167TH COMMENCEMENT

Congratulations, Class of 2017!

DEGREES OF HAPPINESS: Members of the Class of 2017 celebrate after their degrees are formally conferred during this spring's Arts, Sciences & Engineering commencement ceremony on the Eastman Quadrangle. Altogether, more than 3,100 degrees—including bachelor's, master's, and doctorates—were bestowed during ceremonies that brought together students, faculty, family members, and distinguished alumni and guests (see page 51). For photos, videos, and other stories about commencement, visit Rochester.edu/commencement/2017. **PHOTOGRAPH BY ADAM FENSTER**


2017

PUBLIC ART

Light It Up

HIGHLIGHTS: The façade of the Memorial Art Gallery became a community canvas for a new work of art this summer, when Jim Sanborn's light installation *Argentum: Double Positive* lit up the 1913 "jewel box" building. Paying homage to Rochester's history in the development of imaging and photographic technology, the work features two cylinders that project text drawn from that technological history as well as from Susan B. Anthony, Frederick Douglass, and others to highlight Rochester's role as a center for the suffrage and abolition movements. PHOTOGRAPH BY ADAM FENSTER


CONSTANCE
BASCH AND

GENOMICS

Where There's a Wasp . . .

GENERATIONS OF GENES: Tiny wasps are providing big insights into an important question in evolutionary biology: how can the function of genes change so that an organism can adapt and survive? Jack Werren, the Nathaniel and Helen Wisch Professor in Biology, postdoctoral fellow Ellen Martinson, and others in Werren's lab reported this spring that genes in the tiny jewel wasp take on new roles without, as often understood, making duplicate copies with additional functions. The study in the journal *Current Biology* is one of the first to document a process in which genes are co-opted to take on new functions. **PHOTOGRAPH BY ADAM FENSTER**

ESSAY

A Better Measure of a College Education?

A longtime Rochester academic leader makes the case for a more robust analysis of the value of higher education.

By Peter Lennie

The typical college graduate can readily point to how she grew and matured over her four years as an undergraduate. Parents, who send a teenager off to college as a freshman and see an adult emerge as a graduate prepared for life in a complex world, are probably even more aware of the transformation.

Colleges and universities have long been happy to take the credit for this, and for the bright future that awaits graduates. In almost every dimension of life, college-educated adults are better off than others: they're more employed, they're higher paid, they're more civically engaged, they're healthier, and they live longer.

But how much can those of us who are professionally involved in higher education legitimately claim to have contributed to this outcome?

LENNIE: A comparative analysis may help sharpen ideas about the benefits of a college education.

For most of the history of Western colleges and universities, particularly for elite institutions, the value of higher education has been considered self-evident. But it's surprisingly difficult to articulate precisely how institutions influence the success of their students.

Consider the high school graduates who attend college: they generally have social and economic advantages over those who don't, and these advantages propagate through college into life beyond. None of this is surprising, but it makes clear why it's not straightforward to identify the benefits of a college education. If incoming students are already talented and often accomplished, how much difference does a college education make to their future trajectory?

Can we, as colleges and universities, do a better job not only of articulating our contribution, but also of refining the college experience so that it remains the life-changing investment so many of us believe it to be?

These are important questions for the future of higher education. To answer them well, we need to look broadly at the experience of students and graduates over the course of their lives. It's not sufficient to limit our attention to basic measures—like average salary—that have long been popular.

Some would argue—and it's an argument that has been recently

ADAM FENSTER

drowning out other voices—that the purpose of education is to prepare students for jobs. Many institutions of higher education are happy to trumpet their success in this regard, and it's undoubtedly an important indicator of value.

But major universities—especially elite ones in which the foundation of the undergraduate curriculum is a broad, liberal education that draws on the pillars of critical reasoning and analysis and effective communication—have been careful to avoid talking narrowly in terms of employment. We see our mission as equipping graduates with an armament of intellectual skills that will serve them well across the spectrum of opportunities that await them beyond college, regardless of the particular jobs they may hold.

Articulating and demonstrating that value is now more important than ever. As the costs of higher education have continued to rise and affordability has decreased, and as it has become harder for graduates to find secure, well-paying jobs, prospective students and their families have become increasingly skeptical about the value of a college education—or at least the kind of education traditionally offered by elite universities.

In a world in which skilled white-collar jobs, not to mention the professions, are increasingly in danger of being occupied by machines, it's not enough for universities to take it as self-evident that they add value of the right kind. Colleges and universities need to address more directly the concern—reflected in burgeoning enrollments in engineering and declining enrollments in the humanities—about whether investment in a liberal education brings sufficient benefit.

The fundamental issue is a complicated one because "going to college" means much more than simply immersing oneself in courses. In describing themselves to prospective students, universities draw attention not just to the curriculum, but also to the broad range of things they offer: a favorable faculty-student ratio; research opportunities; the diversity of the student body; opportunities for community service; athletics; and many other things.

Students who spend four years at elite, residential colleges and universities often talk in similar ways about the richness of that broader experience. What they learn from rubbing shoulders with classmates from around the country or around the world and from immersion in activities outside of the *(Continued on page 15)*

FACTS & FIGURES

Transformative Tenures

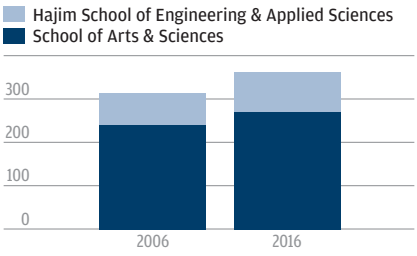
The last day of June marked the end of the tenure of two of Rochester's academic leaders. Peter Lennie, the Robert L. and Mary L. Sproull Dean of the Faculty of Arts, Sciences & Engineering, and Richard Feldman, dean of the College, both took on their administrative roles in 2006. As dean of the faculty, Lennie oversaw the academic and administrative operations of Arts, Sciences & Engineering, one of the University's primary academic units, home to more than 350 faculty members, 5,200 undergraduates, and 1,200 graduate students. As dean of the College, Feldman led the academic and cocurricular programs for undergraduates within Arts, Sciences & Engineering.

Beginning in July, Richard (Rick) Waugh, a professor of biomedical engineering, will serve as interim dean of the faculty, while Jeffrey Runner, a professor of linguistics, has been named dean of the College (see page 16). Both Lennie and Feldman will take sabbaticals during the 2017–18 academic year, but are remaining on the faculty—Lennie as a professor in the Department of Brain and Cognitive Sciences, and Feldman as a professor in the Department of Philosophy.

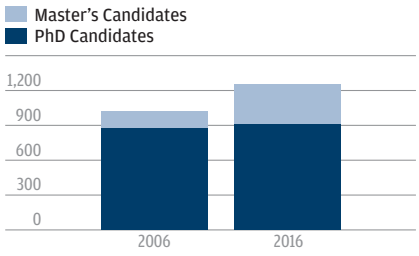
Arts, Sciences & Engineering

Lennie is credited with leading Arts, Sciences & Engineering through a remarkable period of growth, emphasizing efforts to increase the number of faculty, strengthen research endeavors, and put a spotlight on Rochester as part of a global community.

