berners-Lee, inventor of the Web and director of the World Wide Web Consortium. Participants in the panel discussion included Berners-Lee, Wendy Hall, Nigel Shadbolt, Nova Spivack, and Tetherless World Constellation Professors James Hendler and Deborah McGuinness. ---> <http://tw.rpi.edu>



**RENSSELAER BIOLOGY PROGRAM SYMPOSIUM - AT THE INTERFACE:** Sixteen researchers, including professors Robert Linhardt, Angel Garcia, and keynote speaker John Condeelis '71, presented their findings and latest work at the Center for Biotechnology and Interdisciplinary Studies on May 22. The Rensselaer Biology Program Symposium was a forum for those whose research, regardless of experimental approach, addresses important issues in the life sciences. Event coordinator, Susan Gilbert, Professor and Head of Rensselaer's Department of Biology, said "Today's most exciting advances and future challenges are at the interface of biology and chemistry, physics, mathematics, engineering, as well as computation and information technology. This symposium was a forum to present and discuss our latest findings and to develop new collaborations that cross disciplines and departments. It was also an opportunity to showcase the research happening at Rensselaer and throughout the Capital District." The diversity of the topics discussed --->

**BIOLOGY PROGRAM SYMPOSIUM, CONTINUED** ---> embodied the multi-disciplinary spirit of the Center for Biotechnology and Interdisciplinary Studies, encouraging collaboration among many diverse academic and research disciplines to enhance discovery and innovation. Dr. Condeelis, Professor and Co-Chair of Anatomy and Structural Biology at Albert Einstein College of Medicine, presented the keynote address titled, "Breast Tumor Invasion: Tumor Cell Chemotaxis in a Macrophage-Dependent Microenvironment." He received his bachelor's degree in physics from RPI in 1971 and his Ph.D. from SUNY-Albany. After postdoctoral training at Harvard University, Dr. Condeelis joined the faculty of Albert Einstein, where he is also the Scientific Director of the Albert Einstein Analytical Imaging Facility. He is the Principal Investigator with Dr. James Castracane of the College of Nanoscale Science and Engineering, SUNY-Albany, as Co-Principal Investigator on the National Cancer Institute funded Tumor Microenvironment Study. The goal of this five year study is to develop a next-generation microchip that, when placed in a cancerous mass, can gather information on the presence of metastatic cells that would demand more aggressive cancer therapy.

### **PARTNERSHIPS FOR INTERNATIONAL RESEARCH AND EDUCATION:**

Wayne Powers, a chemistry graduate student in the Accelerated B.S./Ph.D. Program, recently spent four months in Korea, working on the characterization of brominated polystyrene at Pohang University of Science and Technology (POSTECH). He traveled to Korea as part of the Partnerships for International Research and Education (PIRE) program. The PIRE program is funded by a \$2.5 million grant from the National Science Foundation that brings together scientists, engineers, graduate and undergraduate students from top U.S. and Korean universities.

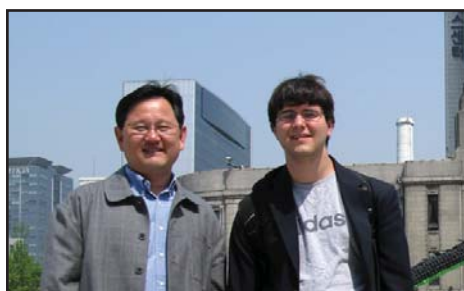
Chang Ryu, Associate Professor of Chemistry and Chemical Biology at Rensselaer, who oversees the NSF grant, explained, "As research and education become more global, and many countries continue to invest heavily in science and technology, our students in the United States need to have a strong global perspective. When these students graduate, they need to foster collaboration with international research to help America maintain its leading place in the international scientific community." Powers has been working in Dr. Ryu's research group since 2006, researching the physical chemistry of polymers, particularly polymer separations.

