



Chemistry & Chemical Biology News

Professor Ki-Bum Lee Patents Technology To Advance Stem Cell Therapeutics

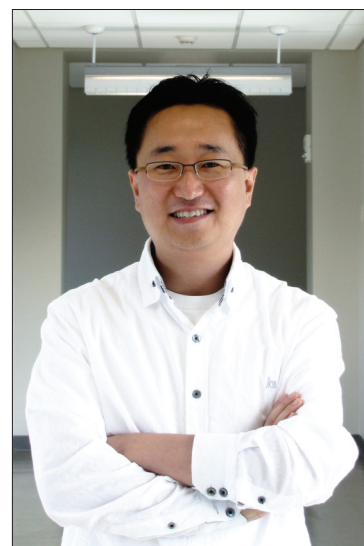
Professor Ki-Bum Lee has developed patent-pending technology that may overcome one of the critical barriers to harnessing the full therapeutic potential of stem cells.

One of the major challenges facing researchers interested in regenerating cells and growing new tissue to treat debilitating injuries and diseases such as Parkinson's disease, heart disease, and spinal cord trauma, is creating an easy, effective, and non-toxic method to control differentiation into specific cell lineages. Lee and colleagues at Rutgers and Kyoto University in Japan have invented a platform they call NanoScript, an important breakthrough for researchers in the area of gene expression. Gene expression is the way information encoded in a gene is used to direct the assembly of a protein molecule, which is integral to the process of tissue development through stem cell therapeutics.

Stem cells hold great promise for a wide range of medical therapeutics as they

have the ability to grow tissue throughout the body. In many tissues, stem cells have an almost limitless ability to divide and replenish other cells, serving as an internal repair system. Transcription Factor (TF) proteins are master regulators of gene expression. TF proteins play a pivotal role in regulating stem cell differentiation. Although some have tried to make synthetic molecules that perform the functions of natural transcription factors, NanoScript is the first nanomaterial TF protein that can interact with endogenous DNA. *ACS Nano*, a publication of the American Chemical Society (ACS), has published Lee's research on NanoScript. The research is supported by a grant from the National Institutes of Health (NIH).

"Our motivation was to develop a highly robust, efficient nanoparticle-based platform that can regulate gene expression and eventually stem cell differentiation," said Lee, who leads a Rutgers research group primarily focused on developing and integrating nanotechnology with chemical biology to modulate



Professor Ki-Bum Lee

signaling pathways in cancer and stem cells. "Because NanoScript is a functional replica of TF proteins and a tunable gene-regulating platform, it has great potential to do exactly that. The field of stem cell biology now has another platform to regulate differentiation while the field of nanotechnology has demonstrated for the first time that we can regulate gene expression at the transcriptional level."

SUMMER 2015 VOLUME 17

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610 Taylor Road
Piscataway, NJ 08854

For questions or suggestions, please contact:

John Brennan, Chair
Phone: 848-445-1554
Email: chemchair@rutgers.edu
Web: chem.rutgers.edu

Coordinators: Karen Fowler and Kristin Render
Faculty Liaison: Eric Garfunkel
Writer/Editor: Fred Feiner

Message from the Chairman

Welcome to the Summer 2015 edition of *Chemistry & Chemical Biology (CCB) News*. It has been an eventful academic year for our department with significant progress on our new building scheduled to open in late 2016. The construction crew is working on the fourth floor as we go to press. It will not be long before our signature science building begins to show its full shape.

I am also happy to share with you that renowned artist Larry Kirkland has been selected to create artwork for the new building that reflects the molecular scale world of chemistry. Kirkland has collaborated with community and business leaders and design professionals to conceive and create his large-scale, multi-dimensional public artworks. His many commissions include artwork installed at Penn Station in New York City; the American Red Cross Headquarters and National Academies of Science in Washington, D.C.; Putra World Trade Center in Kuala Lumpur, Malaysia; and Kansai International Airport in Osaka, Japan. To learn more about his work, visit larrykirkland.com.

As we go to press, we have learned that our emeritus colleague Ulrich (Uli) Strauss, has passed away. Uli was a major figure in the history of polyelectrolyte chemistry, and he chaired CCB from 1965 to 1971 and 1974 to 1980. In a future edition of the newsletter, we will review Uli's many contributions to chemistry and to the department.