Faculty



Graduate Student Enrollment



Improving Academics

As a measure of the academic strength of undergraduates, the average two-score SAT for the entering class for 2017–18 is expected to be above 1,400 for the first time. That puts Rochester students in the 97th percentile for the SAT, a rise from the 86th percentile in 2005. More than 18,000 students applied for admission for the 2017–18 year, up from 11,293 students in 2005.

Strengthening Research Initiatives

As part of a strategic planning effort, leaders in Arts, Sciences & Engineering are developing initiatives that leverage research strengths in traditional and emerging fields. Recent endeavors include:

- Goergen Institute for Data Science brings together faculty throughout Arts, Sciences & Engineering and other units to explore how data can inform research in science, medicine, the arts and humanities, social science, engineering, and business.
- Center for Energy and the Environment, with leadership in the Department of Earth and Environmental Sciences, explores the interaction between Earth systems and energy technology.
- Humanities Center, which has a new home in Rush Rhees Library, supports multidisciplinary engagement with literature, history, the arts, and philosophies of past and present cultures.
- Augmented and Virtual Reality draws on Arts, Sciences & Engineering faculty in the sciences, engineering, and the humanities, as well as other vision-oriented programs across the University, to explore computer-generated environments.
- High Energy Density Physics is an initiative to explore the behavior of matter at pressures many millions of times that of Earth's atmosphere. The research involves the Laboratory for Laser Energetics as well as engineering and physics and astronomy.

Engaging Internationally

During Lennie's tenure, Arts, Sciences & Engineering has developed 27 new international agreements for research collaboration and student exchange. Up to a third of undergraduates have an international experience—studying abroad or taking part in research or internships—before graduating. And led by Lennie, Rochester joined the Worldwide Universities Network, a consortium of 20 universities to bring a global perspective to research initiatives.

FACTS & FIGURES

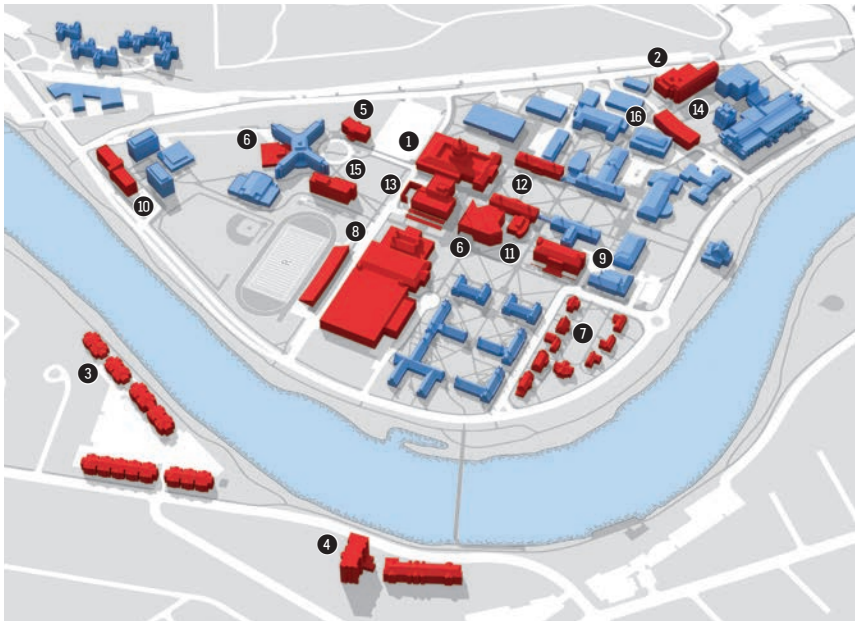
The College

As dean, Richard Feldman was responsible for the academic and student life programs for undergraduates in Arts, Sciences & Engineering. He helped develop new academic initiatives, particularly interdisciplinary courses and degree options. With a focus on the campus experience of students, Feldman worked to improve diversity, increase retention and graduation rates, and establish a support system called the CARE Network that has become a model for other institutions.

This spring, the ballroom in the newly renovated Frederick Douglass Building was named in his honor.

Campus Changes

Over the past decade, several building and renovation projects on the River Campus designed to enhance student life were completed. The new facilities include student residences, a newly revamped student life center, a new student health building, as well as renovations to dining centers, the Fraternity Quadrangle, and the Brian F. Prince Athletic Complex. That's in addition to new student-oriented spaces in Rush Rhees Library, academic buildings, and other spaces. The projects were funded through *The Meliora Challenge* Campaign as part of the College's strategic planning process.



❶ **Rush Rhees Library**
Gleason Library, 2007
Messinger Graduate Study Rooms, 2009–10
Lam Square, 2016

❷ **Goergen Hall**
Opened in 2007

❸ **Riverview Apartments**
Opened in 2008

❹ **Brooks Crossing**
Opened in 2008–14

❺ **University Health Service**
Opened in 2008

❻ **Wilson Commons/Danforth Dining**
Renovated in 2010 and 2011

❼ **Fraternity Quadrangle**
Renovations in 2012 and 2013

❽ **Prince Athletic Complex**
Renovations 2012–16

❾ **LeChase Hall**
Opened in 2013

❿ **O'Brien Hall/Jackson Court**
Opened in 2013

⓫ **Rettner Hall**
Opened in 2013

⓬ **Morey and Bausch & Lomb Halls**
Renovated spaces, 2014–15

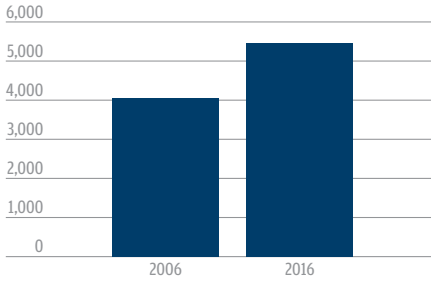
⓭ **Frederick Douglass Building**
Renovated in 2015–16

⓮ **Hajim Science & Engineering Quadrangle**
Opened in 2016

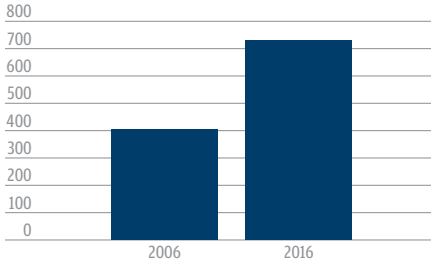
⓯ **Genesee Hall,** including **Boehning Varsity House**
Opening in 2017

⓰ **Wegmans Hall**
Opened in 2017

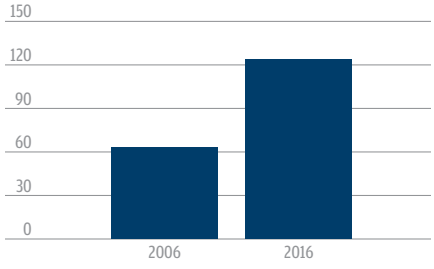
Undergraduate Student Enrollment



Underrepresented Minority Enrollment



Number of Countries Represented



New Majors

As part of an effort to continually update how the College's academic strengths can better meet the needs of students, Feldman and the faculty introduced additions to the curriculum, including new majors, such as:

- American Studies
- Archaeology, Technology, and Historical Structures
- Audio and Music Engineering
- Business (Barry Florescue Undergraduate Business Program)
- Dance
- Data Science
- Digital Media Studies
- East Asian studies
- Financial Economics
- International Relations
- Public Health, including Epidemiology; Health Policy; and Health, Behavior, and Society; Bioethics; Environmental Health

Student Honors

Over the past decade, Rochester undergraduates have been selected for some of the most highly sought honor and award programs, earning selection for Goldwater, Fulbright, Churchill, Gates-Cambridge, and other scholarships.

