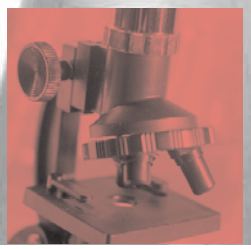

Chemistry & Chemical Biology News

New Instrumentation for Cutting-Edge Research

A few years ago Chemistry and Chemical Biology Professor Jean Baum and her colleagues decided that it was time for Rutgers to obtain access to state-of-the-art Nuclear Magnetic Resonance (NMR) facilities so that they and their associates could carry out cutting-edge biomedical and biotechnological research.

Baum, a faculty member at Rutgers since 1988, arrived in New Brunswick after receiving her Ph.D. at the University of California, Berkeley, and doing postdoctoral research at Oxford University as a Fulford Junior Research Fellow. The Sloan award recipient knew that her own research—which seeks to understand the basis of protein folding and misfolding and associated medical disorders such as Parkinson's and Alzheimer's diseases—would be greatly enhanced if she could have access to an 800 MHz NMR spectrometer, in addition to the 500 MHz and 600 MHz NMRs that were already in place.

Other research stood to benefit as well: studies of nucleic acid structure and interaction such as drug designs, NMR investigations of protein-protein and protein-nucleic acid interactions (gene regulation), analysis of small bio-medically important peptides, and the development of new NMR methods for future research. Researchers at Rutgers weren't the only scientists who would be able to conduct such investigations, as the plan was to go statewide.

A consortium consisting of three faculty members from Rutgers, New Brunswick, one from Rutgers, Newark, four from Princeton University, and two from Montclair State University was formed to apply for funding. Their dream was to create a facility where hands-on NMR experiments could be performed by graduate students, post-docs and undergraduates, and where others in the state could benefit from research collaborations with faculty and students associated with the facility. The group applied for and received a Major Research Instrumentation grant from the National Science Foundation (NSF).

Desiring an even more up-to-date facility, the consortium decided to apply for another NSF grant to obtain a cryoprobe that would optimize the performance of the 800 MHz NMR. The cryoprobe would speed up the research process, as well as improve the instrument's sensitivity, so that researchers could work on more complex and diverse systems. The NSF also awarded this grant.

Once the grants went through, work began on the statewide facility. A site was chosen in The Technology Centre of New Jersey, on Route 1, close to Cook College campus. Baum, the principal investigator on both of the grants, says that it will be "shared and used as needed," by various faculty at the consortium colleges. For now, she uses it about half the time and Associate Professor Charalampos (Babis) Kalodimos

Chris Pedota

CCB Professor Jean Baum helped create a $4 million NMR facility

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FALL 2008
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This newsletter is published for alumni and friends by the Department of Chemistry and Chemical Biology

For questions or suggestions, please contact:

Kristina Wetter, Coordinator
Department of Chemistry and Chemical Biology
Rutgers, The State University of New Jersey
610 Taylor Road
Piscataway, NJ 08854

Phone: 732/445-8388
FAX: 732/445-5312
Email: CCBNews@sakai.rutgers.edu

Faculty Liaison: Joseph Potenza
Writer/Editor: Katherine Wessling

RUTGERS

Ancient Writing and Modern Chemistry

When Kuang-Yu (K-Y) Chen finds himself in Asia for scientific conferences, he also searches for bones. Not just any bones, but bones with writing on them, dating back to about 1300 BC. Along with being a fellow of the American Association for the Advancement of Science, Chen is an expert on oracle bone inscriptions.

Chris Pedota

CCB Professor and oracle bone inscriptions expert Kuang-Yu Chen

During the Shang Dynasty, ca. 1700–1145 BC, the Chinese inscribed their oracle questions and divine answers on animal bones or turtle shells. These inscriptions have survived through the ages, providing insight into both the origins of Chinese writing and the culture that existed at the time.

"There are probably no more than two or three universities in North America where students can learn to read these ancient Chinese writings," comments Chen, who offers a course on oracle bone inscriptions at Rutgers, in the Department of Asian Languages and Cultures.

His interest in the inscriptions began when he minored in ancient Chinese as an undergraduate at National Taiwan University, and it still holds. "How and where Chinese writing developed are very interesting academic questions," he notes. Chen, who also serves on the Board of Directors of the Confucius Institute at Rutgers, points out that there are probably only three books on the ancient writing published in English, and with the help of a grant from the Rutgers Research Council, he's hoping to add a fourth.

