

Chemistry & Chemical Biology News

Governor Christie Helps Rutgers Celebrate New CCB Building Groundbreaking & Future of Science

New Jersey Governor Chris Christie, Rutgers University President Robert Barchi, Rutgers New Brunswick Executive Vice President and Chancellor Richard Edwards, and School of Arts and Sciences Executive Dean Richard Falk marked the start of a new era of science instruction and research as they joined with state officials and members of the university community on June 16 to break ground for the new home of the Department of Chemistry and Chemical Biology (CCB).

The four-story, 145,000 square-foot facility will provide critically needed teaching, laboratory and support space that will enable Rutgers to expand and accelerate its innovative research in drug design, alternative energy, biomaterials and nanotechnology.

The \$115 million project is funded largely by the 2012 Building Our Future Bond Act.

"With these extraordinary new facilities, Rutgers University is poised to be a national leader in terms of scientific instruction and research," said Gov. Christie. "Rutgers will be



Larry Levanti

Breaking ground for the new CCB building are (from left) graduate student Allison Faig; Rutgers New Brunswick Executive Vice President and Chancellor Richard Edwards; New Jersey Governor Chris Christie; Rutgers President Robert Barchi; School of Arts and Sciences Executive Dean Richard Falk; and graduate student Michael Haibach.

positioned to compete with and even surpass its peer institutions, making it an even greater magnet for top students from New Jersey and, indeed, from around the world. The 2012 Building Our Future Bond Act was the first major capital funding for higher education in New Jersey in decades, and I am proud of my administration's role in developing it in a bipartisan approach with the Legislature and the wide public support it ultimately received."

The new classrooms and labs are key to enhancing the

high quality science education at Rutgers. More than 5,000 Rutgers students take chemistry courses each semester, and this number has been increasing steadily for years. In addition, the CCB building will allow the university to build upon its tradition of collaborative research with leading academic labs, government entities and private industry in the region and around the world.

"This remarkable new building befits a premier research

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Changing of the Guard, Brennan Becomes Chair

"We are entering a very exciting time for CCB and Rutgers as we continue to strengthen the department's position as a leader in education and research in chemistry."



Professor John Brennan has recently begun a three-year appointment as Chair of the Department of Chemistry & Chemical Biology (CCB), succeeding Distinguished Professor Roger A. Jones. Brennan previously served as Vice Chairman of the Undergraduate Program for CCB and has been a faculty member since 1990.

"It's an honor to succeed Roger Jones as Chair," said Brennan. "Roger served as CCB chair for a total of 15 years during two separate tenures. The last three years have been very important with the planning for the long awaited new building for the department. The next three years will certainly be interesting—I look forward to the continued growth of our department as we prepare to move into a new home in 2016."

Jones, a biophysical and organic chemist, has returned to full-time faculty status, pursuing research interests in nucleic acid synthetic chemistry. His current work is focused on RNA fragments designed for crosslinking

with HIV-1 reverse transcriptase, and on cyclic dinucleotides and their analogs.

"It has been a privilege to serve as chair and I would like to thank our faculty, alumni, students and many friends for their support over the years," said Jones, a Rutgers faculty member since 1977. "We are entering a very exciting time for CCB and Rutgers as we continue to strengthen the department's position as a leader in education and research in chemistry. We are very fortunate to have John Brennan's astute knowledge of the department, university and our field to carry us forward."

Brennan is an inorganic and materials chemist who came to Rutgers from AT&T Bell Labs. His research interests have focused on the synthesis and characteri-



Professor Roger A. Jones



Professor John Brennan

zation of lanthanide molecules and clusters with extraordinary near infrared (NIR) emission properties that have applications in optical fiber technologies. More recently, he's been looking at the chemistry of compounds with actinide-sulfur bonds, motivated by problems in actinide waste remediation.

Brennan received his Ph.D. in inorganic chemistry from the University of California at

Berkeley and a B.S. in chemistry from the State University of New York at Albany.

Professor Gregory F. Herzog, a faculty member since 1971, has succeeded Brennan as Vice Chair of the Undergraduate Program.

Faculty Build African Partnerships and Foster Collaborations to Advance Development

Chemistry Associate Professor Tewodros (Teddy) Asefa grew up in Ethiopia, but a recent trip to Addis Ababa, the capital of Ethiopia, and the political capital of Africa, was still an eye opening experience.

"Many African countries are experiencing rapid population growth, and some of the fastest growing economies are also in Africa," said Asefa, who returned to his native country with Rutgers colleagues for an important international meeting. "There is

tremendous opportunity not just for Africans, but also for the whole world, including the U.S., to engage in the rise and development of Africa. The continent needs investment in education, infrastructure, manufacturing

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and human capital to ensure success in the future."