ADMINISTRATION

Next Chapters

An outgoing dean reflects on his role and on his future as a scholar.

Interview by Jim Mandelaro

For the past 11 years, Richard Feldman has served as dean of the College, overseeing the academic and extracurricular programs that serve undergraduate students. In January, he announced that he would be stepping down from the position at the end of the 2016–17 academic year and returning to the faculty as a professor of philosophy in 2018, after a yearlong sabbatical.

A distinguished epistemologist, Feldman in October 2016 received the Romanell–Phi Beta Kappa Professorship, awarded nationally to scholars in philosophy in recognition of distinguished achievement as well as contributions to public understanding of philosophy.

Feldman arrived on the River Campus as an assistant professor of philosophy in 1975, rising to professor and chair of the department before his appointment as dean beginning in 2006.

ADAPTABLE: The College is always adapting its programs to best equip students, says Feldman.

What's your proudest achievement as dean?
Early on in my time as dean, we looked at the graduation rates of our students. They weren't what we wanted them to be, and we set out to find out why and what we could do to improve them. They've gone up notably, and I'm delighted by that.

What will you miss most about the role?
I will miss the interactions with the students, the faculty, my colleagues in the dean's office, and the College staff I work closely with.

The thing I've come to appreciate as dean in a way I didn't before is how much all the people on the College staff contribute to the education of our students to make it all work. All the things beyond the classroom that contribute to the students' experience have really made an impression on me.

What challenges remain for the College?
There are different kinds of challenges. There are challenges about continuing to attract and enroll the strongest students, issues about affordability of college—the structure of the curriculum, the offerings. It's never a finished product. You're always adapting.

Years ago, you went to college, you studied something and got a degree, and had confidence that something would work out. We have to be more intentional now in understanding what skills our students need and keep getting better about making sure our education equips students for the world they're entering.

As the Romanell–Phi Beta Kappa Professor in Philosophy, you'll present public lectures this fall. What will you be talking about?
The lectures will broadly be about topics on rational argument and public discourse. Kind of an interesting topic to think about these days.

(Continued from page 13) classroom can be as important as what happens in it.

Which aspects of the undergraduate experience, then, are the most important? Can we disentangle key factors from less influential ones? Could we eliminate some of the things we do and (at lower cost) equip students just as well for life after college?

This is tough territory in which to be a pioneer. In part, this is because we don't know much about the relative importance of the different opportunities we provide. It's also fraught because the university that cuts something no other is cutting risks loss of enrollment, even if what was cut resulted in lower costs.

To untangle this problem—to better understand the relative importance of some of the things we provide for students—we can look across systems of higher education and ask whether the differences among them result in different outcomes. For example, at major universities and colleges in the United States an undergraduate degree routinely requires four years or more of study. Elsewhere (notably in the UK and many Commonwealth countries) a degree program is completed in three years.

The different durations generally reflect differences in content: the US degree is, in the liberal tradition, typically less specialized, while the UK degree is more narrowly focused. Universities in the United States generally offer residential education, housing students on campus and providing an array of facilities and services for them. Other countries (England and some Commonwealth countries as well as China) do this too, but generally less richly. The differences between the United States and elsewhere—the commitment to a liberal education and the heavy investment in residential life—make the United States a relatively more expensive place to be an undergraduate.

That invites the question of whether US graduates are better equipped for success than those elsewhere—whether their education has added greater value. To answer that question we must identify equally well-prepared students who entered universities in different countries, then look broadly at their success after graduation. Finding freshmen of comparable standing is relatively straightforward, because a great deal of comparative work has been done on secondary schooling and its outcomes in different countries. Comparing post-graduation success is harder, and brings us back to the question of how we should capture the value that a residential college education adds to the lives of students.

Discussions of value-added often focus on "learning gain," a broad measure of the change in students' intellectual performance over the course of their studies. Reassuringly for universities, studies indicate that students generally demonstrate considerable gains in knowledge as well as other developmental attributes while in college. Less reassuringly, we know little about the relevance of these gains to success in life beyond college.

ADAM FENSTER

COLLEGE LEADERSHIP

New Dean Named

A linguistics professor who has helped lead efforts to increase faculty diversity has been named dean of the College.

Jeffrey Runner, who joined the faculty in 1994 and who has chaired the Department of Linguistics since 2014, was introduced this spring.

As dean, he oversees academic and cocurricular programs for undergraduates in Arts, Sciences & Engineering. He succeeds Richard Feldman (see pages 14–15).

As faculty development and diversity officer for Arts, Sciences & Engineering, Runner has worked with University leaders and faculty to develop strategies for the hiring and retention of underrepresented faculty.

He has also directed the Center for Language Sciences and has been a faculty associate of the Susan B. Anthony Institute for Gender and Women's Studies.

ADAM FENSTER

This has led to interest in putatively more "relevant" measures, such as earnings after graduation. Several surveys, including the College Scorecard published by the US Department of Education, and others such as the PayScale College Salary Report, compare colleges and universities on graduates' average salaries. Salary is an important measure of success, but absent context is a flawed and misleading indicator. First, the published measures take no account of the fact that some universities admit much better-prepared students than others, and those better-prepared students are likely to do better after graduation; second, for students who attend graduate school (as do a majority of Rochester students and students from similar universities), a focus on early years after graduation will catch many at points that don't give a meaningful indication of their careers; third, measures of average salary obscure large variations across occupations, so, for example, universities that graduate many engineers will look more potent than those that graduate fewer.

These concerns lead to more fundamental questions about what we should evaluate and when to do it. If we want to measure success in equipping students for careers, surely we should be most interested not in average salaries, but in how well a university prepares its graduates for intellectually demanding occupations, not all of which are highly remunerated—and we should make our assessment when their careers are well-enough developed for their trajectories to be clear.

We want to know where people stand 10 to 15 years after graduation, what degrees they obtained, from which university or college they obtained them, their background and qualifications on entry as freshmen, and what activities they pursued. Such information is not easily gathered, though social networks, notably ones like LinkedIn, have a great deal of it and are a potentially rich source of information about where most value is added. Moreover, because social networks embrace a very broad population—including people who never attended college—their data might enable a richer characterization of the benefits of attending college.

A comparative analysis along these lines would help us better understand the value of two key attributes of undergraduate education at major US universities: the liberal curriculum and the residential experience. It might well tell us that US graduates are better equipped than those elsewhere. But that's not enough. For the full picture, we need to compare outcomes in relation to the costs of delivering education. With such information, we would be in a position to decide whether better US outcomes were worth the investment, and we would be in a position to more clearly articulate the value of that investment—to students, to families, to policymakers, and to the public at large. ®

Peter Lennie, who this summer was appointed the Jay Last Distinguished University Professor, served as the Robert L. and Mary L. Sproull Dean of the Faculty of Arts, Sciences & Engineering from 2006 to 2017. As a member of the Rochester faculty from 1982 to 1999, he was the founding chair of the Department of Brain and Cognitive Sciences. He returned to Rochester as dean in 2006 after serving as dean for science at New York University. He also served as provost from 2012 to 2016.

