

Access

Excellence in the Arts and Sciences

New Approach to Undergraduate Science Takes Hold in Genetics

Teaching through discussion and problem solving

With students gathered in neat rows of theater seating, and the professor facing them from atop a stage, you might mistake “Genetic Analysis” for a typical science lecture course.

But as the class gets under way, the formality of the auditorium-style classroom in William Levine Hall melts away and a buzz of activity runs through the 50 or so genetics majors.

Rather than delivering a conventional lecture, Mary Konsolaki, a genetics professor in the School of Arts and Sciences, employs a conversational approach in teaching highly complex topics like RNA and transposable elements.

Maintaining a constant dialogue with students, she probes the depth of their knowledge with multiple-choice clicker questions while lacing the academic material with intriguing references to contemporary issues—including a recent *New York Times* story about a 24,000-year-old body in Eastern Siberia whose genome was found to contain both European and Native American lineage.

“I don’t want to be up here just talking,” she says afterward. “I like interacting with students.”

The students then break into groups to answer a complex question involving a process crucial to creating vaccines. The collective problem solving creates a lively din, making the class seem like a brainstorming session at a cutting-edge start-up company.

“We all teach one another here,” says sophomore Kendall Flanagan. “And through that process, a lot of aha moments come up.”

Those moments will help when it’s time for the final exam, which in keeping with the unique approach of the course will be a take-home test—but not one that simply asks students to answer multiple-choice questions. Instead, they will have to contend with complex genetic problems requiring research, reflection, and originality of thought.

(continued inside)



In the course “Genetic Analysis,” professor Mary Konsolaki (above right) moves beyond lecturing to guide students like Pooja Patel.

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Rashmi Singh

On a Bustling and Diverse Campus, She Discovered Her Own Unique Path

A sense of wide-open possibilities defines an undergraduate journey

When Rashmi Singh arrived at Rutgers as a first-year student, she encountered a campus that was the opposite of her quiet little hometown of Flemington, New Jersey.

And as she discovered, that was just the change she wanted.

Singh plugged into the social and intellectual currents of the New Brunswick Campus. In so doing, she stepped into multiple roles: proud Indian-American, captain of the cross-country team, literature student, public policy analyst, and environmentalist.

"I consciously get involved because I strongly believe in balance," says Singh, a **School of Arts and Sciences (SAS)** senior. "I've always avoided being entrenched in one way of thinking or in one way of being."

That desire for balance fueled an eclectic undergraduate journey. As a student, for example, she explored connections between humanities and public policy, majoring in English at SAS and minoring in Environmental Policy, Institutions, and Behavior at the School of Environmental and Biological Sciences.

"I like meeting different kinds of people and getting different perspectives."

"I love literature and the way it teaches us about the human condition," she says of her major. "With my minor, the intent was to work in a very specific way, at the local and global level, for the greater good."

Singh's education at Rutgers extended beyond classrooms. She participated in five service programs, including a stint as a camp counselor for at-risk New Brunswick youth and as a conversation partner for adult immigrants learning English.

"It was important for me to get to know New Brunswick as a community, and not just be a student on campus," Singh explains.

Yet, the campus itself provided another important avenue for personal transformation. She found a welcoming community of fellow Indian-American students—a small, supportive niche in the larger university constellation.

"It feels very comfortable," she says.

As she prepares to graduate, Singh says she'll miss the sense of wide-open possibilities at Rutgers and SAS.

"I love how big Rutgers is," she concludes. "I like meeting different kinds of people all the time. And I thrive on getting different perspectives."

German Scholar's Odyssey Comes Full Circle at Rutgers

Charlotte Craig has dedicated her life to languages and literature

It was 1962 and Charlotte Marie Craig was on the verge of realizing her dream: becoming a doctoral student in Germanic studies.

But Princeton University, where she had applied, was still very much an "old boys' school" and denied her admission.

"They said they regretted it but they weren't admitting women," Craig says. "I said, 'You regret it? What about me?'"

Nevertheless, Craig received some advice from the university that would ultimately prove useful.

"They told me, 'Try next door,'" she says. "I said, 'Excuse me, I just arrived from Arizona; what is next door?'"