Encouraging such partnerships was the focus of the 7th International Conference of the Africa Materials Research Society, held in the African Union Conference Center in Addis Ababa, and co-chaired by Professor Teketel Yohannes Anshebo of Addis Ababa University and Rutgers Chemistry Professor Eric Garfunkel. The conference and the academic exchanges have benefited from the strong support of the National Science Foundation (NSF) and the Materials Research Society (MRS).

"Scientists and engineers can play critical roles in the development process that is taking place in Africa," said Garfunkel, who has co-chaired the past two Africa MRS conferences. "Our African counterparts are requesting more international involvement as the development of materials technologies have tremendous impact in energy, construction, health, transportation, and a variety of other critical sectors in Africa. Our joint conferences and academic exchanges can be very rewarding for both sides."

California Institute of Technology Professor Robert H. Grubbs, Nobel Laureate in Chemistry in 2005, was the plenary speaker at the conference, which was attended by some 300 scientists from across Africa and around the world. Rutgers Chemistry Professor Kathryn Uhrich also participated, presenting novel results of her polymer research, as well as leading a discussion on women in science.

"The workshop on women in science was a first for the society and the conference," said Uhrich. "It offered an opportunity for the younger scientists to meet, learn about, and interact with at least a dozen of the world's most successful women scientists and engineers. It was a good start, but we really just touched the tip of the iceberg. I have stayed in contact with some of the younger women who participated in the workshop regarding graduate school and career opportunities, so we have some momentum to build on."

Rutgers Chemistry graduate student Aleksandra Biedron was one of the young scientists that attended the conference. "It was a great opportunity to meet and talk to young Africans about my research, and to find out what we have in common," said Biedron. "I also enjoyed the opportunity to interact with other women and discuss the challenges we face. I learned quite a bit about topics that are different from my current research, but still in the general area of materials chemistry. I am now considering a possible internship in Africa so the visit was beneficial in that respect as well."

Rutgers has already hosted over two dozen African scientists and engineers over the past three years, including John Obayemi, a doctorate student studying at the new African University of Science and Technology (AUST) in Abuja, Nigeria. Obayemi presented the results of his research experience in

Uhrich's lab at the Africa MRS conference. Rutgers Chemistry hopes to grow their global exchange programs over the next few years, and expand it further by partnering with other departments.

Garfunkel is working with colleagues at Rutgers and Princeton to create the Pan African Materials Institute (PAMI) with seed funding from the World Bank and Carnegie Foundation. The purpose of PAMI is to develop Africa's ability to add value to materials and mineral resources.

"PAMI is coordinating the training of Africans through short courses and graduate programs, supplemented by state-of-the-art distance learning and laboratory access techniques," Garfunkel said. "PAMI faculty and students will also engage in interdisciplinary research that will help address African needs in health, energy, water, affordable housing and infrastructure."



Rutgers Chemistry Professor Eric Garfunkel (far right) co-chaired the recent 7th International Conference of the Africa Materials Research Society in Ethiopia. Garfunkel is pictured at the international meeting with (from left) Professors Wole Soboyejo of Princeton University and current Africa MRS President; Sossina Haile of the California Institute of Technology (Caltech); Robert Grubbs of Caltech, 2005 Nobel Laureate in Chemistry; Mona Marei, former Africa MRS President; and Teketel Yohannes Anshebo of Addis Ababa University and conference co-chair.

Colgate-Palmolive's Co-op Program Helps Students Grow and Develop Research Interests

Chemistry undergraduates Shiri Nawrocki and Scott Smart are getting first-hand experience as research scientists through an innovative co-op program at the Colgate-Palmolive Piscataway Technology Center located adjacent to the Busch Campus. In the process, both students are partnering with chemists on discoveries that could significantly influence the future of consumer products.

"Working at Colgate has truly been a once-in-a-lifetime experience for me, and I couldn't have asked for a better opportunity," said Nawrocki. "The knowledge I have gained while working at Colgate is beyond anything I ever expected and I've only been part of the co-op program for 9 months. I used to be very nervous in my lab courses at school, but since I started working at the company, my confidence in the lab has significantly increased."

Both Nawrocki and Smart have already made significant findings. In her short time at

Colgate, Nawrocki has worked with a Colgate team to partner on two patent applications. Smart, a rising senior who has been in the company's co-op program for 18 months, recently published his first author cover paper with other co-authors in the prestigious journal, *Chemical Communications*. Nawrocki and Smart work with Long Pan, Ph.D., a Rutgers alumnus and manager at Colgate.

"Since 2007, I have supervised about 20 undergrads to work on more than 10 different projects," said Pan, a scientist focusing on fundamental research to understand how to enhance the efficacy of personal care products. "The students from Rutgers who work with us are actively involved in every step of research and development. The new breakthroughs not only help our company maintain a leading position in the market, but also foster a training environment for students to learn how to create new ideas and how to turn these ideas into usable products. I train the students who work at Colgate to become independent research scientists."

