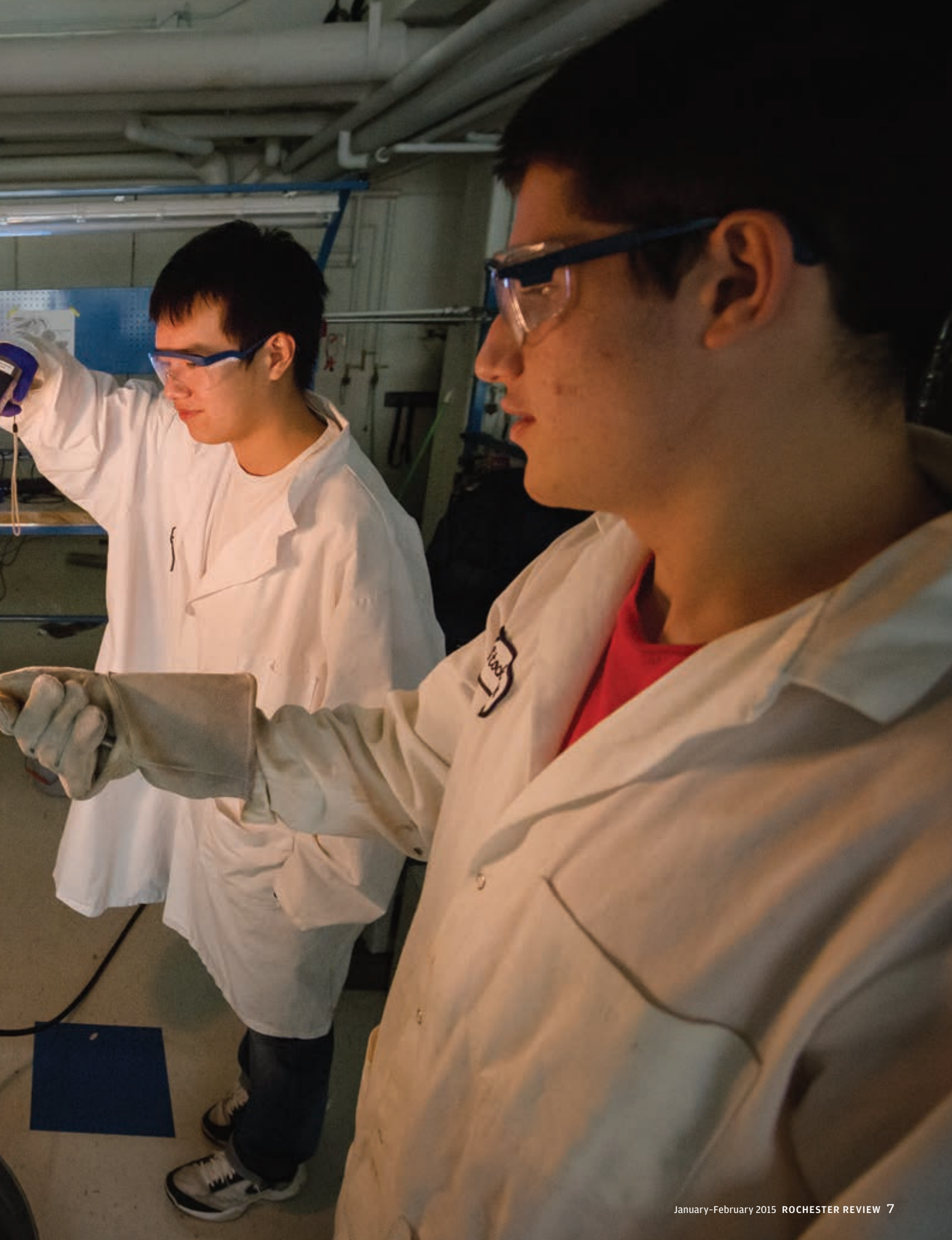
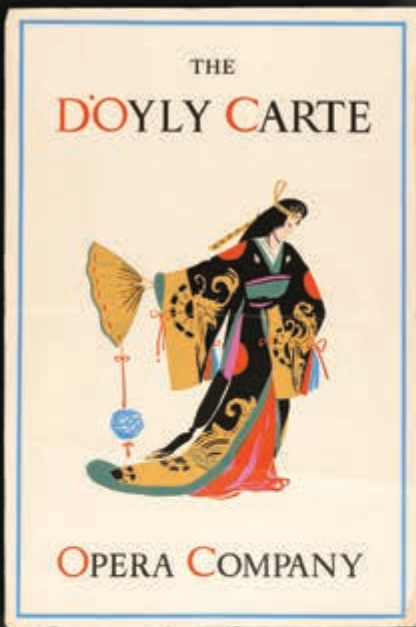


CHEMICAL ENGINEERING Chemical Bonding

BIOMASS MOMENT: Chemical engineering students Daniel Napolitano '15, Yuqi Guo '15, Jisu Jiang '15, and Andrew Stark '15 (left to right) work on their senior design project this fall in Gavett Hall. The group is studying environmentally friendly and economically efficient alternatives for converting cow manure into a carbon-based fertilizing compound known as "biochar." The Department of Chemical Engineering is celebrating its 100th anniversary this year. PHOTOGRAPH BY ADAM FENSTER







The Light Opera Group of the Negev תחזו לאופרה קלה בנגב

Princess Ida

by Gilbert and Sullivan

הנסיכה אידה

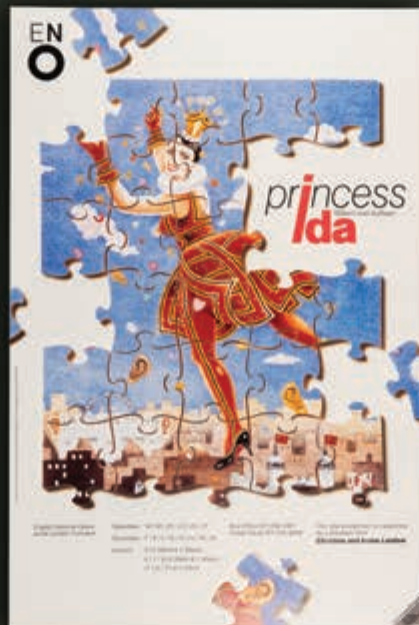
מאת גילברט וסוליון

Conductor: H. Dizon
Stage Director: Edward Sells, M.D.
Production: Shalom Yonit, Edward Sells, M.D.