Lennie, who also holds a faculty appointment in the Department of Brain and Cognitive Sciences, plans to undertake a project to address the problems outlined in this essay. He will spend the 2017–18 academic year in the UK and Australia, first at the University of Leeds and then at the University of Melbourne, before returning to the Rochester faculty.

Ask the Archivist:
Is the River Campus Ivy Truly 'Ivy' League?

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

Every summer, the University's buildings and grounds staff trims the ivy on the Eastman Quadrangle. The whole process takes 90 staff hours. Our staff heard that the original ivy came from other colleges and notable buildings in Rochester: do you have any information in the Archives to prove that?
—John McIntyre, trades supervisor and area manager, University Horticulture and Grounds

The ceremonial first spadeful of earth was turned on May 21, 1927, to launch the construction of the River Campus. Between 1926 and 1930, representatives of the architects (Gordon and Kaelber), the contractor (Hopeman Brothers), and the University met hundreds of times to discuss every element of the project. No item seems to have been too small to escape their consideration, but apart from trees, the meeting minutes indicate that landscaping was not considered in depth until after the dedication in 1930.

Thus the minutes record that in May 1931, the senior class approached President Rhees for permission to "plant ivies in place of class trees as has been customary on the old campus. . . ." The "old campus" was at Prince Street, and the custom of planting a class tree began even before the University moved to that location in 1861, with the Class of 1858 literally leaving its mark via a tree with a dated stone marker.

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.

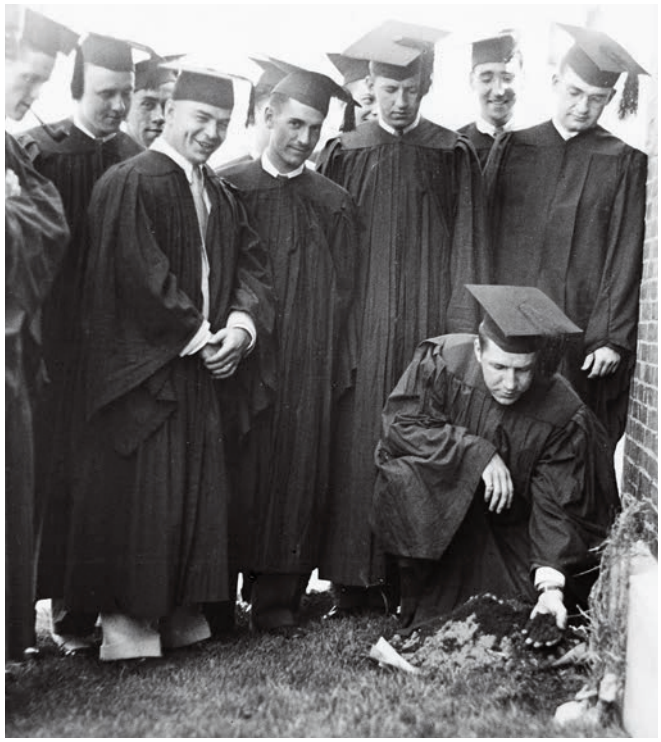
The tradition of planting a class ivy was well established in the "ivy-leagues." The *New York Times* reported that Yale's class of 1886 planted ivy sourced from Mount Helicon in Greece, and that less than a month later the supplication to "Old Eli" was itself stolen. But the Rochester men of '31 were likely taking up a tradition closer to home: the students of the College for Women had been planting ivy on University buildings to celebrate their Class Day since 1908.

The consulting architect on the River Campus project was Charles Platt (1861–1933), whose work included the University of Illinois at Urbana-Champaign and the Freer Gallery of the Smithsonian in Washington, D.C. Trained as a landscape designer, Platt was apparently opposed to the planting of ivy on the quadrangle: he ordered wisteria for the façade of Gavett Hall, and favored ivy only on the backs of the buildings.

The *Campus* newspaper reports that the Class of 1931 was allowed to place ivy at the northwest corner of Morey Hall (the corner now facing Wilson Commons). Other ivies were added soon after on the back of Gavett and the Gymnasium. The Class of 1932 was allowed to locate its ivy "near the front wall of the Library." The heritage of the early ivies was apparently not considered noteworthy, although the minutes show discussion of the preferred variety.

Perhaps one root of the story can be traced to the 35th-reunion activities of the Class of 1899. Robert Pattison, Class of 1899, wrote in *Rochester Review* that the class's ivy, planted on the northeast corner of Morey Hall (the corner closest to the library) came from the home of Sir Walter Scott in Abbotsford, Scotland. Scott gave a cutting to the writer Washington Irving while Irving was serving as American ambassador to the Court of St. James between 1842 and 1846. Irving had it planted at St. Mary's Episcopal Church in Scarborough, New York, from whose rector Pattison received a cutting.

There was already ivy on the Prince Street Campus when Thomas Swinburne, Class of 1892, referred to "alma mater's vine-clad halls" in "The Genesee" (in the second verse—the one we do not sing). The ivy is equally well established on the River Campus, but happily kept in check so that there is ample room for "sweetest memories" to cling as well. R



PLANT SHOOTS; GET LEAVES: Members of a 1930s-era class plant ivy as part of Class Day events (above) that by 1966 had overtaken the buildings of the Eastman Quadrangle.

Joan Sapiro Beal

Jay Benet

Stephen Biggar

H. Christopher Boehning

LEADERSHIP

Seven Elected as Trustees

Leaders in music, finance, real estate, and university and corporate management join Rochester's Board of Trustees.

By Sara Miller

The Board of Trustees has elected seven new members.

Joan Sapiro Beal '84E is a studio singer and vocal contractor for film, media, and television in Los Angeles. She is performing as soprano soloist with House of Cards in Concert with her spouse—composer and conductor Jeff Beal '85E. She has sung on more than 100 film scores for composers, including John Williams, James Newton Howard, and James Horner, and has done numerous national commercials and television series. In 2015, the couple helped establish the Beal Institute for Film Music and Contemporary Media at the Eastman School of Music to help prepare students for careers creating music for film and other media.

Jay Benet '76S (MBA) is vice chairman and chief financial officer for the Travelers Companies, a component company of the Dow Jones Industrial Average. He previously served as worldwide head of financial planning, analysis, and reporting at Citigroup, as well as chief financial officer for Citigroup's global consumer business in Europe, the Middle East, and Africa. He chairs the Simon Business School Advisory Council and is a recipient of Simon's Distinguished Alumnus Award. He and his spouse, Jeanne, established the Jay S. and Jeanne P. Benet Professorship of Finance at the Simon Business School.

Stephen Biggar '92 is a partner at Baker Brothers Investments in New York City, a fund-management company focused on long-term investments in life sciences companies. He also chairs the board of ACADIA Pharmaceuticals and is a former director of Synageva BioPharma and BioCryst Pharmaceuticals. A varsity soccer player as a Rochester undergraduate, he is a member of the Athletic Campaign Committee. He and his spouse, Liz Asaro Biggar '92—also a soccer player—are members of the Friends of Rochester Athletics.

