

Chemistry & Chemical Biology News

Securing the Future of Our Department

Rutgers has launched the most comprehensive and ambitious fundraising campaign in its 244-year history, *Our Rutgers, Our Future: A Campaign for Excellence*, and Chemistry is joining in. The seven-year endeavor aims to raise \$1 billion to widen and amplify the many ways the university serves students, New Jersey and the world.

In an environment of declining public support, Rutgers needs private funding as never before. *Our Rutgers, Our Future* focuses on four key areas: faculty and research, students and learning, campuses and facilities, and university and community programs. It supports a set of objectives aimed at positioning Rutgers as a world leader in higher learning. These objectives include: enriching the learning experience of undergraduate students with opportunities such as research projects with senior faculty; smaller seminar classes; globalization via study abroad programs; preparing students for an ever more technological and multicultural world; and pioneering the interdisciplinary approaches in education

and research needed today and in the future.

Along with the rest of the university, Chemistry stands to benefit from the capital campaign. The department has chosen to focus on one major item, a central new home, as well as several smaller scale initiatives. The proposed building is one of three new structures that the capital campaign aims to fund. Located on the Busch campus, the new facility will replace our current quarters, much of which dates back to 1947.

The new building will provide modern lecture and laboratory instructional space, as well as state-of-the-art facilities to support our groundbreaking research programs in pharmaceuticals, alternative energy, life sciences, advanced materials and nanotechnology. We are targeting major private and public funding sources to help launch construction, as well as smaller sources to support specific facilities within the building. A brochure outlining our vision for the future is appended to this newsletter. It presents a compelling case for what a new building will bring to Rutgers and the region.

**OUR
RUTGERS
OUR
FUTURE**
A CAMPAIGN FOR EXCELLENCE

Chair Eric Garfunkel notes that chemistry faculty are key to central strategic objectives of Rutgers as well as other pressing global challenges, such as developing drugs to help cure cancer and AIDS, designing next-generation solar materials, and identifying novel synthetic approaches for sustainable manufacturing. He says, "Our vision for the future development of the department includes new graduate fellowships, undergraduate scholarships and the construction of the new building to house the department and strengthen our mission of research, education and public service."

In parallel with the capital campaign, our department has recently set up four ongoing funds, all of which can be

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RUTGERS

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A Letter from the Chair and Dean

Dear Friends of the Department of Chemistry and Chemical Biology:

Welcome to another edition of *Chemistry & Chemical Biology News*. We encourage you to read more in this issue about the Rutgers capital campaign, a globe-trotting undergrad, an exceptional new faculty member, and a recent Ph.D. graduate. This year we have planned several activities to help bring our department, alumni and friends closer together. We hope you find these events as exciting as we do and that you will be able to join us at some of them.

We will be hosting our first alumni mixer at the American Chemical Society meeting in Denver on Tuesday, August 30. We encourage you to join us! We will post details about the event on our website as soon as they are finalized.

The department hosted several events at Rutgers at the end of the spring semester. The first was our annual Celebration of Undergraduate Achievement on Friday, April 29th. The day began with a poster session presented by our undergraduate students. We then had a brief presentation from Jim Savage, Class of

1971, who announced the endowment of a new undergraduate scholarship in honor of Professor Jean Wilson Day. The highlight of the day was the Jean Wilson Day lecture, given this year by Sol Barer, Executive Chairman of Celgene Corporation and a Chemistry alumnus. The day of celebration concluded with an awards ceremony for our leading undergraduate students who were honored for their outstanding achievements (see page 9 for a listing of awardees).

Saturday, April 30th was Rutgers Day, a great day to visit Rutgers each year to discover what we do, enjoy lively activities, good food and music, and more! Chemistry again hosted a series of booths outside Wright-Rieman Labs on Busch Campus. We performed experiments, participated in an "Ask the Professor" panel, and gave building tours. Our ice cream concoction was a big hit with visiting kids.

The format for Rutgers graduation, which was held on May 15th for both graduate and undergraduate chemistry degree awardees, changed significantly this year. Our graduate students received their degrees (M.S. or Ph.D.) at an early morning event

on Busch Campus, followed by a late morning university-wide graduation convocation in the Rutgers football stadium. Following a buffet lunch, the Chemistry Department held a more personal graduation event for our B.A. awardees adjacent to our building.

We are looking forward to seeing you at one or more of our departmental events, if not this year than hopefully in the near future! For further information please check our website, call Karen Fowler at 732-445-1554, or email Karen at kmfowler@rci.rutgers.edu.

The Chemistry Department is always looking for new ways to interact with our alumni, so we welcome your ideas for future events. Finally, we encourage you to consider making a donation to the future of Chemistry and Rutgers via the new giving tab on our Website (chem.rutgers.edu/giving).

Sincerely,
Eric Garfunkel
Professor and Chair

Kathryn Uhrich
Professor of Chemistry, and
Dean of Mathematical and
Physical Sciences

Cross-Cultural Adventure

During his first two years at Rutgers, Jacques Karcnik took not only math and science courses, but also Portuguese and Italian. People warned him against spreading himself too thin, saying that he would not be able to merge his interests. But when he was

accepted into the NSF-funded University of Florida International Research Experience for Undergraduates (REU) program to conduct research in Brazil, it was clear that he had made the right choice. "I found something that hit on all of my interests at once," he explains.