That would be Rutgers.

She soon arrived on College Avenue, fell in love with the campus, and was accepted into a Ph.D. program. She received her degree in 1964.

It was a pivotal moment in an epic life journey. Craig, a native of Czechoslovakia, had arrived in the United States in 1949 with a fierce commitment to Germanic studies, particularly the Enlightenment and Romantic periods. "I'm an 18th-century person," she declares.

She worked her way up as she followed her husband, Robert Craig, a U.S. Army officer, to military assignments in Washington, Alaska,

Arizona, and Germany. At each stop she advanced in her scholarship and bolstered her résumé. In Alaska she taught at Anchorage High School. "And at night, I taught the troops Russian," she said.

After Rutgers, Craig went on to enjoy a successful career at several universities, including Kutztown University of Pennsylvania, where she served as professor of German and chair of the Department of Foreign Languages and Literatures. She retired in 1999.

But her connection to Rutgers has only grown stronger.

As a donor to the Rutgers University Foundation she has supported initiatives in the Department of Germanic, Russian and East European Languages and Literatures in the **School of Arts and Sciences**. Those include visiting professorships, graduate fellowships, and scholars-in-residence.

"Rutgers deserves it," she says. "The university made it possible for me to do the work that I love."

In 2001, Craig came full circle, returning to Rutgers as a lecturer.

In an increasingly technological society, she sees her role as a teacher of languages and literature as providing an essential public service. "Our job is to get students to think deeply, to analyze, and to understand," she says. "That is why I am here."

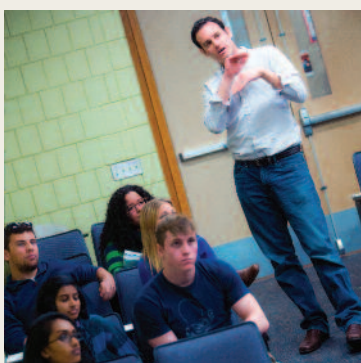
"Rutgers made it possible for me to do the work that I love."



Charlotte Marie Craig

(continued from front)

New Approach to Undergraduate Science Takes Hold in Genetics



Professor Michael Verzi works his way around the class to assist genetics majors. Later, he and professor Mary Konsolaki work directly with students as they tackle new material.

"That's because life is an open-book test," declares Terry R. McGuire, the professor who designed the course. "You need to be able to deal with open access information, to use the information that's out there to develop something new."

A professor at Rutgers since 1979, McGuire has long advocated for a bold reinvention of undergraduate science education with an emphasis on developing more flexible

and adaptive learners.

"With the flood of information available to us, it's absurd to require students to master the contents of only a single textbook in order to pass a course," he says.

McGuire developed "Genetic Analysis" as a feeder course to advanced-level classes, but one that would push younger students into a deeper understanding of genetics by drawing connections between the course material and its relevance to laboratory research and contemporary social issues.

McGuire retires at the end of the spring 2014 semester, but a new generation of faculty is incorporating the type of teaching techniques he values.

Last year the genetics department, chaired by Linda Brzustowicz, sent Konsolaki and new faculty members Michael Verzi and Karen Schindler to a special training at Harvard University for professors wanting to employ active learning strategies in their classrooms. The training was provided by the National Academy of Science and the Howard Hughes Medical Institute.

Over the last year, the three Rutgers professors taught some of McGuire's courses, including "Genetic Analysis," incorporating techniques such as "flipping the classroom," in which the traditional roles of homework and classwork are reversed. Students read the material as homework and then tackle problems that resemble real-life situations in class, such as a genetic counselor needing to give advice to clients, or a lab researcher interpreting data.

The result is a course that both students and professors say spurs engagement more than any they've experienced.

"You don't see students getting distracted and sending texts on their cell phones," Verzi says. "When we're engaging in discussion, they're all interacting with each other. It's very lively."

Sophomore Carol Nowlen puts it another way: "In other science classes, we do problems. In this class, we solve problems."

RELIGION EMERGES AS VITAL FIELD FOR GLOBALLY CONSCIOUS STUDENTS

New graduate program launched at Rutgers

Ashmi Patel arrived from Texas seeking to study Hinduism.