H. Christopher Boehning '87, '88 (MS) is a partner in the litigation department at the law firm of Paul, Weiss, Rifkind, Wharton & Garrison. His practice includes complex commercial and civil litigation matters, criminal and regulatory inquiries, internal investigations, and international arbitrations. He played varsity soccer for four years at Rochester. He and his spouse, Julie Boehning, have made a leadership gift to establish the Boehning Varsity House, a new facility at the Brian F. Prince Athletic Complex. A recipient of the John N. Wilder Award and Garnish Citation, he chairs the Arts, Sciences & Engineering National Council and the Athletic Campaign Committee, and he is a member of the Friends of Rochester Athletics.

Emerson Fullwood is a retired corporate vice president of Xerox Corporation. He joined Xerox in 1972 and spent 36 years in executive and management leadership positions, including president of Xerox worldwide channels group and of the worldwide customer services group, and executive chief staff officer of the developing markets group. Most recently, he was executive chief of staff and marketing officer for Xerox North America. He is a member of many boards, including the

Emerson Fullwood

John Sexton

Amy Leenhouts Tait

Medical Center. He holds the Minett Professorship at the Rochester Institute of Technology, where he served for several years as executive-in-residence.

John Sexton '05 (Honorary) is president emeritus, Benjamin Butler Professor of Law, and law school dean emeritus of New York University. He joined NYU's law faculty in 1981, serving as president from 2002 to 2016. During his presidency—among other significant accomplishments—NYU created an integrated global university with full research campuses in Abu Dhabi and Shanghai and study away campuses in 12 cities on six continents. NYU also greatly expanded its faculty; restored engineering; doubled applications for admission; and achieved record fundraising. A fellow of the American Academy of Arts and Sciences, Sexton also serves on numerous boards and has received 18 honorary degrees.

Amy Leenhouts Tait '85S (MBA) is executive chairman and chief investment officer at Broadstone Real Estate, a full-service real estate company that sponsors private real estate investment offerings and manages commercial and residential properties across 37 states. Tait cofounded Broadstone in 2006 with her spouse, Robert Tait, and her father, the late Norman Leenhouts '56, a former University trustee. She has served as Broadstone's board chair since 2012 and was chief executive officer until 2017. Tait serves on the board of governors of the National Association of Real Estate Investment Trusts, the Simon School National Council, the Simon Advisory Council, and is a recipient of Simon's Distinguished Alumni Award. She has also served on the boards of numerous other community organizations.

OUTDOOR ART

New Sculptures Join Campus Outdoor Collection

THINK PIECES: A sculpture installed this spring adds a new perspective to a high-profile area of the River Campus. *Think and Be Free* (above), a nearly 12-foot-tall work by artist Dale Rogers, was installed near Wegmans Hall, along a path that connects the Eastman Quadrangle to the new Hajim Science & Engineering Quadrangle. The work, made of Cor-Ten and stainless steel, is the second sculpture by Rogers to be installed on campus during the last year. *Joy* (left), an eight-foot-tall work in stainless steel, was installed last fall at the Eastman School of Music. Both sculptures were donated by Martin Messinger '49, a life trustee of the University. In 2014, Messinger donated *A Dream of Two Snakes (DNA)*, by artist Ilan Averbuch, a work that's located between the School of Nursing and the Saunders Research Building at the Medical Center.

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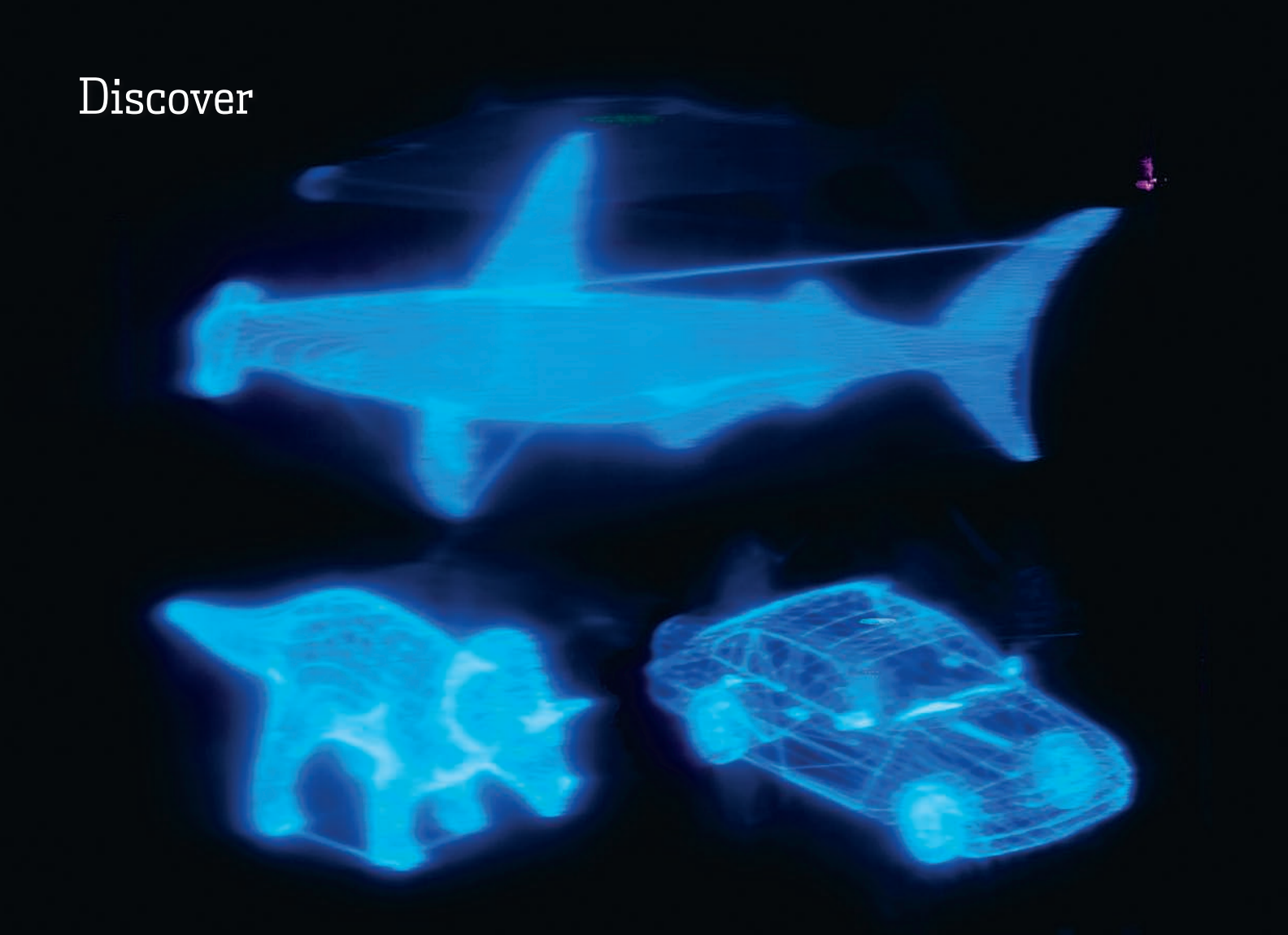

IMAGE QUALITY: A Rochester team is developing a system that displays objects in three dimensions without requiring special glasses.