As you read this edition, we hope you will be as excited as we are about some of the many other successes within CCB. Our cover story describes one of Professor Ki-Bum Lee's research projects that may help overcome one of the critical barriers to harnessing the full therapeutic potential of stem cells. Over the past year CCB faculty have been honored with several awards, including Professor Darrin York (2014 New Jersey Professor of the Year); Professor Gene Hall (2014 American Microchemical Society Benedetti Pichler Award); Professor Eddy Arnold (elected Fellow of the American Crystallographic Association); and Professor Martha Cotter (Rutgers School of Arts and Sciences Award for Distinguished Contributions to Undergraduate Education).

We also profile alumnus Kevin Theisen and his successful venture iChemLabs; and note



Kristin Render

Chair John Brennan

an international exchange with a pair of visiting students from Spain. Additionally, our fourth group of students from Jilin University in China are currently visiting CCB.

We have opportunities for our alumni and friends to support the exciting future of chemistry at Rutgers. Please consider making a gift to our students, our research or our new building as CCB moves forward with a promising new era of research and education. We are also seeking alumni who can serve as champions of Rutgers Chemistry within their company. We hope you've enjoyed a wonderful summer! We are all excited by the imminent arrival of fall, the start of a new academic year and all the promise that it holds.

John Brennan, *Chair*



Kristin Render



Kristin Render

Construction on the new CCB building, scheduled to open in late 2016, is moving forward.

Professor Darrin York Named New Jersey Professor of the Year

The Carnegie Foundation for the Advancement of Teaching and the Council for Advancement and Support of Education named Chemistry Professor Darrin York the 2014 New Jersey Professor of the Year. He was selected from nearly 400 top professors in the United States.

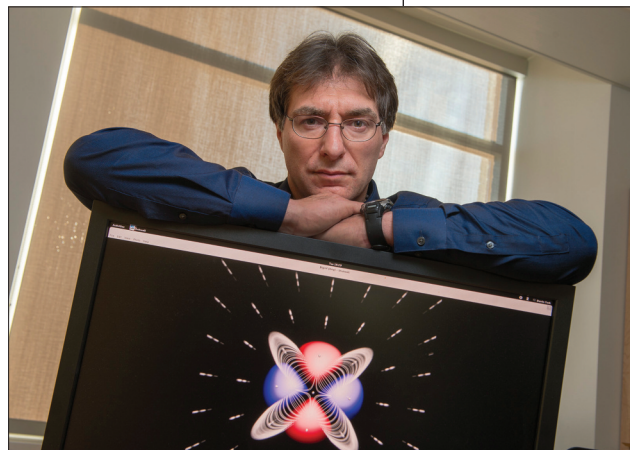
York developed a novel e-Learning system that connects students and instructors to each other online, providing immediate customized feedback and a more intimate give-and-take experience than the traditional online class. This e-Learning technology was developed with the support of the Rutgers School of Arts and Sciences and the National Science Foundation. The program has been integrated into new online recitations in General Chemistry, termed "Chemistry Interactive Problem Solving Sessions," or ChIPS, and is available to students five days a week.

ChIPS has received positive reviews. Students generally

appreciate the convenience of attending ChIPS sessions any day of the week, the anonymity of asking questions online, and the immediate feedback on custom quizzes and virtual office hours. York was honored for this achievement and the many other ways he has helped students master and enjoy general chemistry, a subject nearly all science, engineering and health-related majors require.

The award recognizes professors for their outstanding impact on and involvement with undergraduate students and for their scholarly approach to teaching and learning.

"The amount of thought that Darrin has put into teaching chemical concepts is amazing," said Chemistry Chair John Brennan. "You have to see the way he analyzes a chemical problem, breaks down what a student needs to know, how to teach it, how to test students, and how to explain whatever they are having trouble with." Brennan says the department is embracing York's innovations in other courses, such as organic



Nick Romanenko

Chemistry Professor
Darrin York

chemistry, typically a second-year offering for chemistry and life science majors.

York earned his doctorate in chemistry at the University of North Carolina at Chapel Hill in 1989 with Lee Pedersen. He also held postdoctoral positions at Duke University with Weitao Yang, and jointly at Harvard University and the University of Strasbourg in France with chemistry Nobel Prize winner Martin Karplus. Before joining Rutgers in 2010, York held his first faculty position at the University of Minnesota.

