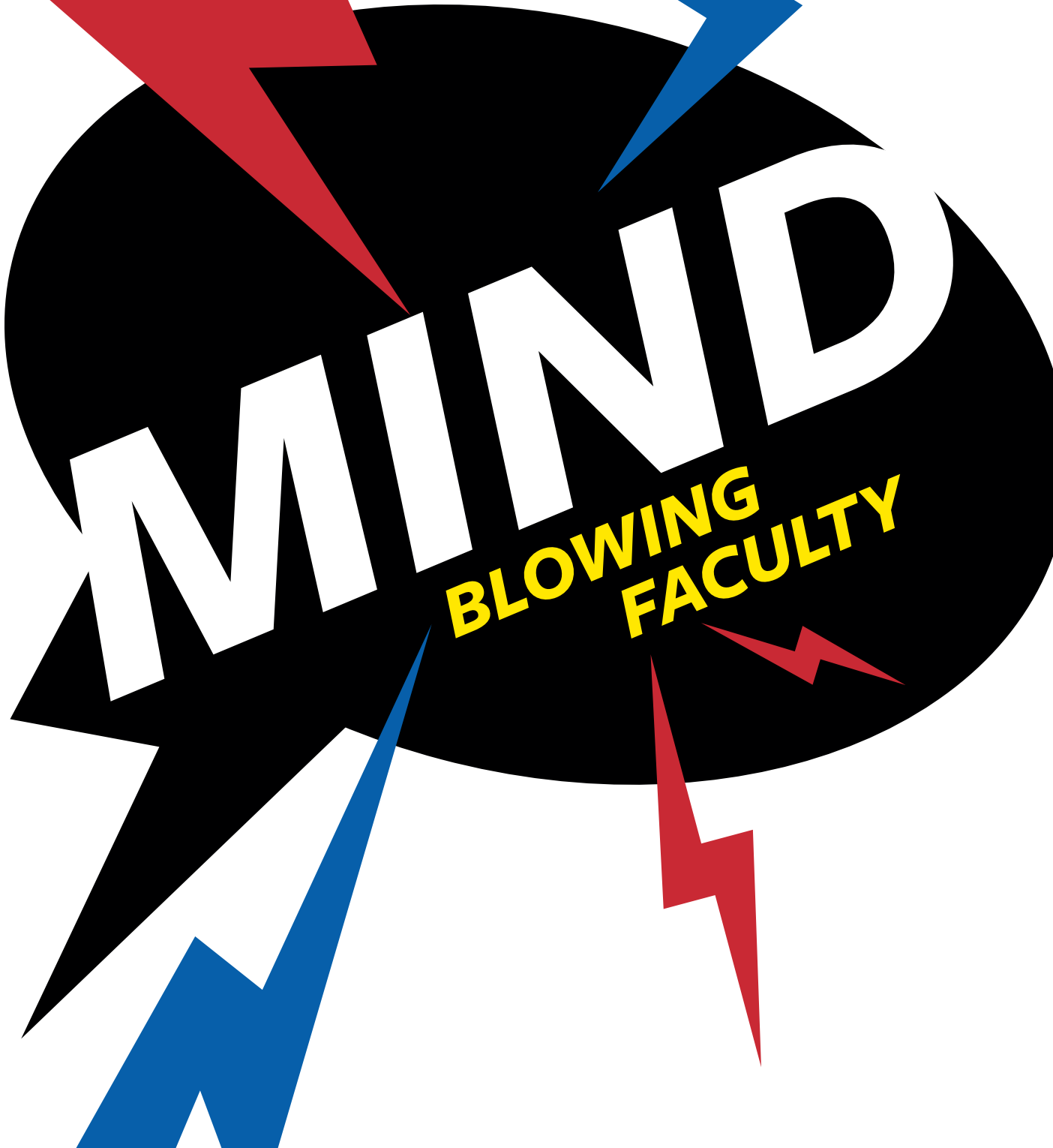


EZRA

CORNELL
UNIVERSITY'S
MAGAZINE
FALL 2016

RECRUITING AND
RETAINING THE BEST FACULTY



PICTURE CORNELL BY ROBERT BARKER

John Lai '17 works on the sculpture "Urchin" on the Arts Quad Sept. 12; built from 360 plastic deck chairs, it is part of the Cornell Council for the Arts' Biennial project and was created by CODA, a design firm led by assistant professor of architecture Caroline O'Donnell.





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EZRA

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FROM THE PRESIDENT

When I returned to Cornell – for a third, albeit interim role as president – I was determined to have some fun with this job, which entails many responsibilities that require hard work, coping with difficult situations, and lots of travel. Not that those parts of the job are not fulfilling: They are often remarkably rewarding, but I had in mind the sheer intellectual pleasure of following my own natural curiosity.

After pondering the question of how to enable such opportunities, I hit upon a happy answer: invite myself to faculty members' offices to hear about their research and scholarship.

Over the past five months, I have had about a dozen conversations with Cornell faculty members who are at the forefront of their fields, from medieval Chinese literature to physics, from information sciences to economics, from sociology to biomedical engineering. After each one, I



have gone home to my wife, Elizabeth, and said the same thing: “You will not believe what I learned today talking with professor X: It is mind-blowing.”

Cornell’s educational and scholarly missions are lived and breathed by the faculty, and that is just a bit of what this issue of Ezra aims to show – though by any measure, it can barely scratch the surface. Cornell is a phenomenal magnet for talent, intellectual talent that spans the universe of knowledge.

Take David Mimno, assistant professor of information science, whom you will read about (along with a selection of other recently hired star faculty) in this issue. He is combining work in classics and other humanistic disciplines with computers and data science, using mathematical formulas to detect patterns in historical documents and literature. He’s finding that this computational approach can find subtle patterns that human beings might otherwise miss, and he hopes to show how this can benefit academic scholarship and help find new approaches to global problems. Of course the fact that he has done pathbreaking work on the text of Thucydides, my own author of choice, did not slip my notice.

Or take Marjolein van der Meulen, professor and director of the Meinig School of Biomedical Engineering. Marjolein has won numerous awards for her research and serves as a senior scientist in the research division of the Hospital for Special Surgery in New York City. She is leading the development of the relatively new biomedical engineering program at Cornell, which links the Ithaca, Weill Cornell Medicine and Cornell Tech campuses, and attracts top students, about half of whom are now women. Marjolein’s work spans research and clinical care, teaching and administration, and focuses on the interaction between mechanical stimuli and the skeleton, with particular pertinence to diseases like osteoporosis.

In a world that is in need of discoveries and new solutions, Cornell’s uniqueness is embodied by what is happening across our departments and campuses. You can see it in the collaborations that emerge when we have classicists talking to mathematicians, who are talking to engineers and physicists, who are talking to economists and physicians, who are talking to soil and crop scientists. That kind of work across disciplines does not happen enough in the academy. When we do it, the results are amazing.

Look at the wide range of disciplines that address sustainability, also the subject of a major feature in this issue. You’ll discover how Cornell has brought faculty members, researchers and students together across the sciences of sustainability to make real impacts on the ground, from improving staple crops amid a warming global climate and finding new business solutions for energy companies, to developing sustainable housing and devising strategies for environmental lawyers.

The free flow of diverse ideas, which happens every day at Cornell between faculty members and students, is fueled by the best and deepest minds. Students are attracted to Cornell and then inspired by our outstanding faculty – individuals who lead in student-centered teaching. Call it the ultimate and best technology transfer: that of knowledge and information from mind to mind.

These past few months I have felt like a kid in a candy store: discovering what’s happening across our faculty offices, classrooms, libraries and labs, restarting a liberal education after a five-year absence. It’s the best kind of fun I know.



Hunter R. Rawlings III

“Cornell’s educational and scholarly missions are lived and breathed by the faculty.”

Hunter R. Rawlings III

CORNELL UNIVERSE



GANNETT MOVES TO NEW ADDITION AS RENOVATION CONTINUES

Gannett Health Services is halfway through a two-year renovation and expansion project that will double the building's usable space, and will feature state-of-the-art medical facilities, offices for individual and group counseling, waiting areas that enhance patient comfort and privacy, and an expanded pharmacy.

Since June, visitors to Gannett access all services in the newly completed addition while the original 60-year-old building on Ho Plaza undergoes renovation. By the summer of 2017, the updated facility will open in its entirety under the new name Cornell Health.

The project has been a strategic priority of the university for a decade, and is being funded by Cornell's schools and colleges, the central administration and donors.



KLARMAN HALL, IN PLACE AND TIME

Ushering in a new century for the humanities in the College of Arts and Sciences, Klarman Hall took its official place adjacent to the Arts Quad between Goldwin Smith Hall and East Avenue in a dedication May 26.

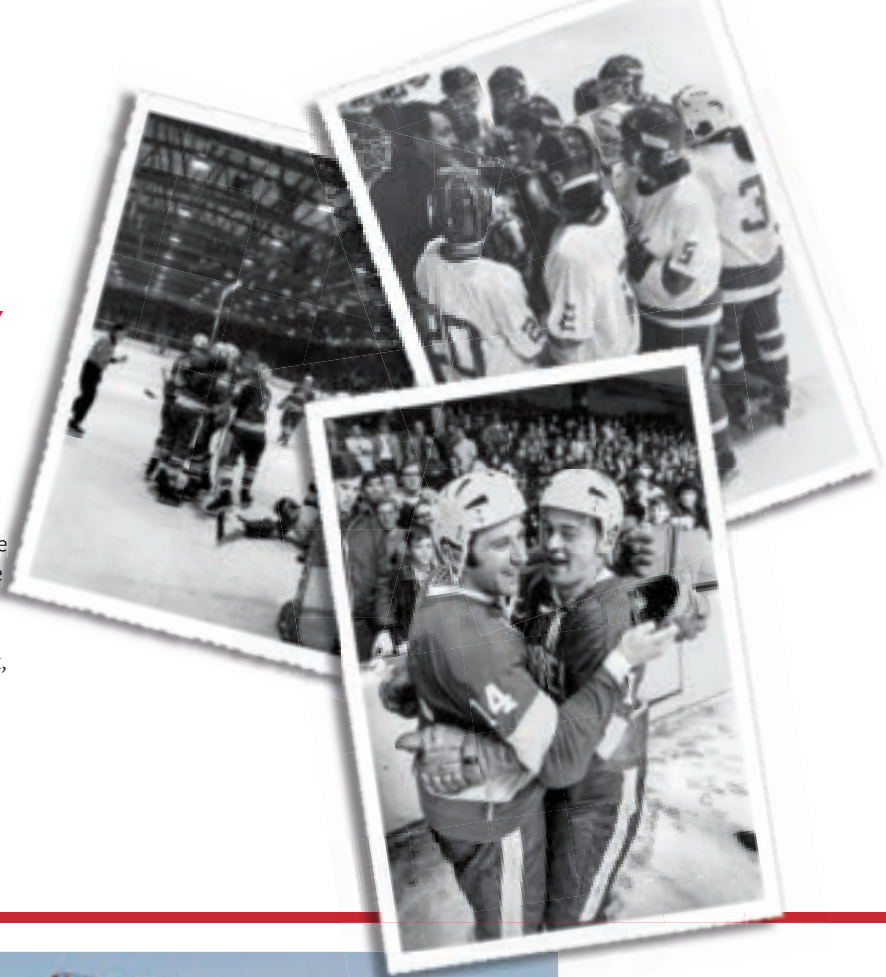
To celebrate the university's first new humanities building since Goldwin Smith opened in 1905, a time capsule was created, sealed and buried; it now is awaiting its opening during what will be Cornell's bicentennial year in 2065. In it are items that tell of life as we know it in 2016, selected by faculty and designed by students with contributions from faculty, students and alumni.