חופה באודיטריום חיפה
שדרות הנשיא 138
תאריך: יום חמישי 2 אפריל 1987

Haifa: Haifa Auditorium
Apr. 2, 1987,
Tickets: AAI Haifa, 04-387140

מכירת כרטיסים: התאחדות עולי אמריקה וקנדה סול. 04-387140
בשעה 20:30
129 על הניג'א-ג'וב הכיכר, 384777



THE AUSTRALIAN OPERA

The Mikado

Gilbert and Sullivan
Adapted from 'The Mikado'

June 3 early evening, 6, 11, 13 matinee, 11, 26, 29, July 2, 6 matinee, 10, 12, 16, 21

SYDNEY OPERA HOUSE

TIM CURRY PAMELA STEPHENSON GEORGE COLE ANNIE ROSS

The Pirates of Penzance

BONNIE LANGFORD
CHARLENGER MICHAEL PRATT
STEPHENS PACE

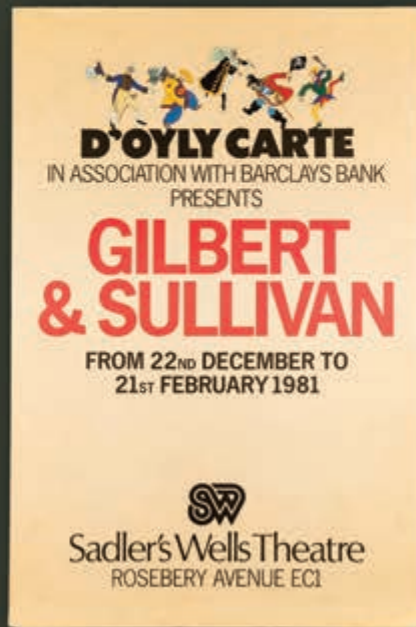
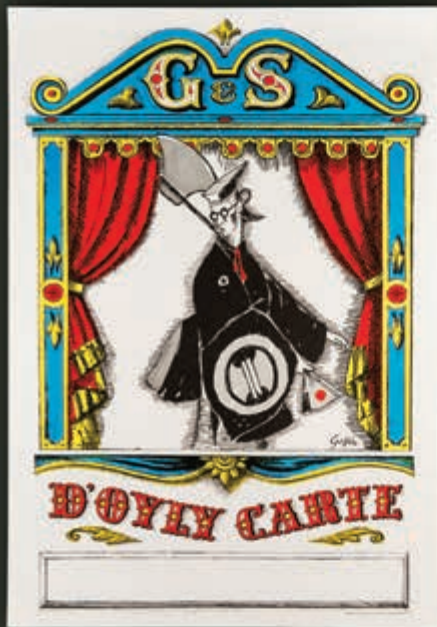
Directed by WILFORD LEACH
Music adapted by WILLIAM ELLIOTT Choreography by GRACIELA DANIEL

Theatre Royal Drury Lane
BOX OFFICE 01-2510

LIBRARIES

The Very Model of a Major Collection

MATTERS VEGETABLE AND MINERAL: A selection of posters featuring the Victorian-era comic operas of W. S. Gilbert and Arthur Sullivan took center stage this fall at Rush Rhees Library. Drawn from a collection of 150 posters from the 20th century donated by Hal Kanthor '66M (MD), a Rochester-area pediatrician, the exhibition also featured programs, souvenirs, and photographs representing the work of the British team that produced some of the English-speaking world's most memorable stage productions. More about the collection: <http://www.lib.rochester.edu/gilbert-sullivan>. PHOTOGRAPHY BY ADAM FENSTER





CROSS COUNTRY
Go, Yellowjackets, Go!

HOST FIELD: Yellowjackets Eric Franklin '17 (232), Jeremy Hassett '16 (235), Dan Nolte '17 (237), Mark Rollfs '15 (237), Joseph DiFabio '16 (behind Rollfs), Austin Davis '15 (230), and Andrew Zeccola '15 (238) set off at the start of the NCAA Division III regional cross country meet, hosted by Rochester this fall in Genesee Valley Park. Rollfs and Franklin earned All-Region honors. In the women's race, Catherine Knox '16 placed 10th, qualifying for the national championship race, where she finished 56th in a field of 275 runners. PHOTOGRAPH BY ATHLETICS AND RECREATION



ROCHESTER

230

ROCHESTER

238

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309

306



ADMINISTRATION

Setting the Course for Eastman's Future

New dean Jamal Rossi discusses his plans for the school, and a changing musical world.

Interview by Kathleen McGarvey

In October, the University hosted a formal investiture of Jamal Rossi '87E (DMA) as the Joan and Martin Messinger Dean of the Eastman School of Music. Rossi is the school's seventh dean and came to Eastman in 2005 as senior associate dean. Two years later, he was promoted to executive associate dean—a position in which he oversaw the project to renovate Eastman Theatre and construct the Eastman East Wing, among other responsibilities. Rossi is a saxophonist and chamber musician featured on many recordings. Prior to coming

LOOKING AHEAD: Rossi says the musical world has changed dramatically in the past 25 years, due largely to technology, and that the Eastman curriculum should prepare students for careers and opportunities that no one can yet foresee.

to Eastman, he was assistant and then associate dean of the School of Music at Ithaca College from 1989 to 2000, and was also dean of the School of Music at the University of South Carolina from 2000 to 2005. A graduate of Ithaca College in music education and performance, Rossi earned a master of music degree from the University of Michigan before receiving his doctor of musical arts degree at Eastman.

What is your vision for the Eastman School?

We are committed to educating musical leaders who will have the curiosity and ambition to continually learn, adapt, and contribute to the world around them. We have an exceptional curriculum, one that has prepared generations of outstanding musicians. But as the music world continues to change, Eastman must prepare our students to be ready for careers and

opportunities that we do not yet anticipate. That means continuing to develop a curriculum that is progressive, integrative, and forward thinking.

How is the music world changing?

It has changed dramatically in the last quarter century, largely due to technology. The recording industry has been transformed to something very few people ever anticipated. Symphony orchestras, opera companies, and other organizations face unprecedented financial challenges. Music and musical styles continue to evolve, and the lines between genres continue to merge and dissolve—so what was once very clearly labeled “classical music” today can combine elements of improvisation, jazz, and other styles of music. We need to make certain that Eastman students have the preparation and versatility to engage with many styles of music and opportunities.

What's the best way to do that?

It's impossible to teach everything that a musician will ever need to know in an undergraduate or graduate degree. It's important to focus on the essentials—and to me these are an emphasis on musical artistry and comprehensive musicianship. Beyond that, though, we need to make certain that our students have opportunities to explore many facets of music, perform in multiple genres, and develop skills relevant in the 21st century. And our goal is to elicit curiosity in our students, and an awareness that a life in music is a lifelong career in learning. It is through their own curiosity and ambition that they will constantly learn and adapt to a changing music world.

How do you adapt the curriculum?

All stakeholders in Eastman's future are currently engaged in a conversation about the remarkable school we plan to be in the future. We are currently examining what we do, why we do it, and how we can do it better. Last year, we laid the groundwork for new degree programs in contemporary media composition, convergent artistry, and music leadership. While many of our students currently pursue an arts leadership certificate, we are exploring the possibility of a discrete degree in executive music leadership. We are also in the early stages of considering programs in creativity and improvisation, and in contemporary music. Eastman has a responsibility to educate students who will develop the next era of music so that they can be strong advocates and lead music organizations.

What are some of the challenges you're facing?

One of our challenges is providing enough scholarship support to make an Eastman education attainable for the highly talented students who typically have very strong scholarship offers from other top-tier music programs. Enrolling the very best students has become increasingly competitive, and my top priority is increasing our scholarship support.

Second, we're at a point in the next several years where there will likely be a significant turnover of faculty. I want to make certain we have the financial resources to recruit, hire, and retain the very best faculty in the world. Therefore, a second priority is increasing the number of endowed professorships at Eastman.

A third challenge is related to facilities. We have some spectacular facilities at Eastman—but they are approaching 100 years old and in need of infrastructure

Listening to Eastman

While it's hard to limit the choices to just five—"there are so many more titles worthy of inclusion in this list," says Jamal Rossi—the following small selection of recent recordings are his picks for representing the Eastman School sound.

■ Jazz at Eastman 2014

Eastman School of Music

"A great collaborative and learning experience," says Rossi of the recording, which features student jazz combos. A donor funded the project, and the compositions were chosen in a competition.

■ Stravinsky Octet/L'Histoire du Soldat

Avie

The recording is by the Eastman Wind Ensemble and the Eastman Virtuosi, a joint faculty-student ensemble.