Ryu understands how important it is to foster international relations, as he was born and raised in Korea. He explained that Korea is the second largest resource of U.S. students from East Asia, but not many students from the U.S. attend schools in Korea. Korea is reaching out to students of other nations to study in Korea to encourage global perspectives on research and education. "We are not just sharing research and knowledge. We will also be sharing our cultures," Ryu said. "It is important that our students learn to interact with each other on more than just a scientific level. We want them to receive more than just a scientific education from the program."



**The lab group at the POSTECH Training Institute.**

While in Korea, Powers visited historical and cultural sites in Seoul, Pusan, and Gyeongju, including several ancient Buddhist temples. He also attended a Korean Chemical Society meeting in Seoul to present his collaborative work between RPI and POSTECH. "The PIRE Program helped me to expand my horizons, both inside and outside the lab," Powers said. "It also helped me to greatly improve my ability to communicate with people of different cultures. I am very thankful to Dr. Ryu, to NSF, and to POSTECH for giving me this great opportunity."



**Wayne Powers and Professor Chang Ryu at a festival in Seoul, Korea.**

Currently, four other RPI School of Science students are studying in Korea: Jessica Zurlo, Alicia Potuck, Charles Salvo, and John Ellis. All four students are undergraduates in chemistry. They will be spending six weeks at POSTECH.

## SCHOOL OF SCIENCE HONORS AND AWARDS

**Asem Abdulahad** and **Michael Perry**, Graduate Students in the Department of Chemistry, received the Dr. Johanna Maas Chemistry Teaching Assistant Award. It was established by Sonja Krause, Class of 1954, and others in memory of Dr. Johanna Zelig Maas, chemist, physician, Holocaust survivor and humanitarian.

**Donna L. Bedard**, Research Professor, Department of Biology, has received funding in the amount of \$194,575 from NSF for June 2008 to May 2009 for year two of her three year grant entitled: Identification of Dehalococoides Genes Encoding Reductive Dehalogenases that Dechlorinate Specific PCB Congeners. Dr. Bedard's paper, A Case Study for Microbial Biodegradation: Anaerobic Bacterial Reductive Dechlorination of Polychlorinated Biphenyls – From Sediment to Defined Medium, has been accepted for publication in Volume 62 of *Annual Reviews of Microbiology*. It will be published online shortly and will be in print by October 2008.

**Daniele Cherniak**, Research Professor, Earth and Environmental Sciences, was an invited speaker at "The Big Impact of Small Accelerators" – a SUNY Conversations in the Disciplines conference, held on May 29 - 30 at the SUNY Geneseo campus. She was also named a Mineralogical Society of America Distinguished Lecturer for the 2007 - 2008 academic year. The lecture tour included visits to institutions in the U.S. and Europe. Lectures were given at the University of Granada, the University Claude Bernard Lyon, the University of Freiberg, the Denver Museum of Nature & Science, the University of Kansas, Northern Arizona University, the University of Arkansas, Marshall University, and Appalachian State University.

**Eric Choudhary**, Graduate Student, Department of Chemistry, received the John and Mary Cloke Prize, awarded to the graduating senior in chemistry who is continuing their study of science in graduate school, and who has made a distinguished record within the department.

**Fern P. Finger**, Assistant Professor, Department of Biology, received funding in the amount of \$306,000 from NSF for April 2008 to March 2010 for "Septin functions in *C. elegans* axon extension." She also gave invited lectures at the National Institute for Diabetes and Digestive and Kidney Diseases of the National Institutes of Health in Bethesda, MD on May 12, at the Medical College of Georgia in Augusta, GA on May 20, and at the Hudson-Berkshire chapter of the Society for Neuroscience on May 27. All three seminars were on "Septin functions in *C. elegans* axonal dynamics."

**Jim Hendler**, Senior Constellation Professor, Tetherless World Research Constellation, gave a Distinguished Seminar at DARPA's Information Processing Technology Office. His talk, entitled "From DAML to Web 3.0" discussed Semantic Web developments from 2001 - 2008. He also gave an invited talk entitled "The Fellowship of the Web: The Two Towers" at the Semantic Technology Conference in San Jose in May. Hendler and his colleague, Dean Allemang, just finished writing a new book: Semantic Web for the Working Ontologist. The book, published in May and available at Amazon.com, sold out at a book autographing session held at the Semantic Technology Conference in San Jose.