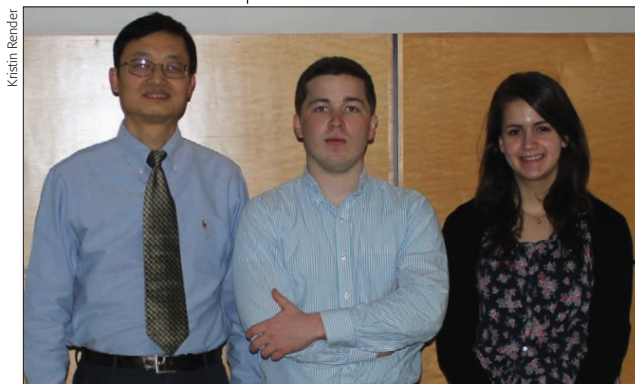
Pan noted that Rutgers students at Colgate have been involved in numerous patent applications, invention records and many outside publications. Four of the students were hired for permanent positions at Colgate and several entered doctorate programs.

Like most of the students who enter the co-op program, Smart had no experience in research. "In my interview, Long Pan and other Colgate scientists

asked me if I was interested in looking at fundamental problems within the field, not just formulations or routine lab work," recalled Smart. "I said yes! Since then, the projects I have been working on are often initiated by Long although with the other Colgate scientists, but then are carried out through my own investigations. Through this approach and the continual guidance and support of Long and others at Colgate, I have been able to experience what research is. I feel I have matured as a researcher, as a professional, and as a person, while being able to contribute something worthwhile to Colgate."

Pan noted that the paper co-authored with Smart "received very high praise during the peer review phase of publication. The broad potential applications of this work are remarkable. Scott has learned a great deal professionally and picked up a wide range of skill sets that will be quite valuable in his future career, wherever he ends up. The next step for this research is to implement the fundamental work into practical applications."

The Colgate co-op program allows students to learn how to conduct research at a consumer products company, develop a new product from inception, implement the concept, create prototype products, and finally commercialize the products. By engaging the students at every step of the commercialization process from idea generation to product creation, Colgate hopes that the students will become



Colgate-Palmolive scientist Long Pan, Ph.D., with Rutgers Chemistry undergraduate students Scott Smart and Shiri Nawrocki, participants in the company's research co-op program

Kristin Render

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genuinely interested in their work and perhaps become permanent employees.

"I train students one on one, as I believe each student has a unique potential," Pan said. "I set very high standards for the students, in part by telling them that they should act as independent research scientists rather than as technicians who are simply doing routine work at a lab. The students are partic-

ipating in creating new ideas, filing patent applications, and publishing their own work in international journals. In the beginning, many of our undergrads do not believe they are capable of doing any of the above. In the end, many of these students have patents and publications."

The experience has helped Smart refine his research interests.

"Currently, I am interested in mechanistic inorganic research,"

Smart said. "Theoretical studies and trying to obtain a more fundamental understanding of reactions is something that appeals to me, and I believe the breadth of this area would make it worthwhile to study. I would definitely recommend the Colgate co-op program to other students. I have yet to see or hear of an opportunity that provides a place to grow as much as I have at Colgate. In addition, it offers one valuable industry experience."

Aresty Scholars Program Provides Undergraduates Early Research Experience

Alicja Cygan was one of many Rutgers University Chemistry undergraduate students who received hands on experience with research at Rutgers through a pilot program funded by the Aresty Research Center. Cygan, who graduated in May, worked in a lab that focused on the Hepatitis C virus thanks in part to the Aresty program.

"I would definitely recommend the opportunity to other students who are looking to get involved in research and would enjoy the opportunity to present their work in a supportive setting," said Cygan. "The biggest benefit of the program is that a student can choose any lab in the chemistry department to work in rather than choose from specific projects. This allows for great freedom and for the opportunity to work on a project or in a lab that most interests a particular student."

Cygan is continuing her research in graduate school, most likely focusing on biological problems and virology. She has just started at Stanford

University, where she will pursue a doctorate in microbiology and immunology.

"Our goal with the Aresty Chemistry Scholars Program has been to get more students involved in research earlier in their academic careers," said John Brennan, Rutgers Chemistry Chair and Professor. "For chemistry students, the first couple years are very textbook heavy, but we want to get more undergraduates involved in the lab earlier. The Aresty Center allows us to do that by providing support for research endeavors."

Brennan approached the Aresty Center two years ago to support the department's research objectives for undergraduates. The Aresty Research Center, funded by a generous endowment from Jerome and Lorraine Aresty, provides a variety of programs that allow undergraduate students to be involved in research throughout their Rutgers careers. Students in the Chemistry program simply need to express an interest to get started in a lab.