■ Thomas Gaynor Plays the Organ of Wellington Cathedral Saint Paul

Organism

Gaynor earned his master's degree from Eastman last spring and is now a doctor of musical arts candidate. He is the winner of many international organ competitions.

■ Stars, Stories, and Song

Ravello Records

The recording of sonic narratives is by two composition faculty members, David Liptak and Ricardo Zohn-Muldoon.

■ Diaries: Works for Large Ensemble

Urtext

Performed by the Eastman Broadband Ensemble, the recording features compositions of faculty member Carlos Sánchez-Gutiérrez. He founded Eastman Broadband with Zohn-Muldoon several years ago, and the ensemble is made up of current students and recent alumni.

and cosmetic improvements. Two priority projects are developing the parking lot located across from the Eastman Theatre into a new cultural gateway to the city, and completing the renovations to Messinger Hall—the home of the Eastman Community Music School.

You've been involved in improving facilities before, and in community outreach through founding RocMusic. Can you talk about that?

Being involved in the Eastman Theatre renovation and addition was a real privilege.

We had a tremendous team of individuals who were committed to bringing to reality a decades-long dream for new performance and rehearsal facilities. I believe the outcome of that project reflects the excellence that really is the hallmark of Eastman.

RocMusic is a project I care very deeply about. I believe every child deserves the opportunity to experience the joy of making music. Simultaneously, I fear that one of the most serious challenges facing music in the future is the marginalization of music education in the public schools. I am committed to working with leaders in music and education to stem this trend and to advocate for the importance of music in the lives of children.

RocMusic is an initiative we started nearly three years ago when I approached the leaders of the Eastman Community Music School, the Hochstein School of Music and Dance, the Rochester Philharmonic Orchestra, and the Rochester City School District to ask if we were satisfied with the impact our organizations were having on students in the heart of inner-city Rochester. We agreed that while we were all engaged in good efforts, none of us was reaching students as effectively as we desired. So we teamed together, along with the City of Rochester, to form the *RocMusic* collaborative. Today, 70 students, ages 8 to 18, come to the David F. Gantt Community Center three days a week for intensive music instruction in general music and string instruments. Besides the fact that these students are developing a love of music, we know that students who are involved in music stay in school.

It is our hope that these students will experience opportunities they never before imagined. We also hope to expand the *RocMusic* program in the years ahead to two or three additional community centers, so that hundreds of students might experience the same opportunities.

What has best prepared you for your role as dean?

I have been in music leadership positions at three different institutions since 1989, so I have a broad understanding of the challenges and opportunities facing musicians, the music industry, and schools of music in higher education. I am passionate about music, teaching music to future generations of students, and the Eastman School of Music. Serving Eastman as the Joan and Martin Messinger Dean is a tremendous honor, and I look forward to working with my faculty and staff colleagues as together we advance the mission of our school. **R**

Ask the Archivist: Can We Have a Snow Day?

A question for Melissa Mead, the John M. and Barbara Keil University Archivist and Rochester Collections Librarian.



“When was the last time the school officially closed for [a] snow day?”—@curdriceaurora [Rahul Srinivasan ’11 (MS)], via Twitter

During a blizzard that left at least 18 inches on the River Campus during spring break in 2014, the @UofR Twitter feed posted cancellations of classes at the Simon Business School and the Warner School of Education as well as other closures and changes to campus services. The weather also prompted questions from several alumni.

Prior to the Second World War, University records do not easily disclose occasions when undergraduate classes have been cancelled due to weather-related events: most major storms of the 20th and 21st centuries seem to have occurred on weekends



WINTER WONDERLAND: While the idea of celebrating all four seasons is part of the fabric of Rochester life, there are times when too much winter has forced the cancellation of classes.

Need History?

Do you have a question about University history? Email it to rochrev@rochester.edu. Please put “Ask the Archivist” in the subject line.

or during breaks, and the schedules of student and University publications seem to have determined which events were recorded.

A December 11, 1944, storm brought 22 inches. With the headline, “UR Chow Halls Defy Snowstorm,” an article in the *Campus* applauded those who “wad(ed) through the drifts” to provide meals, while admitting to being “happy to know that our profs were snowbound during the recent snow siege.”

Twenty years later, the *University Record* (the precursor to the faculty-staff newspaper *Currents*) reported that a January 1966 blizzard began after exams finished and before the new term began. The grounds crew cleared snow for three days, while Food Service administrator Donald Scott and store-room clerk Julius Reicis managed to provide food for some 550 students, noting, “Neither (of us) have any

cooking talents . . . we were just lucky we didn’t have the usual 2,000 students here. . . .”

A 1977 blizzard caused the University to shut down on Friday, January 28. The *Campus-Times* reported that 75 mile-per-hour wind gusts and extreme cold were the main threats. A widespread natural gas shortage did not affect the University, which was still using coal at the time. Smitty’s Birdland reportedly delivered 50 chickens, and the weekend Winter Carnival proceeded after a few schedule adjustments.

Two blizzards occurred in 1978. The University shut down on the morning of January 26 in advance of dire predictions. The storm bypassed the area, and some professors held classes despite the closure. A week later, on February 5, the University closed again, as 25 inches of snow and high winds “brought the UR to a standstill.”

And, as if to confirm Bishop McQuaid’s observation that the climate in Rochester was generally good except for March, a 1999 blizzard suspended classes just before students left for spring break.

Other kinds of storms have caused severe damage as well as cancellations: an ice storm in December 1929 glazed trees on the Prince Street Campus and destroyed newly planted elms on the River Campus, still under construction. The historic March 3–4, 1991, ice storm closed the University for two days, and was estimated at the time to have caused \$1 million of damage on campus.

It should also be noted that after the opening of Strong Memorial Hospital in 1926, the University as a whole has rarely, if ever, closed because of weather. As a major health care provider, the Medical Center provides essential services to the area and can’t suspend operations completely. That’s not the case for classes and other academic programs.

From 1888 to 1920, geology professor Herman LeRoy Fairchild served on the faculty and published landmark studies of the glacial history of western New York. During his tenure, Fairchild experienced a great deal of Rochester “weather,” including a March 1900 snowstorm that dropped a three-day total of 43.5 inches. A contemporary report in the *Campus* included an admiring (and teasing) portrait of Jane Rich, an assistant librarian who staffed the Sibley Hall library:

“Although the wind blew and the snow fell deep, Miss Rich was there. We are proud of our persevering Librarian who will get that book you have out, in spite of any assistance the Fates may give you.”

STUDENT LIFE

Getting to the Root of STEM Education

Undergraduates reach out to young students to boost science learning.

Interview by Kathleen McGarvey

George Iwaoka '16, a biology and economics major, and Jenny Yoon '16, a microbiology major, established the student organization STEM Initiative—STEM is an acronym for science, technology, engineering, and math—to connect young students with undergraduates who are passionate about math and science. Now in its second year, the group has started an after-school science program at Adlai E. Stevenson School No. 29, a Rochester city school, and a Family Science Day.

How did you develop the idea for the STEM Initiative?

We both went to the same vocational magnet high school in Hackensack, New Jersey, attending its Academy of Medical Science and Technology. We were encouraged to seek STEM education through coursework and research from a very early age, and we were fortunate enough to freely pursue higher-level education in the sciences. After coming to Rochester, we immediately realized that STEM education was lacking just a few steps away from campus. We wanted to create opportunities for undergraduates to volunteer for science tutoring and workshops. So we decided to act on that.