Professor Gene Hall: Chemistry's Fish Oil and Document Detective

Professor Gene S. Hall is the Chemistry & Chemical Biology (CCB) Department's main analytical chemist. He also is an unofficial fish oil and paper document detective.

Upon visiting his laboratory in the Wright-Rieman Building, one may notice a large sampling of

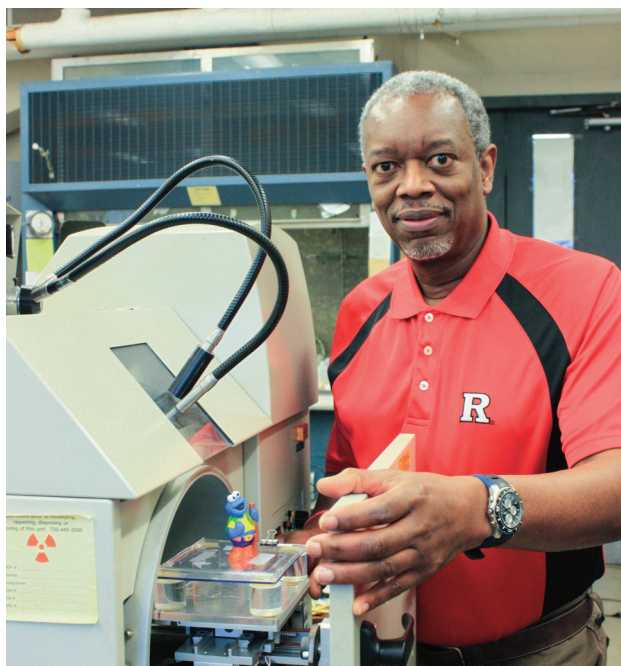
the some 1,800 fish oil dietary supplements the analytical chemist is assessing for a future journal article or a bank note, claimed to be a century old, that could be worth a fortune.

"I love teaching and forensic science," said Hall, who came to Rutgers in 1979 as a lecturer.

"I love testing things and finding out their composition. Many times we discover the claims behind certain items, particularly those that are perceived as valuable, are false. It's a lot of fun."

As a result of publishing multiple journal articles and

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Professor Gene S. Hall

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giving many presentations on document authenticity, Hall is frequently sought out by people all over the world to determine the true origins of potentially valuable items. He has a reputation for analyzing the origin and validity of historic bank notes, postage stamps and other items.

One family that contacted Hall had what they thought were 32 Grinnell Hawaiian

Missionary Postage stamps, which could have been worth a small fortune. "They sent me to London to compare their stamps with the Queen's authenticated stamps," he recalled. "Unfortunately for them, the stamps were not real. Many times people come across items that they think are valuable, but no documentation exists to prove authenticity and I am asked to help verify their origin."

Hall was recently recognized for his many years of teaching and research excellence with the 2014 American Microchemical Society Benedetti Pichler Award. Hall has led many interesting research projects at CCB including extensive studies on childhood lead poisoning and maternal transfer of lead during pregnancy. One of Hall's main research interests is in bio-analytical chemistry and the identification and quantification of copper, lead and zinc binding proteins in human biological tissues; and environmental analytical chemistry that focuses on identification of sources of lead in drinking water.

"Gene has been a great mentor for students over the years, helping many fine chemists begin wonderful careers in academia, research and industry,"

said CCB Chair John Brennan. "Gene's research has been invaluable to the public in many ways and will continue to have an impact for years to come."

Ever since Hall was five years old, playing with chemicals in the basement of his home, he wanted to be a chemist. He grew up in Plainfield, N.J. and obtained a B.S. degree in Chemistry and Mathematics from Tusculum College, and then a Ph.D. from Virginia Tech in Radioanalytical Chemistry.

"When I was a kid, I just loved making things explode," he recalls. "In high school, I wore a bow tie and people called me the professor."

Hall has continued to earn that nickname by analyzing the properties of many items over the years from Coach handbags to stock certificates to baseball cards. He has recently concentrated on dietary supplements.