By the time Karcnik, now 20, moved from the Catskills to Princeton Junction with his family as a teenager, he already spoke Spanish, some Portuguese and Italian, and was literate in Hebrew. His facility with languages was thanks in part to his family: his mother and grand-

This year we have planned several events to help bring our department, alumni and friends closer together.



mother spoke a language called Ladino, or Judeo-Spanish, which is grammatically based in Castilian Spanish but also incorporates Portuguese, Italian, Hebrew and other languages. The fact that his maternal grandfather spoke eight languages also inspired him. Karcnik had further honed his skills while attending a Hebrew day school. "I was bombarded by languages from all different directions," he recalls.

His family not only influenced his love of languages, but, ultimately his interest in science—both of his parents and one of his grandparents studied medicine. Initially, Karcnik wasn't sure whether or not he would follow a premed course, but Professor Asbed Vassilian's general chemistry course changed his mind. "I sat in the front row of his class every single day for an entire year," he remembers. "It ended up being my favorite subject. Not only did I love doing the work, but I would go home and watch periodic table of the elements videos every night."

Karcnik, who is now in his third year at Rutgers, says that the class helped him to see "how relevant chemistry is to everything in the world," and he eventually did decide—with positive input from fellow Rutgers Chemistry Society (RCS) students and advisor John Taylor—to major in the subject.

One day in class, Vassilian announced that there were opportunities for students to do research in Brazil. "That's when a light bulb went off in my head," says Karcnik. "I knew I wanted to go." With the assistance of Professor Larry Romsted and Chemistry Chair Eric Garfunkel, Karcnik got his application in on time. Along



Chris Pedota

with 16 other students from around the country, he was accepted into the three-month program. "I was very proud to be the Rutgers kid in the bunch," he says.

In April 2010, Karcnik found himself at the Universidade de São Paulo, working with a team of chemists at the Laboratório de Química Fina e Biocatálise, led by Leandro H. Andrade. "Being there was the perfect fit for me," he says. The undergraduate worked hard to compensate for his limited academic experience. "I was getting into organic synthesis before I even took organic chemistry," he explains, "and I had very limited lab experience." But Karcnik shouldered on, helping synthesize compounds that have the potential to stop the growth of carcinogenic tumors.

He also met people from around the world, attended a national workshop on biocatalysis and biotransformation, traveled around the country, and gleaned much information about Brazilian culture. "I'll never forget how beautiful Brazil was, how fresh and tasty the food

was and how easygoing and friendly the people were," he says.

Though his time in Brazil ended last August, the experiences offered by the program have continued. In March, he traveled to the ACS meeting in Anaheim, CA, to present a poster about the synthesis of compounds that contain selenium. In April, he again presented the poster, this time at a symposium at Rutgers.

As for the future, the multilingual science aficionado is leaning toward medical school. But he says that no matter what he decides to do, chemistry will always be a part of his life: "It took me to the other side of the world, and that's not something that I'm just going to forget. The experience was an enormous gift on the part of everyone who helped me get there, including Larry Romsted, John Taylor and my friends in the RCS. It pushed me ahead in so many ways—culturally, scientifically, linguistically, academically, and confidence-wise."

Globe-trotting undergraduate
Jacques Karcnik

"It pushed me ahead in so many ways—culturally, scientifically, linguistically, academically, and confidence-wise."



FACULTY PROFILE

Darrin York

Working at the Intersection of Traditional Sciences



Professor
Darrin York

When Darrin York arrived at Rutgers last September to take up a professorship and joint appointment in Chemistry and the Bio-MaPS Institute for Quantitative Biology, he was excited to have landed in such a collaborative and interdisciplinary environment. "My work is focused at the interface of biology, mathematics and physical sciences," says the professor, "and I knew that the university's dedication to supporting interdisciplinary work creates an environment

that can lead to ground-breaking scientific discoveries."

York's work focuses on developing new quantum mechanical molecular simulation methods and high-performance computing to address large-scale problems of biomolecular catalysis, particularly RNA catalysis. He says he and his team "are addressing a fundamental question in biology: how is it possible that special sequences of RNA are able to fold into 3D structures that are able to increase the rate of chemical reactions by 10 million?"

In order to solve this riddle, he and his group perform computer simulations of the actual chemical reactions so as to provide an atomic-level characterization of the origins of the catalytic effect. They also work closely with experimental groups in structural biology, molecular biology and molecular biophysics.

York notes that since molecules of RNA can catalyze fairly complex chemical reactions in addition to having the capacity to store genetic material, life itself may well have started as an "RNA World." "So," he explains, "understanding the mechanisms whereby molecules of RNA can be controlled and catalyze chemical reactions is an area of intense interest both for me and the broad scientific community."

Thanks to his physicist father, York was always interested in science. But his interest in research didn't kick in until after his junior year at The University of North Carolina at Chapel Hill, when he undertook a summer internship at Cornell University to study how supercomputers could be used to perform chemical research through molecular simulation. "It started as a summer fling with doing something different," he says, "but I ended up falling in love with physical chemistry and research."