The contents were showcased during the dedication, the culmination of the college's New Century for the Humanities series of marquee events, speaker presentations and panel discussions. The events highlighted emerging areas of research and scholarship in the arts and humanities and showcased the college's diverse faculty.

Klarman Hall was funded completely philanthropically with donors Seth '79 and Beth Klarman in the lead. In July 2016, the U.S. Green Building Council awarded the university 87 out of 110 points, the highest total Cornell has ever received, to certify Klarman Hall as LEED Platinum.

WANTED: BIG RED HOCKEY MEMORABILIA

Jim Roberts '71, former editor and publisher of Cornell Alumni Magazine, has been researching and writing a book on Cornell's greatest hockey games, and Cornell University Press editor Michael McGandy is looking for photos, ephemera and memorabilia associated with the men's and women's hockey teams. Specifically, they are seeking photos of historic games (going back to 1962) and materials associated with the great games, players and coaches of the 1960s through the 2010s. The book, due to be released in fall 2017, will feature 24 games as well as chapters on Lynah Rink, the Lynah Faithful, and the key rivalries with Boston and Harvard universities. Readers are welcome to contact McGandy directly at mjm475@cornell.edu.



RECOMMENDED READ CORNELL ALUMNI MAGAZINE

Want to read about alumni who came back to campus to meet the students living in their former homes? Revisit the rituals of the Lynah

Faithful? Learn about the creative Cornellians who are continuing the Big Red's legacy of innovation? (An underground city park, a drinkable book, a hi-

tech environmental watchdog and a portable sterilizer are just a few of their inventive solutions to challenges big and small.)

You'll find these stories, and much more, in the pages of Cornell Alumni Magazine. An independent source of university news and views since it was founded by alumni in 1899, the magazine is published bimonthly and supported by paid subscriptions. Check out the latest issue at cornellalumnimagazine.com.



COLLEGE OF BUSINESS LAUNCHES

In its inaugural academic year, Cornell College of Business leadership, faculty and staff welcomed students and reiterated the importance of the unique identities and strengths of its three accredited business schools. The College of Business, which officially launched July 1, comprises the School of Hotel Administration, the Charles H. Dyson School of Applied Economics and Management, and the Samuel Curtis Johnson Graduate School of Management.

Undergraduates and graduates alike are looking forward to taking multidisciplinary courses, taking advantage of increased opportunities from career services and enjoying enhanced networking opportunities.

To provide the college with academic and networking space in New York City, Cornell has leased a well-appointed building in midtown Manhattan, with plans to open in late fall. In addition, a \$25 million gift from Johnson alumnus David Breazzano, MBA '80, will help establish the Breazzano Family Center for Business Education in a new six-story building in Collegetown in Ithaca (see rendering, above). Construction on the building, which will house classrooms and offices, is underway, and it is expected to open next summer.

College of Business leaders are keen to include alumni from the Hotel School, Dyson and Johnson in a variety of upcoming events and activities in Ithaca and New York City. Visit business.cornell.edu.

PICTURE CORNELL BY JASON KOSKI

Nearly all members of Cornell's incoming Class of 2020 (numbering 3,342 students) gather in Schoellkopf Stadium for a group photo.





**“ THE
FACULTY
IS THE
UNIVERSITY. ”**
Cornell Provost Michael Kotlikoff

It's a simple statement that speaks volumes.

“The faculty do the discovery, they apply those discoveries, and they teach and inspire our students. It's really impossible to overestimate the role of the faculty at Cornell – they really are what is permanent and fundamental about our academic institution,” Kotlikoff says.

To keep Cornell's world-class academic departments at the tops of their fields and advance the university's reputation as a top research institution, while also addressing Cornell's challenge to hire a new generation of teachers and researchers, Kotlikoff has launched an ambitious series of initiatives to enhance faculty hiring – with particular attention given to strategic, collaborative discipline areas that point the way toward the discoveries and solutions of tomorrow.

It's a hybrid approach, like so many parts of Cornell: collaborative and balanced, partly centralized and partly given over to the individual colleges to determine their own priorities and objectives. It encourages the growth of self-organized initiatives and needs that have bubbled up naturally from departments and faculty members, while it brings administrative muscle, funding and assistance to cross-college and cross-campus efforts.

The strategic initiatives tout the “radical collaboration” that defines Cornell's research and teaching enterprise in and across seven discipline areas: nanoscale science and molecular engineering; genome biology; data science; sustainability; the social sciences; infection biology; and the humanities and arts. Each initiative involves a research focus of at least eight separate academic departments from a minimum of four colleges, creating more faculty interactions across the Ithaca campus and between Ithaca and Cornell's New York City campuses. They will build strength, bolster recruitment and organize infrastructure.

In addition to the pressing task of bringing in brilliant young researchers and teachers, along with outstanding faculty already making names for themselves in their fields, is the need to retain existing faculty so they aren't hired away to competing institutions.

A good example of the approach is the effort in the field of nanoscience. Its target is making 10 midlevel or senior

hires over the next five years in an area that, Kotlikoff says, will have a major impact on a number of departments within several colleges.

“Part of Cornell's advantage in this recruitment effort is the fact that we are such a collaborative environment,” Kotlikoff says, noting the focus on nanoscience was initially organized by faculty members themselves. It “is a great example of the collaboration among physics and chemistry in Arts and Sciences, a number of Engineering departments, departments in Human Ecology and the College of Agriculture and Life Sciences, as well as others.”

“I like to think about Cornell as a place with no fences, with no barriers to collaboration. And these initiatives will really highlight that,” he says.

Another purpose of the initiatives is a built-in boon to recruitment, Kotlikoff notes. “It's to create a sense of forward motion in these areas that attract individuals to join something that is beyond one department. To be recruited as part of a community, by multiple departments, and as a scientist ... that's a very seductive and attractive presentation to a potential faculty member.”

At the same time, Kotlikoff is mindful to not overemphasize the provost's office role. “The primary responsibility for academic excellence lies within the colleges, and they have to have the ability – the financial ability and the strategy – to enhance their own objectives, many of which may not be multidisciplinary or multicollege,” he notes, citing the university's world-class astrophysics department as just one example.

“So by not having an initiative around astrophysics, we're in no way diminishing the importance of that for the university,” he says. Cornell will continue to promote and support departments and programs like that and “make sure the colleges have the financial ability to succeed in enhancing their own stature.”

Along with the initiatives, Kotlikoff also is working on boosting recruitment of diverse faculty and dual-career hires. He is funding hiring incentives through his office and working with college deans to create an additional recruitment and retention advantage throughout Cornell's campuses.

Cornell's reputation as a world-class research university, along with its spirit of community and collaboration, is the essence of its success. Many recent faculty hires exemplify this spirit. Here is a look at seven members of the faculty, hired in just the past few years, who represent the vitality at the academic heart of Cornell today.

More information:

Office of the Provost, provost.cornell.edu

Office of the Vice Provost for Research, ovpr.research.cornell.edu

“I like to think about Cornell as a place with no fences, with no barriers to collaboration.”



ESRA AKCAN



HISTORY- SURVEYING ARCHITECT

“My contribution in teaching this course is to prepare the students for global practice by introducing them to a vision of modern architecture that includes but goes beyond the canon.”

Esra Akcan

At the center of associate professor of architecture Esra Akcan’s teaching and research are a geopolitically conscious global history of architecture, the exploration of cosmopolitan ethics and global justice.

In her scholarly work, Akcan offers new ways to understand the global movement of architecture in two books she authored on architecture in Germany and Turkey, both published in 2012. “Architecture in Translation: Germany, Turkey and the Modern House” highlights the historical, albeit uneven, translations between places by analyzing the transformation of people, ideas, technologies, information, objects and images as they were transported from one location to another. The book also advocates for a commitment to a new “culture of translatability” from below and in multiple directions, defined by Akcan as openness to translations from around the world rather than from one center, and with a purview of global justice rather than an imperial imagination.

“Turkey: Modern Architectures in History,” penned with co-author Sibel Bozdoğan, is part of a series that aims at an inclusive survey of modern world architecture; it’s the first volume in any language to cover the entire 20th century in Turkey.

Akcan prepares the students in her History of Architecture survey course (for all incoming undergraduate and graduate architecture students) for globalization, as well as ethnic and gender diversity, through the concept of “intertwined history,” the migration of people and translation of cultural artifacts. The course continues to evolve as scholarship in this area grows.

“My contribution in teaching this course is to prepare the students for global practice by introducing them to a vision of modern architecture that includes but goes beyond the canon, but also one that does not divide the world into set self-contained geographical zones (such as European, Asian, African architecture), by showing the interactions between places.”