"The vast majority of dietary supplements are not what they claim to be," said Hall. "The problem is there is no regulation of these products so consumers, for the most part, really have no idea what they are putting in their bodies. I am hoping we can get some of these 'snake oil' products' taken off the market."

Professor Cotter Receives SAS Honor for Undergraduate Education

Chemistry Professor Martha Cotter has been honored with the Rutgers School of Arts and Sciences Award for Distinguished Contributions to Undergraduate Education. In recent years, Cotter has taught Physical Chemistry, which covers classical thermodynamics, an introduction to statistical ther-

modynamics, and chemical kinetics at a relatively sophisticated mathematical level, and is considered by most chemistry majors to be one of the most challenging courses of their time at Rutgers. Cotter has raised the mathematical and conceptual level of the course while providing even mathematically chal-

lenged students with the support they need to succeed.

In course evaluations, students have lavishly praised her teaching style and concern for students, the "perfect" organization of the course, and the excellent materials and extra help

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COTTER

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provided to students. As one student put it, Cotter “provided a learning environment in which I could thrive.” Another student summed things up by saying, “Awesome course. Great professor, highly recommended. Although it’s a hard course, she makes it very accessible and understandable.” Still another student said simply, “Martha Cotter is probably the best professor I have ever had at Rutgers.”

John Brennan, CCB Chair and former Vice Chair of the Undergraduate Program, noted that Cotter’s popularity with students is hardly a secret. “In the past few years, I can say that I’ve had more students rave about Martha’s teaching abilities than I’ve had for any other faculty member,” said Brennan. “In fact, her reputation for teaching

excellence is so superior that it presented a problem for the department. We are trying to encourage students with an interest in biological problems to take the physical chemistry courses designed around biological systems, but Martha’s reputation for being able to convey the key concepts in physical chemistry is so recognized by our majors that many simply refuse to consider any alternative.”

“I have taught Physical Chemistry for the last 12 years and I enjoy working with the undergraduate students, particularly junior and senior chemistry majors,” she said. “For many students, Physical Chemistry is the first chemistry course they are taking where they have to regularly use mathematics as a tool, so it’s a new challenge and personally very rewarding to help them be successful.”

Cotter earned her B.A. at Southern Illinois University and her Ph.D. at Georgetown University. She was an A.P. Sloan Foundation Fellow and a Visiting Scientist at Bell Laboratories. Her research interests lie in the area of equilibrium statistical mechanics, but she admits that she has focused primarily on teaching and University service for some time. In the latter category, she is currently the Chair of the New Brunswick Faculty Council and the Vice Chair of the University Senate, has served as Chair of the University Senate and Faculty Representative to the Board of Governors, and has chaired several major University-wide committees.



Kristin Bender

Chemistry Professor
Martha Cotter

Professor Eddy Arnold Elected American Crystallographic Association Fellow

Eddy Arnold, Rutgers Board of Governors Professor of Chemistry and Chemical Biology, and member of the Center for Advanced Biotechnology and Medicine, was elected as a Fellow of the American Crystallographic Association (ACA). Arnold was honored for his research in macromolecular crystallography and drug design targeting infectious disease agents; he is well known for his contributions to the field through both scholarly and service activities.

Arnold has been a faculty member at Rutgers since 1987, following undergraduate and

graduate study in chemistry at Cornell University with Jon Clardy, and postdoctoral research at Purdue University, where he worked with Michael G. Rossmann (ACA Fellow 2009) to obtain a picture of a human common cold virus in atomic detail, the first animal virus structure.

Arnold is the author of more than 250 publications in prominent peer-reviewed scientific journals. With Rossmann, Arnold co-edited the first International Tables for Crystallography Volume F, devoted to crystallography of biological macromolecules. Arnold has also served on several national

and international advisory committees, including synchrotron X-ray facilities and served as Chair of the International Union of Crystallography Commission on Biological Macromolecules.

He is an elected Fellow of the American Association for the Advancement of Science and of the American Academy of Microbiology. Since its inception in 1987, Arnold’s laboratory has been continuously funded by the National Insti-

Rutgers Board of
Governors Professor
of Chemistry and
Chemical Biology
Eddy Arnold

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ARNOLD
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tutes of Health (NIH) and he is the recipient of two consecutive NIH MERIT Awards (1998–2008, 2009–2019), which extend five-year grants to 10 years. These are awarded to less than 5 percent of NIH-funded investigators. In 2013 he received the Hyacinth Award honoring outstanding achievements in the struggle against HIV/AIDS,

recognizing work that he and his group have done to understand the structure and function of the AIDS virus reverse transcriptase enzyme, and to develop drugs that can overcome resistance. HIV reverse transcriptase is responsible for copying the viral genetic material in infected cells and is the target of many of the most widely-used anti-AIDS drugs.