Gabriella Percario is a yoga instructor in New Jersey looking to strengthen her practice.

Helen Castro, a single mom and Rutgers employee, simply saw an opportunity to learn about a topic that has always fascinated her.

The three women are among the first students entering Rutgers' new graduate program in religious studies. Launched last fall by the Department of Religion in the **School of Arts and Sciences**, the M.A. program puts the university at the forefront of an increasingly hot field in the humanities.

"Religion pervades so many aspects of modern life," says Patel. "If you can understand religion, you can understand many things in this world."

Generations ago, students pursuing master's level religion studies were more likely to check out seminaries and divinity schools than public

in everything that we are working on and deciding and thinking about in life today," he said in a speech last year.

At Rutgers, where there has been an undergraduate religion program since the 1950s, faculty members say the M.A. program is the only one of its kind in New Jersey.

"The department has been dreaming about a graduate program for years," says religion department chair Tao Jiang.

Professor James T. Johnson says it's well-timed for the post-9/11 world. "The public is increasingly aware of the importance of religious differences," he explains. "This program responds to that awareness and places Rutgers in the running among public universities exploring these issues."

Students can study the major traditions and take thought-provoking courses like "Just War and Jihad" and "Apocalypse Now: Religious Movements



Religion professor Edwin F. Bryant (center) meeting outdoors with graduate students in his "Theory and Methods in the Study of Religion" course last fall.

Percario, who earned her bachelor's in psychology at Rutgers in 2013, saw the M.A. program as benefitting her as a yoga instructor and as a person interested in spirituality.

"Once you start digging into this well of information, it becomes a completely compelling experience," she says. "To understand, for example, how yoga developed and the way it was transplanted to the West is not only fascinating to learn about, but also makes me a more serious student and practitioner."

For Castro, who earned her bachelor's in English and works in the university's Center of Alcohol Studies, the program adds a new dimension to her life.

"I was looking for something that would stretch my mind, challenge my assumptions, and spur my creativity," she says. "And that is exactly what this program does."

The religion department received support from the SAS Office of New Program Initiatives and Digital Learning to develop its M.A. program. Visit sas.rutgers.edu/initiatives.

“If you can understand religion, you can understand many things in this world.”

universities. But that is changing. Religious studies programs are on the rise at colleges and universities nationwide, drawing students with diverse goals—anyone from budding scripture scholars to future teachers, diplomats, public policy experts, and human rights activists.

Secretary of State John Kerry said recently that if he went back to college he would study comparative religion. "That's how integrated it is

and the End of Time." Another course pulls science into the mix, examining research into religious contemplative practices.

Students say the program is rigorous yet flexible enough to fit their plans.

Patel, who majored in religion at Southern Methodist University, is laying the groundwork for a doctoral program. "I saw Rutgers as a place where I could grow," she says.



From left, computer science students Brian Poppy, Jenny Shi, Jingyan Zhu, and Bill Lynch enjoy the collegial environment of the CAVE, or Collaborative Academic Versatile Environment.

Researcher Follows Smokers to Get at the Root of Addiction

Psychology professor Danielle McCarthy says emotional triggers help keep people hooked >>>

Why is it so hard to quit smoking? Danielle E. McCarthy, a psychology professor in the **School of Arts and Sciences**, looks for answers in places other researchers overlook: the day-to-day stresses and struggles of smokers trying to kick the habit.

McCarthy has electronically followed hundreds of smokers during their attempts to quit, developing real-time information on the psychological and emotional triggers that weaken their resolve and push them into lighting up.

"We're interested in the specific factors that keep people smoking—not what made them start as teenagers. What happens when people quit that leads them back to smoking?" asks McCarthy, who runs a smoking cessation laboratory at the Rutgers Institute for Health, Health Care Policy and Aging Research in downtown New Brunswick.

By asking such questions, McCarthy and her research team may help spur the development of innovative psychological interventions in a field increasingly dominated by medication, from over-the-counter nicotine patches and gum to prescription drugs such as bupropion.

“We’re interested in the specific factors that keep people smoking. What happens when people quit that leads them back to smoking?”