The city of Berlin has been a particular focus of study for Akcan. She received the 2016-17 Berlin Prize from the American Academy in Berlin, where she holds a fellowship to write her next book on the urban renewal of Berlin’s immigrant neighborhood, through which she explores a theory of open architecture. Her research has fostered in her graduate students a compassionate and critical investigation into the migrant crisis there and elsewhere in Europe. For example, Jordan Berta, M.Arch. ’16, credited Akcan, his professor and thesis adviser, for inspiring and supporting his investigation into the social implications of asylum and immigration.

Educated as an architect in Turkey and holding a Ph.D. from Columbia University, Akcan came to Cornell in 2014. Along with numerous awards, fellowships and published articles in multiple languages, Akcan carries her research and ideas about contemporary cities into multimedia art projects, using fiction, photo-collage and video installations.

– Patti Witten

NANO- SLICING ENGINEER

“... we hope to fundamentally change the way researchers and industrial scientists approach drug discovery.”

Christopher Alabi

Nanoparticles engineered to usher life-saving medicine through the human body often don't reach their targets while navigating such a complex environment. Christopher Alabi, assistant professor of chemical and biomolecular engineering, is changing the way drug delivery systems work and advancing the emerging field of nanoparticle therapeutics.

“I am making polymers that look like the biopolymers in our bodies, but are instead created with synthetic molecules designed in our lab,” Alabi says. Biopolymers include the proteins, DNA and RNA found in all living organisms. “We want to use what the body already makes as a guide, but then improve upon it by adding one modification at a time in a very controlled process,” he explains. “This level of control is important, especially when these bio-active polymers are used as scaffolds to carry drugs exactly where we need them to go.”

A second line of research in Alabi's lab involves understanding the underlying principles that dictate how nanoparticles move and interact in biological environments. For a targeted treatment to work, the active compounds need to get into specific compartments in the cells where they can be the most effective. The targeted treatment must be able to sense, respond and adapt to the local environmental cues to reach the desired site of action.

“In the end, any process we come up with must be scalable for it to have any real impact,” says Alabi. “If our work pans out, we hope to fundamentally change the way researchers and industrial scientists approach drug discovery.”

Alabi, a native of Lagos, Nigeria, joined the faculty at Cornell because it offered the perfect marriage of chemistry and engineering. “A lot of places I interviewed preached being collaborative, but Cornell truly is,” Alabi says. “The department here is open enough that I could find collaborators from different fields and make some valuable contributions to some tough problems.”

He was focused, in part, on finding a truly collaborative university because of his postdoctoral fellowship experience at MIT in the lab of biochemical engineer and Cornellian Robert Langer '70. “There are people in the Langer lab from many different fields and having access to that range of knowledge makes all the work better,” Alabi says.

When Alabi came to interview at Cornell three years ago, the daughter of the director of the Smith School of Chemical and Biomolecular Engineering babysat for Alabi's young son. “I knew right away this was the sort of place for me,” says Alabi. “The people in the school are great both personally and professionally. The opportunities for collaboration here are endless.”

– Chris Dawson

A portrait of Christopher Alabi, a Black man with short hair, wearing a black polo shirt. He is standing with his arms crossed, looking slightly upwards and to the right. The background is a warm, orange-red color with a large, curved architectural element on the right side. The text "CHRISTOPHER ALABI" is overlaid on the bottom left of the image.

CHRISTOPHER
ALABI



MICHAEL GORE



GENE- SP LICING BIOFORTIFIER

If you think plant breeding must be dull, you don't know Michael Gore.

Sure, the Cornell geneticist concerns himself with the traditional agricultural imperatives of higher yields and better resistance to drought and disease. But Gore's ambitions extend beyond the field. His aim is to make the human experience healthier, richer and more productive.

As a plant geneticist he places human interests at the center of the plant breeding process to create cultivars that contribute to solving nutritional and other problems faced by billions every day. Think maize packed with vitamins to counter childhood blindness, or nutrient-dense cassava to wipe out the worst symptoms of malnutrition. In Gore's world, a desert shrub becomes a potential source for domestic rubber, and industrial rapeseed a renewable jet fuel.

But it's his research into the biofortification of crops – staple foods packed with vitamins and micronutrients essential to human health – that most inspires his work.

“For individual human happiness to be achievable, a certain level of health is necessary. For too many, their food doesn't meet basic requirements,” says Gore, associate professor of plant breeding and genetics in the College of Agriculture and Life Sciences. “Since the dawn of agriculture human ingenuity has shaped plants to be bigger, more robust. Now we are pushing science to improve the nutrition we get from our food in a way that will impact billions of lives for the better.”

With a team of seven graduate students and five postdoctoral associates, Gore is pioneering quantitative genetic and genomic approaches to explore complex trait variations. Their work is revealing new insights into sustainable solutions to 21st-century problems.

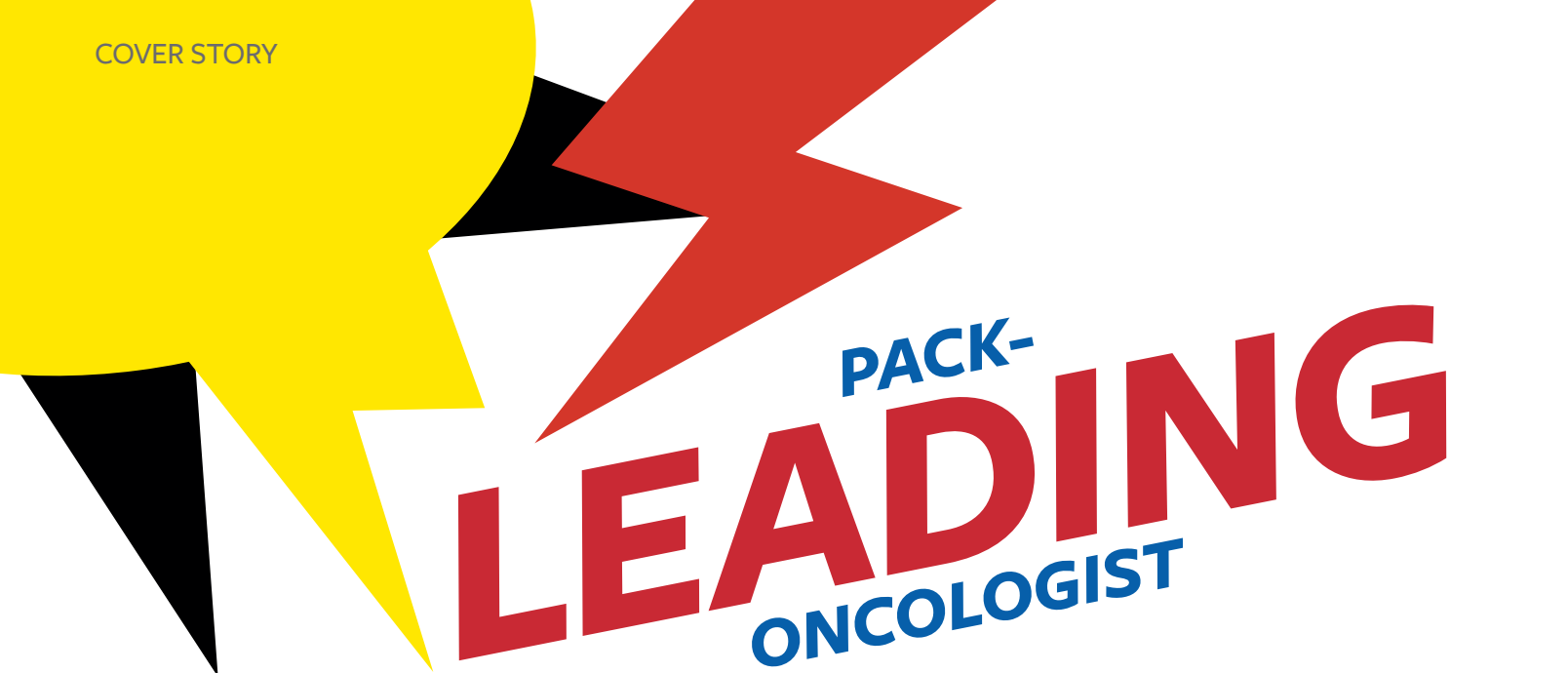
“Cornell can attract some of the best minds in the world,” Gore says of the students in his Bradfield Hall lab. Part of his team's work is developing the intelligence behind crop-sensing technologies that measure plant phenotypes instantaneously, accurately and at field-sized scales. In coming years the deployment of these high-throughput phenotyping technologies, allowing large-scale, rapid measurement of plant traits in little time, will be a reality. Drones in the sky and robots on the ground will use science he is pioneering to scan fields for disease and give growers early detection of emerging problems.

Gore envisions nutrition-focused plants and smart technology revolutionizing agriculture in the coming decades as scientists grapple with ways to feed a booming global population. For a plant breeder, that's anything but boring.

– Matt Hayes

“For individual human happiness to be achievable, a certain level of health is necessary.”

Michael Gore



PACK- LEADING ONCOLOGIST

When Dr. Kristy Richards first told people she was looking at pet dogs as part of her cancer research, she'd get a lot of blank looks. "I'd tell my M.D. colleagues what I was doing, and they'd go, '... what?'" she says. Fortunately, the Cornell University College of Veterinary Medicine recognized a visionary when they saw one, recruiting Richards in 2015 to head up their nascent comparative cancer program. Now, Richards' research creates buzz rather than bafflement.

Richards, an oncologist, studies lymphoma, a common cancer in humans and the most common cancer in dogs. Her plan is to recruit canine lymphoma patients (pets, not research animals) to veterinary clinical trials to test potential treatments – and then, in collaboration with her colleagues at Weill Cornell Medicine, apply that knowledge in human lymphoma patients.

Dog and human lymphoma patients share many biological similarities, as well as the unfortunate fact that rates of the disease are rising for both species. "We don't know why this is," Richards says. "It could be something in the environment, which both dogs and humans share. So in a way, dogs could be a canary in the coal mine."

Richards plans to test cutting-edge approaches such as immunotherapy, which harnesses the body's natural defenses to fight off cancer cells, in dogs suffering from lymphoma. This September, she was awarded a supplement grant from the National Cancer Institute, in partnership with the Roswell Park Cancer Institute in Buffalo, to further explore canine immunotherapy with veterinary patients that come to the Cornell University Hospital for Animals.