Arnold was the Director of an International School of Crystallography course on structure-

based drug design in Erice, Italy in June 2014, attended by 160 scientists from around the world. He also presented a keynote lecture at the International Union of Crystallography Congress in Montreal in August 2014, describing his laboratory's structural studies of HIV reverse transcriptase and how that information has contributed to the discovery and development of two drugs used for treating HIV infection.

Visiting Students from Spain Join Professor Goldman's Research Group

Juan del Pozo and Sara Martinez, visiting doctoral students from Spain, joined Chemistry Professor Alan Goldman's research team during the Fall 2014 semester through an educational program funded completely by the Spanish government.

Martinez, 27, a student from the University of Oviedo, said that she and del Pozo had met once briefly at a conference in Spain, but were unaware that both had an interest in working with Goldman and would be in Piscataway at the same time. "It was a great pleasure to have both Sara and Juan join our research team," said Goldman, whose research group focuses on the reactions between transition metal complexes and simple organic molecules, particularly hydrocarbons. The team's work generally involves a mechanism-based approach to the development of catalysts.

"Both students are studying the reactions of small molecules with transition metal based catalysts," Goldman said. "Sara has developed a new catalyst for the dehydrogenation of alkanes. This is a reaction that can be used as part of an overall process for many different transformations; for example, the conversion of light gaseous hydrocarbons to clean-burning liquid fuels, or the greener and

more efficient conversion of petroleum to chemical building blocks. Juan's work has given us a new understanding of the cleavage of N-H bonds by metal complexes. This reaction could be incorporated, for example, into the development of new pharmaceuticals or materials."

Both del Pozo and Martinez were thankful for the efforts of Goldman and other researchers to make them feel like part of the team. "Despite cultural differences, we had a lot of fun together and shared some great experiences," said Martinez. "Alan helped us a lot with organizing the visit, including housing and transportation," said del Pozo. "Alan gave me a bike! The departmental staff was very helpful with red tape issues. We went out several times together, attending baseball and football games. I really felt part of the Goldman Group." Both students said they would welcome the opportunity to return to the U.S. in the future.



Visiting doctoral students Sara Martinez and Juan del Pozo

"Professor Goldman really has a tremendous international reputation, so it was a great opportunity," said del Pozo, 27, a student from the University of Valladolid. "The research that he does at Rutgers is among the best in the world."

Started in a Rutgers Dorm, Kevin Theisen's iChemLabs has Grown Into a Major Scientific Software Company

As an enterprising Rutgers Chemistry undergraduate student, Kevin Theisen launched iChemLabs in 2008 with seed money from a generous donor who specifically wanted to help entrepreneurs start new companies. The CCB graduate has come a long way from the days spent sitting in his dorm room dreaming of an affordable, student-friendly software package that would allow users to draw chemical structures and predict their spectra. Now on its seventh version, Theisen's ChemDoodle software has broad appeal to a large community that requires visualization of molecules and has resulted in a company with employees and partnerships spread across the globe. iChemLabs is a developer of chemical software for students and professionals; the company provides its software

to some educational institutions, including Rutgers, for free.

As a sophomore at Rutgers, Theisen first started to experiment with computer programming to check the nuclear magnetic resonance (NMR) homework assigned in his organic chemistry class. "I wanted to sit in my dorm room and check my work by looking at molecules and knowing what their spectra should be without spending a million dollars on an NMR spectrometer so I created a program that would let me achieve the task," he said. Over several years, Theisen utilized his interest in computer programming to create ChemDoodle.

"While I was at Rutgers I decided to create a fully functional two- and three-dimensional software package for investigating chemistry and drawing chemical structures because the alternative on the marketplace at that

time would have cost \$4,000," said Theisen, 28. "My parents both had computer software backgrounds and I had also been interested in software development in addition to my passion for chemistry, so I spent the summer before my senior year creating ChemDoodle. I was set to pursue a Ph.D. at the University of California at Berkeley, but after creating the software I realized where I wanted to be and iChemLabs was born."