Cigarette smoking remains the leading cause of preventable death in the United States, accounting for more than 440,000 deaths, or one of every five deaths, according to the Centers for Disease Control and Prevention.

And the relapse rates are daunting: some 95 percent who can quit for a day go back to smoking within three months.

In McCarthy's studies, participants use hand-held devices or cell phones to communicate with McCarthy and her team several times a day during the time leading up to quitting and for up to a month afterward. Those transmissions open a window to some of the struggles smokers face as they move through their day without nicotine—everything from the frequency and potency of cravings to the specific times and places lapses occur.

"The risk of having that first lapse changes across contexts that include who you are with, where you are spending your time, and what your stress level is," McCarthy states. "We want to understand how all these factors come together, and we think that will help us inform better treatment."

Since joining the Department of Psychology in 2006, McCarthy and her team have studied nearly 400 smokers and are currently analyzing large data sets and preparing to publish new reports about their findings.

One of the underlying themes of her work is the role of emotions in smoking. At the University of

Wisconsin-Madison, where she earned her doctorate, McCarthy worked with an adviser on an emotion-based model to explain addiction. Simply put, she says addicts learn that quitting their drug of choice unleashes a flow of negative emotions, so over time their addictive behavior becomes second nature.

"If you are a habitual smoker, you don't think about why you need to smoke, because it is so automatically woven into your day," McCarthy says. "And that makes it really hard to change it."

But those insights, she adds, open the door for bold new approaches to treatment. "What it tells us is that maybe we ought to help people find other ways to modulate their negative and positive emotions, to make it more tolerable to quit, and to help to sustain that motivation to quit over time," she says.

McCarthy received the 2012 Emerging Researcher Award from the New Jersey Psychological Association.



COMPUTER SCIENCE MAJORS GO “BACK TO THE FUTURE”

Unique student space evokes 1980s camaraderie

When Lars Sorensen recalls his days as a computer science major in the 1980s, the details might seem unfathomable to today's students. “There were no laptops, and you didn’t necessarily have PCs at home,” says Sorensen, a staff employee in the Department of Computer Science, **School of Arts and Sciences**. “To complete your assignments, you had to spend long nights in the computer lab.”

Yet there was also a strong sense of camaraderie, which became a treasured and indispensable part of the undergraduate experience. “Back in the day, students spent so much time in the lab that they really got to know one another,” Sorensen says. “Friendships were made. Communities were built. Projects got worked on. It was a good *esprit de corps*.”

That memory is behind a unique student space that the computer science department helped create in the Hill Center on Busch Campus. Known simply as the CAVE (Collaborative Academic Versatile Environment), the space, with its scarlet walls, comfortable blue couches, and flat screen TV, is a welcoming oasis for students needing a place to decompress after class. But it’s more than just a hangout. The CAVE is stocked with Linux computers, movable whiteboards, and reconfigurable Bungee tables perfect for collaborative work. On a typical day, students drop in to do homework, get tutoring,

or simply network with fellow computer science majors. “If I’m not in class, then I’m here,” says senior Bill Lynch, who is president of the Undergraduate Student Alliance of Computer Scientists. “Most of my friends are here, too.” The mix of the studious and social fuels a give-and-take among students, and as a result, the CAVE is often the launch pad for undergraduate research projects. Lynch and fellow senior Jenny Shi, for example, worked at the CAVE this

“This is a good environment, not just for doing work, but also for getting inspiration. You meet a lot of bright, creative people who can supplement and expand on what you get from your classes.”

year on a new algorithmic approach to the way Rutgers schedules classes. “This is a good environment for getting inspiration,” Shi says. “You meet a lot of bright, creative people who can supplement and expand on what you get from your classes.” Professor Richard Martin, who helped develop the concept of the CAVE, said creating an outside-the-classroom space was vital. “When I was an undergraduate, other students showed me things that weren’t part of class assignments,” Martin says. “And that was very helpful.”