It's an exciting alternative to the current model for new drug development, which, for each new drug, takes an average of 15 years, costs \$2.6 billion and has a mere 7 percent success rate. "We can't afford to spend this kind of time and money to test potential drugs," says Richards. "Veterinary trials are an untapped resource – we have a really powerful tool to advance these therapies much more rapidly and efficiently – plus, we can find cures for both dogs and humans at the same time."

In many ways, Richards and Cornell have been a match made in heaven. Richards was one of the only M.D.s in the country doing comparative oncology in dogs, which made her the perfect person to head the comparative cancer program. For Richards, Cornell's well-established reputation of excellence in lymphoma research made the admiration mutual. "When they asked me to come to bridge the gap between human and canine research, and work with all my favorite lymphoma people – I said of course. It's been a total win-win situation."

– Lauren Roberts

"I'd tell my M.D. colleagues what I was doing, and they'd go, '... what?'"

Dr. Kristy Richards



KRISTY RICHARDS



DAVID MIMNO



BIG DATA- DIGITIZING HUMANIST

“Algorithms affect us daily as we use social media, our nation’s infrastructure and even our food supply.”

David Mimno

David Mimno, assistant professor of information science, is a prime example of the type of educator Ezra Cornell had in mind when he founded Cornell – one who combines fundamental knowledge with practical applications. In Mimno’s case, this means a teacher who interweaves classics and the humanities with computers and data science to create collaborations that benefit both scholarship and students.

Mimno was interested in computational social sciences before he even knew the field existed. “I was always a history nerd and a computer geek,” he recalls. “I realized I didn’t have to choose. I could use my undergraduate classics major and combine it with a Ph.D. in computer science, and that was the toolkit I needed to most benefit scholarship.”

He uses mathematical formulas to detect patterns in historical documents and literature and teaches the popular course Text Mining for History and Literature. “I like to contrast what people think is going to happen when you apply computers to literature [with] what really happens. A lot of the anxiety is that computers will miss the nuances of culture, but what actually happens is it’s often the humans who will miss the subtle patterns as there is only so much their minds can memorize and process,” he says.

Mimno is currently working with researchers at UCLA on reclassifying large volumes of Danish folktales. With the ability to digitize the 50,000 stories and count and classify the words, the researchers can take each story and compare it with similar stories and volumes. “We can reconstruct the ambiguity the original collector had in cataloging because we don’t have the constraints he was facing,” Mimno says.

“The study of culture, history and literature – everyone has a stake in [it],” says Mimno. “The same can be said of machine learning and data science. Algorithms affect us daily as we use social media, our nation’s infrastructure and even our food supply. One of my motivations is showing how computation can benefit overall academic scholarship that helps find solutions for world problems.”

Mimno was attracted to Cornell because of the friendly atmosphere and the ability to cross disciplinary boundaries. As a teacher, he most likes hearing from students that they are actually using things they worked on in class. “We have the monumental task of trying to train people to operate in a world that we fully expect they themselves will create,” he says.

– Leslie Morris



PATTERN- DETECTING LAWYER

Cornell Law School hired James Grimmelmann as a law professor, but they got a translator in the bargain. Grimmelmann, who started teaching at Cornell Tech this fall, is bridging the gap between students who dream of becoming “the Notorious R.B.G.” (U.S. Supreme Court Associate Justice Ruth Bader Ginsburg ’54) and those whose idols are more like Mark Zuckerberg. These students comprise the inaugural class of the new, one-year “law tech” Master of Laws program, which is designed to give already-practicing attorneys or recent law graduates the skills and knowledge to succeed in the technology and entrepreneurial ecosystem.

Grimmelmann studies the intersections between computers and the law, and what each side has to teach the other. A former Microsoft programmer, he’s currently exploring ways of looking at copyright law through a computer science lens – in particular, figuring out how to quantify the expression in artistic work, and the similarities between different works. Grimmelmann says tech industry insiders already think about copyright this way: don’t worry about defining aesthetics, just write some code.

“I think it would be very helpful for the legal system to understand how people who write software think about what they do,” he says. “And this is a general principle for my work, which is that computer science is incredibly pragmatic. It’s about getting computers to do things. And that pragmatic approach to deep questions sidesteps the philosophical issues and just says, ‘What can we do?’”

Another facet of Grimmelmann’s work involves teasing out an analogy between computer code and legal texts. “If you think about a statute that says ‘don’t speed,’ it’s like a computer program – it’s a piece of text that does something in the world,” he says.

“Even incredibly complicated programs can have completely determinate behavior. That possibility, of language that doesn’t require controversial on-the-spot discretion, is a kind of a holy grail for lawmakers,” Grimmelmann adds, noting this also raises the question of which features of the legal system can be delegated to machines. “Could you have automatic enforcement of rules against market manipulation that’s simply an algorithm that spots suspicious trades and declares them illegal?” he asks.

Cornell Tech provides the perfect venue for someone wrestling with these liminal questions. “These are law students who are deeply interested in technology,” Grimmelman says. “[There] are engineering students who are building things that are going to have massive policy implications. This is a really great moment for doing things that aren’t held back by traditional boundaries.”

Law students without a strong technical background shouldn’t be intimidated, though – Grimmelman says they’re already well equipped to get up to speed. “Lawyers learn new areas and new fact patterns all the time for cases,” he says. “Learning tech is no different. It just requires the commitment to do it, and the humility to accept that you have to put in the work.”

– Ian McGullam

“I think it would be very helpful for the legal system to understand how people who write software think about what they do.”

James Grimmelmann



**JAMES
GRIMMELMANN**



YIMON AYE

BOUNDARY- PUSHING CHEMIST

Assistant professor of chemistry Yimon Aye's research begins with the 50 trillion or so cells contained in the human body. Every one of these cells is affected by highly diverse reactive chemicals, both good and bad, at any given time. How these different chemical signals and cells interact to maintain a healthy balance in the body has been a long-standing mystery – one Aye is determined to solve.

Her lab takes a unique, chemistry-driven approach to develop tools to study particular chemical-signaling events in the context of a single cell and of a whole organism. This approach started from “pure scratch,” says Aye, and was unrelated to her previous research. “It was a high-risk, high-reward approach for a problem that is very important for the biological field. It will be a breakthrough if we can solve it.”

Aye, a Milstein Sesquicentennial Fellow in the College of Arts and Sciences, attributes her ability to tackle the complex biological research problems at the fundamental chemical level to her training in the cross-disciplinary fields of chemistry and biology and to the intellectual and scientific diversity at Cornell and at Weill Cornell Medicine, where she holds a secondary appointment. “The opportunities at the two campuses are incredibly unique,” she says. “My lab has been able to take on new approaches, new ideas, new skill sets and new projects because of this collaborative environment.”

She adds that biological faculty members at both Cornell and Weill Cornell Medicine “have always opened the door to help me with ideas, technique transfer and training opportunities – whatever would be beneficial to my students. They really care, not just about their own research but about how we can mentor students to prepare them for their future beyond Cornell.”

The students and postdoc members in Aye's lab hail from seven countries, providing a diversity essential to doing good science, according to Aye. “It's very important when you try to solve a complex research problem to bring in different perspectives, different cultural and scientific ideas,” she explains. “I personally favor thinking outside the box.”

Aye notes the high quality of graduate students she has recruited. “They come to Cornell because of the level of knowledge and dedication and excitement here about science,” she says. “At Cornell, they have the freedom to pursue their interests and what's most exciting for them. [They] can use the knowledge and expertise we have in our lab and also seek out other opportunities, like my grad student who reached out on his own to a professor in the vet school. I am very impressed with how passionate my students are.”

– Linda B. Glaser

“My lab has been able to take on new approaches, new ideas, new skill sets and new projects because of this collaborative environment.”

Yimon Aye


PICTURE CORNELL BY ROBERT BARKER

Carlton Potter, DVM '40, a former member of the Big Red Band, connects with current band members during Homecoming Weekend in September.





Chiedozie Egesi, Cornell's NextGen Cassava project manager, examines a field of the starchy plant in Nigeria. Cassava stands up well to drought and marginal soil, and can be stored long term.



“IF YOU USE THE RIGHT COMBINATION ... CASSAVA CAN SUSTAIN A NATION.”

Chiedozie Egesi



**“For plant improvement,
we’re speeding up the
process a lot.”**

Lukas Mueller, Cornell associate professor

For our tomorrows: Refining facets of sustainability

By Blaine Friedlander

As the planet warms, arable land decreases and population grows, global agriculture is facing a dilemma, prompting farmers and researchers to be agile and creative in responding to these critical challenges. Staples like maize and wheat come up short against a changing climate, but cassava – a once-neglected key crop – shows promise for feeding millions.

Cassava, also called yuca or manioc, is a low-cost carbohydrate. Americans make pudding from tapioca derived from the root, but to 250 million farming families in sub-Saharan Africa who consume the starchy vegetable daily, it is a major staple. Cassava stands up well to marginal soil, drought and long-term storage. As a critical food and nutrition source, Africa’s small farmers produce more than half the world’s cassava, about 86 million tons on 25 million acres.

Chiedozie Egesi manages Cornell’s NextGen Cassava project, a global consortium of scientists who are working to unlock the full potential of the versatile crop. Egesi explains that beyond eating it, farmers can process and sell it. In its flour form, it compares well with wheat. “If you use the right combination of good seed, good agronomy and good extension delivery systems, cassava can sustain a nation,” he says.

Cassava actually benefits from a warming climate. “Where climate change is happening, cassava outperforms other major crops,” says Egesi. “It’s a major staple crop for poor families on marginal land – and it is mainly grown and produced by women.”

In 2012 the Bill & Melinda Gates Foundation and the U.K. Department for International Development awarded \$25 million to researchers from Cornell, Uganda, Nigeria, Ghana, Tanzania and other countries and agencies to improve cassava genetics. Egesi says breeding nutritional enhancement into the plant is time-intensive, as genotypes flower poorly, making it hard to crossbreed. “It’s a lengthy process, and it can take up to a decade to release new varieties,” Egesi says. “We’re working to shorten its breeding cycles.”

In collaboration with the NextGen Cassava project, researchers at the Boyce Thompson Institute, a Cornell affiliate on the Ithaca campus, have developed a key component to bolster the crop: Cassavabase, a genetic database for cassava breeders worldwide.