How does it work?

We have more than 300 members on our mailing list, and as of November, 68 students had attended at least one volunteer session at School 29. At Family Science Day last April, we had 21 on- and off-campus organizations host STEM activities at booths, while more than 300 family members from the Rochester community attended to enjoy fun and educational hands-on science.

STEM Initiative doesn't offer incentives for people to volunteer. We want volunteers to be passion-driven. As corny as it may sound, we think many of our volunteers keep volunteering with us because they see how the kids react when they see cool chemical reactions or build exciting

things. You can see them become more and more interested as we have more workshops with them.

What made science exciting and accessible for you, and how are you trying to duplicate that for students at School 29?

Our high school put a lot of money into funding a research program—we housed

local community asking us to collaborate with them or volunteer at their events.

Finding a good balance between the quality of the lessons and the resources we provide has been a challenge. We need to provide supplies, and we've been running on a minimum amount of money. We hope in the future to have a constant budget to create more complex lessons that will leave



HANDS ON: Students explore density and liquids as STEM Initiative volunteers Matthew Mullen '15 and Vivy Ngo '18 look on.

two biosafety-level labs, two electron microscopes, and a lot of other instruments that you wouldn't normally find in a public high school. In an environment where we were supported in researching any topic, science became something more enjoyable than memorizing facts in a textbook. When you're the one controlling test reactions and building things, you start to understand why things might work. We want the kids at School 29 to feel the same, so we strive to include a hands-on component for every lesson we do with them.


What has been the biggest challenge, and the biggest surprise?

The biggest surprise by far has been the support and interest we've been getting. We're a very new organization, but we have people from both the University and the

a lasting impression on our students.

We've realized how receptive and attentive young students can be if encouraged with a supportive attitude. In the beginning, students had a difficult time participating or asking questions—but by the end of the semester, they'd interrupt lessons with questions so they could engage and learn, volunteer for demonstrations, and even request specific lessons.

What are your future plans?

Within the next year, we're hoping to expand to other campuses, starting with local universities. We're also thinking about registering as a not-for-profit organization, which would open the doors to collaborations, grants, and so on. But we want to establish some traction before we take this big step. 

New Tool Targets Rare Brain Disease

Researchers have developed new insight into a rare but deadly brain infection. Most frequently found in people with suppressed immune systems, the disease, called progressive multifocal leukoencephalopathy (PML) disease, had long evaded study as well as tests for new treatments.

In the *Journal of Clinical Investigation*, Steve Goldman, the Dean Zutes Chair in Biology of the Aging Brain and Distinguished Professor in Neurosciences, and Maiken Nedergaard, the Frank P.

Smith Professor of Neurosurgery, reported that a tool they developed provided a new platform for studying the elusive disease and the virus that causes it.

The two, who are the codirectors of the Center for Translational Neuromedicine, say that the new model revealed that the virus attacks cells known as astrocytes rather than oligodendrocytes, as previously believed.

Researchers estimate that the virus behind the disease is so common that 70 to 90 percent of

Americans have been exposed to it and may carry it in a dormant form. For the vast majority, the virus will never become infective or trigger disease.

But in some people with compromised immune systems, the virus can eventually make its way to the brain. Once there, it can trigger PML, an almost uniformly fatal infection of the brain's white matter.

First seen in leukemia and lymphoma patients in the 1950s and '60s, PML became more

common during the AIDS epidemic in the 1980s, prior to the widespread use of antiretroviral treatments. More recently, it has been increasingly observed in people undergoing long-term immunosuppressive treatments for autoimmune diseases like multiple sclerosis.

The findings may enable researchers to focus on potential ways to identify the early symptoms of the disease, as well as to develop new therapies.

—Mark Michaud

Playing Action Video Games Can Boost Learning

A new study shows for the first time that playing action video games improves not just the skills taught in the game, but learning capabilities more generally.

Published in the *Proceedings of the National Academy of Sciences* and led by Daphne Bavelier, a research professor in brain and cognitive sciences, the study first used a pattern discrimination task to compare action video game players' visual performance with that of people who don't play action video games. Then the team conducted another experiment to see if habitual players of the games may be endowed with better templates independent of their game play, or if the action game play led them to have better templates.

Prior research by the group and by other scientists "has shown that action gamers excel at many tasks. In this new study, we show they excel because they are better learners. And they become better learners by playing the fast-paced action games," says Bavelier.

Being a better learner means developing the right templates faster and thus achieving better



performance—and playing action video games, the research team found, boosts that process. The researchers also found that the action gamers' improved performance is a lasting effect. When tested several months to a year later, the action-trained

participants still outperformed the other participants, suggesting that they retained their ability to build better templates.

Bavelier's team is now investigating which characteristics in the games are key to boosting players' learning.

"Games other than action video games may be able to have the same effect," she says. "They may need to be fast-paced, and require the player to divide his or her attention, and make predictions at different time scales."

—Monique Patenaude

Damaging Brain's 'Garbage Truck' May Accelerate Dementia

A new study in the *Journal of Neuroscience* shows that traumatic brain injury can disrupt the brain's waste removal system, allowing toxic proteins to accumulate in the brain and setting the stage for neurodegenerative diseases such as Alzheimer's and chronic traumatic encephalopathy.

"We know that traumatic brain injury early in life is a risk factor for the early development of dementia in the decades that follow," says Maiken Nedergaard,

the Frank P. Smith Professor of Neurosurgery and senior author of the research. "This study shows that these injuries set into motion a cascading series of events that impair the brain's ability to clear waste, allowing proteins like tau to spread throughout the brain and eventually reach toxic levels."

The findings are the latest in a series of insights that are changing how scientists understand neurological disorders. In a 2012 study, Nedergaard and colleagues

described a previously unknown system of waste removal that's unique to the brain and which researchers dubbed the "glymphatic system." The body's normal waste removal system doesn't extend to the brain, but waste removal is essential to prevent the accumulation of toxic proteins and other debris. The team showed that mice, whose brains are similar to those of humans, pump cerebral spinal fluid—the fluid that surrounds the brain—through brain tissue,

flushing waste from the spaces between the brain's cells.

The protein tau helps stabilize the fibers, or axons, that nerve cells use to communicate with their neighbors. But during trauma, large numbers of these proteins are shaken free from the axons and drift into the space between the brain's cells. Once unmoored, the sticky proteins are attracted to each other and, over time, form "tangles" that can become toxic to brain function.

—Mark Michaud

Concussions Derail Batting Performance for MLB Players

The message "When in doubt, sit it out" flashed on video boards throughout the 2014 World Series, and with good timing: a new analysis of Major League Baseball statistics shows that concussed players may not be fully recovered when they're cleared to return to the batting lineup.

In a study that looked at MLB players who suffered a concussion between 2007 and 2013, Rochester researchers found that during the first two weeks back, the concussed players' batting performances were significantly worse than another group of players who were rusty because of being away on leave during the same period.

Lead author Erin Wasserman, an epidemiology doctoral student, presented the data at the 142nd annual meeting of the American Public Health Association last fall.

Brain injuries are most often associated with contact sports, but they're prevalent in baseball, too. At the high school and college levels, baseball concussions are rising at a rate of about 14 percent a year, researchers say.

In the MLB study, players returning after a concussion had lower batting averages (.234 versus .264), lower slugging percentages (.359 versus .420), and lower on-base plus slugging percentages (.654 versus .747) compared to players returning



from bereavement or paternity leave.