Rutgers Aresty Chemistry scholars Richa Rana, Sarah Goodman and Alicja Cygan.

Richa Rana, a senior, first became involved with the Aresty program as a research assistant in the lab of Rutgers Chemistry Professor Kathryn Uhrich.

"My two years as a research assistant have allowed me to gain hands-on experience in a laboratory setting that I could not have gained through classroom experience alone," said Rana, who hopes to attend

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Professors Kohn and Uhrich Named Fellows of the National Academy of Inventors

Rutgers Chemistry Professors Joachim Kohn and Kathryn Uhrich, renowned polymer scientists, have been named Fellows of the National Academy of Inventors® (NAI). Deputy U.S. Commissioner for Patents Andrew Faile of the U.S. Patent and Trademark Office (USPTO) inducted the inventors during the Annual NAI Conference.

NAI is a non-profit membership organization comprised of U.S. and international universities, and governmental and non-profit research institutions, with over 3,000 individual inventor members and Fellows spanning more than 200 institutions. Election to NAI Fellow status is a very high professional distinction accorded to academic inventors who have demonstrated a prolific spirit of innovation in creating or facilitating outstanding inventions that have made a tangible impact on quality of life, economic development and the welfare of society.

"We congratulate Professors Kohn and Uhrich on this very special honor," said Distinguished Professor Roger A. Jones, former Chemistry Department Chair. "Joachim and Kathryn have been awarded numerous patents for biomedical materials and drug delivery through their scientific advances. They are not only outstanding researchers with an excellent history of translating their discoveries into products, but exceptional mentors for Rutgers students."

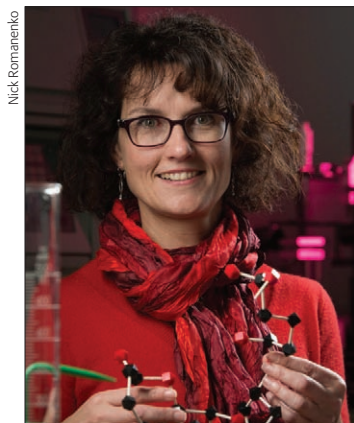
Kohn is the founder and director of the New Jersey Center for Biomaterials at Rutgers. He is a leader in biomaterials science and his laboratory is widely known for the development of tyrosine-derived, resorbable polymers, which are now used in several FDA-approved medical devices. His research focuses on new ways to develop biomaterials for specific applications, particularly tissue engineering, regenerative medicine and drug delivery, using combinatorial and computational methods.

Kohn led a team of scientists who discovered a polymer optimized for fully degradable cardiovascular stents, which is being tested in clinical trials. Lux Biosciences also used his approach for the development of optimized polymers for ophthalmic applications, as did Trident Biomedical for orthopedic applications. Kohn holds 58 U.S. patents and has received about \$100 million in

research support from U.S. federal agencies and other sources since 1997. He is the Chair of the International College of Fellows of Biomaterials Science and Engineering, and the recipient of the Thomas Alva Edison Patent Award for best patent in medical technology in New Jersey in 1999 and 2006.

Uhrich holds over 50 U.S. and international patents with over 20 applications pending worldwide. She is the scientific founder of Polymerix Corporation, a specialty pharmaceutical company that developed products based on therapeutic polymer technology. Uhrich is involved in several start-ups that use her technology, including Bioabsorbable Therapeutics, Xenogenics, Polymer Therapeutics and two others currently coming to life.

Uhrich's laboratory designs biocompatible and biodegradable polymers for medical, dental and personal care applications. She has trained over 160 junior and senior scientists in polymer chemistry and generated nearly \$30 million in federal and corporate funding. Her honors include the Common Pathways Award from the New Jersey Association for Biomedical Research, the American Chemical Society's Buck-Whitney Award, Dow's Turner Alfrey Visiting Professorship and the Thomas Alva Edison Patent Award from the R&D Council of New Jersey. Uhrich is a Fellow of the American Institute for Medical and Biological Engineering, a Fellow of the American Chemical Society's (ACS) Polymer Division, and most recently, an ACS Fellow.



Nick Romanenko

Chemistry Professors Joachim Kohn and Kathryn Uhrich

Helen Berman Receives Franklin Award

Chemistry Professor Helen M. Berman has been awarded the Benjamin Franklin Award for Open Access in the Life Sciences from Bioinformatics.org, also known as The Bioinformatics Organization, Inc.

Berman was the founding Director of the Research Collaboratory for Structural Bioinformatics (RCSB), and has served as the director of the Protein Data Bank (PDB) since it was moved to Rutgers in 1998. She received the Benjamin Franklin award and delivered a laureate presentation at the Bio-IT World Conference and Expo. The honor is a humanitarian/bioethics award presented annually by Bioinformatics.org to an individual who has, in his or her practice, promoted free and open access to the materials and methods used in the life sciences.