But, he emphasizes, the bones are a "side interest. My focus is on my science." Chen received his Ph.D. from Yale before arriving at Rutgers in 1977. While he was doing post-doctoral work at Yale Medical School, his interests broadened to include biomedical issues. His curiosity about the functional roles of polyamines led to his current focus on hypusine formation, which is essential for cell survival and has repercussions for cancer and aging. Chen's lab was the first to purify and clone the enzyme necessary for this formation.

Chen's work has recently extended to include nutraceuticals—products from nature or food components that have medical benefits. To date, he has studied polyphenols found in black tea, resveratrol, found in grape skin, and flavones from orange peels. He and his collaborators have obtained patents for these substances, licensed to WellGen, Inc., a biotechnology company launched from Rutgers. "I like to use chemistry to understand how some important aspects of life function," he explains. "Since many nutraceuticals exist in plants for defense purposes, there is a great potential that some of these small molecules will prove useful in terms of enhancing lifespan and dealing with diseases."

In collaboration with WellGen, Chen continues to develop methods for screening natural products with anti-inflammatory, anti-cancer, or anti-obesity activities. He mentions that recent findings of particular interest include the discovery that "a small molecule involved in hypusine formation exhibits potent anti-obesity activity by blocking insulin-stimulated fat cell formation." So, the basic research on hypusine formation does appear to have practical biomedical implications.

Chen's research has been funded by the National Cancer Institute, the National Institute on Aging of the National Institutes of Health (NIH), and the New Jersey Commission on Science and Technology. The chemist has received the Johnson & Johnson Discovery Award and served as a member of the NIH study section, Biological and Clinical Aging Review Committee. He has also found time to serve on the editorial boards of *Biogerontology* and *Biological Signals and Receptors*.

Chen thinks it's appropriate that his department is now called Chemistry and Chemical Biology, noting that, "biology truly represents a fertile land for chemists to till." He enjoys introducing the field of chemical biology "to students who have not had much prior exposure to the biomedical field and don't realize how they can use chemistry to tackle biological problems." They're in the right hands—when it comes to teaching students how to tackle problems from deciphering ancient writing to learning about hypusine formation, Chen is just the person for the job.

As you may have heard, over the past summer we had a change of Departmental leadership. Roger Jones stepped down as chair after a very successful 12-year tenure. Eric Garfunkel is the new Department Chair and is joined by Kathryn Uhrich as Associate Chair and Graduate Program Director. A long-term goal of the new leadership is to obtain a new chemistry building with state-of-the-art research and teaching laboratories. The new contact information for Chair and Associate Chair is (phone) 732/445-2036; (fax) 732/445-5312; (e-mail) chemchair@rutgers.edu.

Student Programming

During Kevin Theisen's sophomore year at Rutgers, he decided that there had to be an easy way to check the nuclear magnetic resonance (NMR) homework assigned in his organic chemistry lab class: "I wanted to be able to sit in my dorm room and check my work by looking at molecules and knowing what their spectra should exhibit without spending a million dollars on an NMR spectrometer." So, in just three months, he created a computer program that did just that.

With an interest in computer science, Theisen had the know-how to play around with various algorithms until he came up with a system that was able to predict, explain, and analyze ^{1}H NMR spectra based on molecular structures. "It's kind of an estimation, of course," explains Theisen, "but it works really well."

In 2006, the chemistry major released the program as HNMRazor online for free on the website of his newly launched company, iChemLabs (www.ichemlabs.com). "The software already out there costs around $2,000 and I didn't have easy access to it, so my goal was to make sure that students are able to access these kinds of programs and use them to benefit their education," states the May 2008 grad. A few months later, he created and released HNMRazor's ^{13}C NMR equivalent, also gratis.

Theisen received positive feedback from around the world, but the Razors did have computational limits. So the enterprising chemist decided to create "fully functional two- and three-dimensional 'sandboxes' for investigating chemistry." In 2007, he made the two-dimensional ChemDoodle available for $39. The revenue helps the *summa cum laude* graduate offset his expenses, and costs just a fraction of the $4,000 alternative. A three-dimensional "sandbox" is in the works.