Theisen, a former Henry Rutgers Scholar and president of the Rutgers Chemistry Society, has stayed active at the University, funding an annual computation award for undergraduate students and providing iChemLabs web components for an important chemistry e-Learning initiative. He hopes to use his experience to help foster interest in chemical programming and encourage students to view chemistry in new ways.

"Kevin is a great success story and will have a substantial impact on education in chemistry for years to come," said Chemistry Professor Roger A. Jones, a former chairman of the department and one of Theisen's mentors. "He was in the right place at the right time, and received several thousand dollars of 'lab-to-marketplace' seed funding, a program initiated and supported by Rutgers alumnus Ybet Villacorta. Clearly, those have been dollars well spent."



Kevin Theisen



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Theisen said the field of chemistry can be one of the harder areas to find your niche, but credits the Rutgers faculty with encouraging him to explore his interests. "A career in chemistry is not necessarily a life spent in the lab," Theisen said. "When we think of chemistry,

most people think about huge laboratories and beakers with liquid in them, but the fact is there are many ways to engage chemistry beyond this stereotype." Dr. Villacorta is an intellectual property lawyer, yet another non-traditional, but very rewarding path for those with chemistry backgrounds.

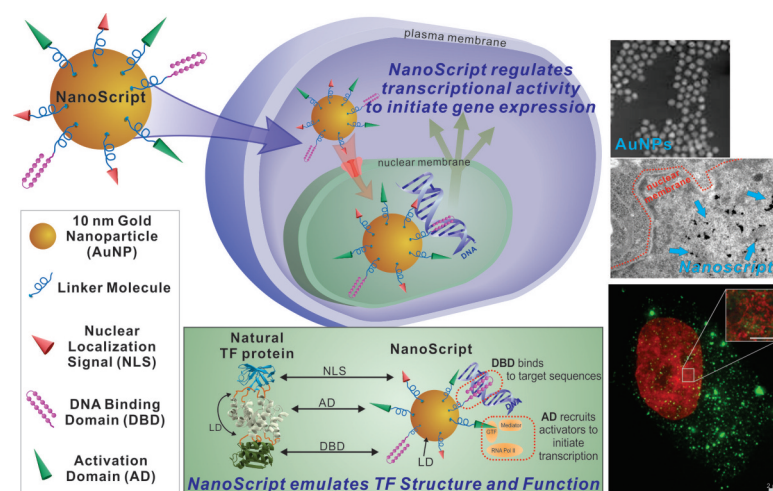
"For students who are not sure how they fit in the chem-

istry world, it's important to keep their interests top of mind," he said. "Rutgers has proven time and time again that their faculty include many excellent chemists who not only do great chemistry, but also care immensely about students. I want to see Rutgers students get the same opportunities I received to pursue their interests and achieve their dreams."

PATENT continued from page 1

NanoScript was constructed by tethering functional peptides and small molecules called synthetic transcription factors, which mimic the individual TF domains, onto gold nanoparticles. "NanoScript localizes within the nucleus and initiates transcription of a reporter plasmid by up to 30-fold," said Sahishnu Patel, Rutgers Chemistry graduate student and co-author of the *ACS Nano* publication. "NanoScript can effectively transcribe targeted genes on endogenous DNA in a nonviral manner."

Lee said the next step for his research is to study what happens to the gold nanoparticles after NanoScript is utilized, to ensure no toxic effects arise, and to ensure the effectiveness of NanoScript over long periods of time. "Due to the unique tunable properties of NanoScript, we are highly confident this platform not only will serve as a desirable alternative to conventional gene-regulating methods," Lee said, "but also has direct employment for applications involving gene manipu-



NanoScript is the first nanomaterial TF protein that can interact with endogenous DNA.

lation such as stem cell differentiation, cancer therapy, and cellular reprogramming. Our research will continue to evaluate the long-term implications for the technology."