"Helen's leadership of the Protein Data Bank has been invaluable to many scientists around the world," said Distinguished Professor Roger A. Jones, former Rutgers CCB Chair.

"I can think of few if any people who are more deserving of an award for open access in the life sciences. Helen truly embodies the spirit of this special honor."

Berman studied Chemistry at Barnard College before earning a Ph.D. at the University of Pittsburgh. She worked at Fox Chase Cancer Center for 20 years, researching nucleic acid crystallography and drug nucleic acid interactions. She moved to Rutgers in 1989, expanded her program to include the study of the structures of collagen and protein-nucleic acid complexes, and at the same time developed structural databases and ontologies.

In the 1970s Berman began working with colleagues to establish the PDB archive at Brookhaven National Laboratory as a place to store and share data about the 3D structures of proteins and nucleic acids. In 1998, when the RCSB won funding for PDB and moved it to Rutgers, the data bank had 9,000 archived structures. The PDB reached a milestone

100,000 structures in May.

The PDB archive is the single worldwide repository of information about the 3D structures of large biological molecules, including proteins and nucleic acids, providing an essential resource of information about biomolecular structures. The molecules of life that appear in the PDB come from a very broad array of organisms, from bacteria and plants to animals and humans.

Bioinformatics.org serves the scientific and educational needs of bioinformatic practitioners and the general public. The organization maintains computational resources to facilitate worldwide communications and collaborations, and promotes open access to the materials and methods required for, and derived from, research, development and education.



Professor
Helen M. Berman

David Case to Receive National ACS Award for Computers in Research

David A. Case, Chemistry Distinguished Professor, has been selected to receive the American Chemical Society's (ACS) 2015 Award for Computers in Chemical and Pharmaceutical Research. Case will receive the national honor at a special symposium held to recognize his contributions to sci-

ence at the ACS national meeting in Denver on March 24, 2015.

Case is a theoretical and computational chemist with particular interest in molecular dynamics simulations of proteins and nucleic acids; electronic structure calculations of transition-metal complexes that model active sites in metalloenzymes; development and application of

methods for nuclear magnetic resonance (NMR) structure determination; ligand-protein and ligand-nucleic acid docking; and computational drug design.

"David Case's pioneering contributions to the science and methodology of biomolecular simulations have guided modern

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Postdoctoral Chemistry Researcher Ana Monica Nunes Receives AHA Fellowship

The American Heart Association has awarded Chemistry Postdoctoral Researcher Ana Monica Nunes a two-year fellowship to study novel biological interactions critical to the development of improved treatments for hardening of the arteries or atherothrombosis, more generally known as cardiovascular disease, the leading cause of death in the U.S.

Nunes' research focuses on the interaction between blood vessel wall collagens and the integrin $\alpha 2 \beta 1$ ($\alpha 2 \beta 1$) located on the platelet surface, a process fundamental to clot formation inside blood vessels. The body uses platelets to form a clot to prevent blood loss after blood vessel injury. The in-

collagen," said Nunes, a structural biology researcher under the direction of Rutgers Chemistry Distinguished Professor Jean Baum. "Understanding the process is extremely important to platelet adhesion, activation and aggregation, and is a key process in clot formation."

Collagen-protein interaction is one of the research focuses of Baum's lab. Collagen is the most abundant protein of the human body, providing structural integrity and managing multiple interactions with cells and other matrix molecules.

"In order to design safer therapeutics to prevent or treat heart diseases it is important to understand $\alpha 2 \beta 1$ -collagen interaction and to identify the crucial residues involved in the process," said Baum. "The research will allow for the future design of second-generation drugs highly specific and potent, without secondary effects."

Baum's team uses an integrated approach based on nuclear magnetic resonance (NMR) in conjunction with computational, biophysical and biological methods to provide unique structural and dynamic insight into protein recognition of collagen and to understand the molecular basis of collagen diseases arising from mutations.

Nunes' research utilizes integrated molecular biology and NMR to grant insight into the structure and motion of integrin $\alpha 2$ -domain when unbound and bound to collagen. NMR is unique, providing not only structural, but also dynamic information of proteins. The study will produce the $\alpha 2$ -domain, re-

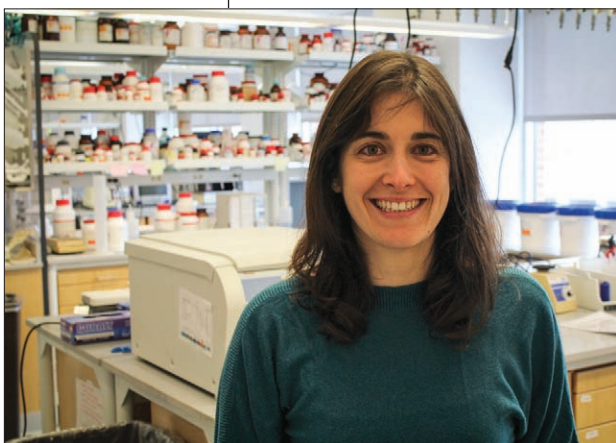
sponsible for the direct binding to collagen in the parent integrin, and characterize its dynamic behavior in the presence and absence of collagen peptide models. Understanding how integrins select and bind collagen will grant insight on the process of clot formation.