Up until then, he had planned to pursue a medical degree, and had already been accepted to the M.D./Ph.D. program at UNC Chapel Hill. But after the internship at Cornell, he decided to focus on research, and finished his Ph.D. in only three years. He then was awarded an NSF postdoctoral fellowship to pursue research at Duke University with Weitao Yang in the field of density-functional theory.

The next stop for the budding scientist was Harvard University, where he had an NIH fellowship to work on molecular simulations of enzyme catalysis under Martin Karplus. "My focus at Harvard was to learn how to perform quantum mechanical simulations of enzyme catalysis in complex solvated environments," York says.

After a year, Karplus asked him to join his lab in Strasbourg, France, at Université Louis Pasteur. York went there under a European Molecular Biology Organization fellowship, and worked on developing

state-of-the-art quantum mechanical simulation methods to study reactions catalyzed by biomolecules for two years.

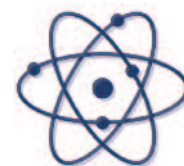
York's first academic appointment, as an assistant professor at the University of Minnesota, followed his stint in France. After 12 years there, he was drawn to Rutgers by its interdisciplinary nature and new opportunities to explore collaborative research. "I wanted to work in the Department of Chemistry and Chemical Biology and the BioMaPS Institute," he says. "Rutgers' support of interdisciplinary research, particularly through

the BioMaPS Institute, creates an environment where science at the boundaries of traditional disciplines can stimulate breakthroughs in discovery and innovation."

All is going well in New Jersey for the professor and his wife, Francesca, and three children. He was published on the cover of the *Journal of Chemical Theory and Computation* this year, and has initiated new collaborations with the groups of Ronald Levy and David Case "to develop the next generation of molecular simulation models."

York is also one of the inaugural recipients of Rutgers' SAS Entrepreneurial Program (SASEP), which offers grants to initiatives that are able to enhance the university's environment, and ultimately generate revenue. "My proposal was to develop a new type of eLearning system for general chemistry students," he says. "If it works out, it could first enhance the general chemistry program here, then elsewhere." York says this is just one of many examples of why he is finding that Rutgers "is exceeding my expectations on every level."

"Rutgers' support of interdisciplinary research creates an environment which stimulates breakthroughs in discovery and innovation."



Rutgers Against Hunger Adopt-A-Family Program

Chemistry and Chemical Biology helped make the most recent Rutgers Against Hunger (RAH) Adopt-A-Family program a booming success. In a letter, Leslie A. Fehrenbach and Larry S. Katz, co-executive directors of RAH, congratulated Chemistry on "making the holiday season much more enjoyable for your adopted family," adding "your generous donations will have a big impact on them as they start this new year. The food, the clothing, the household items and the gifts that were donated by so many generous faculty, staff and students will go a long way to helping these families in need."



Chris Padara

The department's RAH team worked to brighten a family's holiday season, *left to right*: Karen Fowler, Stephen Kujan, Shirley Engroff, Jennifer Lin, Andrew De Zaio

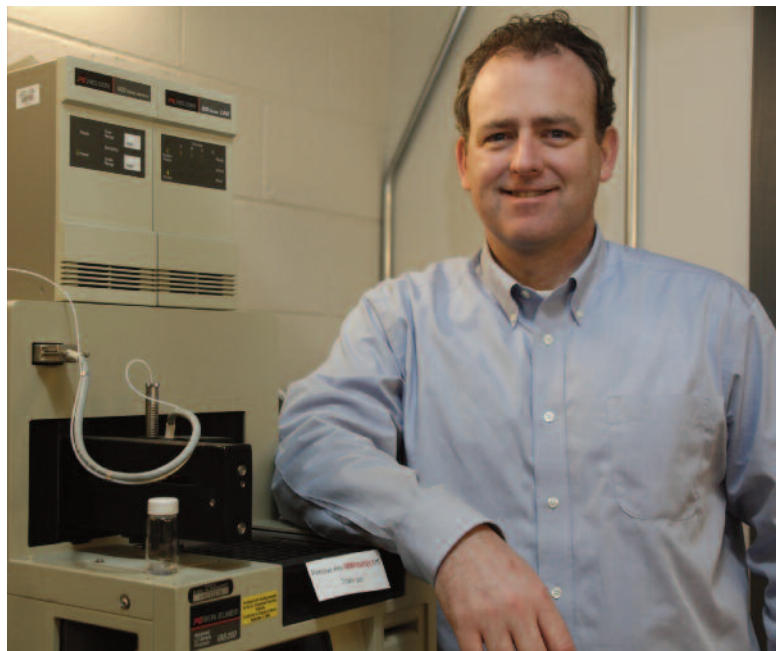
A Multi-Tasker Earns His Doctorate

Earning a Ph.D. is no easy task. Earning a Ph.D. while holding down a fulltime job and raising a family seems practically super-human. But that is just what Alex Harmon, who was awarded his Ph.D. from the Department this January, managed to do.

Harmon's work in Kathryn Uhrich's lab was notable enough to score him the inaugural Steven A. Cox Scholarship for Cancer Research. "Alex is talented, gifted and dedicated," says Uhrich. "He managed to do this while essentially holding down three jobs: working for Johnson & Johnson (J&J), being a grad student and being a family man."