"Although players who sustain a concussion may be symptom-free and cleared by MLB protocol to return to play, the residual effects of concussion on the complex motor skills required for batting may still be a problem," says principal investigator Jeffrey Bazarian, associate professor of emergency medicine and a national expert in sports head injuries.

When a batter's at the plate, the brain and its neural networks must be in top form to master hand-eye coordination, intense

visual acuity, fast reaction time, postural stability and balance, and swing control in just 400 milliseconds—the estimated time it takes most balls to pass from pitcher to batter, Bazarian says.

After a concussion, brain function can be impaired for weeks or months, resulting in such symptoms as slowed thinking or response speed, and poor concentration.

Understanding the impact of concussions on batting performance can help to inform decisions about when to return to the lineup, the study says.

—Leslie Orr

Infants' Scores Linked to Congenital Herpes

Babies with congenital infection of a herpes virus known as human herpesvirus-6 (HHV-6) are more likely to score lower on a 12-month mental development test, according to a new study published in the journal *Pediatrics*.

The study, led by Mary Caserta, professor of pediatrics and infectious disease, assessed 299 newborns over their first year of life. Scores on the test were similar for the infected babies to those of infants exposed to lead or cocaine in the womb. The differences were not large—all results fell within the normal range.

One of eight herpes viruses that infect humans, HHV-6 infects every human, usually in the first two years of life. But for a small portion of the population, the virus is integrated into the chromosomes, which causes a parent to transmit the virus to offspring still in the womb. About 1 percent of newborns have been infected with the virus congenitally.

Caserta developed the study with the late Caroline Hall, a longtime professor of pediatrics who spent her career studying HHV-6 and other viruses. Next, Caserta plans to study older children with learning or cognitive disabilities to check their infection rate.

—Sean Dobbin

Family Ties

How did music, politics, and worship intersect in early modern Europe?

Musicologist Michael Alan Anderson examines music dedicated to Saint Anne to shed light on Renaissance culture.

Why Saint Anne?

Saint Anne gets way more than her due in history because of her relationship to the Virgin Mary, who is a central figure in Christianity. As a historical figure, Mary had to have a mother, and the legend has given the name Saint Anne to her mother. And so she's important because of her connection to the most powerful woman in Christian theology.

Her story is known to us from an apocryphal source in the second century. It's not accepted as part of the official canon of the church, but it was widely circulated. And her legend picks up later in the Middle Ages when a lot of poetry and music and other texts were written about her. So in the book I was trying to put on the musicologist's hat and look at all the things that had been ignored.

What has been ignored?

It wasn't just a matter of saying prayers to Saint Anne, or regular devotion. People in the Middle Ages felt a real, visceral connection to these saints. Because Saint Anne was more or less an imagined figure, people started to think up some interesting areas of intercessions. If people wanted

Michael Alan Anderson, associate professor of musicology at Eastman, is the author of the new book *St. Anne in Renaissance Music: Devotion and Politics* (Cambridge University Press, 2014).



MOTHER ANNE: An engraving by Albrecht Dürer, circa 1512, shows Saint Anne and the Virgin Mary holding the baby Jesus.

to pray for wealth or well-being, they'd pray to Saint Anne. She could help in childbearing or fertility. She could help widows. She didn't really have a biography, so people thought up things for her, based on what little they knew.

The most important thing is that she was a politically advantageous saint to worship. I think people who look at the book will do a double take and say, politics? And sainthood?

But Saint Anne was not only the mother of the Virgin Mary; legend says she was also mother of two other Marys, which con-

nects Saint Anne to an impressive network of relatives, including Jesus, but also disciples and other figures. It was known as the "Holy Kinship," a big, impressive family tree with Saint Anne at the top—and isn't it the goal of kings and queens to produce great lineages?

By worshipping Saint Anne, you're worshipping someone who sits atop the most important family in Christianity. Rulers are emulating that, and so it would make sense for them to sponsor music, paintings, and poetry for Saint Anne.

What kind of music do you examine in the book?

I explore two kinds. One is chant, which is music for one voice or unison voice, without harmony. It was the central style of music for the entire Middle Ages and Renaissance. I'm trying to remind people with this book that chant has always been at the heart of sacred music.

The second is the glorious, elegant, beautiful choral music called polyphony. This is the most decorative style—but these pieces were exceptional. They were the best music money could buy, and no small amount of polyphony was written for Saint Anne.

There's no zinger of a piece in the book, no musical outlier. It all fits in the music of the period. Rather, what I've done is to bring anonymous music to the foreground. The tendency in our field is that if we don't know the composer's name, then we have nothing to say about the piece. I tie pieces about Saint Anne to people who cared about Saint Anne—I don't care if we don't know the composer.

Is this a typical musicology project?

We'll see. I think the field is headed in this direction.

Twenty years ago, musicology was perfectly comfortable saying, here's what happens in this piece and here's what it's about. It's like art history; our fields are very close.

But now we're looking at who a piece belongs to and how it fits into something bigger. We're asking questions not just about the object, but about how it fit into a culture or place or institution.

—Kathleen McGarvey

Consumption Conjunction

Is consumption inequality growing with income inequality?

A macroeconomist who specializes in the labor market, Mark Bils is coauthor of a study finding a rise in consumption inequality in the United States.

Why is it important to look at consumption inequality?

There's a lot of emphasis on inequality of income or wealth. But that might not map into consumption inequality. If the rich save their incomes, or give them away, then they free up resources for someone else's consumption. Take Ebenezer Scrooge, for example—it's very unequal that Scrooge has so much wealth. But he's so miserly that he lives kind of like Bob Cratchit. That's true even before he gives his money away. Inequality in consumption is presumably what we most care about, but it's hard to measure.

Why?

There's not much survey data on household consumption. There are two ways one might estimate household consumption, and both are difficult. The standard way is to ask people how much they spent. For the United States, that's done by the Bureau of Labor Statistics through the Consumer Expenditure Survey, or CE. You can also estimate it indirectly—if you know somebody's income and know how much they saved (or borrowed), you could estimate consumption by income minus savings. But that's a noisy estimate in practice, so rarely considered.

Some researchers have suggested that consumption inequality hasn't risen with income inequality. Why?

Mark Bils is the Hazel Fyfe Professor in Economics. An anonymous donor's bequest honoring the Fyfe family helped create the professorship, named in honor of Hazel Fyfe Gallaher '46.

Income inequality has gone up substantially over the past 30-plus years, the time period that Mark Aguiar and I consider in our paper. Researchers have shown that, based on the CE survey, consumption inequality went up much less than did income inequality. When Mark

rate would need to have exploded upwards; and we don't think we've seen that over the past 30 years. Our main motivation, however, is that the CE data have done an increasingly poor job of measuring household consumption over those last 30 years. That is, it fails to capture the average

groceries are a necessity. We estimate changing consumption inequality from how rapidly high-income families shifted spending toward luxuries (like entertainment), compared to what we see for poorer families. We can estimate changing consumption inequality by this approach even



INEQUALITIES: The wealthy but miserly Ebenezer Scrooge lives like Bob Cratchit (above)—illustrating the idea that income inequality isn't the same as consumption inequality, though both are increasing.

and I estimate consumption inequality directly from the CE data, we similarly find that measured inequality in total expenditures increased by only about a third as much as income inequality, comparing high- to low-income households. Those direct measures of expenditures underlie the view that consumption inequality didn't rise that much.

What prompted your study?