Nunes received a Ph.D. in Bioinorganic Chemistry from the University of Ioannina, Greece; and a B.S. in Technological Chemistry and a Specialization Degree in Biomedical and Inorganic Chemistry from the University of Lisbon, Portugal. In addition to her work at Rutgers, she conducted postdoctoral biophysics research at the National Institute of Chemical Physics and Biophysics, Estonia.

Nunes research takes place at the Rutgers Center for Integrative Proteomics Research, a relatively new facility located on the Busch Campus, dedicated to fostering interdisciplinary structure-function studies of complex biomolecular phenomena. The Center houses state-of-the-art instrumentation for protein NMR spectroscopy, mass spectrometry, and protein/nucleic acid physical chemistry, and hardware for high performance computing.

The Centers for Disease Control and Prevention (CDC) estimates that about 600,000 people die of heart disease in the United States every year, one out of every four deaths, with coronary heart disease being the most common, killing more than 385,000 people annually and alone costing the United States more than \$100 billion each year in health care services, medications and lost productivity.

Karen Fowler



Postdoctoral Researcher Ana Monica Nunes

tegrin $\alpha 2 \beta 1$ protein is critical in platelet adhesion, but does not consistently bind collagens—an interaction that is not fully understood.

"We are studying this interaction on the molecular level, trying to understand how $\alpha 2 \beta 1$ integrin chooses to bind

DAVID CASE

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pharmaceutical chemistry research," said Chemistry Department Chair and Professor John Brennan. "David is among the world leaders in the fundamental theory and computational simulations of biomolecular NMR, electrostatic interactions in proteins and nucleic acids, and electronic structure aspects of metalloenzymes. He is widely recognized by thousands of professionals in the pharmaceutical chemistry and computational chemistry communities for his groundbreaking work throughout his career."

Case is co-developer and currently the lead scientist behind the powerful Amber suite of biomolecular simulation codes used in more than 1,000 labs internationally to carry out molecular dynamics analysis of proteins, carbohydrates and nucleic acids. He has created significant improvements to the Amber software including force fields, solvation effects, and sampling strategies, which have greatly accelerated the speed of discovery and increased the value of simulations for pharmaceutical research. Simulations using Amber enable analysis of many aspects of the structure and dynamics of biomolecules.

Case's current research projects include: the energetics of binding drug candidates to enzymes; mechanical properties of nucleic acids; conformational preferences of polysaccharides; and the determination of solution structures by NMR. He also is active in the development of new energy functions, such as force fields, and simulation methods to help make these calculations more predictive.

A member of the editorial board of Biopolymers since 1990, Case has served in similar capacities for numerous research journals. Case's publication record, which includes nearly 300 scientific papers, has one of the highest citation records of any chemist nationally, and

reveals the many collaborators who have sought his expertise across diverse fields of chemistry.

Case earned a Ph.D. in Chemical Physics and an A.M. in Physics at Harvard University and a B.S. in Chemistry at Michigan State University.



Kristin Render

Professor David Case

STUDENT AWARDS**Undergraduate Awards****CRODA AWARDS**

General Chemistry 161–162 & 166 Solid Gems
Excellence in General Chemistry
Ingrid Erazo
Amy Huang
Yu Hsuan Lin
Hector Lisboa

Outstanding Student in Sophomore Chemistry Classes
Excellence in Organic Chemistry
Jonathan Fetherolf
Yaniv Tivon

Outstanding Student in Junior Organic Chemistry Laboratory
Excellence in Organic Chemistry Laboratory
Courtney Yurecko

COURSEWORK AWARDS

The Rufus Kleinhans Award
Excellence in Honors General Chemistry
Nil Rawal
Maria Vishnyakova

The Roger Sweet Award
Excellence in Organic Chemistry
Julia Dreifus
Diana Torres-Pinzon

The Phyllis Dunbar Award
Excellence in Physical Chemistry
Xiaoming Liu

ACS Inorganic Division Award
Excellence in Inorganic Chemistry
Neil Patel

ACS Analytical Division Award
Excellence in Instrumental Analysis
Zahara Bakhtiar