Lukas Mueller is a Cornell associate professor whose BTI laboratory includes postdoctoral researchers Guillaume Bauchet and Naama Menda; Jean-Luc Jannink, a U.S. Department of Agriculture



Above: Clockwise from top left: Maysoon Sharif, M.Eng. '11, Sarah Long '09, doctoral student Shiuli Vanaja and Uttara Gadde '15 share a light moment inside an AguaClara water treatment plant at the village of Gufu, Jharkhand, India.



Above: Louise Bruce '09 strives to help New York City see zero organic waste going into landfills by 2030.

research geneticist and adjunct professor, and Isaak Yosief Tecle, a bioinformatics consultant, furnish added expertise to the lab using genomics-assisted breeding to hone cassava traits – such as size, flavor and disease resistance – while the plants are still seedlings.

Says Mueller: “For plant improvement, we’re speeding up the process a lot.”

It starts in the classroom

The cassava project is but one of countless examples of Cornell University’s reach – across disciplines, approaches and the globe itself – into the intersecting world of sustainability.

Cornell students, faculty and alumni are nourishing and transforming the world’s sustainability machinery.

As reflected in Ezra Cornell’s “any person ... any study” philosophy, the world itself is an intricate place where scientists, sociologists, humanists, lawyers, biologists, oceanographers and business leaders help create solutions so that clean waters flow into village homes in India, nutritious crops grow in Africa’s arable lands, and growing cities use new solutions to grapple with the reality of waste.

Cornell undergraduates take advantage of a dazzling array of campus projects and apply their knowledge throughout the region and around the world. Students have 475 classes involving sustainability from which to choose, including anthropology’s Indigenous Peoples, Ecological Sciences and Environmentalism, the ILR School’s Labor, the Environment and Social Change, or Biological and Environmental Engineering’s Renewable Energy Systems.

475

number of classes
students can choose
involving sustainability



Earth’s population stands
at 7.4 billion people, and it
will grow to 7.7 billion by
2020



Above: Professor Gerald Torres: “You want lawyers to be conversant with scientists to think through the best policies.”

A new environment and sustainability major is being discussed in the College of Arts and Sciences and the College of Agriculture and Life Sciences. Its goal: To give students more ways to combine studies in physical and biological sciences with social science and humanities fields. For students, this opens the social, ethical and public policy dimensions of environmental issues.

The College of Business’ Center for Sustainable Global Enterprise – housed at Johnson and directed by Mark Milstein, clinical professor of management – is a tapestry of partners, research projects and student opportunities that offer financially viable, self-sufficient answers to green challenges. Recent projects range from the Cheetah Conservation Fund, which saves cheetah savannah habitat from encroaching bush and compacts the woody bush into marketable cooking fuel; to suggesting international source strategies for the organic food company Made in Nature; to guiding energy companies in a changing business climate.

In less than a year, the historic opening of Cornell Tech’s sustainable Roosevelt Island campus in New York City – driven by LEED (Leadership in Energy and Environmental Design) specifications, and Net Zero and Passive House principles – will give rise to continued technical creativity.

Sustainability offers hundreds of facets. Comprising more than 480 faculty fellows and 50 research fellows, Cornell’s Atkinson Center for a Sustainable Future has granted millions of dollars to support faculty pilot projects that are yielding substantial environmental and economic benefits for the world. David Lodge, the research center’s new director, is fostering partnerships with

the Environmental Defense Fund, CARE and for-profit companies to hasten the incorporation of Cornell research innovations into on-the-ground solutions. Cornell’s students hone their niches on campus, throughout the region and on an international scale in order to make Earth – environmentally, economically and socially – a thriving place.

Elders have used the aphorism “You can’t save the world” as cautionary advice. Finding various ways to conduct sustainability across fields and disciplines, Cornellians may be proving that wrong.

A more potable place

Using gravity, solar power and engineered filters, Cornell students in the AguaClara program have created community water-treatment plants throughout Honduras. AguaClara LLC – the professional version of the student project, a Certified B Corporation – has now expanded to India, the next step in its goal of providing potable water around the world.

“Engineering problems are the least difficult. Understanding the cultural and political components are what’s complicated,” says Maysoon Sharif, M.Eng. ’11, who, along with Sarah Long ’09 and Karen Swetland, Ph.D. ’12, kick-started AguaClara’s nonprofit business version. Pilot projects in two Indian villages are now complete.

Earth’s population stands at 7.4 billion people, and it will grow to 7.7 billion by 2020. Without electricity, water treatment has been virtually impossible – a reality for about 1.3 billion people, according to the World Health Organization. And about 1.5 million people – mostly children – die annually from poor water quality and waterborne disease.

Thanks to AguaClara LLC, these Indian villages have seen far fewer waterborne diseases, says Charles H. Dyson School of Applied Economics and Management doctoral student Shiuli Vanaja and Uttara Gadde '15, who graduated from the College of Human Ecology. With funding from the Tata Cornell Institute for Agriculture and Nutrition, they surveyed villagers to comprehend the time-saving impact of reliable, potable water.

With clean water nearby, village women who might have spent more than four hours a day retrieving it now only spend 30 minutes daily. The extra time enables women to handle more agricultural work and provides more leisure time in the homes.

"There are substantial time savings," explains Vanaja. "It seems from the initial field observations that the task of managing the water systems successfully may be developing community leadership among women in these villages."

Eco solutions for low-income neighborhoods

The Westside Value Laundromat represents the ascension of Buffalo's West Side – and Skye Hart '18 spent the summer of 2016 researching the neighborhood's revitalization so others can replicate its success.

Through ILR's High Road Fellowship, funded through the Engaged Cornell initiative, Hart served as an intern for the Partnership for the Public Good to document the work done by People United for Sustainable Housing's (PUSH) project in Buffalo.

Facing blighted buildings, decrepit housing and dangerous vacant lots, PUSH has – for more than a decade – offered green ideas and action to create a thriving neighborhood.

"I'm piecing it together into a cohesive narrative," says Hart.

Through Buffalo's Green Development Zone, PUSH aims to revitalize 25 blocks on the city's West Side to help residents lower their energy bills by weatherizing homes, harnessing geothermal heating, turning vacant lots into rain gardens and net-zero energy housing, and fostering community with artistic initiatives and environmental projects.

Hart's research also contributes to Buffalo's effort to implement inclusionary zoning, which integrates neighborhoods economically by requiring new, market-rate housing to include affordable units.

"That way those earning low incomes will have access to better schools, shorter commutes and public transportation, resulting in a more equitable and eco-friendly lifestyle," says Hart, an urban and regional studies major in the College of Architecture, Art and Planning. "PUSH has shown that environmentally sustainable initiatives are a solution in low-income neighborhoods."

Organic diversions

Give Louise Bruce '09 your food scraps, your yard trimmings, your organic waste yearning to compost free.

Bruce, senior program manager in the New York City Department of Sanitation, oversees the development and expansion of the agency's organic waste diversion

initiatives, which include a pilot curbside collection program and neighborhood drop-off sites, all of which serve 700,000 residents. Residential and commercial organic waste – such as kitchen rubbish – accounts for 30 percent of the city's total trash. Residents of all five boroughs toss away an average of 15 pounds of garbage per person weekly, generating unimaginable tons of trash each year.

In 2015 the sanitation department's pilot program diverted 15,850 tons of organic material into compost. By late 2018, the program will become permanent and serve the entire city with either organic waste curbside pickup or neighborhood drop-off sites, with a goal to achieve zero organic waste going to landfills by 2030.

Beyond the advantages of diverting organic waste, city residents enjoy a reduction in rats. "By collecting organic waste, you might think you're creating a feast for animals," says Bruce, "but in reality we're making the food waste inaccessible to rodents by moving it from a black trash bag at the side of a curb to a sturdy bin, which has a latch that can close."

In the shadow of Brooklyn's Gowanus Expressway, Red Hook Community Farm is among the city's 87 organic waste-receiving sites, and it's the largest urban compost site in the United States that runs solely on renewable resources, says David Buckel, J.D. '87, senior organics recovery coordinator for the NYC Compost Project (funded by the city's sanitation department) and hosted by the Brooklyn Botanic Garden at the farm. Red Hook's compost – which diverts 150 tons of organic waste annually – helps to grow more than 30 crops that include arugula, heirloom tomatoes and okra for neighborhood residents and restaurants.

Large, heaping mounds formed into windrows, aerated by hand or solar-powered blowers, process the waste year-round. It takes about 2,000 volunteers annually armed with pitchforks and wheelbarrows to handle the work. Solar power runs the heat lamps to keep the volunteers' gloves warm in winter.

Says Buckel: "Volunteers love that we keep food scraps in the community to help green the neighborhood and that we do it in the most sustainable way, all by hand."

Raising the environmental bar

Gerald Torres, Cornell's Jane M.G. Foster Professor of Law, is an Atkinson Center faculty fellow who wears an important hat outside Ithaca: He chairs the board of the Earth Day Network, the international group that organizes Earth Day each April and links all the local celebrations. "What can lawyers bring to the table?" Torres asks. "If you're trying to improve the environment or maintain water flow for agricultural lands, it all starts with policy goals, rules and regulations. Lawyers provide a clear understanding of institutional adjustments needed to bring about natural system changes."

Torres served as deputy assistant attorney general for the U.S. Department of Justice's environment and natural resources division and as chief counselor to Attorney General Janet Reno '60 from 1993-95. For his environmental



“I’M PIECING IT TOGETHER INTO A COHESIVE NARRATIVE.”

Skye Hart '18

Photographed in front of the Westside Value Laundromat on Buffalo’s West Side, Skye Hart '18 spent this past summer researching and chronicling People United for Sustainable Housing (PUSH) and its Green Development Zone.



Left: In Puako, Hawaii, Chuck Greene, left, with Murray Taylor of the Jupiter Research Foundation, a group that helps to develop new technology to grasp the natural world, test robotic Wave Gliders.

Below: Energy Warriors team members – from left, educator Laura Komor, Marjorie Olds, J.D. '76, Aloja Airewele and educator Cheryl Starcher-Ceresna (all from Cornell Cooperative Extension of Tompkins County) – look over a solar panel.