There are two things that motivated Mark and me to look at this in another way. One is that the conventional wisdom—little rise in consumption inequality—is extreme in the following sense. Given the rich are getting relatively richer, if their consumption didn't go up much, their savings

growth in consumption spending shown by retail measures of aggregate spending. We had concern that it may increasingly fail to capture spending by richer households, causing it to under-measure the true rise in consumption inequality.

What did you do differently?

We focus, not on how much households report spending in total, but on how they report spending across different categories of goods—specifically luxuries versus necessities. Just as examples, consider entertainment spending, say going to events, versus spending on groceries. Entertainment spending is a luxury—its share of spending is higher for richer families—while

if the data fail to capture the growth in spending for rich versus poorer households and fail to capture overall spending growth on luxuries versus necessities.

And what is your bottom line?

We see that higher-income households shifted their spending much more toward luxuries than did lower-income households. That shift requires a sizable increase in consumption inequality over the past 30 years. In fact, we conclude that the rise in consumption inequality mirrored the rise in U.S. income equality over those years. So that differs dramatically from what had been concluded based on the direct measures of household spending.

—Kathleen McGarvey

Campus Updates

South Campus Scene

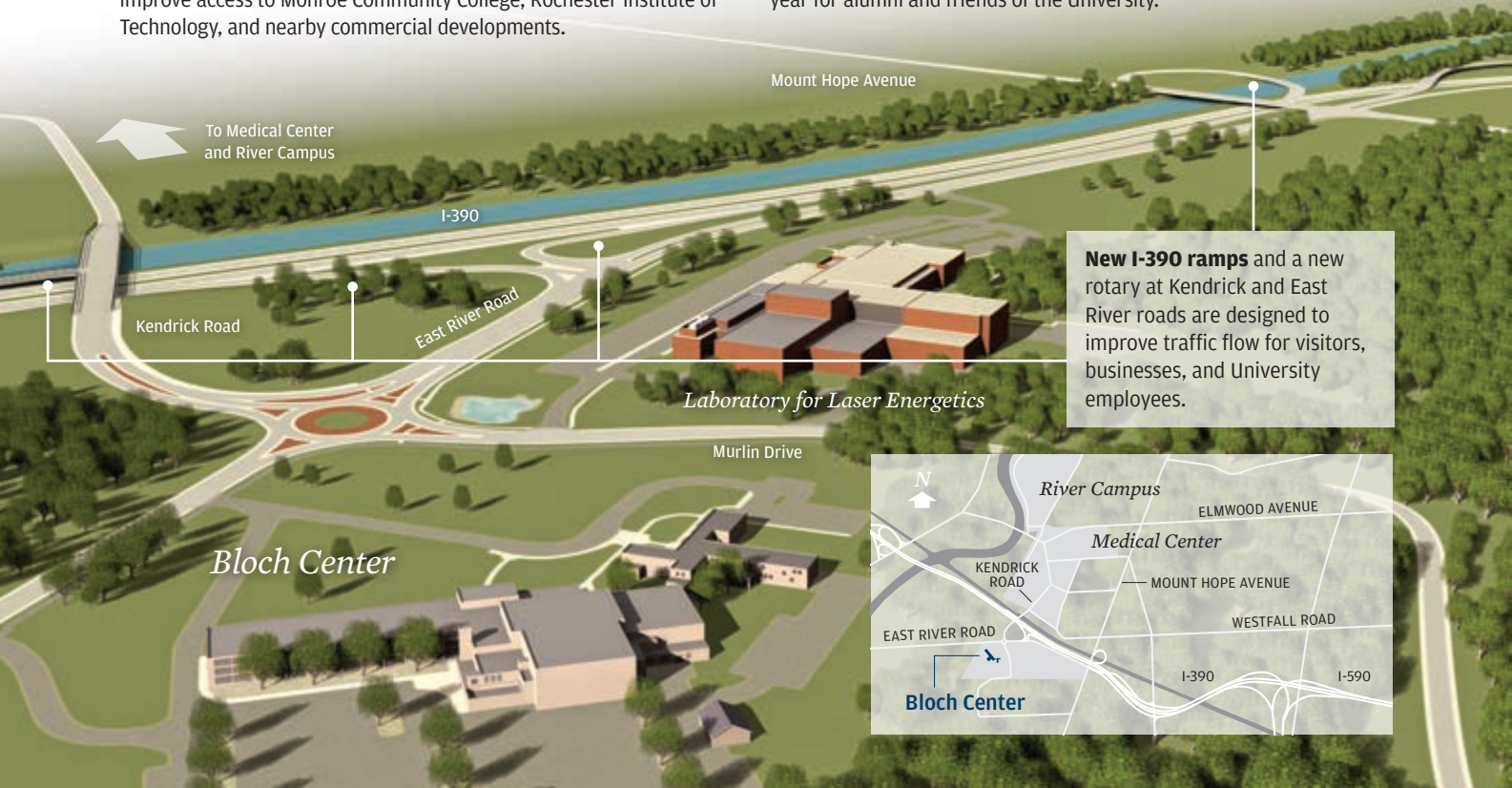
Several projects are designed to improve access to the Medical Center, the River Campus, research and alumni facilities on the South Campus, and new commercial developments near the University.

New On- and Off-ramps

Work on a \$70 million effort involving federal, state, and local officials is helping ease traffic congestion along Interstate 390 near the University. The culmination of a decade-long initiative, the project is designed to help facilitate the growth of the University, as well as improve access to Monroe Community College, Rochester Institute of Technology, and nearby commercial developments.

Larry and Cindy Bloch Alumni and Advancement Center

In October, the University celebrated the dedication of the Bloch Center, named in recognition of University Trustee Larry Bloch '75 and his wife, Cindy. Home to the offices of Alumni Relations and University Advancement, the center hosts events and activities throughout the year for alumni and friends of the University.



New I-390 ramps and a new rotary at Kendrick and East River roads are designed to improve traffic flow for visitors, businesses, and University employees.

Introducing the Prince Athletic Complex

Rochester's athletic facilities, including Fauver Stadium, are undergoing a significant renovation and expansion.

Construction began this summer and includes infrastructure and other improvements to Fauver Stadium, the Lyman Outdoor Tennis Center, the baseball field, and outdoor practice areas.

The complex has been named the Brian F. Prince Athletic Complex in recognition of a lead gift from Brian Prince '86, '89S (MBA) in honor of his parents, Richard and Christine Prince.

Brian Prince, the president and chief executive officer of ORIX USA Corporation, was recruited to the University's men's soccer program in 1982, and he served as team captain.





MOREY MELIORA: Named the Ronald and Karen Rettner Gallery, the lobby of Morey Hall has been revamped to serve as a more elegant and inviting gathering space. The work is part of an initiative to update several spaces in the Eastman Quadrangle buildings.

Eastman Quad Evolves

Buildings on the Eastman Quadrangle are getting some of their historic luster back, thanks to an initiative supported by University Trustee Ronald Rettner.

Rettner has established the Ronald Rettner Campus Improvement Fund to support work to revamp the iconic halls as learning spaces and

to bring them up to date for the 21st century. The project began last summer with a multifloor renovation of Morey Hall that had its debut during Meliora Weekend.

Work begins this year on Bausch & Lomb Hall, directly across the quad from Morey.