Harmon credits both Uhrich and his supervisor at J&J's Advanced Technologies and Regenerative Medicine (ATRM) division, Anna Gosiewska, for his success. "I had such great support from both of them. They allowed me the freedom and latitude to do what I needed to do when I needed to do it."

The New Jersey native is no stranger to academic multitasking: after receiving his undergraduate degree in biosciences from Fairleigh Dickinson University, he worked fulltime while pursuing his master's in biology at Fairleigh Dickinson. He started off as a pathology assistant in the surgical pathology lab at Overlook Hospital in Summit, NJ, then halfway through his master's, he took a temporary job at J&J, supporting tissue engineering research. "I discovered that this was an interesting field, and started to tailor what I was doing with my master's to what I was doing at work," says Harmon.



Chris Pectora

Recent graduate Alex Harmon earned his Ph.D. while working fulltime and raising a family

The scientist continued working at J&J after receiving his degree. As time passed, and tissue engineering became known as regenerative medicine, Harmon's experience and interests expanded as well. "I enjoyed my work as a technician at ATRM," he says, "but I was interested in doing more research." So, in 2006, at the age of 34, he embarked on his studies at Rutgers.

By this time, Harmon also had two daughters at home, so he became a master juggler. "I spent three to four nights a week at Rutgers, and usually all day Sunday," he says. "I had a priority list that mixed work, school, and home, and it was a matter of making sure that I made everything on it happen."

Uhrich was impressed. "He is very hard-working and extremely focused and persistent," she says. "He knows what he wants and how to get it done." She

points out that even though he was a part-time student, he managed to achieve a 3.9 GPA, co-author six papers, and receive the Cox award and the Van Dyke Award for Excellent Performance in Research. "Plus, he published two papers at J&J, while receiving two technical awards there (including the Philip B. Hofmann Research Scientist Award), so he's obviously doing amazing work there as well," adds Uhrich.

One of the challenges that the new Ph.D. candidate faced was finding an area of research at Rutgers that didn't pose any conflict of interest with his work at ATRM. After taking some preliminary classes, he discovered that "the whole field of drug delivery—and some of the potentials of that technology—seemed very interesting to me." Since Uhrich's research covered this area and did not conflict with his job, he decided to pursue a Ph.D. with her. "At ATRM,

"Whatever you need, wherever research takes you, there's probably someone at Rutgers who can help you out."



I work more in cell therapy and tissue engineering, while at Rutgers, my work was in systemic drug delivery," he explains.

That work focused on using biodegradable polymers to more efficiently deliver anti-cancer drugs to cancer cells while reducing the side-effects caused by excipients used to deliver the drugs. Harmon combined novel polymers generated in Uhrich's lab with lipids to form Amphiphilic Macromolecule-Lipid Complexes, which encapsulate anti-cancer drugs and passively target them to only the diseased tissues. His research will result in polymer-based drug delivery systems that will allow cancer patients to tolerate higher dosages of a

drug, while better targeting and impacting diseased tissues and leaving healthy cells unaffected. "More studies need to be performed," notes Harmon, "but these preliminary findings are very interesting."

It is this work that earned Harmon the Cox award. He says that he was thrilled to receive the scholarship, which "helped pay for the materials and supplies we needed to conduct many of the studies that we performed."

The recent graduate says that he couldn't be happier with his experience at Rutgers. "I don't want to exaggerate, but I was absolutely amazed by the amount of resources available here," he says. "What makes the university so successful is that it

contains such a diverse group of people and technologies. Whatever you need, wherever research takes you, there's probably someone at Rutgers who can help you out." He again emphasizes Uhrich's importance to his success: "She was very supportive and she let me find my own way. She didn't have to take on a part-time student, but she did, and I am indebted to her for that."

What's next for the multitasker? "I will continue on at ATRM," he says. "The organization conducts a lot of innovative, cutting-edge research throughout the field of regenerative medicine, so as a research scientist it is a very nice place to be. I hope to bring some of what I learned at Rutgers to ATRM."

A New History of the Department

Chemistry Professor Emeritus Sidney Toby has added to the department's historical record with his book *The Wright Chemistry: An Informal History of the Department of Chemistry and Chemical Biology at Rutgers University, New Brunswick, NJ 1972-2009*.

The Department's history has been documented before, in William Rieman's *A History of Rutgers School of Chemistry*, which reviewed the period up until 1971, but Toby felt that along with covering the ensuing years, there was a need for a more inclusive, less formal history. "I wanted to show how the department was and is a microcosm of the world," he explains. "I covered what was going on in the country and in the department—from ageism and sexism to the Vietnam War

and its effect, and so on."

The scientist cum historian arrived at Rutgers in 1957 from Canada, where he had received his Ph.D. at McGill University and held a postdoctoral fellowship at the National Research Council. "When I first arrived, I went to the roof of Wright Laboratories and took four pictures in four different directions," he says. "I did this every ten years for 40 years. There were incredible changes." Needless to say, these photos have made their way into Toby's book.