The CAVE, which is managed by Sorensen and staffed by students, opened several years ago and draws an increasing number of undergraduates who enjoy its lively mix of lab and lounge. The space has become the location for computing clubs, tutoring services, and faculty groups. Brian Poppy says the opening of the CAVE at the start of his junior year changed the dynamic in the student community almost overnight. “Before then, you might see a few people from

your classes around, every once in a while, like right after class,” says Poppy, now a graduate student. “Then suddenly, here is the place you can go and meet your colleagues, work out problems you don’t fully understand, and grow as a computer scientist.” One of the reasons for its success is that students have had a say in its setup and subsequent redesigns. They also serve as staff, providing tutoring and troubleshooting. “The students have created an environment that’s completely helpful,” says Sorensen. “I just went along for the ride.”

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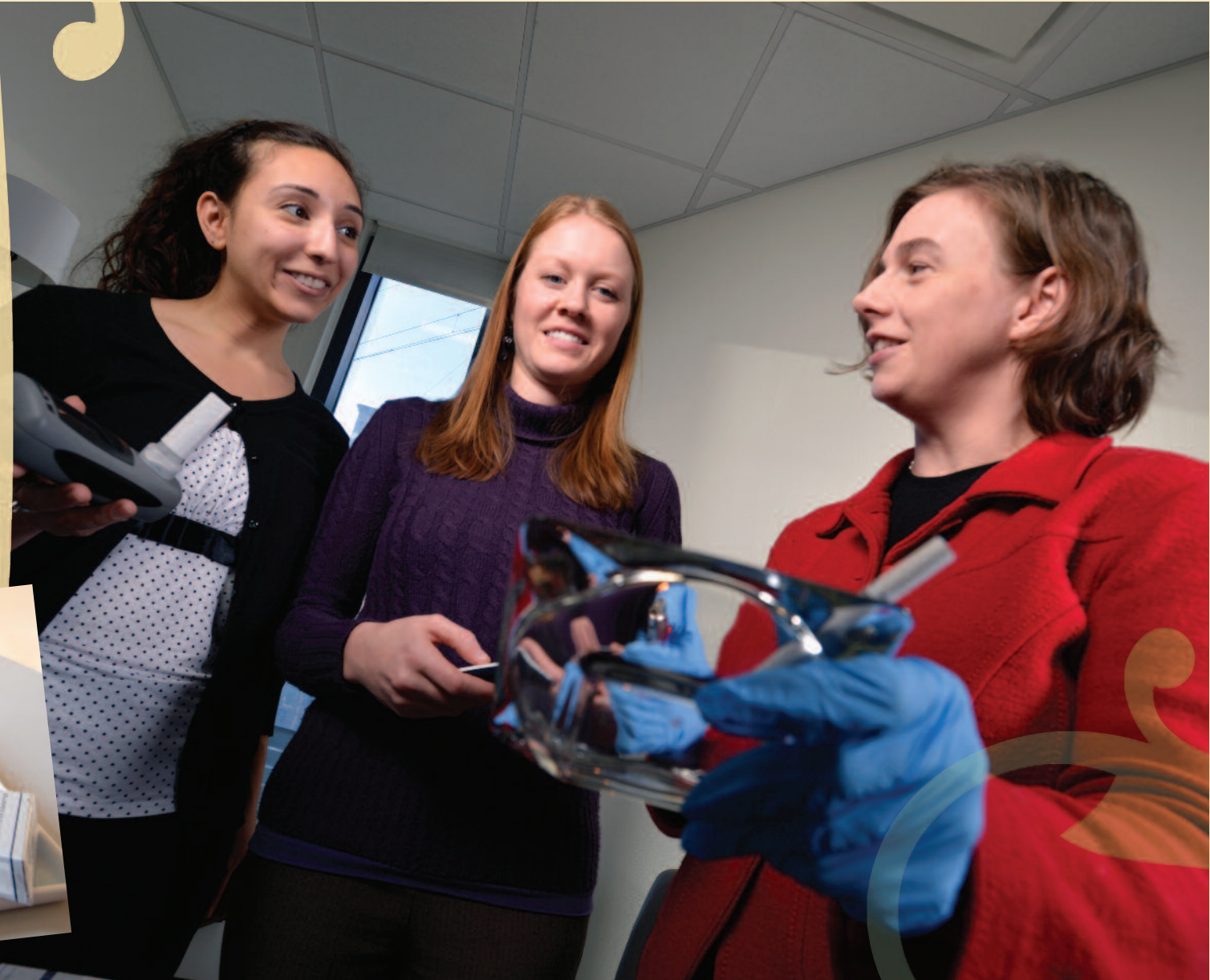
A New Era for College Avenue