Theisen traces his interest in molecular visualization to his freshman year, when he learned that one could "see" atoms by using various types of microscopy and spectroscopy, such as NMR. This interest eventually led to his using electron paramagnetic resonance to study the properties of electrons. He became a Henry Rutgers Scholar and completed his honors senior research project on Multiple Oxidations of Lycopene and Model Compounds in Pentasil Zeolite.

The National Starch Award recipient "really loved" his time at Rutgers, and has high praise for the faculty, singling out Laurence Romsted, Stephan Isied, John Taylor, Roger Jones, and particularly his research advisor, Heinz Roth, for their inspiration and encouragement. His work was acknowledged with the Hypercube Award, the Enzon Award, and various Chemistry Service Awards.

Theisen was president of the Rutgers Chemistry Society during his senior year, and says he incorporated lots of fun demonstrations, like mixing Diet Coke with Mentos, creating dust grain explosions with flour, and making cold flames with isopropyl alcohol and water. But their once-a-semester outreach program to local middle schools was the undertaking that meant the most to him as an undergraduate.

The New Jersey native has now headed across the country to pursue a Ph.D. in chemistry, studying solar energy at the University of California, Berkeley. He says he hopes to work toward helping "society go beyond some of the problems that we're creating and to more efficiently utilize the resources that we do have available." With his wide variety of skills, Theisen is poised to help make this possible.

Chris Pedota

Kevin Theisen RC'08, has created software "sandboxes" for investigating chemistry

Multi-Disciplinary Moeller

Even an armed prison guard and bear tracks can't keep Holly Moeller from her research.

The dedicated Moeller, who graduated with a double major in chemistry and biology in May, encountered these obstacles in Alaska last summer. She was there with a National Science Foundation program, measuring the influence of glaciers on freshwater life. One of her sampling sites, behind a state prison, was patrolled by an armed guard. At another site, she found bear prints at every single spot where she'd left footprints.

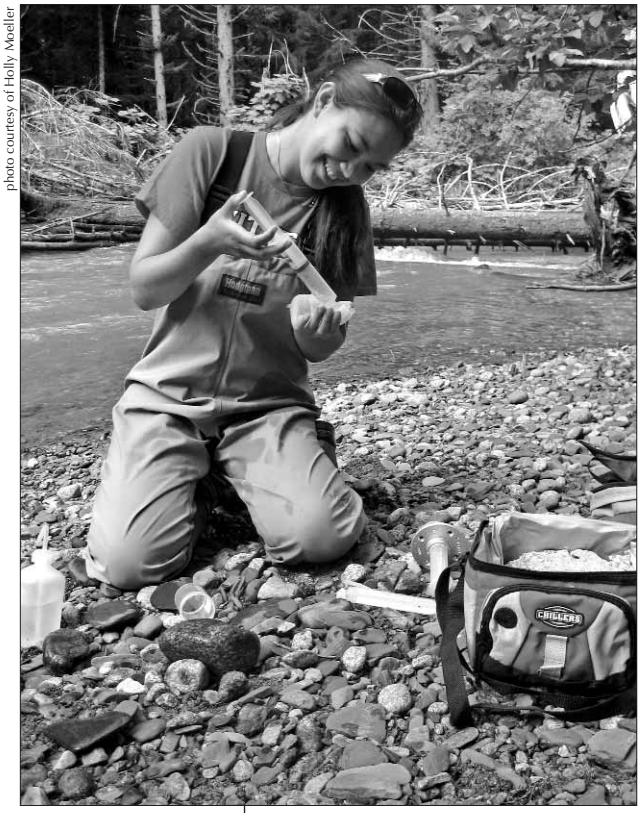
Luckily Moeller's research for her Henry Rutgers Honors Thesis mostly took place in a lab, safe from guns and claws. She studied the bioenergetics of the marine ciliate Myrionecta rubra, focusing on its ability to adapt to different light levels. "It's really cool from an evolutionary standpoint," she points out, "because it's capable of conducting photosynthesis but it doesn't have its own chloroplasts, so it has to eat other species and use those chloroplasts as its own."