The professor's research concerned atmospheric chemistry, particularly the reactions of ozone, and he loved teaching as well. "I would walk into a freshman class full of 400 glum students who had to be there, and I would get them to laugh," he remembers. He hopes that he accomplished something

similar with his book: "I wanted to find a way to make it interesting, not something that would leave you bored stiff."

At the age of "80 and a bit," Toby is as busy as ever. He lives in Somerset with Frina, his wife of 58 years (who also worked in Chemistry), and notes that his retirement is "in name only. I'm still writing furiously." Toby is grateful for his years at Rutgers. "If I had to do it over again," he says, "I would do the same thing."

Toby assigned the copyright of his book to the University, and copies are available through Chemistry, free of charge. Please contact Karen Fowler (see page 2) if you are interested.



courtesy of Sidney Toby

Chemistry Professor Emeritus Sidney Toby

Meet the Reid Award Winners...

"I am very fortunate to be involved in a laboratory where interdisciplinary research is encouraged."

—M.H.R. Magno



In February, another brilliant batch of Chemistry and Chemical Biology graduate students received the Reid Award, a \$4,000 fellowship for outstanding performance in thesis research. The awards come from a fund established by the late Thomas Reid, who studied at Rutgers as an undergraduate and went on to have a successful career as an organic chemist at the 3M Corporation, where he developed the material that is the basis for Scotchgard. Meet the latest winners:

Chandra Kanta De: De's research, under Daniel Seidel, has focused on the area of asymmetric catalysis, in particular the design of new catalyst systems for asymmetric catalysis using organocatalysts and transition metal catalysts. He became interested in chemistry in high school, thanks to the influence of a teacher. He came to Rutgers after getting his master's in chemistry at the Indian Institute of Technology, in Mumbai. It was Daniel Seidel's research that brought him to study at Rutgers. De says, "Whatever I have learned is because of him. He always encouraged me to come up with new ideas." What interests the student about his topic is that "chiral molecules are a very important class of building blocks in organic synthesis, and the best way to introduce chirality in an achiral molecule is by asymmetric catalysis." De is pleased to have received the Reid Award, and says, "I have really enjoyed my time at Rutgers, from my orientation to

Rutgers Day, departmental picnics and living on campus." After graduation, he plans to return to India and continue his research.

Kai Liu: Liu's research, under Lawrence Williams, has focused on allene oxidation, exploring the interface between synthetic chemistry and biology. Liu says he's been interested in "our nature" since he was a child, and in chemistry since middle school. After he studied synthetic organic chemistry as an undergraduate at Tsinghua University in his native China, Liu, was drawn to Rutgers by its location and academic environment. He feels he made the right choice, saying, "I enjoy every day that I am at Rutgers." He likes working with Williams and his group, and particularly enjoys the group meetings, "when everyone is discussing challenging problems." He says of his research, "whenever you solve a difficult problem or synthesize a brand new type of complex molecule, the feeling is so fantastic!" Liu is excited to have won the Reid Award, but says he knows he must "keep working as hard as—or even harder than—before to be a success in the future." He hopes ultimately that future will include finding a position in industry.

Min Liu: Liu's presentation at the Reid Awards discussed proton affinities and reactivity of NHC carbene versus phosphine by mass spectrometry. "The work is challenging," she says, adding, "we're some of the first people who have ever studied this." She links her interest in science to always having been "very curious about the world

around me." After she received her bachelor's and master's degrees in chemical engineering at Hebei University of Technology in her native China, she headed to New Jersey. "I knew that the U.S. was the place to study in terms of high technology," she explains, adding that she has long been "very interested in state-of-the-art instruments, like spectrometers, especially in how they can be used in analytical chemistry." Rutgers Fourier Transform Mass Spectrometer (FTMS) and Quadrupole Ion Trap Mass Spectrometer (LCQ) are two of the reasons that she is studying in New Brunswick. She enjoys working with her thesis advisor, Jeehiun Lee, and is grateful to her and to the department for the Reid Award. Next up for the scientist? "I expect to find an analytical job in a company with the knowledge I learned in mass spectrometry," she says.

Maria Hanshella R. Magno: Magno's research focuses on developing synthetic biomaterials for tissue engineering applications. Specifically, she has contributed to the development and optimization of scaffolds for bone tissue engineering in the cranio-mandibulo maxillofacial (CMF) complex. Magno's "life-long" interest in scientific research brought her to Rutgers from the Philippines, where she received her bachelor's and master's degrees at the University of the Philippines. "I have always been fascinated by medical advances that have helped people regain their lives," she explains. She says that when she started working with her thesis advisor, Joachim Kohn, she realized that she could use her experience as

a chemist toward this end. She now feels "very fortunate to be involved in a laboratory where interdisciplinary research to develop biomaterials is encouraged." She is honored to have won the Reid Award and says it is "just the beginning of an exciting and challenging journey." Her immediate career goal is to continue biomaterials research as a postdoctoral associate, focusing on biomaterial-based tissue engineering.