“I am not going to sugarcoat it, as the challenges have been monumental.”

Aloja Airewele,
coordinator for the Energy Warriors program

law course this fall, Torres' students are looking at compliance, enforcement, defense and counseling. And because environmental lawyers must be informed by science, many Cornell scientists visit his classroom.

"You want lawyers to be conversant with scientists to think through the best policies," says Torres. "One of the pleasures of being here is that we have some of the leading natural scientists in the world."

Allocating quality water resources will be a key challenge as climate change worsens, Torres says. For much-needed policies here and around the world, he says, "I would love to say we're going to turn it over to the scientists to draw up the policy. But the politics of it means you're still going to need to craft rules and regulations in the face of nonscientific policy objections. Lawyers, as well as scientists, will be integral to mitigating the impacts of climate change."

Break the criminal cycle: Go green

Youthful offenders have a new, verdant path to productive lives as Energy Warriors, a program that offers a positive pipeline from the criminal justice system into a world of on-the-job sustainability training, licensure and certification – and reintroduces educational opportunities – all in the name of reducing energy.

"The youth come from drugs and crime – sometimes violent and sometimes nonviolent – and we prepare them for the workplace," says Aloja Airewele, coordinator for the Energy Warriors program, a partnership between Cornell Cooperative Extension of Tompkins County and the New York State Office of Children and Family Services. "We front-load these youth with credentials, and we give them the advantage of skills – a leg up, if you will."

A rigorous year's curriculum gives students professional trade experience in creating an environmentally friendly space. From air sealing to insulation methods, understanding ducts to weatherization, the students master new skills. Additionally, they learn to communicate as they adopt talking strategies on how to address homeowners professionally, speak to co-workers with respect and weigh their own options for workplace conflict resolution.

The Energy Warriors model: classroom training, hands-on work and nurturing career connections. During the last school year, 46 youth participated from Tompkins and Delaware counties – pilot programs that have been expanded to Columbia County for the 2016-17 school year. In total, nearly 80 youth have participated in the program – and most participants, if not all – have returned to school.

In 2013, Marjorie Olds, J.D. '76, a former city of Ithaca judge and a treatment court judge who now consults on youth recidivism and re-entry issues, helped design the program from within the New York State Office of Children and Family Services. Olds reached out to Cornell Cooperative Extension for help in shaping it. Those who complete the Energy Warriors program now get a solid chance to merge back into the community.

Says Airewele: "I am not going to sugarcoat it, as the challenges have been monumental. We are now providing

New York a new template to allow youth to achieve sustainable, meaningful reintegration, and this fall we will be visiting all of New York's regions to engage with them with the best practices we've found."

Creating sustainable fisheries

Oceans serve up oxygen, horde atmospheric carbon dioxide, provide protein and pump a watery pulse across this planetary blue dot we call home. Sadly for the deep and bountiful blue, humanity fouls the sea with trash and extra nitrogen, and often extracts too many fish – stressing the ecosystem's equilibrium.

To assess the ocean's fish populations, doctoral candidate Erin Meyer-Gutbrod and Chuck Greene, professor of earth and atmospheric sciences, are perfecting acoustic instruments with exquisite accuracy to outfit robotic Wave Gliders – a large surfboard-sized platform, powered by the sun and oceanic motion – to take inventory of the sea's inhabitants in real time.

Survey ships that currently do this work today are expensive – costing many tens of millions of dollars – because of maintenance, salaries and fuel needs. And, at best, these vessels survey the oceans annually. In the near future, Meyer-Gutbrod and Greene envision a fleet of hundreds or even thousands of gliders literally working around the clock for a fraction of the cost.

"The Wave Glider – and the instrumentation we develop – will provide ocean and fisheries scientists and managers with more consistent and reliable data on the distribution and abundance of marine organisms," Meyer-Gutbrod says. In the United States, finding food near the coasts goes well beyond netting fish and sending them to stores – it's a \$37 billion industry that supports more than 1.5 million jobs in commercial fishing operations, wholesalers, processors and retailers, according to the National Oceanic and Atmospheric Administration.

In their quest for an aquatic inventory, Greene and Meyer-Gutbrod partner with Liquid Robotics of Sunnyvale, California, makers of Wave Gliders, and Biosonics in Seattle, makers of scientific echo sounders. Wave Gliders harness energy from waves for propulsion and gather solar energy to power environmental-sensing, navigation, control and communication systems, enabling them to operate for long periods of time.

This past September, Greene – an Atkinson Center fellow – hosted a Wave Glider exhibit at the U.S. Department of State's "Our Ocean" conference. Later this fall, in an initiative funded by the Atkinson Center and the Environmental Defense Fund, he will travel to Peru with state department officials to develop long-term coordination of fisheries management throughout the Americas.

"The ocean is vital to human survival – both environmentally and economically," says Greene. "Deleterious fishing practices not only threaten fisheries, but they also impact marine mammals, seabirds and us. Taking an accurate inventory of our seas will help us achieve a more sustainable ocean and planet."

Learn more: sustainability.cornell.edu

PICTURE CORNELL BY JOE WILENSKY

A meteor is visible over the Sackett Bridge and Beebe Lake in the early morning hours of Aug. 12 during the Perseid meteor shower.





Making their mark

UNDERGRAD RESEARCH SCHOLARS DRIVE DISCOVERY

By Diane Lebo Wallace

55%

of program participants pursue graduate school, often at top universities, with more than 70 percent seeking degrees beyond the master's level.



NEARLY HALF graduate with distinction; and 45 percent submitted senior honors theses in 2015-16.

Looking back, Leyla Davis '07 is still amazed that by age 19 she had already spent dozens of nights in the cloud forests of Costa Rica and Panama in search of red-eyed tree frogs. Today, the former Hunter R. Rawlings III Cornell Presidential Research Scholar is a Swiss National Science Foundation postdoctoral fellow at Imperial College in London and part of a multinational research effort to understand and mitigate the rapid decline of amphibian populations around the globe.

She also is one of some 800 students across Cornell's seven undergraduate colleges who have distinguished themselves as Rawlings scholars. Founded in 1996 and named in 2006 to honor Hunter R. Rawlings, president emeritus and now interim president, the program offers students a head start on gaining research experience by working closely with Cornell faculty.

"Two decades ago, we saw the Cornell Presidential Research Scholars Program as a way to attract the best college students in the country to Cornell by involving them in research from their very first undergraduate year," Rawlings recalls. "An impressive number of Cornell's early and recent presidential research scholars now contribute to innovation and to the solution of the world's problems through professional pursuits across an array of fields.

"I have no doubt that even more talented Cornell students would follow in their footsteps were we able to provide more scholarships and a level of support that reflects the rising cost of research," he says.

"Demand for admission has been increasing steadily," says Kristin Ramsay '88, coordinator of the program. "Faculty nominated more than a hundred rising juniors, and we admitted 22 of them last spring. Our target for incoming freshmen is 40; this fall, we have an RCPRS class of 55 freshmen. This is due to an unexpectedly high yield of admitted students, many who were attracted to Cornell by the opportunity to begin research as a freshman."

Meet three alumni whose experiences as Rawlings scholars have helped propel their careers and advance their achievements.

HOW IT WORKS

Up to 200 students are supported each year; the majority are first-year students. Scholars collaborate with faculty mentors to design and carry out individualized programs of research.

Scholars receive stipends to support research and related activities (\$8,000 over four years for scholars admitted as freshmen; \$5,000 for those admitted as juniors) and an annual need-based loan replacement of up to \$4,000.

Added benefits: a freshman colloquium, peer advisory network, research in progress forum, summer research experiences and more. Learn more at commitment.cornell.edu/rawlings-research-scholars.

Leyla Davis '07, CALS

Postdoctoral fellow
Imperial College of London



“The program jump-started me into a lab from day one.”

“It all started in my backyard pond in Florida,” says Davis, an amphibian disease ecologist who grew fascinated by frogs and other amphibious creatures near her family’s home just north of the Everglades. There, as the home-schooled budding scientist neared the finish of her international baccalaureate degree, she was drawn to study in Cornell’s program in ecology along with those at other leading universities. But RCPRS became the deciding factor in her college choice. “The program jump-started me into a lab from day one,” she says.

Currently, Davis is working on a self-designed, self-directed project in collaboration with the Zoological Society of London and the Natural History Museum in Madrid. She and a large community of ecologists have an urgent task: thwart the threat of *Batrachochytrium dendrobatidis* (Bd), an emerging fungal pathogen that causes an infectious skin disease in amphibians. This disease is a major driver in accelerating global extinction of amphibians unparalleled since the age of the dinosaurs. Scalable and sustainable intervention methods are needed. Davis is studying how beneficial bacteria isolated from amphibian skin prevent Bd infections. For her postdoc she is testing these bacteria by administering probiotic baths to treat tadpoles in infected mountain ponds in Spain.

Davis says her experience as a Rawlings scholar was key to her ability to self-direct research – from gaining field experience and laboratory skills to the challenges of fieldwork, working through data analyses and writing results for publication.

“Through RCPRS you get to see a project through from start to finish using the full scientific method, from formulating your hypothesis and research questions to collecting and analyzing samples, to writing and publishing a paper,” she says.

Davis, who now speaks four languages, emphasizes RCPRS also opened the door to multiple international research opportunities and prepared her for living abroad: “By the time I moved to Switzerland to work on my Ph.D. at the University of Zurich, I really wasn’t afraid of going to countries where I don’t speak the language or of living in different international communities.”

She reserves her highest praise for the guidance and mentoring she received from several Cornell faculty members, especially her faculty adviser, Kelly Zamudio, the Goldwin Smith Professor of Ecology and Evolutionary Biology, and former graduate students Jeanne Robertson and Heidi Rutschow. A paper resulting from Davis’ undergraduate research was published this year in *Frontiers in Ecology and Evolutionary Biology*.

David Kim '03, Arts and Sciences

Assistant professor, Whitman College
Pianist and fortepianist
Walla Walla, Washington



“Holding a research scholarship felt like a big statement of belief.”

For David Kim, the impact of RCPRS was simple and profound: “It changed my life,” he says. “To start with, it enticed me to matriculate at Cornell.”