‘Objects’ Made of Light

A type of three-dimensional display that was once only a mainstay of science fiction is now closer to reality, thanks to a device developed by a team in physics and optics.

The device is the next step in 3-D volumetric display, which enables viewers to see images in three dimensions without the use of special glasses or filters. (Think of the 3-D projection of a desperate Princess Leia, pleading, “Help me Obi-Wan Kenobi,” in the classic film *Star Wars*.)

Unlike displays that rely on stereoscopy—in which one of two distinct two-dimensional images is presented to either eye, creating the perception of depth—the Rochester 3-D volumetric images are made manifest by light that illuminates every point in an image.

Three-dimensional volumetric display technology has attracted the attention of researchers around the world. But a device created by Curtis Broadbent, a research associate in the Department of Physics and Astronomy, as well as Chris Mullarkey ’18 (PhD), and Rochester professor of physics and optics John Howell represents a significant improvement in the technology, creating displays that are notably brighter and larger than what most scientists have been able to achieve.

The device consists of a glass box, housing a heated glass sphere that contains cesium vapor, a silvery-gold metal good at emitting light. Two laser beams with wavelengths invisible to the eye are crossed in the sphere. Where the laser beams cross, cesium atoms are illuminated by both lasers and are excited into an especially high-energy state. When the atoms decay, they emit sky-blue light in all directions.

“Essentially, you get this tiny, point-like source of blue photons where the lasers intersect,” Broadbent says. “That’s really the key feature that allows us to make an intrinsically 3-D object that exists in real space.”

Broadbent and his colleagues have transformed blue photons into “objects” such as dinosaurs and moving helicopters by breaking down the objects into coordinates along the three axes representing the three dimensions of length, width, and depth. The lasers, programmed to cross at the coordinates, illuminate one point at a time.

“The image never really exists at one time, even though we perceive it that way,” Broadbent says. “If you want a sequence of points to look like an image, you need to draw it fast enough so the eye can’t tell that the image is being drawn point by point.”

Illuminating each point for a fraction of a second, the lasers are able to light up all of the points that make up the image in about 50 milliseconds (one millisecond equals one thousandth of a second).

—Lindsey Valich

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A Collaborative Approach to Some Prison Ills

An estimated 20 percent of the US prison population consists of individuals with severe mental illnesses—people who are more than four times as likely to be arrested than other adults, and once behind bars, often wait months to receive treatment.

Now, an intervention developed at the Medical Center has been shown to reduce the population's criminal convictions, jail time, and hospitalizations by roughly 50 percent. In addition, the model—which hinges on collaborative problem-solving between the mental health and criminal justice systems—has been proven to keep individuals with mental illnesses in treatment twice as long as the study's comparison intervention. The research appeared in the journal *Psychiatric Services*.

The new intervention, called the Rochester Forensic Assertive Community Treatment model (R-FACT), relies on judges, lawyers, probation officers, and other criminal justice professionals to work with mental health professionals to guide clients with mental illnesses toward "specific interventions that target the things driving their involvement with the criminal justice system," says Steven Lamberti, lead investigator and a professor of psychiatry at the Medical Center.

—Christine Roth

Putting the Brakes on Cancer Cells

A Medical Center team has identified a new way to potentially slow the fast-growing cells that characterize all types of cancer. The findings were reported in the journal *Science*.

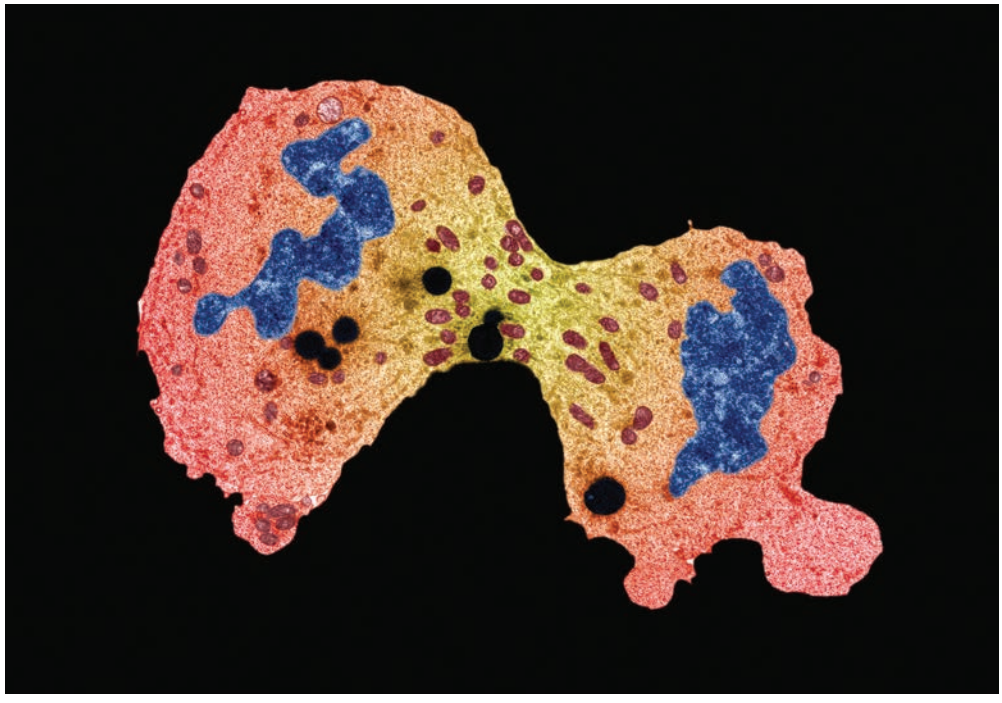
All cells go through the cell cycle, a series of events that, in healthy cells, culminates in orderly cell growth and division. The researchers discovered that when a protein called Tudor-SN is eliminated from cells, the cells take longer to gear up for division, slowing the cell cycle.

"We know that Tudor-SN is more abundant in cancer cells than healthy cells, and our study suggests that targeting this protein could inhibit fast-growing cancer cells," says Reyad Elbarbary, research assistant professor in the Center for RNA Biology and the Department of Biochemistry and Biophysics at the Medical Center.

The Tudor-SN protein controls microRNAs, molecules that fine-tune the expression of thousands of human genes. When Tudor-SN is removed from human cells, the levels of dozens of microRNAs go up. Boosting the presence of microRNAs puts the brakes on genes that encourage cell growth.

"Because cancer cells have a faulty cell cycle, pursuing factors involved in the cell cycle is a promising avenue for cancer treatment," says Lynne Maquat, director of the Center for RNA Biology and the J. Lowell Orbison Distinguished Service Alumni Professor of Biochemistry and Biophysics. Maquat also holds an appointment in the Wilmot Cancer Institute.

Researchers aim next to understand how Tudor-SN works in concert with other molecules and proteins, with the ultimate goal of identifying drugs to target Tudor-SN. —Emily Boynton



SLOWING CELL DIVISION: Targeting a key protein may play an important role in slowing the rapid cell division (above) that characterizes all forms of cancer, say Rochester researchers.