The Cherry Hill native credits a high school Advanced Placement Chemistry teacher with helping her decide to major in the subject. Her current focus came about

continued on page 4

Moeller's "Seeing Green" column in "The Daily Targum" addressed environmental issues.

photo courtesy of Holly Moeller



Holly Moeller RC'08, conducting research in Alaska

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during her sophomore year at Rutgers, when she told her ecology professor, David Ehrenfeld, that she'd always been interested in marine biology. He promptly sent her to Professor Paul G. Falkowski at the Institute of Marine and Coastal Sciences, who offered her the research project that blossomed into her thesis. She notes that these professors, along with John Taylor and Larry Romsted, were very helpful and supportive.

Moeller's love of the sciences is reflected in the many scholarships and awards that she accrued at Rutgers, including a Barry M. Goldwater Scholarship. Her Chemistry Department awards include the Wyeth Award for Excellence in Chemistry, the Phyllis Dunbar Award for Excellence in Physical Chemistry, the Croda Award for Outstanding Organic Chemistry Laboratory Student, and the National Starch Award for General Academic Excellence.

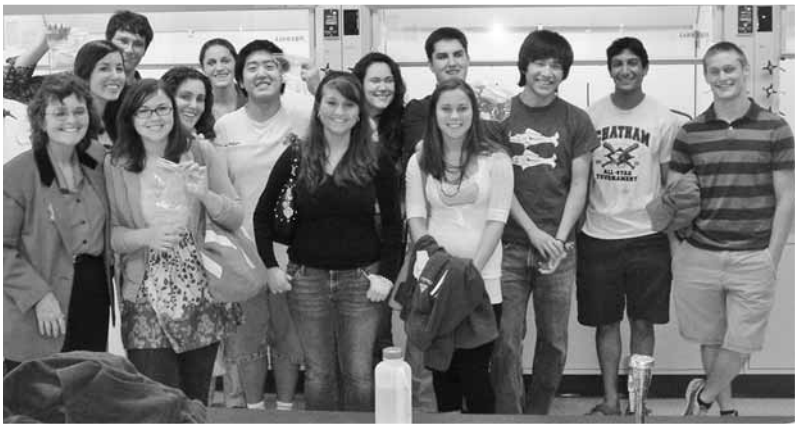
Moeller's talents include photography, and her work was displayed in three exhibitions during her time at Rutgers. Somehow she has also found time to devote to another of her passions—the environment. During her last year at Rutgers, she penned the "Seeing Green" column for *The Daily Targum*. This centerfold opinion column addressed a different environmental issue every two weeks.

She says it was her father who instilled her love of nature: "I was very fortunate to have a stay-at-home dad with a Ph.D. in biology. He would take me out to the Pine Barrens to look at trees and ID insects." But, she points out, it wasn't until she got to Rutgers and found Professor Falkowski that she became interested in the academic side of the environment.

Next up for the multi-talented Moeller? This fall she'll be a Linden Earth Systems Fellow pursuing her Ph.D. in a biological oceanography joint program with the Massachusetts Institute of Technology and the Woods Hole Oceanographic Institute. "I'll be looking at the nutrient cycle in the ocean and trying to bring to bear everything I've learned at Rutgers about marine organisms, and I'll try to merge that with the knowledge of organic and inorganic chemistry," she notes.

Beyond that, Moeller hopes to get a job at a major research university where she can continue to do her own work and also teach, which she's looking forward to, pointing out that "because of climate change it's even more important to get people to understand pressing scientific issues." Coming from someone who can brave prison guards and bears, it seems probable that Moeller's goals will be achieved.

High School Students Come to Call



By Kristina Wetter

For the past several years, teacher Cheryl Campbell's Advanced Placement Biology class from New Providence High School in New Providence, NJ, has taken a field trip to tour resources found in Chemistry and Chemical Biology. The tour includes the RCSB Protein Data Bank and the research laboratories of Professors Gene Hall (analytical chemistry) and Kathryn Uhrich (biocompatible polymers), as well as the Cell and DNA Repository housed in the Division of Life Sciences. This year's visit was marked by a first—one of Campbell's former students is currently an undergraduate at Rutgers, so this was the second time she attended the presentations.

FACULTY PROFILE **Kai Hultzsch**

PR Rep for Science

It comes as no surprise to Kai Hultzsch that he ended up in chemistry. "It runs in the family," explains the Chemistry and Chemical Biology Assistant Professor. "My father is a pharmacist and my grandfather was a chemist." He adds that it was a high school teacher in his hometown of Wiesbaden, Germany, who taught him how exciting the field could be. "From him I learned how badly we need teachers who can really get students excited about chemistry—and science in general. It's like being in public relations for science!" Hultzsch himself enjoys teaching, and hopes that he too can "inspire the next generation."