Jeremy Pronchik: Working under David Talaga, Pronchik researched the role of the hydrophobic core in regulating protein stability. "This work represents a major shift in the way experiments with a Parkinson's disease protein will be conducted," Pronchik explains. "It's gratifying to make progress on understanding how the disease might work," he adds, "plus, it required me to be creative in a way that I wanted to be." As a child in Pennsylvania, Pronchik always liked to figure out how things worked. In seventh grade, an "excellent" teacher sparked his study of science, and during his undergraduate studies at Bucknell University, he was inspired by his advisor, a physical chemist. Pronchik spent two years at Merck as an analytical chemist before coming to Rutgers. He says he was looking for ways to "sharpen up" his thinking, and found that Talaga "arranged his ideas differently" than Pronchik, so he chose him as an advisor in order to expand his own "ways of thinking." He is grateful that the Reid Award recognizes some of the hard work he's put in. The scientist hopes to ultimately find work in the field of solar energy.

STUDENT AWARDS

AWARDED SPRING 2010 Undergraduate Awards

CRODA AWARDS: Presented for outstanding undergraduate activities. For Excellence in General Chemistry, **Ashleigh Carlton, Yucheng Lin, Sajjad Qureshi** and **David Yao**; for Outstanding Sophomore/Chemistry Major, Excellence in Organic Chemistry, **Patrick Kramer**; for Outstanding Junior, Excellence in Organic Chemistry Laboratory, **Leonid Garber**.

COURSEWORK AWARDS:

Vakul Gupta and **Alycia So** received **The Rufus Kleinhans Award for Excellence in General Chemistry**.

Jusleen Ahluwalia and **Marez Megalla** received **The Roger Sweet Award for Excellence in Organic Chemistry/Female Student**.

Noam Fine received **The Phyllis Dunbar Award for Excellence in Physical Chemistry**.

Leonid Garber received **The Ning Moeller Award for Outstanding Academic Achievement by a Chemistry Major in the Junior Year**.

Denise Cullerton received the **ACS Analytical Division Award for Excellence in Instrumental Analysis**.

Elon Weintraub received **The Hypercube Award for Excellence in Chemical Physics**.

Bridget Huang received **The Merck Award for General Academic Excellence and Research**.

Noam Fine received **The Bruce Garth Award for General Academic Excellence in Chemistry**.

Steven Bagienski, Derek Le and **Christina Odorisio** received the **Enzon Awards for Academic Excellence & Research in Chemistry**.

CHEMISTRY SERVICE AWARD:

Rozena Varghese received **The Chemistry and Chemical Biology Award for Excellence in Community Service in Chemistry**.

CHEMISTRY SOCIETY OUTREACH PROGRAM:

The following students were recognized for their participation in the Outreach Activities of the Rutgers University Chemistry Society: **Isabella Arias, David Feinblum, Leonid Garber, Andrea Goyma, Eric Hagee, Miriam Leichtman, Kevin Lu, Roman Obolonskiy, Nataly Patino, Christine Perez, Valentino Petrenko, Rima Rana, Laura Stapperferne, Rozena Varghese** and **Xiao Zhang**.

AWARDED JANUARY 2011 Graduate Awards

REID AWARDS FOR EXCELLENCE IN RESEARCH

went to **Chandra De, Kai Liu, Min Liu, Maria Hanshella R. Magno** and **Jeremy Pronchik**.

VAN DYKE AWARDS FOR

EXCELLENCE IN RESEARCH went to **Aniruddh Solanki, Gaojie Hu** and **Haohan Wu**.

KRISHNAMURTHY AWARDS FOR OUTSTANDING PAPER OR THESIS IN SYNTHETIC ORGANIC CHEMISTRY went to **Eric Klauber** and **Alexander Reznichenko**.

RIEMAN AWARDS FOR OUTSTANDING ACCOMPLISHMENTS AS A TEACHING ASSISTANT

were won by **Jason Hackenberg, Xianglan He, Gaojie Hu, Hiep Nguyen** and **David Wang**. Honorable Mentions were obtained by **Elliot Goodzeit, Michelle Ouimet** and **Prasad Subramaniam**.

CHEM 171 EXCELLENCE IN TEACHING AWARD (First-Year Teaching Assistants)

were won by **Laura Hagens** and **Maria Janowska**. Honorable Mentions were obtained by **Michael Blessent** and **Nicholas Rue**.

AWARDED SPRING 2011 Undergraduate Awards

DEPARTMENTAL HONORS:

Highest Honors in Chemistry went to **Leonid Garber** and **Nicholas McCool**; High Honors in Chemistry went to **Rayna Addabbo**, **Kholud Dardir** and **Eric Hagee**.

CRODA AWARDS: Presented for outstanding undergraduate activities. For Excellence in General Chemistry, **Dan M. Benenson**, **Chiagozie J. Chukwuneke**, **Fariha Kamal** and **Richard T. Wolfe**; for Outstanding Sophomore/Chemistry Major, Excellence in Organic Chemistry, **Tahia Haque** and **Kelvin Mei**; for Outstanding Junior, Excellence in Organic Chemistry Laboratory, **Aaron Sun**.

COURSEWORK AWARDS:

Deepak Gupta received The **Rufus Kleinhans Award** for Excellence in Honors General Chemistry.

Katarina Yaros received The **Roger Sweet Award** for Excellence in Organic Chemistry/Female Student.

Yulia Afinogenova and **Aaron Sun** received The **Phyllis Dunbar Award** for Excellence in Physical Chemistry.