On September 20, 2013, the New Brunswick Development Corporation (Devco) and Rutgers broke ground on the much-anticipated College Avenue Redevelopment Initiative. Rutgers President Robert Barchi, Governor Chris Christie, and Devco President Christopher Paladino joined hundreds for the groundbreaking ceremony. The catalyst for the project is the relocation of the New Brunswick Theological Seminary to the corner of College Avenue and Seminary Place. That makes room for state-of-the-art lecture halls and classroom space accommodating up to 20,000 undergraduates daily. The building (pictured above) will also bring together academic departments in modern languages and literatures and provide a home for the distinguished research and outreach activities of the Rutgers Center for Historical Analysis and the Center for Cultural Analysis. Also, a new Residential Honors College will house 500 honors students. Meanwhile, a student apartment building to be erected at the corner of College Avenue and Hamilton Street will include a 25,000-square-foot park with an outdoor LED video screen, pedestrian walkways, bike paths, and other infrastructure improvements. In addition, inspired by New Jersey’s famed boardwalks, a total of 13,500 square feet of open-air retail space, restaurants, and concessions will be built. All of the buildings will be designed for LEED Silver certification. Construction will be completed in 2016 to coincide with the 250th anniversary of the founding of Rutgers. For more information, visit rutgersfuturebydevco.org.

The School of Arts and Sciences is the school for liberal arts and sciences on the New Brunswick Campus of Rutgers, The State University of New Jersey. The School of Arts and Sciences carries on the tradition of excellence founded nearly 250 years ago by Rutgers College and expanded by the three other liberal arts colleges established in the 20th century: Douglass College, Livingston College, and University College. With more than 20,000 undergraduate and graduate students, 800 full-time faculty, and more than 70 majors and minors in biological and physical sciences, humanities, mathematics, and social and behavioral sciences, the School of Arts and Sciences is the largest unit at the university, combining excellence in teaching with world-class research and preparing students to meet 21st-century challenges.

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From left, graduate students Yamine Omar and Krysten Bold with professor Danielle E. McCarthy inside the Smoking Cessation Laboratory in downtown New Brunswick.

ROUNDUP

Things You May Not Know about the School of Arts and Sciences

96

● The number of majors open to SAS students includes everything from anthropology and cell biology and neuroscience to medieval studies and statistics.



Russian Scholar
Edyta Bojanowska, professor of Russian and Comparative Literature, won an American Council of Learned Societies Burkhardt Fellowship and is spending the 2013–2014 academic year in residence at the Institute for Advanced Study (School of Historical Studies) in Princeton to work on her project, titled “Empire and the Russian Classics.”



● **Rutgers Day** is a day of free events and performances, tours, exhibits, hands-on activities, Ag Field Day, and the New Jersey Folk Festival, held on the Rutgers–New Brunswick Campus. Come share in our Rutgers pride by exploring the university's research, education, and service. Meet our diverse student body and faculty, and learn more about the health sciences programs that are now a part of our university. For more information, visit rutgersday.rutgers.edu.

800

● Number of SAS faculty with expertise ranging from African languages and chemistry to molecular biology and sociology.



Reach for the Stars at the Robert A. Schommer Astronomical Observatory
You are invited to observe the wonders of the night sky on the second and fourth Thursdays of every month through the 20-inch optical telescope of the Robert A. Schommer Astronomical Observatory, located in the dome on the roof of the Serin Physics Laboratory on Busch Campus. Weather permitting, the observatory opens for two hours starting at 8:30 p.m., or one hour after sunset. For information about what you can see and how to get there, visit observatory.rutgers.edu.



Stellar Student
Senior David Kolchmeyer is one of 14 students nationwide to receive a scholarship from the Winston Churchill Foundation of the United States to study at the University of Cambridge, where he will pursue a degree in applied mathematics and theoretical physics. One of two Rutgers students awarded a Barry M. Goldwater Scholarship for excellence in mathematics, science, and engineering last year, he is a student, researcher, and teaching assistant in the Department of Physics and Astronomy.