New Materials from Quantum Dots

Photoredox catalysis—the use of light to mediate chemical reactions—has become an essential way to synthesize novel organic compounds. It may soon be used even more widely—and less expensively—thanks to work by Rochester chemists.

A team led by Todd Krauss, a professor of chemistry and chair of the department, and Daniel Weix, an associate professor of chemistry, demonstrated for the first time how light-emitting quantum dots can be used as catalysts to create carbon-carbon bonds, the basic building blocks for numerous molecular forms, many of them essential to biological functions.

In the study, which appeared in the *Journal of the American Chemical Society*, the researchers showed that quantum dots create the bonds just as effectively as rare-metal catalysts, such as ruthenium and iridium.

Quantum dots are tiny semiconductor crystals. They "have properties of both the molecular and the macroscopic world," says Krauss, and can be "manipulated just as you would manipulate small molecules in solution. You can spray them, you can coat them on surfaces, you can mix them, and do all different chemistries with them."

Quantum dots have potential applications in the synthesis of pharmaceuticals, fine chemicals, and agro-chemicals. Noting that the research is still in its early stages, Weix says,"The next step is to look at what these things do that nothing else can do. That's the promise of the future."

—Bob Marcotte

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Faculty Named to Lead Programs

Members of the faculty were formally appointed to lead key institutes and centers this spring.

Joan Shelley Rubin, the Dexter Perkins Professor in History, was formally installed as the Ani and Mark Gabrellian Director of the Humanities Center.

Rubin, who joined the faculty in 1995 and specializes in 19th- and 20th-century American history, has led the center since 2015 and was selected for the Gabrellian Directorship last fall.

The position is named in recognition of the support of University Trustee Ani Gabrellian '84 and her husband, Mark Gabrellian '79. The couple also established the annual Hagop and Artemis Nazerian Lectures, named for Ani Gabrellian's parents and directed by the center.

Scott Carney '99 (PhD) became the director of the Institute of Optics this summer.

Previously a professor of electrical and computer engineering at the University of Illinois at Urbana-Champaign,

Joan Shelley Rubin

Carney earned his PhD in physics at Rochester, studying with Emil Wolf, the Wilson Professor of Optical Physics, who has been part of the institute since 1959.

Carney replaces outgoing director Xi-Cheng Zhang, who will remain on the faculty as the M. Parker Givens Professor of Optics.

Carney is editor-in-chief of the *Journal of the Optical Society of America A*, and is noted for work that bridges the gap between pure and applied research.

Scott Carney

Mark Watters, a six-time Emmy Award-winning composer and conductor, has been named the inaugural director of the Beal Institute for Film Music and Contemporary Media at the Eastman School of Music.

Watters served as music director for two Olympics—the 1996 Centennial Games in Atlanta and the 2002 Winter Games in Salt Lake City—for which he won two of his six Emmys. He also received Emmys for Outstanding Music Direction for *Movies Rock*;

Mark Watters

Outstanding Music for *True Life Adventure Alaska: Dances of the Caribou*; and two Outstanding Music Direction and Composition Daytime Awards for *Aladdin* and *Tiny Toon Adventures*.

Named for Emmy-winning composer Jeff Beal '85E and vocalist and University Trustee Joan Sapiro Beal '84E, the Beal Institute was established to prepare students for evolving opportunities to write, produce, and perform music for film and visual media.

Eastman Musicians Join Rochester Jazz Festival

Eastman School of Music musicians—current students, faculty, staff, and alumni, as well as students and faculty from the Eastman Community Music School—were among the performers at this summer's Xerox Rochester International Jazz Festival.

The festival featured performances in many of Eastman's venues, including Hatch, Kilbourn, and Kodak Halls, while Gibbs Street, home to Eastman Theatre and other school facilities, was renamed "Jazz Street" during the event.

Eastman has been involved in the festival since it was founded in 2002.

JAZZ TRIO: Eastman School of Music students Matt Bent '18E (drums), Ryder Eaton '17E (bass), and Rowan Wolf '19E (sax) and were among the many musicians with ties to Eastman who took part in this summer's Xerox Rochester International Jazz Festival.

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Team Meliora to Vie for Hult Prize

A team of four recent graduates of the College is in the running for the Hult Prize, the largest social entrepreneurship competition in the world, with a reward of $1 million seed money.

One of three wild card entrants selected by Hult officials last spring, Team Meliora will join regional champions from Boston, San Francisco, London, Dubai, and Shanghai at the September Hult Prize finals in New York City, with former president Bill Clinton announcing the winner.

The team—Edgar Alaniz '17, a biochemistry and clinical psychology major, Carlos (Yuki) Gonzalez '17, a financial economics major, Ibrahim Mohammad '17, a mechanical engineering major, and Omar Soufan '17, a biomedical engineering major—aims to efficiently build homes from recycled plastics for refugees.

The Hult Prize, a partnership between Hult International Business School and the Clinton Global Initiative, was established in 2010 and encourages teams of entrepreneurs to solve some of the planet's biggest challenges with innovative ideas for sustainable start-up enterprises.

The 2017 Hult Prize President's Challenge is "Refugees—Reawakening Human Potential."

TOP TEACHERS: The winners of this year's Singer Family Prize for Excellence in Secondary School Teaching were invited to join their former students at this spring's Arts, Sciences & Engineering commencement ceremony. Posing with their nominators (standing), the teachers (seated) are Lisa Ricci of Utica, New York, with Nicholas Contento '17; Marvin Gordon Hall of Kingston, Jamaica, with Mark Auden '17; Deborah Morand of Fitchburg, Massachusetts, with Brian O'Neil '17; and Jesse Warren of Arvada, Colorado, with Shelby Corning '17.

College Seniors Recognize Top Teachers with Singer Awards

Four graduating seniors were joined at commencement by former high school teachers selected to receive the Singer Family Prize for Excellence in Secondary School Teaching.

Each year, seniors in the College are invited to nominate a high school teacher for the prize. Winners receive $3,000 for themselves and $2,500 for their school and travel expenses to attend commencement.

Paul Singer '66 supports the prizes through the Paul Singer Family Foundation. Singer, says his son, Gordon, "feels strongly that while devoted secondary school teachers play a vital role in the intellectual development of American society, they often receive little recognition or acclaim for their endeavors."

This year's recipients were Marvin Gordon Hall, a mathematics and robotics teacher from Campion College High School in Kingston, Jamaica, who was nominated by Mark Auden '17, a mathematics and physics major; Deborah Morand, an English teacher from Fitchburg High School in Fitchburg, Massachusetts, nominated by Brian O'Neil '17, a biological sciences major; Lisa Ricci, an Italian teacher from Thomas R. Proctor High School in Utica, New York, nominated by Nicholas Contento '17, a neuroscience and anthropology major; and Jesse Warren, an English teacher, from Pomona High School in Arvada, Colorado, nominated by Shelby Corning '17, an environmental sciences major.

Rochester Poet to Direct Oldest American Writers' Conference

Poet and professor of English Jennifer Grotz has been named the next director of the Middlebury Bread Loaf Writers' Conferences.