Patrick Kramer received The **Ning Moeller Award** for Outstanding Academic Achievement by a Chemistry Major in the Junior Year.

Aaron Sun received the **ACS Inorganic Division Award** for Excellence.

John Cafaro received the **ACS Analytical Division Award** for Excellence in Instrumental Analysis.

Aaron Petronico received The **Hypercube Award** for Excellence in Chemical Physics.

Rayna Addabbo received The **Merck Award** for General Academic Excellence and Research.

Eric Hagee received The **Bruce Garth Award** for General Academic Excellence and Research in Chemistry.

Leonid Garber and **Nicholas McCool** received the **Van Dyke Award** for Academic Excellence and Research in Chemistry.

CHEMICAL RESOURCES

AWARDS: **Patrick Rogler**, **Aaron Sun** and **Kristin Reale** received the award for distinction in research. **Rayna Addabbo**, **Tejas Shah**, **Nicholas McCool** and **Leonid Garber** received the award for Highest distinction in research.

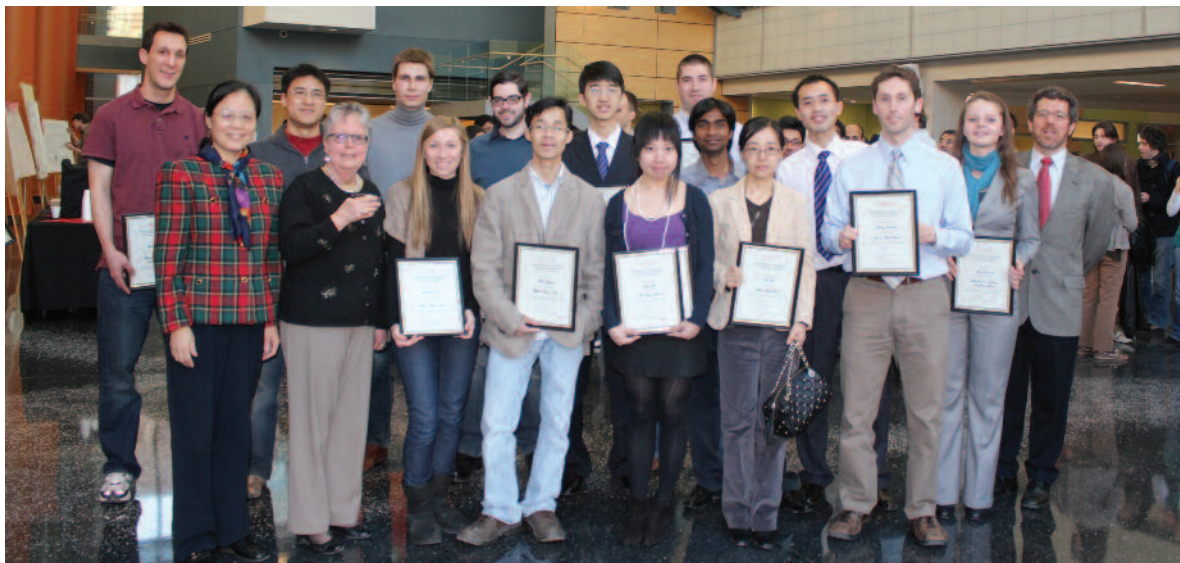
CHEMISTRY SERVICE AWARD:

Kevin Lu received the **Departmental Award for Community Service** in Chemistry.

FACULTY AWARDS

Chemistry Professors **G. Charles Dismukes** and **Martha Greenblatt** were named finalists in the **2010 ConocoPhillips Energy Prize** for their work, *Renewable Fuels from Sunlight: Bioinspired Catalysts for Solar-Driven Water Splitting*. The prize, a joint initiative of ConocoPhillips and Penn State University, recognizes new ideas and solutions that can help improve the way the U.S. develops and uses energy. The team of Dismukes, who is on the faculties of Chemistry, the Waksman Institute, and the Biochemistry and Microbiology Department, and Greenblatt, who is Board of Gover-

JANUARY 2011 GRADUATE AWARD RECIPIENTS



Chemistry graduate award winners and faculty, left to right: **Michael Blessent**, **Jing Li**, **David Wang**, **Martha Cotter**, **Alexander Reznichenko**, **Michelle Ouimet**, **Jason Hackenberg**, **Hiep Nguyen**, **Kai Liu**, **Gaojie Hu**, **Eric Klauber**, **Chandra De**, **Min Liu**, **Haohan Wu**, **Jeremy Pronchik**, **Maria Janowska**, **Eric Garfunkel**

nor Professor in Chemistry, received \$25,000 to help further their research.

The idea that led to the award involved the creation of two new families of biomimetic water oxidation catalysts. These catalysts are made from earth-abundant transition metal oxides that are chemically modified to introduce degrees of freedom that allow them to become good catalysts. The professors say that creation of the unrealized technologies that they discuss in their work, "would allow utilization of the earth's enormous water resource as fuel and the realization of a non-polluting carbon-free energy carrier."

DEGREES CONFERRED

May 2010

B.A.