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● Ranking of the philosophy faculty in the English-speaking world. (*Philosophical Gourmet Report*)

Bookshelf

These recently published books by Rutgers School of Arts and Sciences faculty are all award-winners.



Prophecy, Alchemy, and the End of Time
Columbia University Press
Leah DeVun (History) won the 2013 John Nicholas Brown Prize from the Medieval Academy of America for the best first book in medieval studies.

Troubling Vision: Performance, Visuality, and Blackness
University of Chicago Press



Nicole Fleetwood (American Studies) received the 2012 Lora Romero Prize for First Book Publication from the American Studies Association.



Africa after Apartheid: South Africa, Race and Nation in Tanzania
Indiana University Press
Richard Schroeder (Geography) received the 2012 Association of American Geographers Meridian Book Award.

Eurolegalism: The Transformation of Law and Regulation in the European Union
Harvard University Press



R. Daniel Kelemen (Political Science) won the European Union (EU) Studies Association's Book Award for the best book on the EU published in 2011 or 2012.

CREATING A FUN, MOVING COMMENCEMENT

When Rutgers revived the tradition of University Commencement several years ago, Christopher Retzko's mission was clear: bring the vast Rutgers community together for a single event.

As the manager of special events and programs, he did just that, creating a brisk and spirited commencement ceremony that has become the envy of other colleges and universities. “My colleagues at other schools often complain that their ceremony is dull,” Retzko says. “Then I show them videos of ours, and they ask, ‘How’d you do that?’”

This year's ceremony on May 18 will include students from Rutgers Biomedical and Health Sciences. Retzko explains how he set out to make the event fun.



On the scene: Christopher Retzko strives to make the annual commencement ceremony fun.

Q: Why did Rutgers shift in 2011 to a University Commencement?

A: It was really the final piece of the Transformation of Undergraduate Education. The School of Arts and Sciences was graduating its first class with nearly 5,000 students. It was a good time to go back to that model of inviting everyone.

Q: Students can still attend the convocations held by departments and schools. What are the benefits of also going to the larger commencement?

A: Students haven't had that visceral feeling of being part of this huge community. They've been with the same group of classmates and professors over four years. When they finally walk through the stadium, it's an amazing experience. Also, a third of our graduates are the first in their family to graduate from college, and commencement provides an

opportunity to experience that on a deep level. You'll see a graduate with his or her whole family, from a baby to a great-grandparent. They're all there to applaud this one person. It's unforgettable.

Q: What's the right mood?

A: We really want this to be fun. We want to be known as the fun commencement.

Q: What creative touches make it fun?

A: First, we have a stadium announcer, Chris O'Connor, who brings people up to the microphone and keeps the pace moving. Also, where a lot of schools have gone to canned music, we have the wind ensemble and members of the various university choirs. And of

course, we do a lot with video and graphics. We have the names of every graduate scrolled on the video boards. We have our student shout-out videos.

Q: What would you say to students who are on the fence about participating?

A: Every year I am contacted by graduates who never went to commencement, and it's bothered them their whole lives. Students should know commencement is the day when they are the stars. It's all for them, and we don't want them to miss out.

Learn more about Rutgers Commencement at commencement.rutgers.edu.

Rutgers, The State University of New Jersey, does not discriminate on the basis of race, color, national origin, sex, sexual orientation, gender identity or expression, disability, age, or any other category covered by law in its programs, activities, or employment matters. The following people have been designated to handle inquiries regarding the nondiscrimination policies: Jackie Moran, Title IX Coordinator for Students and ADA/Section 504 Compliance Officer, Office of Student Affairs (848-932-8576, jackie.moran@rutgers.edu); Lisa Grosskreutz, Associate Director, Office of Employment Equity, University Human Resources (848-932-3980, lisa.grosskreutz@rutgers.edu). For further information on the notice of nondiscrimination, visit wdcrocolp01.ed.gov/CFAPPS/OCR/contactus.cfm for the address and phone number of the Office for Civil Rights that serves your area, or call 1-800-421-3481.

Photo credits: Nick Romanenko, Kara Donaldson, Roy Groething