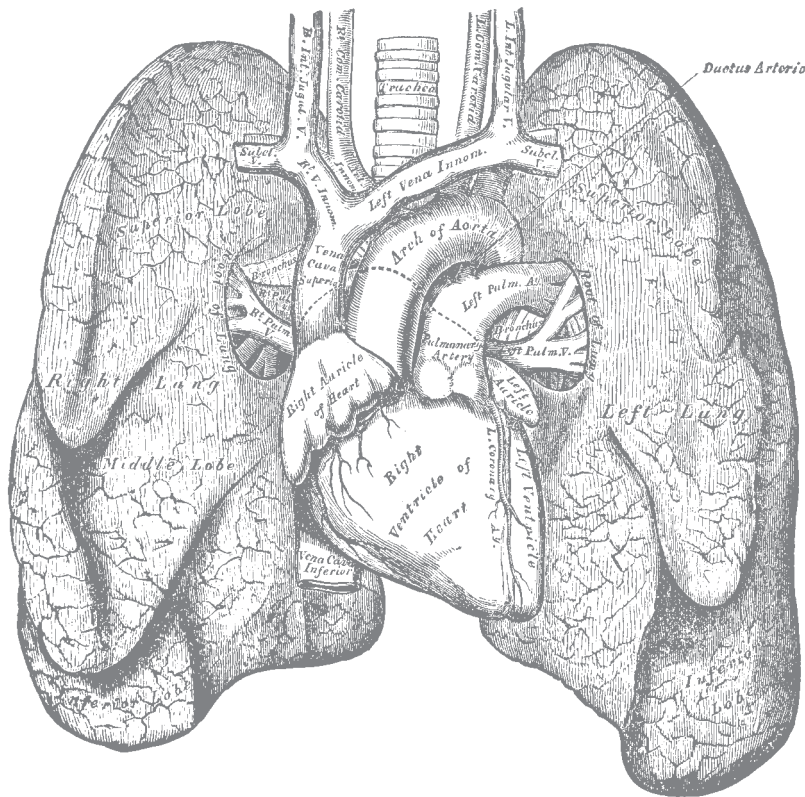


Sculpture Makes Its Debut at the Medical Center

DNA DISPLAY: A sculpture that highlights the intertwining of art and science graces a space between the School of Nursing and the Saunders Research Building at the Medical Center.

Titled "A Dream of Two Snakes (DNA)," the work by noted sculptor Ilan Averbuch was donated by Martin Messinger '49, a life trustee of the University.

The sculpture pays homage to the double helix nature of DNA, drawing on a story about a dream in which James Watson, one of the scientists credited with discovering DNA, reportedly saw two intertwining snakes as a clue to the molecule's structure. The 21-foot sculpture was installed last fall.



DEEP TISSUE: A Medical Center team will collect data to build a 3-D map of human lungs, a project designed to improve diagnosis and treatment of pulmonary diseases.

Rochester Helps Create First Map of Human Lungs

Rochester researchers hope to create the first comprehensive 3-D map of human lungs to help measure how the organs develop from birth through childhood and how that development influences conditions such as emphysema and chronic obstructive

pulmonary disease.

As part of a \$20 million, multi-institutional initiative supported by the National Institutes of Health, Medical Center scientists led by Gloria Pryhuber, professor of pediatrics and environmental medicine, will help build the

map over the next five years.

The Medical Center received \$6.1 million for the project, called the Human Lung Molecular Atlas Program, or LungMAP.

Data generated from the project will be accessible to the public online at www.lungMAP.net.

University Office for Veterans Opens

An office designed to help veterans move from military life to the world of college opened this fall at the University.

The Veteran and Military Services Office, which is staffed by two full-time Veterans Association-certified officials, will serve as a liaison between veterans and

a number of services provided across campus.

The staff will also help military students use University programs like the Yellow Ribbon Program, which is designed to help students with up to 100 percent of out-of-pocket tuition and fees that may exceed GI Bill tuition benefits.

There were 84 veterans enrolled at the University last fall, a 50 percent increase since 2010, according to Jonathan Burdick, dean of admissions and financial aid, who noted that the numbers are expected to increase as more post-9/11 veterans return to civilian life.

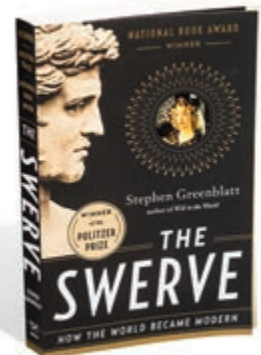
Ferrari Symposia Host Celebrated Humanist

Pulitzer Prize-winning scholar Stephen Greenblatt, whose 2011 book described the influence on the Renaissance of an ancient Roman literary work, was the guest of the Ferrari Humanities Symposia this fall.

Greenblatt, the John Coogan University Professor of the Humanities at Harvard University, presented a keynote lecture tied to his book *The Swerve: How the World Became Modern*, and took part in workshops and group discussions.

In *The Swerve*, Greenblatt recounts the discovery in the early 1400s of a copy of the poem *On the Nature of Things*, and how the work by the Roman philosopher and poet Lucretius shaped Renaissance thought and influenced modern ideas about politics, religion, and culture.

Thomas Hahn, professor of English and organizer of this year's sessions, said Greenblatt's work describes a "cultural disruption that changes the way people think," noting that Greenblatt's work has "had a similar influence, shaping the way scholars approach literary studies."



THOUGHT PROCESS: How did an ancient Roman philosopher influence modern ideas?



ROCHESTER AND POLAND

People

- 5** current students
- 15** alumni living in Poland
- 8** student Fulbright recipients since 2002
- 33** study abroad undergraduates in last decade

The Skalny Center

The Skalny Center for Polish and Central European Studies is celebrating its 20th anniversary. Founded in 1994 through a grant from the Louis Skalny Foundation and housed in the Department of Political Science, it offers a variety of programs in research, education, and community outreach, including summer study at Jagiellonian University, courses by visiting faculty from Kraków, the Skalny Lecture and Artist Series, and the Polish Film Festival, an annual, five-day festival showcasing some of Poland's best films and featuring actors and directors who speak about their work.

Thirty professors have visited from Poland through the Skalny Center, teaching and doing research for a semester or academic year. Among the participants: Grzegorz Kolodko, former prime minister of Poland, and Henryk Szlajfer from Poland's Ministry of Foreign Affairs. In November, Andrzej Mania, vice rector of Jagiellonian University, came to Rochester to celebrate the anniversary. And seven Rochester post-doctoral fellows have traveled to Poland for international relations research.

Global Rochester: Poland

A medical exchange program links European and American neurology training.

For 20 years, Ralph Józefowicz, professor of neurology, has been traveling to Kraków, Poland, as part of a medical exchange program he founded between Rochester and Jagiellonian University. He received the Polish university's Merentibus Medal last year in recognition of his services to the school.

Since the program began in 1995, 111 Rochester medical students and 58 Rochester neurology residents have taught neurology in Kraków, while 170 Jagiellonian University students have traveled to Rochester for clinical electives. The two universities have also hosted eight medical exchange conferences in Kraków and Rochester.

"Our students and residents will tell you it's the best experience they had in school. The future of medicine is international. And when you go outside your own country, you see that certain things are very different, and some are very similar," says Józefowicz.

Raised in a Polish-American community in Brooklyn, with grandparents who emigrated from Poland, Józefowicz grew up bicultural and bilingual. He first traveled to Kraków, Rochester's sister city, in 1989, when he and a colleague were invited to Kraków Children's Hospital to explore the creation of an exchange program. In 1992, Józefowicz received a

Fulbright Scholarship, the first physician to receive a Fulbright to Poland. He calls his year at Jagiellonian University a "phenomenal experience."