School of Arts and Sciences

Alden C. Adrian
Olsi Dema
Noam D. Fine
Mukund A. Patel
Mayank I. Patel

Livingston College

Hyun Joo Kim
Elon A. Weintraub

Douglass College

Marlena D. Konieczynska

Rutgers College

Steven E. Bagienski (*honors*)
Timothy J. Cuneo
Sean T. Curran
Corey J. Herbst-Gervasoni
Bridget Y. Huang (*high honors*)
Phyllis Ko (*honors*)
Derek T. Le
Kevin P. McNichols
Alfonso J. Minervino
Andrew B. Morgan
Christina M. Odorisio (*honors*)
Michael J. Tsimaras

University College

Khyati J. Patel

M.S.

Rudrajit Mal
Advisor: Daniel Seidel
Vyoma R. Patel
Kathleen M. Ryan

Ph.D.

Mohannad M. Abdo, "Biomimetic Enzyme Inhibitors"
Advisor: Spencer Knapp

Kehinde A. Ajayi, "The Total Synthesis of Mycothiol and New Inhibitors of Carbohydrate-Processing Enzymes"
Advisor: Spencer Knapp

Ozgur Celik, "Surface and Thin Film Studies of the Etching of Molybdenum by Xenon Difluoride"
Advisor: Eric Garfunkel

Weidong Pan, "Total Synthesis of 7-Epi-FR 66979 and 7-Epi-FR 900482"

Advisor: Leslie Jimenez

October 2010

Ph.D.

Soumik Biswas, "Regioselectivity in Catalytic Transfer Dehydrogenation and Mechanism of 1-alkene Isomerization"
Advisor: Alan Goldman

Mauricio Esguerra, "RNA Structure Analysis via the Rigid Block Model"
Advisor: Wilma Olson

Jongjin Jung, "Multimodal Nanoparticle-based Platforms for Cancer Therapy"
Advisor: KiBum Lee

Robert V. Kolakowski, "Distortional Asymmetry and its Role in Governing Facial Selectivity"
Advisor: Lawrence Williams

Le Li, "Enantioselective Organocatalysis as an Emerging Synthetic Toolbox"
Advisor: Daniel Seidel

Paramita Sarkar, "Structural and Dynamic NMR Studies of the Crk Proto-oncogene"
Advisor: Charalampos Kalodimos

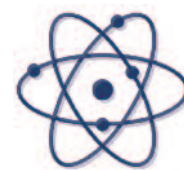
CAPITAL CAMPAIGN

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accessed via links on the Chemistry or SAS (Rutgers School of Arts and Sciences) websites. These new funds include the:

- Student Support fund, which will provide research funds, travel stipends and awards for exceptional teaching and research.
- Chair's fund, which will support departmental initiatives that promote academic excellence, workshops, outreach to local communities and technology upgrades.
- Laboratory fund, which will support lab renovations, new instrumentation for undergraduate lab classes, and state-of-the-art facilities for high impact research.
- Globalization fund, which will support the development of new exchange programs, and help continue funding existing exchange initiatives with Brazil, China, India, Korea and Africa.

Our Rutgers, Our Future and its Chemistry-specific aspects stand to put the university—and the department—on firm ground for the future. Garfunkel explains, "Supporting these initiatives will greatly increase our impact on training of students, and enable our pioneering science to better impact our regional communities and the world beyond." He adds, "Thank you, the alumni and friends of the department, for your strong and continued support."



Chemistry and Chemical Biology has set up new funds for student support, academic excellence, laboratory renovations and global exchange programs.

Keep up to date
with us at
chem.rutgers.edu



Yue Zhang, "Formation and Reactivity of Allenes and Spirodiepoxides"
Advisor: Lawrence Williams

Chen Zhang, "Development of Redox-Neutral Reaction Cascades"
Advisor: Daniel Seidel

JANUARY 2011

M.S.

Matthew A. Ahearn

Candice G. Alleyne

Stephen L. Linguito

Advisor: Jing Li

Jayshree N. Patel

Ramya R. Rao

Advisor: Helen Berman

Matthew K. Vecchione

Advisor: Daniel Seidel

Ph.D.

Renee E. Butler, "Action of Resveratrol Analogs and Hyperthermia in Cancer Chemoprevention and Chemotherapy"

Advisor: Kuang-Yu Chen

Alexander M. Harmon, "Amphiphilic Macromolecule-Lipid Complexes As Drug Delivery Systems: Physical And Biological Characterization"

Advisor: Kathryn Uhrich

Kristina A. Paris, "Modeling Receptor Reorganization and Strain in Protein-ligand Binding"

Advisor: Ron Levy

Jeremy N. Pronchik, "The Role of the Hydrophobic Core in Regulating Protein Stability: Probing Proteins

with Dielectric and Electrodynamic Driving Forces"

Advisor: David Talaga

Ahalya Ramanathan, "Towards the Synthesis of TMC-95A and Selective Ortho-Substitution on Substituted Aryl Rings"

Advisor: Leslie Jimenez

Sarah M. Sparks, "Design, Synthesis, and Utility of Functionalized Nanoscale Amphiphilic Macromolecules for Biomedical Applications"

Advisor: Kathryn Uhrich

Elizabeth D. Veliath, "Synthesis and Characterization of C8 Analogs of c-di-GMP; New Synthetic Method for 5'-Capped Oligoribonucleotides"

Advisor: Roger Jones

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