Lee, originally from South Korea, joined Rutgers in 2008 and has earned many honors including the NIH Director's New Innovator Award. Lee received his Ph.D. in Chemistry from Northwestern University where he studied under Chad A. Mirkin, a pioneer in the coupling

of nanotechnology and biomolecules. Lee completed his post-doctoral training at The Scripps Research Institute with Peter Schultz. The primary interest of Lee's group is to develop and integrate nanotechnologies and chemical functional genomics to modulate signaling pathways in mammalian cells towards specific cell lineages or behaviors. He has published more than 50 articles and filed for 17 corresponding patents.

STUDENT AWARDS**Undergraduate Awards****CRODA AWARDS****Outstanding Students in
Introductory Chemistry Classes**

Melanie Cotton
Misha Faerovitch
Paige Grecco
Joyce Lam
Stephanie Walsh
John Weber

**Outstanding Students in
Sophomore Chemistry Classes
Excellence in Organic Chemistry**

Ankur Dalsania
Maria Vishnyakova

**Outstanding Student in Junior
Organic Chemistry Laboratory
Excellence in Organic Chemistry
Laboratory**

Timothy Lee

Course Work Awards**The Rufus Kleinhans Award
Excellence in Honors General
Chemistry**

Christopher Markosian

**The Roger Sweet Award
Excellence in Organic Chemistry**

Mary Kiledjian
Viemma Nwigwe

**The Phyllis Dunbar Award
Excellence in Physical Chemistry**

An Le
Nil Rawal

**ACS Inorganic Division Award
Excellence in Inorganic Chemistry**

Fatima Toor

**ACS Analytical Division Award
Excellence in Instrumental Analysis**

Yaniv Pines

**ACS Organic Division Award
Excellence in Organic Chemistry**

Diana Sun

**The Hypercube Award
Excellence in Chemical Physics**

Jonathan Fetherolf

**Sanofi-Aventis Award
Excellence in Synthetic Organic
Chemistry**

Ryan Levy

DEGREES CONFERRED**OCTOBER 2014****M.S.**

Denise Cullerton
Beidi Lu
Thanapat
Pongkulapa
Abbas Sanchawala
Jacqueline Sikora
Hao Zeng

PH.D.

Kathleen Field
Qihan Gong
Landon Greene
Michael Haibach
John Harrold
Sven Sommerfeld
Da Xu
Yi Xu

JANUARY 2015**B.A.**

Leon Ceden
Yara Elrashidy
Ryan Hoover
Kenneth Jenkins
Jeff Mandell
Maria Tan
Amanda Ullmer
Amanda Williams

M.S.

Szu-Ying Wang

PH.D.

Nandish Khanra
Matthew Richers

MAY 2015**B.A.**

Alexander Bahia
Mary Katherine
Battles
Gabriela Ber
Gregory Cender
Miguel Cepeda
Hank Chao
Xu Chu
Danielle Costanzo
Bijal Damania
Emily Fitzgerald
David Golembieski
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Moaz Kaleem
Yi Li
Mohammad Malik
Jasjit Mangat
Nicholas Mezle
Hee Kyung Moon
Michelle Moy
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Paul Pacheco

Neil Patel
Kelly Patraju
Xavier Paulino
Yaniv Pines
Heidy Ramirez
Richa Rana
Yogesh Rane
David Rehe
Daniel Riemer
Scott Smart
Jeffrey Sun
Peter Wadell
Leo Wan
Joan Wilder
Robin Xu
Kyle Daniel Yeung
Eunjung Yoon
Courtney Yurecko
Julia Ward
Benjamin Xin

M.S.

Edward Cooke
Jessica Murphy
Jia Song
Jacky Wang
Yang Zheng

PH.D.

Zhichao Hu

**The Ning Moeller Award
Outstanding Academic
Achievement by a Chemistry
Major in the Junior Year**
Kim Le

**The Bruce Garth Award
General Academic Excellence &
Research**
Jeffrey Sun

**The Van Dyke Award
Academic Excellence & Research
in Chemistry**
David Rehe

**CHEMICAL RESOURCES AWARD
BY PAUL KEIMIG**

**Chemical Resources Award for
Distinction in Research**
Jonathan Fetherolf
James Liu
Brian Schendt
Yaniv Tivon

**Chemical Resources Award for
Highest Distinction in Research**
Olivia Cracchiolo
Mohammad Malik
Laura Sammon
Kervin Smith
Diana Sun
Joan Wilder