The university, which celebrated its 650th anniversary in 2014, is central Europe's second-oldest. In 1993, it established its School of Medicine in English. Józefowicz was invited to organize and teach the



INTERNATIONAL MEDICINE: Rochester neurologist Ralph Józefowicz talks with Jagiellonian medical student Mark Prodger.

program's neurology clerkship; he travels each year with Jeffrey Lyness, professor of psychiatry and senior associate dean for academic affairs at the School of Medicine and Dentistry and now brings 10 medical students and six neurology residents.

"The European approach to teaching medicine is more theoretical," he says.

Rochester students function as teaching residents, teaching how to take a medical history, perform a neurological exam, and present a patient, while residents perform as teaching attending physicians. The program brings up to 16 Polish students to Rochester each year for three months of mostly clinical work.

"I teach them neurology, but they also learn a lot of clinical skills. Students there don't have responsibility for patients. We teach them how to interpret symptoms, how to work up a patient," says Józefowicz, adding that these principles are now being applied in the Kraków medical school. "Poland is a leading country in medical education reform in Europe. We've introduced problem-based learning, and the changes we've made here have influenced medical education there."

—Kathleen McGarvey



SWIMMING & DIVING

A League That They Own

The women's swimming and diving team captures its sixth straight Liberty League title, while the men pick up their third in four years.

By Dennis O'Donnell

Swimmer Lauren Bailey '15 may have her own record book by the time she graduates in May.

The senior chemical engineering major from Ossining, New York, was named the women's Liberty League Swimmer of the Year for the third straight year, winning four individual events and playing a key role as the women won their sixth straight league championship in December.

In one of the meet's marquee races, Bailey edged out the league's second- and third-seeded swimmers to win the 200-yard butterfly by nine-one-hundredths of a second and provisionally qualify for the NCAA championships in February.

The win capped a meet in which Bailey also won the 100-yard butterfly as well as the 200-yard intermediate medley and the 200-yard freestyle. She helped power winning relays in the 200- and 400-yard freestyle and the 400-yard medley.

In a dominating display by the Yellowjackets at the Speegle-Wilbraham Aquatic Complex, both the women and the men won league titles.

The men won five events and two relays to claim their third team title in the last four years. The men have won six league swimming and diving crowns over the last nine years.

Freshman Gunnar Zemering of Delmar, New York, was the men's Rookie of the Year, winning the 50- and the 100-yard freestyle and placing first in the 200-yard freestyle. He also swam on four winning relays: the 200- and 400-yard freestyle and the 200- and 400-yard medleys.

Danielle Neu '18 of Hammondspport, New York, won Diver of the Year honors, finishing second on the one-meter board and first on the three-meter board. Joanna Wallace '16 of Fairbanks, Alaska, was third overall at three meters.

During the two-day meet, the Yellowjackets set several pool and league records. They included:

Bailey's time of :57.02 in the 100-yard butterfly set a pool mark and qualified her provisionally for the NCAAs. She also set a pool record in the 200-yard freestyle with a time of 1:54.71.



SIXTH STRAIGHT: The women's swimming and diving team won the program's sixth Liberty League championship in a row in December.



CHAMPIONS, AGAIN: The men's swimming and diving team captured the Yellowjackets' third Liberty League title in the past four years.

The Yellowjacket team of Julia Herman '19, Alex Veech '18, Khamai Simpson '18, and Emily Simon '18 set a pool record of 1:48.35 in the 200-yard medley relay.

Herman also set a league record in the 100-yard backstroke with a time of exactly one minute.

The 400-yard freestyle relay team of Simon, Hongjue Wang '19, Bailey, and Simpson set a league and pool record with a time of 3:35.01.

The 200-yard medley team of James

Frauen '16, Patrick Davis '16, Brian Wong '16, and Zemering set a league record with a time of 1:35.67.

The 400-yard freestyle team of Frauen, A. J. Brewer '18, Zemering, and Dylan Sharkey '16 posted a league record of 3:10.57.

In the 400-yard intermediate medley, Sharkey's time of 4:12.76 was also a league mark. 📍

Dennis O'Donnell is director of Athletics Communications.

HIGHLIGHTS

Yellowjackets Start Strong in Winter Seasons

The Yellowjackets' winter sports teams had momentum on their side going into 2016.

Squash headed into the semester break with a 5-1 record after home court wins over Princeton and top-ranked Harvard. Men's and women's basketball each won the Chuck Resler Invitational. Men's and women's swimming hosted and won the Liberty League championships.

That's after fall teams concluded successful seasons. Tara Lamberti '16 and Michelle Relin '16 were named All-Americans in field hockey. And men's soccer qualified for the NCAA playoffs for the ninth time

Endo '18 won, 3-1, at the No. 4 position to clinch the victory. Endo did it in dramatic fashion, building a 2-1 lead in games and winning the fourth game, 13-11.

Women's basketball: Boosted by a large group of talented newcomers, Rochester raced to a 7-1 start and moved back into the national rankings. The Yellowjackets were ranked No. 22 in the USA Today/WBCA poll. Rochester won the Chuck Resler Invitational, beating Ferrum College in the final. The high-powered offense topped 80 points five times in six games as Rochester reached the championship game of



HOME COURT: Playing in the No. 1 spot, Mario Yanez '17 helped lead the squash team to victories over top-ranked Harvard and 11th-ranked Princeton at home.

in 10 years. Finishing 10-5-4, Rochester was ranked 20th in the final Division III national poll.

Squash: Rochester finished second in the Liberty League championships with a 3-1 mark. The Yellowjackets defeated Hobart, Vassar, and Bard before losing to second-ranked St. Lawrence. On the first weekend of December, Rochester defeated 11th-ranked Princeton and followed that with a victory over top-ranked Harvard, the defending national champion.

Ryosei Kobayashi '17 clinched the Princeton match with a 3-1 win at the No. 2 position. Mario Yanez '17 won, 3-0, at No. 1. In the Harvard match, Neil Cordell '16, Kobayashi, Meng Xiaomen '17, and Yanez all won to even the match at 4-4. Tomotoka

the Wendy's College Classic before falling to Roberts Wesleyan College.

Al Leslie '18 and Ally Zywicki '15 have provided a solid inside-outside scoring touch with Leslie getting 15.4 points and 9.6 rebounds per game. Zywicki was averaging 10.5 points a game.

Men's basketball: Rochester stood at 4-4 with two games left before the holidays. The Yellowjackets won the Chuck Resler Invitational by defeating Gordon (Mass.) College and Utica College. Kevin Sheehy '15 was named the MVP. Mack Montague '17 was named to the all-tournament team. Sam Borst-Smith '17 was named to the all-tournament team for the Holiday Inn Airport Thanksgiving Classic as well as the Wendy's Classic. 📍



Matthew Mender '16

HONORS

Yellowjackets Named Academic All-Americans

Three fall sport athletes were named Capital One Academic All-Americans by the College Sports Information Directors of America.

Football defensive lineman Matthew Mender '16 was named to the second team. The biomedical engineering major from Glens Falls, New York, is the first Rochester football player to earn the honor since 2007. A total of 10 Rochester football players have earned 16 Academic All-America honors.

Alex Swanger '15 and Griffin Drake '15 were named to the men's soccer team. Earning his second straight honor, Swanger, a financial economics major from Penfield, New York, was named to the second team. Drake, a double major in political science and philosophy from Indianapolis, was selected to the third team.



Alex Swanger '15 (top) and Griffin Drake '15