**Max Molleo**, Senior, Department of Chemistry, received the Arthur G. Schultz Award for Undergraduate Research in Organic Chemistry, for the support of undergraduate research in an area of organic chemistry.

**Heidi Newberg**, Associate Professor, Department of Physics, Applied Physics and Astronomy was awarded a \$144,107 NSF grant, Planning U.S. Partnership in Galactic Structure with the Chinese LAMOST Telescope, which will cover her sabbatical next year and travel. This grant funds planning activities for setting up a new scientific collaboration between U.S. and Chinese astronomy communities.

**Bruce Piper**, Associate Professor, Department of Mathematical Sciences, was awarded the 2008 Rensselaer Alumni Association's Teaching Award. This award was designed to recognize members of the Rensselaer Faculty for their outstanding teaching, as evidenced by the innovative techniques they have developed and employed, the overall contributions to the campus experience and their commitment to the students of Rensselaer. At the award ceremony, Provost Robert Palazzo presented the award, describing Dr. Piper as the perfect embodiment of innovative teaching and singular dedication to students. "Bruce Piper lives and breathes mathematics education and is deeply committed to the undergraduate mathematics program," said Palazzo. "He has a keen understanding of the importance of quality mathematics education for science and technology students and has been a valued and thoughtful participant on curriculum committees for the School of Science and the Institute as a whole. We also note he is an active and productive research scholar in the fields of computer-aided geometric design, numerical analysis, and computer graphics. And busy as he is with his scholarly work and administrative responsibilities, his students will tell you that for Bruce students come first. He has tremendous rapport with them, in and out of the classroom, and his commitment to them is apparent in so many ways... His students and his colleagues are eager for Bruce to be recognized and honored, and so are we."

**Trevor Sherword '08**, B.S., Chemistry, received the Merck Index Award, awarded to the chemistry senior with the highest grade point average. He also received the William Pitt Mason Prize, for outstanding academic work and promise of outstanding success in his professional career in chemistry.

**Frank Spear**, Professor, Earth and Environmental Sciences, received the 2007 Dana Medal of the Mineralogical Society of America. The Dana Medal recognizes continued outstanding scientific contributions through original research in the mineralogical sciences. In addition, his Dana Medal acceptance speech was recently published in a 2008 volume of *American Mineralogist*.

**Ashley Thomas**, Graduate Student, Department of Mathematical Sciences, was selected to receive a National Physical Science Consortium Fellowship. Through this prestigious fellowship, she will receive free tuition and a \$16,000 annual stipend for up to six years.

**Stephen Thomas** and **Ashley Meenaghan**, Undergraduate Students in the Department of Chemistry, received the George J. Janz Award for the support of undergraduate research in an area of chemistry.

**Jennifer Vreeland '08**, Ph.D., Chemistry, received the Walter H. Bauer Doctoral Prize, awarded to the doctoral candidate who has an exceptional graduate record, has carried out meritorious doctoral thesis research, and shows outstanding promise in the field of chemistry.

**Douglas CB Whittet**, Professor, Department of Physics, Applied Physics and Astronomy, was appointed by President Jackson to be Rensselaer's representative to the Universities Space Research Association (USRA). The USRA is dedicated to advancing space sciences and exploration through innovative research, technology, and educational programs; where universities and other research organizations may cooperate effectively with each other and the U.S. government to develop knowledge associated with space science and technology.

**Ingrid Wilke** was promoted to Associate Professor, Department of Physics, Applied Physics and Astronomy, with tenure. Her research areas are time-domain terahertz (THz) spectroscopy and ultrafast spectroscopy.

**Yuehua Yu**, Graduate Student, Department of Chemistry, received the Slezak Memorial Fellowship, for exceptional performance in academics and research.

# SCHOOL OF SCIENCE 2008 ALUMNI & GRADUATION EVENTS



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. Please submit news items, including photos, for the next newsletter to Rebekah Mullaney, Communications Specialist for the School of Science at [mullar2@rpi.edu](mailto:mullar2@rpi.edu).