Kim, who holds advanced degrees from Yale and Harvard and performs internationally, entered Cornell as a first-year chemistry student and presidential research scholar and began his work with Geoffrey Coates, the Tisch University Professor of Chemistry and Chemical Biology. Piano was his second interest. But by sophomore year he had become serious about music, changing his major, and with it the focus of his research – all with Coates’ blessing.

“Then I got extremely lucky – at the time I had no idea how lucky,” Kim says. “I ended up doing some research projects with musicologist Neal Zaslaw [the Herbert Gussman Professor of Music] while studying performance with Malcolm Bilson, the Frederick J. Whiton Professor of Music Emeritus. “Basically, what I was getting was the best kind of musicological research training possible: one-on-one experience with absolutely one of the world’s premier Mozart scholars as well as first-class piano training from a leading artist.”

Working with Zaslaw, Kim researched Mozart’s “Jupiter Symphony” for Zaslaw’s Kochel catalog, the most complete descriptive listing of Mozart’s compositions, tried to track down the origins of a Bavarian folk tune, and then produced a senior thesis on triplet assimilation. His thesis research became a turning point, changing and deepening Kim’s thinking about the function and meaning of musical notation.

“My interests in musicology and performance both started at Cornell,” says Kim, an active music scholar today. “I was later able to be aggressive in pursuing the two together because of the opportunities there. It had ramifications for the rest of my education, and it’s something that characterizes my current professional responsibilities.”

Looking back, Kim says, “Holding a research scholarship felt like a big statement of belief. It was great for me to have this program saying, ‘Yes, we will support this. We believe in you. Go ahead and do it.’ That’s very encouraging and supportive, and I took that as a real responsibility.”

Karim Abouelnaga '13, Hotel

Founder, CEO and president,
Practice Makes Perfect
New York City



“I believe one of the purposes of college is to develop a person’s ability to think creatively and independently.”

Entrepreneur Karim Abouelnaga launched Practice Makes Perfect to help narrow the achievement gap among youth in high-need communities in the New York City area. The nonprofit matches near-peer mentors with elementary and middle school students in a summer program designed to provide academic continuity and improve their math and English language skills. In just five years, PMP has served 2,000 elementary and middle school students.

PMP was recognized at the Clinton Global Initiative Conference in 2013. Earlier this year, Abouelnaga was named one of retired National Basketball Association player Magic Johnson’s “32 Under 32.”

A first-generation college graduate, Abouelnaga founded PMP in 2010, bringing together five Cornell classmates and gaining support from Entrepreneurship at Cornell and the Cornell Public Service Center. Skills he gained as a Rawlings scholar continue to shape his success today and the impact he makes on others.

“Without RCPRS funds, I would not have been able to commit myself to my research,” says Abouelnaga, whose work explored the “sorting effect” in education and the impact of financial incentives on Advanced Placement enrollment.

“The experience of formulating a hypothesis and constructing an argument using evidence to prove or disprove it is one of the most intellectually stimulating experiences you can have. Doing research independently on a topic or an area that you’re interested in and then pressure testing it with an esteemed faculty member – in my case Michael Sturman [the Kenneth and Marjorie Blanchard Professor of Human Resources] – accelerates the development of your critical thinking ability.

“I believe one of the purposes of college is to develop a person’s ability to think creatively and independently – both of which I was afforded through my RCPRS experience,” he says. “I use the skills I learned in constructing arguments with my team when we’re making decisions that continue to impact the future of our company.”

PICTURE CORNELL BY CORNELL TECH

The Bloomberg Center, which will be Cornell Tech's first academic building, is seen in August under construction on Roosevelt Island in New York City against the Manhattan skyline and Queensboro/59th Street Bridge in the background. The campus is set to open in 2017 – with 800,000 square feet of buildings, 2.5 acres of open space and an academic community of almost 600 people – when the first phase of construction is complete.





FACULTY PAPERS ILLUMINATE RESEARCH, ADD CONTEXT TO ARCHIVES

Faculty papers tell the story of Cornell. Hundreds of sets of faculty papers, stretching back to Cornell's beginnings, comprise a hefty component of the University Archives, in Cornell University Library's Division of Rare and Manuscript Collections. Their contents are incredibly diverse and include lecture notes, international awards, correspondence with world leaders and photos of specimens or samples.

These collections illuminate the teaching methods that shaped generations of Cornellians and the faculty research that changed the world.

They provide context to scientific discoveries, such as Hans Bethe's Nobel Prize-winning research in astrophysics, quantum electrodynamics and solid-state physics.

They fill in valuable behind-the-scenes details of trailblazing scholarship, from women's studies to agriculture to engineering.

"State-of-the-art research has been happening at Cornell since its earliest days, and we want to make sure we capture that," says Evan Earle '02, M.S. '14, the Dr. Peter J. Thaler '56 University Archivist. "It's also very important to look back and see what was taught and how it was taught – both can be equally fascinating."

The faculty papers are complemented by other collections, too. Just as faculty papers can shed light on the student experience, student papers can preserve information about their professors that might otherwise be lost. For instance, student notebooks reveal that Vladimir Nabokov's 1950s Literature 311 class was nicknamed "Dirty Lit," and that Nabokov told them – perhaps in jest – that they'd need "medical evidence" if they wanted to "repair to the bathroom" during the final exam.

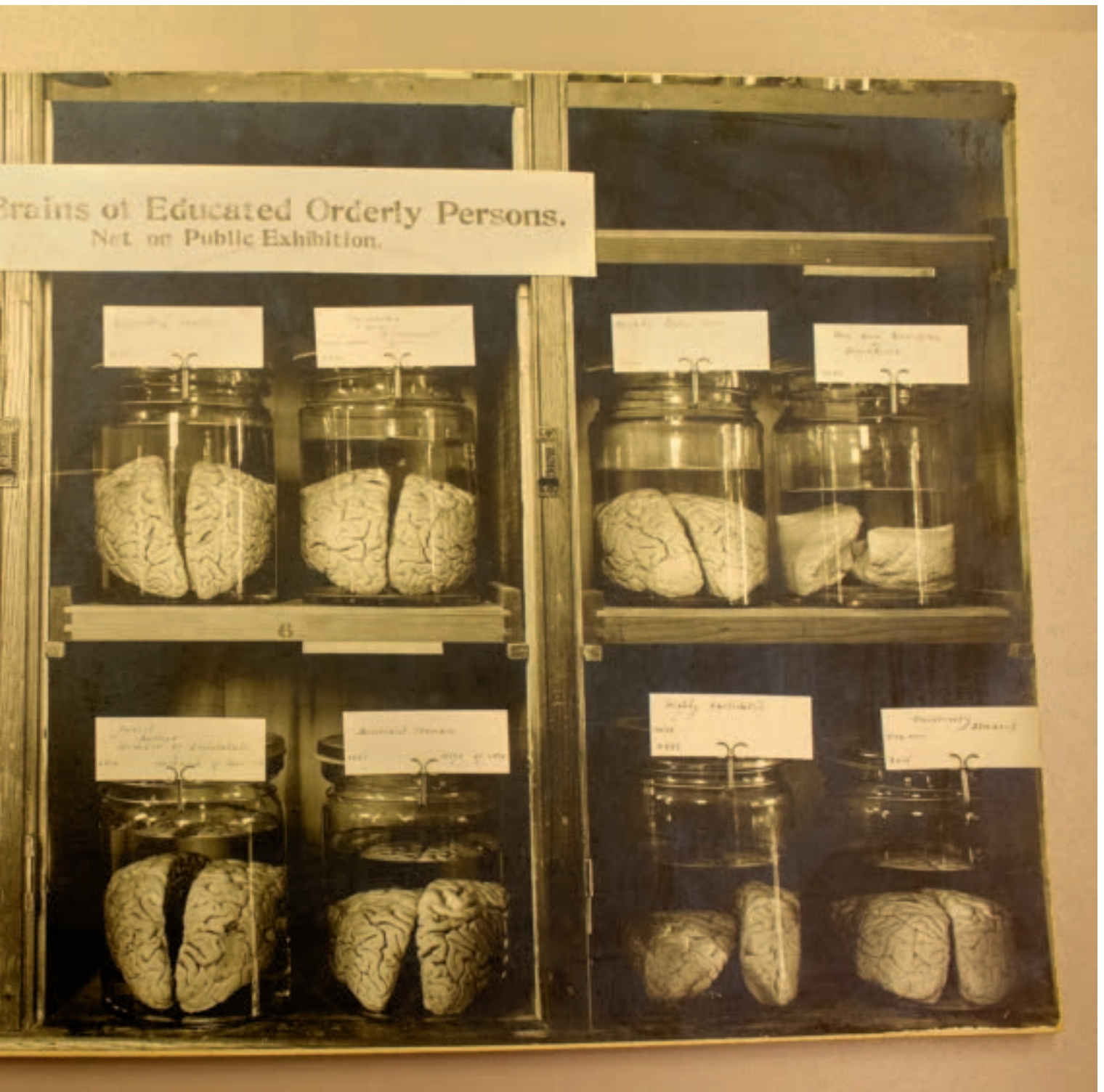
Today, Cornell's archivists work not just to preserve and make accessible records of the past, but to capture the present Cornell experience. Twenty-first century archivists grapple with the increasingly digital nature of personal collections. Websites and social media posts have become essential elements to understanding a researcher's work and impact, but preserving them – amid constantly changing technology – represents new challenges. To that end, the library recently hired its first-ever born-digital archivist, who focuses daily on preserving items that were "born" digital – items that never existed in physical form.

But whatever format future collections take, faculty are encouraged to contact the Archives about organizing and preserving their materials – both the physical and the virtual – so the output of today's influential thinkers, and tomorrow's Nobel Prize winners, remains available for history and research.

Questions about faculty papers? Contact Evan Earle, efe4@cornell.edu.

– Melanie Lefkowitz





Far left: Biochemistry professor James B. Sumner's Nobel Prize in chemistry (1946). **Left and at right:** ILR professor Alice H. Cook, whose papers are housed at the Kheel Center for Labor-Management Documentation and Archives.



Above: A photograph from the archive of natural history professor Burt Green Wilder, Cornell's first animal biologist, who created what's now called the Wilder Brain Collection, kept today in Uris Hall. **Right:** Some of Wilder's bone specimens.