Not that teaching is his only focus. "I'm very research-oriented," he notes. One of the reasons he cites for coming to Rutgers in September 2007 was wanting "a university where I could have a strong research program. I thought I could achieve that at Rutgers." And the Highland Park resident is "very happy" to have ended up in the department of Chemistry and Chemical Biology, explaining that it's not easy to find a high-level faculty position in Europe for his work, which falls between organic and inorganic chemistry. "If you don't fit into either of those two boxes, it's very difficult," he comments.

This isn't Hultzsch's first sojourn in the U.S. After receiving his Ph.D. from the University of Mainz, he spent two years at the Massachusetts Institute of Technology doing post-doctoral work with Nobel laureate Richard R. Schrock. He returned to Germany to do research and a second thesis, a Habilitation, at the University of Erlangen-Nuremberg, receiving several national young investigator awards for his work.

He says that it did take him longer than anticipated to get his lab at Rutgers up and running, not to mention to adjust to new academic and social systems: "It's a big transition—it takes a lot of energy to move across the ocean with a container of lab equipment and personal belongings." But he was wise enough to bring two graduate students with him, so he did have help setting up the new lab.

Now Hultzsch is able to focus on his work, which involves trying to develop catalysts for selective organic transformations. He aims to minimize both the amount of waste generated by and the amount of energy consumed in these transactions. Chirality, or "handedness", plays an important part in his work: organic reactions often generate both an image and a mirror image, so it's "very important if you're generating a pharmaceutical to make sure that the only active compound ingredient is the image, not the mirror image," he explains. The mirror image, he continues, might have the same desired effect as the image, but it might have no effect or, in the worst case, have a negative effect. "Catalysts," he points out, "can make it so that the mirror image isn't generated."

Another goal is to use simple starting components, like ammonia and olefins, to make complex pharmaceutical compounds. "When we are successful, this significantly shortens the reaction sequences." He further explains that, "if you could invent a reaction consisting of a single step, that would minimize the amount of reaction solvent you'd have to use and also minimize wasteful by-products, thus creating a reaction that is both more economical and more environmentally-friendly." That's why catalytic chemistry is an important part of green chemistry, Hultzsch notes.

Though he's on the cutting edge of catalytic chemistry, the environmentally friendly chemist prefers teaching methods that are less new-fangled: "Nowadays there is too much of a tendency to use new techniques like PowerPoint presentations. I think to be a good teacher it's also very important to work on the blackboard." He believes that if the students don't write down the data and draw the molecules for themselves, they don't absorb the information as well, and that the slower pace necessitated by blackboard teaching gives them more time to think about what's being said and to formulate questions. "I want my students to be able to ask questions and to interact with me, " says the professor, who appears to be well on his way toward inspiring the next generation of students.

Nick Romanenko

CCB Professor Kai Hultzsch's work involves developing catalysts for selective organic transformations

STUDENT AWARDS

AWARDED DECEMBER 2007

Graduate Students

CHEMISTRY 171 TEACHING EXCELLENCE AWARD — Awarded to the most outstanding first-year teaching assistant in Chemistry 171 for the 2006-2007 academic year. **Tian Sun,** the winner, was awarded $100, while Honorable Mention went to **Gary DiFilippo, Heather Lee,** and **Soma Mandal**.

2007 REID FELLOWSHIPS — The following students received $4,000 each for outstanding performance in thesis research: **Rob Kolakowski, Wooseok Ki, Xuejun Sun,** and **Jinzhang Wang**.

RIEMAN PRIZE — Awarded for outstanding performance as a teaching assistant during the 2006-2007 academic year. **Mohannad Abdo, Bryan Langowksi, Ahalya Ramanathan,** and **Michael Romanelli** each received a certificate and $500. **Erkan Ciftlikli, Jongjin Jung, Yingjie Li,** and **Hanshella Magno** were awarded Honorable Mentions and each received a certificate and $100.

Undergraduate Students

Christina Odorisio, Aleksandr Rozenberg, and **Krzysztof Wojak** received the National Starch Scholarship Award for Outstanding Coursework and Research in Chemistry.