Established in 1926, Bread Loaf was conceived of by poet Robert Frost and first led by John Farrar, founder of the publishing company Farrar, Straus and Giroux. The first woman to hold the position, Grotz will be the seventh director of the oldest American conference for writers.

Grotz is the author of four volumes of poetry—including *The Needle* (Houghton Mifflin, 2011) and *Window Left Open* (Graywolf Press, 2016)—and has published poems in *The New Yorker*, *New England Review*, *Ploughshares*, and *American Poetry Review*, among other publications. She's also a literary translator, with two books translated from French—*Rochester Knockings* (Open Letter Books, 2015) and *Psalms of All My Days* (Carnegie Mellon, 2013)—as well as other translations from French and Polish.

This spring, Grotz was named a Guggenheim Fellow for 2017, one of just 11 poets to be recognized among this year's honorees.

Frost took part in the original conference for 42 years, and other notable attendees and faculty have included Willa Cather, Sinclair Lewis, Truman Capote, John Irving, Julia Alvarez, and Toni Morrison.

Grotz attended Bread Loaf for the first time in 1995, and became the assistant director in 2005. Her appointment as director follows a national search.

She will become director in October.

RISING: Grotz is the new director of the Middlebury Bread Loaf Writers' Conferences.

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TRACK & FIELD

Two Seasons—Two National Titles

Sophomore Kylee Bartlett joins an elite group in track and field with both indoor and outdoor national championships.

By Dennis O'Donnell

Kylee Bartlett '19 joined an elite field when she won the outdoor heptathlon national championship in May, just weeks after claiming the indoor pentathlon championship in March.

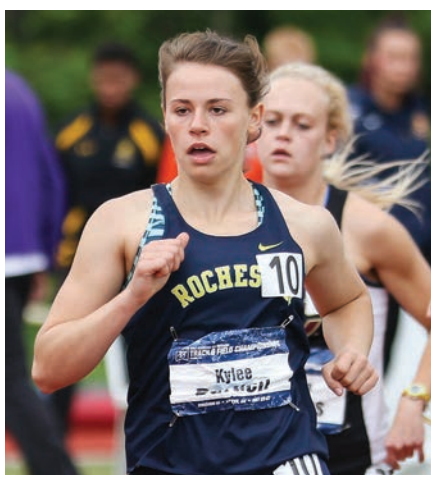
The sophomore from Williamstown, New York, is only the third woman in NCAA Division III history to win both multi-event competitions in the same season. She joins Amelia Campbell of Carleton College (2014) and Ashley Houston of Hardin-Simmons University (2009).

The second Rochester athlete to win a national title in the heptathlon—Renee Schmitt '86 won the event during the 1985 season—Bartlett also is the third Yellowjacket in the history of Rochester athletics to win multiple individual national titles. David Moller '75 won cross country and track and field national titles in 1974, and Josefa Benzoni '89 captured three track and field crowns spanning the two seasons of 1988 and 1989.

Over the course of the two days of competition at the national meet in Geneva, Ohio, this spring, Bartlett tallied a school record score of 5,020 points in the seven-event heptathlon.

She set a Rochester record in the 100-meter hurdles, with a time of 14.44 seconds, topping her own record that she set earlier in the season. She also set personal records in the shot put (36 feet, 2.75 inches) and the javelin (118 feet, 9.25 inches). And she was an inch shy of matching the Rochester record in the high jump, clearing 5 feet, 5.75 inches. R

Dennis O'Donnell is director of athletic communications.



STANDOUT SEASON: Bartlett set a personal best in the javelin (above) on her way to becoming only the third woman in NCAA Division III history to win both the heptathlon and pentathlon titles in the same season.

BASEBALL

Yellowjacket Pitcher Drafted to Major Leagues

Rising senior is the second Rochester baseball player ever selected by a professional organization.

Rochester pitcher John Ghyzel '18 has been drafted by the Major Leagues. The right-hander from Centreville, Virginia, was the second pick of the Cincinnati Reds in the 18th round of the draft in June.

The No. 527 pick overall in the Major Leagues Amateur Draft, Ghyzel is the second Yellowjacket in Rochester history to be drafted. He joins pitcher Michael Weiermiller '83, who was selected in the 14th round (No. 348 overall) in 1981 by the Minnesota Twins, where he played two seasons in the minors for the organization.

In 2017, Ghyzel went 3–2 in nine appearances (eight starts) over 42.1 innings. He finished with a 4.25 earned run average and a team-high 50 strikeouts. For his Rochester career, he is 11–5 with a 3.97 ERA and 127 strikeouts in 136 innings. He's a two-time All-Liberty League honoree, including First Team accolades in 2016.

His sister, Beth '20, is a member of the Yellowjacket volleyball team. R

—SCOTT SABOCHECK

Scott Sabocheck is the assistant director of athletic communications.

DRAFT ELIGIBLE: The Cincinnati Reds selected Ghyzel in the 18th round of the Major League draft, making him the second Yellowjacket ever drafted by a professional baseball team.

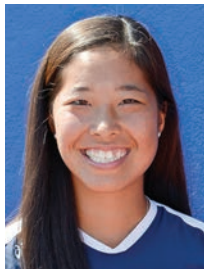
ALL-STAR HONORS

Four Named Academic All-Americans

Four Rochester students were selected as Academic All-Americans by the College Sports Information Directors of America for 2016–17, a recognition of their athletic and academic achievements.

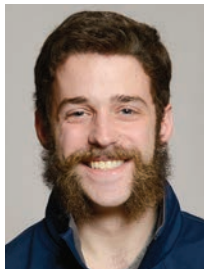
Sayaka Abe '17, a chemical engineering major and captain of the field hockey team, was named to the At-Large Team. An All-American midfielder, Abe received the Merle Spurrier Award from the Department of Athletics and Recreation this year as the senior female athlete who has made the most outstanding contribution to the women's athletic program. She was elected to Phi Beta Kappa and was a member of Tau Beta Pi, the engineering honor society.

Swimmer Emily Simon '17, a brain and cognitive sciences major who helped lead the Yellowjackets to multiple Liberty League titles, was named to the At-Large Team. A three-time All-American, Simon received the University's Rigby Wile Prize in biology. A volunteer at the Rochester Pediatric Center, she was elected to Phi Beta Kappa.



Sayaka Abe

Emily Simon



Eric Franklin

Kylee Bartlett

Eric Franklin '17, a microbiology major and multiple medal winner in track and field, was named to the Cross Country and Track and Field Team. An all-conference honoree, he received the Peter DiPasquale Award as the top senior male scholar athlete. A biology lab research assistant, a workshop leader in biology, and member of the Meridian Society in the Office of Admissions, Franklin is a member of Phi Beta Kappa. He was also selected as a Take Five Scholar for the 2017–18 year.

Kylee Bartlett '19, a brain and cognitive sciences major and a two-time national champion, was named to the Cross Country and Track and Field Team. A national title holder in both the indoor pentathlon and the outdoor heptathlon (see page 24), she was voted as the Field Performer of the Meet for both the indoor and outdoor New York State championships.

Beginning with the 1990–91 academic year, at least one Yellowjacket has been named an Academic All-American in each of the past 26 years.

Overall, Rochester has earned a total of 99 Academic All-America honors since the program began in 1952. R