The Hypercube Award
Excellence in Chemical Physics
Walter Drake

JUNIOR AWARD

The Ning Moeller Award
Outstanding Academic Achievement by a Chemistry Major in the Junior Year
David Rehe

SENIOR AWARDS

The Bruce Garth Award
General Academic Excellence & Research
Sarah Goodman

The Van Dyke Award
Academic Excellence & Research in Chemistry
Deepak Gupta

Sanofi-Aventis Award
Excellence in Synthetic Organic Chemistry
Neyra Jemal

Enzon Award
Outstanding Senior Chemistry Major
Aaron Levin

CHEMICAL RESOURCES AWARDS BY PAUL KEIMIG
Chemical Resources Award for Distinction in Research
Neil Patel
Richa Rana
Christopher Sowa
Courtney Yurecko

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Chemical Resources Award for Highest Distinction in Research

Milos Cejkov
Alicja Cygan
Jessalyn Devine
Christopher Kaplan
Charles Kreisel

CHEMISTRY MAJORS ELECTED TO PHI BETA KAPPA

Casey Hamilton
Neyra Jemal
Charles Kreisel
Laura Sammon
Jeffrey Sun

COMPUTATIONAL AWARD By Kevin J. Theisen

Chemres Award, Excellence in Computational Chemistry & Informatics
Brady Forcier

VAN DYKE UNDERGRADUATE AWARD

Excellence in Teaching a Chemistry Lab

Milos Cejkov
Alicja Cygan
Sarah Goodman
Neyra Jemal
Charles Kreisel
Aaron Levin
David Rehe
Jonathan Tadros
Austin Wenta

CCB UNDERGRADUATE SERVICE AWARD

Participation, Outreach & Departmental Service

Chemistry Society

President, Richa Rana
Vice-President, Rose Soskind
Treasurer, Kyle Yeung
Secretary, Alex Bahia
Historian, Emily Fitzgerald
Public Relations, Katelyn Duchemin

Rutgers Day Volunteers

Reem Asraf
Caroline Bezzubik
Efua Bolouvi
Neeta Chakraverthy
Matthew Emerson
Sarah Indano
Ross Manjunath
Benjamin Mather
Georgia Muchen
Marcus Rountree
Jim Sabatini
Katie VanValen

DEGREES CONFERRED

JANUARY 2014 B.A.

David Delnegro
Brian Lewis
Jennifer Unger

M.S.

Lisa Jablonski
Bin Qian

PH.D

Li Gu
Kexuan Huang
Soma Mandal
Kieran Norton
Prasad Subramaniam
Priti Tiwari

MAY 2014 B.A.

Soraya Abdel-Hamid
Esther Adesina
Sonal Agarwal
Anthony Annam
Gabriela Arevalo
Zahra Bakhtiar
Zachary Bakhtin
Sri Balijepalle

Iryna Barbella
Gregory Bayard
Ana Brumarel
Milos Cejkov
Alicja Cygan
Alexander Dabrowski
Steven Dellavalle
Jessalyn Devine
Walter Drake
Yu-Dien Fu
Sarah Goodman
David Grodman
Deepak Gupta
Emily Hinesley
Neyra Jemal
Kyle Jordan
Minjoo Jung
Inkoo Kang
Christopher Kaplan
Eunhee Kim
Jae Il Kim
Charles Kreisel
Byron Lee
Gisu Lee
Aaron Levin
Bin Li
John Lisowski

Tyler Mallm
Matthew Mieles
Stephanie Morales
Brian Naumann
Jade Pao
Akata Patel
Daniel Riemer
Kevin Samuel
Mark Santomauro
Jonathan Tadros
Ariane Vasilatis
David Verrill
Simon Wang
George Wei
Austin Wenta
Stephen Zieminski

M.S.

Elliott Goodzeit
Derek Hawkins

PH.D.

Mu Chen
Wenchun Feng
Jason Hackenberg
Nisha Mittal
Birju Shah
Kai Wang

GRADUATE AWARDS

Duff Travel Award

Aleksandra Biedron
Allison Faig
Maria Janowska
Paul Janowski
Nandish Khanra
Nicholas Lease
Changyao Liu
Matthew Richers
Shreyas Shah
Nicholas Stebbins
Libing Yu
Yongliang Zhang

Reid Award

Qihan Gong
Li Gu
Gina Moriarty
Matthew Richers
Birju Shah
Yongliang Zhang

Van Dyke Award, Research Excellence

Maria Janowska
Longle Ma
Shreyas Shah

Krishnamurthy Award for Outstanding Paper or Thesis in Synthetic Organic Chemistry

Chang Min

Rieman Award for Outstanding Accomplishments as a TA

Haoyuan Chen
Mu Chen
Jonathan Faig
Kai Wang

Honorable Mention:

Miaoxin Lin
Abbas Sanchawala

Chemistry 171 Excellence in Teaching Award

Benjamin Deibert
Koustubh Dube
Boning Wu

Chemistry Service Award

Allison Faig
Xiang Gao

GROUNDBREAKING

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institution,” said President Barchi. “Rutgers ranks first among U.S. universities in federal funding for chemistry research. Our chemistry and chemical biology faculty are world leaders in discovery and innovation, and our students go on to successful and distinguished careers in the pharmaceutical, chemical and health care industries in New Jersey and beyond. The chemistry and chemical biology building demonstrates our commitment to continued excellence in science education and research.”