PICTURE CORNELL BY ROBERT BARKER

Alumni, students, friends and family fill the stands in Schoellkopf Stadium in September during Homecoming Weekend for the Cornell Big Red vs. Yale Bulldogs football game (Cornell won, 27-13).







**“SO MUCH HISTORY AND ...
CULTURE IN THIS LITTLE
SEGMENT OF CORNELL.”**

Rhonda Gilmore, senior lecturer

Translating the passion

FINISHING TOUCHES BY DESIGN CLASS MAKE NEW FISCHELL BAND CENTER HOME FOR THE BIG RED BANDS

By Kate Klein

For decades, the Big Red Bands, a Cornell musical fixture for more than a century, called a small room in Barton Hall home. Full of band memorabilia, from old drum major uniforms to award plaques to messages scribbled on the walls from past members, the old room was highly personalized – but cramped.

“Over time, the band completely outgrew the space,” says Sarah Fischell ’78, a former Big Red percussion player and passionate supporter. The need for a new space inspired her and her husband, band alumnus David Fischell ’75, M.S. ’78, Ph.D. ’80, to become lead donors for the new Fischell Band Center, which the bands moved into in fall 2013. While the new building has great acoustics, good light and plenty of room for band activities and storage, it was missing the personal touches that had made the Barton Hall space unique.

“Since the center is so new, we had lost some of the history of the band in the transition from our historical location,” says Bethany Angeliu ’18, a trumpet player and current head manager of the marching band.

To recapture the bands’ historical spirit and add it to the center, Sarah Fischell commissioned an exhibit design class in the College of Human Ecology taught by senior lecturer Rhonda Gilmore to create interior “design interventions” that will translate the Big Red Bands’ passion into visual details in its new home.

With six weeks to complete the project, Gilmore and her students immersed themselves in Big Red Band lore, searching archives, listening to recordings and interviewing past and present band members.

“There is so much history and so much culture in this little segment of Cornell,” says Gilmore of the bands. “They are this rogue nation that infuses symbolic music to this place.”

The six students in the studio designed banners, uniform display cases, floor and wall details, and a digital image display to capture the marching and pep bands in visual terms. The banners, with the theme “marching moments,” show photos of band members in iconic moments – the drum major “aardvarking,” for example, or members marching in the Sy Katz ’31 Parade in New York City – enhanced by a process called “posterizing,” which turns photographs into bold, colorful outlines.

“By posterizing, we were removing the identity of the individual in a given photo, allowing viewers to envision themselves in the banners, thus celebrating the legacy and reinforcing the group spirit,” says Amira Adib-Samily ’17.

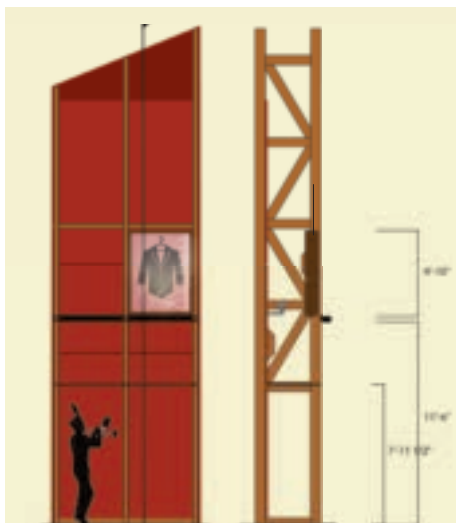
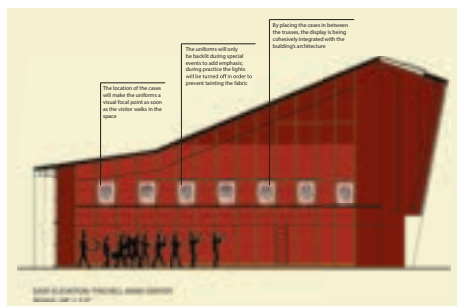
For the drum major uniform display cases, Adib-Samily took measurements, a particular challenge among the Fischell Band Center’s slanted walls and ceilings, which were designed to create good acoustics.

Another challenge for the students, says Gilmore, was revising designs based on feedback from many stakeholders, including Sarah Fischell and current and past band members.

“The students found out quickly if you have a committee of more than one client, it creates complexity,” she says – a tough but necessary real-world lesson. Students and band representatives persevered, however, coming up with a set of design solutions Fischell and band members are happy with.

The design phase took six weeks, from initial research to final deliverables. The first phase of the project – the banners – were hung in August, ready to greet band members when they arrived for band camp.

“They did a bang-up job,” says Fischell, thinking through the themes the design students came up with to guide the uniform display case design, floor details and other elements. “A cult legacy, regimented renegades – they got it.”



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Biomedical technology

Furnish and equip a biomedical technology design studio so graduate students can create and test medical technology at the Meinig School of Biomedical Engineering. Needed: infrastructure (benches, cabinets), power supplies, oscilloscopes and digital analyzers. **\$50,000**



Adopt a Collection

Fund the organization of the W. Jack Lewis Collection in Cornell University Library's Division of Rare and Manuscript Collections, nearly 100 boxes of documents from Lewis, who served as the director of Cornell United Religious Work (CURW) from 1963-81. Documenting his involvement in CURW, the Festival of Black Gospel, the Center for Religion, Ethics and Social Policy, and other organizations, the collection represents a significant time period of Cornell history. **\$10,000**

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Purchase a tiny camera to help internists examine veterinary patients – most of them dogs – suffering from digestive problems at the Cornell University Hospital for Animals, the only animal hospital in the country with this alternative to conventional endoscopy. **\$8,470**



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OUTSIDE VOICES

Bring a prominent visitor to campus to participate in the Outside Voices speaker series, which focuses on timely sustainability topics at the Atkinson Center for a Sustainable Future. **\$5,000-\$10,000**



Engineering labs and classrooms

Provide a specialized piece of equipment for a School of Civil and Environmental Engineering classroom or lab. Wolfvision document camera, **\$5,000**; 55" monitor, **\$2,500**; wrist action shaker, **\$3,000**; incubator shaker, **\$10,000**; miter horizontal bandsaw, **\$4,700**; analytical balance, **\$4,000**; vertical bandsaw, **\$4,500**; microcentrifuge, **\$10,000**



Sharp tools, sharp students

The machine shop in Rhodes Hall needs to replace some heavily used and worn tools, lathes and milling machines. Help mechanical and aerospace engineering students learn using safe, new, updated tools. **\$10,000-\$15,000**



CAPPING OFF A STUDENT EXPERIENCE

Cover the travel costs for a student participating in the Cornell Institute for Public Affairs' capstone project, which takes second-year students all over the globe to work with real-world clients on real-world problems. **\$2,500**

Cornell: A school of questions

By Sharon L. Poczter

It all started with a question. Or, that is, a list of questions. I remember very vividly sitting in the Warren Hall office of my economics professor with a list of maybe 30 questions challenging the assumptions of a model that economists have accepted for over 75 years.

I had the courage of a newly forming academic mind that had yet to be confined by the realities of research. I questioned everything. And I remember my exhausted junior professor's response after being inundated by so many questions – and patiently answering each one – was a very calm, empathetic: “People like you, Sharon, with so many questions about the world, go to graduate school.” And thus the seed was planted for my journey from Cornell and back.

Granted, my intellectual inquiry did not start at Cornell and was not always based on economics. I was the nerdy child who asked my parents for a chalkboard for my birthday to teach an imaginary class with, and a chemistry set to formalize the experiments I had already been carrying out in the basement using household supplies. But the questions that remained the most salient to me were always based on economics and policy.

I even remember my first economics-related question. As a child on a family trip to a then still-very-much-developing Jamaica, I asked my father why two or three people at the airport simply looked at our passports on the way through security, seemingly not adding value to the process. His response – that governments of countries without well-developed labor markets sometimes need to employ low-skilled labor in non-output generating jobs to increase employment – simply shook my 8-year-old intellect. I was officially hooked on economics. From then on the concept of how institutional development impacts economic growth would be the guiding light of my academic journey. Today, my research still echoes that trip, examining how the lack of financial development stymies the growth of firms in developing countries and governments' policy responses to counteract this effect.

I started my Cornell education as pre-med with the notion of helping others; I soon switched to economics, though, specifically to the department that would become the Dyson School of Applied Economics and Management. And there, coupled with the encouragement of my professors to continue questioning, I realized that being a scholar and educator can also change lives – as my life was indelibly changed by several professors.

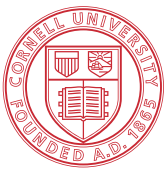
I learned that I could take my passion, and my questioning spirit, on to graduate school – that I could learn for life, and I could inspire others by being a professor just as I was being inspired at Cornell.

That is why upon receiving a job offer from Cornell in my last year as a doctorate student at the University of California, Berkeley, I had an overwhelming sense of continuity and tradition well up inside of me. The place where I was first encouraged to keep questioning, and the place where I first imagined becoming a professor, was welcoming me back with open arms. I was coming home.

Cornell is a place of questions. We aim to be different by pushing our students to be critical, to have the courage to question underlying assumptions about how models, theories and society work. This is the very fabric of who we are, or as Carl Becker, famed Cornell professor and historian, phrased the faculty's commitment to academic freedom and creativity: Cornell is about “thinking otherwise.”

This is the feeling I take with me each time I step into the classroom, each time I have the privilege of inspiring my students. That is why, each year, even as a junior professor, when students in my office hours come in with a lengthy list of questions, challenging established frameworks and theories, I simply sit back, smile and answer intently.

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MY BIG RED YEAR

2016

- › International Spirit of Zinck's Night **October 20**
Various locations worldwide
- › Cornell Entrepreneurship Summit NYC
November 4 New York City
- › Sy Katz '31 Parade **November 12** New York City
- › The Frozen Apple: Cornell University vs.
the University of New Hampshire
November 26 New York City

2017

- › Cornell Cares Day **January 7**
Various locations worldwide
- › Cornell Alumni Leadership Conference
February 3-4 Baltimore
- › Cornell Silicon Valley **March 7** San Francisco
- › Reunion **June 8-11** Ithaca
- › Making My Gift for the Fiscal Year **By June 30**
- › Homecoming **October 20-21** Ithaca

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