Chemistry Majors Elected to Phi Beta Kappa

Emily Fitzgerald
Pengfei Jiang
An Le
James Liu
Yaniv Pines

**ICHEMLABS AWARD
BY KEVIN J. THEISEN**

Excellence in Computational Chemistry & Informatics
Victoria Zelikson

VAN DYKE UNDERGRADUATE AWARD

Excellence in Teaching a Chemistry Lab

Alex Bahia
Lauren Benzinger
Gres Karim
Nicholas Raffa
Krishna Savalia
Amy Wu

Excellence in Chemistry Course Support

Sanchari Ghosh
Matthew Habel
Chaim Miller
Akash Patel
Chirag Patel
Krishan Patel
Nidhi Patel
Michael Rallo
Ifrah Tariq

LONSDALE SCHOLARSHIPS

Allowing chemistry majors the opportunity to devote themselves to full time study

Jonathan Fetherolf
An Le
Richa Rana

CHEMISTRY SOCIETY

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

STUDENTS GRADUATING WITH HONORS

Mohammad Malik
Richa Rana
David Rehe
Jeffrey Sun

Graduate Awards

REID AWARD

Allison Faig
Zhichao Hu
Xiaoxi Huang
Paul Janowski
Maria Panteva
Shreyas Shas
Paul Smith

VAN DYKE AWARD

Excellence in Research

Ben Deibert
Chang Min
Sahishnu Patel
Sven Sommerfeld

KRISHNAMURTHY AWARD

Outstanding Paper or Thesis in Synthetic Organic Chemistry
Weijie Chen

RIEMAN AWARD

Outstanding Accomplishments as a TA

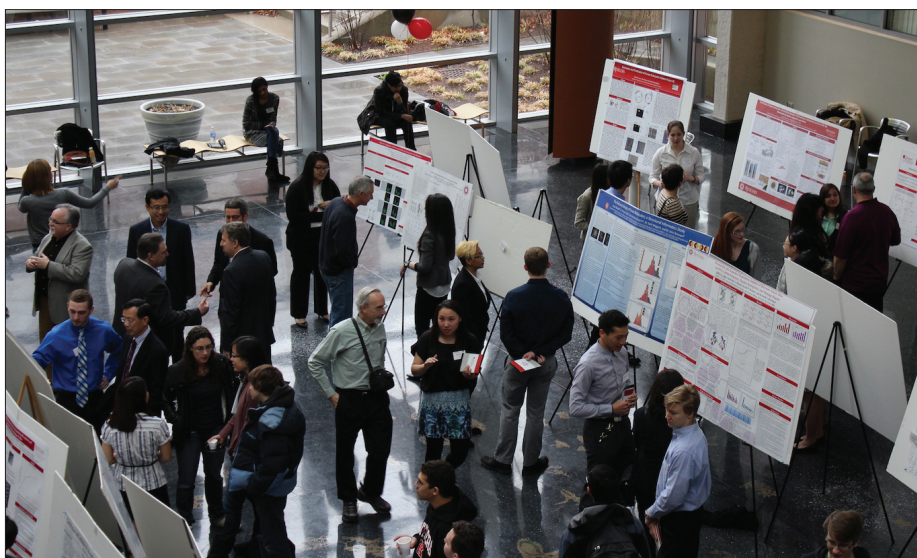
Weijie Chen
Jia Song
Stefjord Todolli

CHEMISTRY SERVICE AWARD

Zhichao Hu

2015 UNDERGRADUATE ACHIEVEMENT DAY

A wide range of research was highlighted during 2015 Undergraduate Achievement Day prior to the announcement of the annual CCB awards.



Kristin Rander

HOW YOU CAN

By making a gift, alumni and friends can help advance the Department of Chemistry and Chemical Biology into a new era of research and education.

Your gift is needed to support

SUPPORT CHEMISTRY

The Future of



A SIGNATURE BUILDING

Now under construction, this state-of-the-art, LEED-certified building will serve as a research and learning hub for students, faculty, staff, and external partners. A variety of naming opportunities, from the building's main lobby and auditorium to conference rooms and junior researcher workstations, are available.

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Chemistry Student
Support Fund**

(No. 035204) Provides research funds, travel stipends, and awards for exceptional teaching and research.



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**Thank
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