Core facilities in the CCB building will include a microscopy suite, a chemistry clean room as well as optical spectroscopy, nuclear magnetic resonance spectroscopy and X-ray crystallography laboratories. Classrooms will provide the latest technology to support teaching and learning. The facility’s modular design and versatile infrastructure will allow reconfiguration of labs and classrooms to respond as technology evolves and the needs of students and faculty change. Common areas are designed to promote collaborations.

“We are investing \$2.3 billion in this year’s budget in our state colleges and universities,” said Gov. Christie. “This is a significant investment, almost 10 percent of the overall state budget will be put into our state colleges and universities. ... It pays off, not only economically, but in terms of reputation.”

The Governor went on to quote a statistic, which he said makes New Jersey “the fifth smartest state in America,” based on the fact that 35 percent of state residents have a four year degree or better.

“That is the thing that makes New Jersey competitive,” Gov. Christie said. “...When I talk to businesses around the country and around the world, one of the reasons, (in addition) to our geographic location, of why businesses want to locate here is because of the educated workforce that we have available to them here in this state.”

The new building will be located adjacent to the Wright-Rieman Chemistry building on the Busch Campus. The first section of the current chemistry complex was opened in the late 1940s and additional wings were built in the 1960s and 1970s. Despite some improvements over the years, the building cannot accommodate the demands of contemporary science teaching and collaborative, multidisciplinary research.

In the last decade, 75 percent of Rutgers’ peer institutions have invested in new chemistry facilities. The CCB building will enable Rutgers to better compete for top-notch faculty and the best and brightest students.

The innovative research occurring inside the new CCB building will be matched by the cutting-edge sustainability features of the building itself. Besides conforming to State of New Jersey energy mandates and guidelines, Rutgers seeks to achieve a Leadership in Energy and Environmental Design

(LEED) Gold certification for the building by reducing its energy usage. Numerous green features are designed into the project, including windows that maximize natural light and manage heat gain, advanced air handling and exhaust systems, construction materials made with a significant percentage of recycled content, and native vegetation to encourage biodiversity and reduce the need for irrigation.

The chemistry and chemical biology building is slated for completion in fall 2016, the year Rutgers will celebrate its 250th anniversary.



Karen Fowler

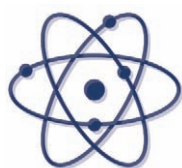
Site preparation is moving forward quickly for the new chemistry building, including demolition of the Doolittle complex pictured here in early September.



Larry Levanti

Chemistry students (from left) Mehwish Khan, Nil Rawal, Julia Hong, Suraj Shukla and Bharath Kannan try on a hard hat at the groundbreaking.

*"We know that
hands on experience
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of study."*



ARESTY SCHOLARS continued from page 5

graduate school and eventually pursue doctoral studies before working in industry. "In the lab, I have been able to readily apply what I have learned in the classroom to my own research. The biggest benefit I have gained from research is the ability to think critically in analyzing how to overcome obstacles and determining why an experiment did not go as expected. I would recommend undergraduate research to all students—some students realize they love research, while others realize it is not for them."

Aresty Director Dr. Brian Ballentine said the center is exploring similar partnerships with other departments in large part due to the success in Chemistry.

"We know that hands on experience helps students feel more comfortable in their chosen field of study," he said.

"Our mission is to encourage, facilitate, and support faculty-student relationships that promote undergraduate engagement in research," Ballentine added. The mentoring relationships that faculty establish with students are central."

Sarah Goodman, who graduated in May, is continuing her research interests in graduate school at Massachusetts Institute of Technology.

"Applying to the Aresty program was really the best decision I made in college," said Goodman. "Being a part of the Aresty program was especially helpful during my first year of research. My peer instructor

taught me how to write an abstract and present a poster. I would definitely recommend Aresty to other students, even if you think research isn't for you. You never know until you try. When I first came to college, I never thought I would become this dedicated to a research project, let alone speak on the topic at two conferences, or go to grad school."

All students in the Aresty program present their research at the Annual Undergraduate Research Symposium. Students in the Aresty Chemistry Scholars Program also present their research during the poster session of the Jean Wilson Day Memorial Undergraduate Research Symposium.