AWARDED MAY 2008

Undergraduate Students

CRODA AWARDS – Presented by Robert Bird of Croda Inc. for outstanding undergraduate activities. For general chemistry, solid gems, **Michael Dimtsios;** for general chemistry, **Teresa Cicci, Ronak Shah,** and **Pan Shen**. Each received a Croda briefcase and CRC Handbook. **Maura Acevedo** was named Outstanding Student in the Sophomore Class with a Chemistry Major. **John Kim** was named Outstanding Organic Chemistry Laboratory Student in the Junior Class.

Coursework Awards

Dhruv Patel and **Teddy John Wohlbold** received The Rufus Kleinhans Award for excellence in Honors General Chemistry.

Allison Ibrahim and **Eva O'Connell** received The Roger Sweet Award for Excellence in Organic Chemistry/Douglass Student.

Aleksandr Rozenberg and **Krzysztof Wojtak** received The Phyllis Dunbar Award for Excellence in Physical Chemistry.

Bryan Urbanowicz received the ACS Analytical Division Award for Excellence in Instrumental Analysis.

Kevin Theisen received The Hypercube Award for Excellence in Chemical Physics.

Shereen Ansay received The Merck Award for General Academic Excellence and Research.

Tina Lee received The Bruce Garth Award for Excellence in Chemistry and Service.

Matthew Connors, Matthew Eibling, Michel Sun, and **Kevin Theisen** received the Enzon Awards for Excellence in Chemistry.

Chika Sakamoto and **Christina Odorisio** received the sanofi-aventis Award for Excellence in Organic Chemistry.

Holly Moeller and **Brenton Taggart** received the Wyeth Awards for Excellence in Chemistry.

Chemistry Service Awards

Andrew Harrison received the Excellence in Community Service in Chemistry Award.

CHEMISTRY SOCIETY OUTREACH PROGRAM – Certificates of Recognition were presented to the following students for their participation in the Rutgers Chemistry Society's Chemistry Connections Programs: **Kevin Apodaca, Robert Comito, Elizabeth Eibling, Matthew Eibling, Andrew Harrison, Rose Nicole, Rima Rana, Kevin Theisen,** and **Elon Weintraub** at Roosevelt Elementary School last fall. **Jonathan Burg, Shinida Cho, Robert Comito, Elizabeth Eibling, Matthew Eibling, Alyssa Filippone, Andrew Greenwald, Mehedia Haque, Andrew Harrison, Bridget Huang, Kevin Huang, Tina Lee, Vladimir Lokshin, Roman Obolonskiy, Christine Perez, Rima Rana, Aleksandr Rozenberg, Jennifer Tan, Kevin Theisen, Elon Weintraub,** and **Xiao Zhang** at Joyce Kilmer Middle School last spring.

FACULTY HIGHLIGHTS

Professor Eddy Arnold's research team helped discover the anti-HIV drug TMC278 (rilpivirine), which is able to change its shape along with the often-mutating human immunodeficiency virus (HIV), allowing the drug to remain effective.

Visiting Scholar **David Olson,** a retiree of ExxonMobil's central research laboratory, and six colleagues received an American Chemical Society (ACS) Heroes of Chemistry Award. The Exxon/Mobil scientists developed a selective catalytic process for producing paraxylene, significantly lowering the cost of producing polyester.

Professor Jing Li and graduate assistant **Wooseok Ki** have discovered a new kind of semi-conducting material, consisting of layers of cadmium sulfide with amine molecules that emits white light when coated on a blue low-energy diode (LED). Adding manganese can enhance the brightness of the light, they also discovered. This could lead to a cheaper, less cumbersome way to produce energy-efficient white light.

Protein Data Bank Archives 50,000th Molecule Structure

By Joseph Blumberg

From its origins in a hand-written petition circulated at a scientific meeting, the Protein Data Bank has become the single worldwide repository for the three-dimensional structures of proteins and nucleic acids. Under the direction of Rutgers Board of Governors Professor Helen Berman, this free, online library allows biological researchers and students to study, store, and share molecular information on a global scale.

Founded in 1971 with seven structures at Brookhaven National Laboratory, the archive is managed by a consortium called the worldwide Protein Data Bank (wwPDB). Today, the PDB archive receives approximately 25 new structures from scientists each day.

The Research Consortium for Structural Biology, Protein Data Bank (RCSB PDB) (www.pdb.org) presents a comprehensive website and database that lets users search, analyze, and visualize the structures of biological macromolecules and their relationships to sequence, function, and disease. In addition, it features a "Molecule of the Month" series, which recently published its 100th installment.

For further information, see: http://news.rutgers.edu/focus/issue.2008-04-09.1171885477/article.2008-04-22.6247976497.

NMR

continued from page 1

uses it the other half. But that will soon change, as the consortium committee has recently opened access to outside users.

The Greek-born Kalodimos is thrilled to be able to do research at the new facility. This past January, he transferred from Rutgers' Newark campus, where he'd been since November 2003. The chemist received his Ph.D. from the Institute Curie in Paris, and did post-doctoral work at the University of Utrecht in The Netherlands before moving to Newark.

When the Johnson & Johnson Discovery Award winner decided to move on from the Newark campus, he considered various options. In the end, he chose New Brunswick's offer, which included the purchase and installation of two additional NMR (600 and 700 MHz) instruments.

These days Kalodimos says his research focuses more on structural biology than chemistry. "The idea of my work is to solve high-resolution three-dimensional structures of large, intricate protein machineries and their complexes with DNA and RNA, examine their dynamics, and determine how the various components assemble in space and time."

He and his team use various biochemical and biophysical techniques to accomplish this. "NMR spectroscopy in particular is a very powerful methodology," explains Kalodimos. "It allows us to study the three-dimensional structure of biomolecules in semi-physiological conditions. Also, it can provide a unique insight into the dynamic aspects of macromolecules and their interaction with ligands over time." The new NMR facility, he adds, will enable him and his group to study more complex biomolecular systems.

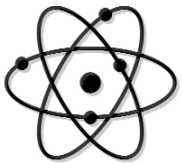
His work includes determining the structural and dynamic basis for the assembly of an important protein translocation machinery, searching for novel mechanisms in the regulation of signaling pathways involved in carcinogenesis, and determining the mechanisms that enable certain pathogenetic bacteria to invade human cells. He notes that his investigations—which have been funded by the NSF, the National Institutes of Health, and the American Heart Association—have already "resulted in very exciting and novel information."

Chris Pedota

CCB Professor Babis Kalodimos

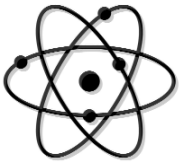
Thanks to the new NMR facility, which is valued at over $4 million, Baum, Kalodimos, and others are moving forward with their research. It's clear that the new facility will help biomedical and biotechnological research at Rutgers and throughout New Jersey move forward by leaps and bounds.

The new NMR facility is run by a statewide consortium, allowing scientists throughout New Jersey to benefit from its state-of-the-art technology.



U.S. Army Funds New Institute of Regenerative Medicine

The Rutgers team was awarded $42.5 million in federal funding to help repair battlefield injuries.



By Joseph Blumberg

Rutgers is taking a leadership position in helping the increasing number of victims of severe blast-trauma injuries in Iraq and Afghanistan. Board of Governors Professor of Chemistry and Chemical Biology Joachim Kohn has assembled a team of top biomedical researchers to develop new therapies to treat these injuries and help soldiers resume their lives.

In April, the Rutgers consortium was awarded $42.5 million in federal funding over five years to develop new products and therapies to repair battlefield injuries through the use of regenerative medicine. This team in combination with another group, forms the Armed Forces Institute of Regenerative Medicine (AFIRM).

The Rutgers team's innovative approach employs biological therapies, including the use of stem cells and growth factors, tissue and biomaterials engineering, and transplants. Rutgers, with expertise in the crucial area of biomaterials, is creating methods for identifying new compositions to spur the growth of nerves, blood vessels, skin, bone, and muscle. These compositions will then be used by AFIRM team members to develop new clinical applications.

For further information, see: http://news.rutgers.edu/focus/issue.2008-04-09.1171885477/article.2008-04-22.2357094864.

To better keep up with the many accomplishments of our alumni and former faculty, we're announcing the launch of a new email address:

CCBNews@sakai.rutgers.edu

Please keep us informed about your personal and career achievements.

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Department of Chemistry and Chemical Biology
Rutgers, The State University of New Jersey
610 Taylor Road
Piscataway, NJ 08854

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