

EZRA

CORNELL
UNIVERSITY'S
MAGAZINE
SPRING 2018

FROM IDEAS TO IMPACT: ATKINSON
CENTER CHARTS A PATH TO A
SUSTAINABLE FUTURE



A student heads toward Collegetown as the sun sets behind Myron Taylor Hall.



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EZRA

Vol. X, Issue 2, Spring 2018

Publisher: Joel Malina, Vice President, University Relations

Managing Editor: Joe Wilensky, University Communications, University Relations

Ezra Editorial Board:

Joseph J. Lyons '98, Executive Director, Communications and Donor Engagement, Alumni Affairs and Development

John McKain, Associate Vice President for Communications, University Relations

Karen Walters, Senior Director for News, University Communications, University Relations

Shane Trost, Senior Director for Brand Communications, University Relations

Contributing Editor: Laura R. Hunsinger

Lead Designer and Project Manager: Clive Howard

Photography: Robert Barker, Matthew Fondeur, Lindsay France, Jason Koski

Contributors: Jose Beduya, Melanie Greaver Cordova, Krisy Gashler, Caitlin Hayes, Syl Kacapyr, Kate Klein, Melanie Lefkowitz, David Nutt, Diane Lebo Wallace, Laura Wilkinson, Patti Witten

Produced by the Cornell Chronicle, AAD Communications and Brand Communications.

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Subscription information:
ezramagazine@cornell.edu
or call 607-255-3630.



ezramagazine.cornell.edu



Printed using 100% wind power and soy inks on Flo paper (FSC® and SFI-certified, 10% PCW, and manufactured using 100% Green-e certified energy).

4/18 30.6M CP

ON THE COVER:
Cover illustration by Davide Bonazzi / salzmanart

FROM THE PRESIDENT

Cornell has always been a global university – in the composition of its student body, in the scholarly interests of its faculty, and in the contributions of its alumni on the national and international stage.

Cornell's first class of 412 students, who entered in 1868, included students from Russia, Canada, England and Brazil. Our first president, Andrew D. White, spent time in Europe before, during and after his presidency, including in diplomatic roles in Germany and Russia. Our first professor of veterinary science, James Law, came to Cornell from the University of Edinburgh, and Liberty Hyde Bailey, dean of the College of Agriculture in the early 20th century, spent the last several decades of his life exploring the tropics to further his studies of palms.

About 5,000 international students and 1,500 international scholars now study, conduct research and teach at Cornell each year, and 7 percent of Cornell alumni live and work outside of North America, using their knowledge and skills in a wide range of endeavors.

A thriving academic community includes people from many backgrounds and nations. Students who experience living and learning in a culturally diverse environment are better prepared for life in our globalized world. They are equipped to reach for opportunities and to address the challenges that emerge in our interconnected society. We know, for example, that companies from 32 countries are on the 2017 Forbes Global 500 list, and of the five largest, only one (Walmart) is headquartered in the United States. In addition, many of the serious issues facing society can only be approached from a global perspective.

All of us gain from being in a setting where we can honor and celebrate our individual experiences and understanding, while also seeking a commonality that allows us to communicate, to build community and to learn from one another. Cornell is a magnet for the world's very best students, faculty and staff, and it is important that we continue to be a place where they can thrive.

At the same time, we must provide opportunities for Cornell students – domestic and international – to gain a global perspective through direct engagement. Approximately 1,400 Cornell undergraduates already study abroad in a typical year, and by the time they graduate, nearly 40 percent of our undergraduates will have participated in international study.

Many faculty members pursue their scholarly work internationally and engage students in global learning and research. This year, for example, marks the 50th anniversary

of Cornell's longest-running international engagement course, International Agriculture and Rural Development 602. Since it began in 1968, the course has reached more than 2,500 undergraduate and graduate students and involved hundreds of faculty from Cornell and partner institutions abroad.

We are now poised to take Cornell's international presence to the next level by establishing the Cornell China Center in Beijing.

The center has three basic purposes: to build capacity for the delivery of educational content and to spark innovative and collaborative research projects that span and benefit both countries; to be a lively gathering place for Cornell faculty, alumni, students and prospective students and for Chinese scholars, friends and partners; and to raise the university's profile in China. A faculty committee is guiding academic aspects of this initiative, and Cornell staff in Ithaca, New York City and Beijing are already working on implementation from a temporary space in Beijing's Central Business District.

To better serve our international students and scholars here in Ithaca, and to support Cornell students and faculty engaged in global education activities around the world, this semester we established a new Office of Global Learning. The new structure brings together the International Students and Scholars Office and Cornell Abroad, and increases opportunities for strengthening support services on campus and around the world.



International engagement and the opportunity to learn in a culturally diverse environment contribute to the educational verve that I believe is so important at a major research university like Cornell. Expanding our stature as a global university of the first rank will be a continuing priority as we work together to create an even stronger and more globally engaged Cornell.

Martha E. Pollack
President
president@cornell.edu

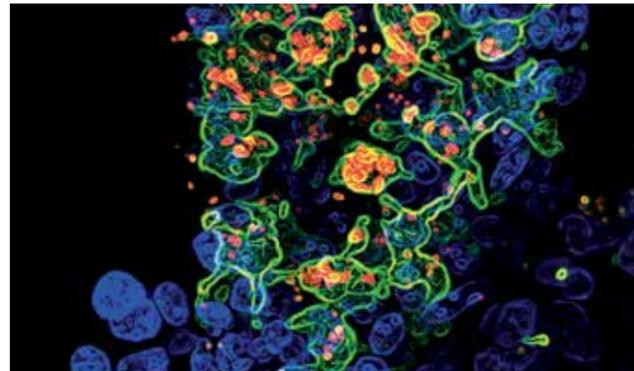


MILSTEIN PROGRAM BRIDGES TECHNOLOGY AND HUMANITY

A \$20 million gift from the Abby S. and Howard P. Milstein Foundation will launch the new Milstein Program in Technology and Humanity, a collaboration between the College of Arts and Sciences and Cornell Tech. The initiative is the first to leverage Cornell Tech's graduate campus as a platform for undergraduate learning and aims to develop pioneering leaders for the digital age.

The program will offer approximately 100 A&S students each year access to Cornell Tech's resources throughout their university education. Students will choose from 39 majors, while also developing their proficiency in computer science during the academic year on the Ithaca campus. They will spend two summers in New York City immersed in learning, mentoring and internship opportunities.

Howard Milstein '73 and Michael Milstein '11, both A&S graduates, developed the vision for the program with Gretchen Ritter '83, the Harold Tanner Dean of Arts and Sciences, and Dan Huttenlocher, the Jack and Rilla Neafsey Dean of Cornell Tech.



VISUALIZING A GUT REACTION

It's as eye-catching as it is critical to human health: White blood cells (green) swarm fungi (red) colonizing the gut (blue). As the white knights of the immune system, these cells maintain the gut's equilibrium, ensuring that fungi calling the intestines home are aiding in normal biological processes. When left unchecked, these organisms can go rogue, leading to gut inflammation that is characteristic of inflammatory bowel disease.

In a study published in *Science*, Weill Cornell Medicine scientists at the Iliev Lab discovered how a white blood cell subtype regulates the gut's fungal population to prevent overgrowth – findings that may lead to better treatment options for patients with IBD.



TO DYE FOR: ALUMNA'S EXHIBIT SHOWCASES NATURALLY TINTED TEXTILES

Six colorful charmeuse silk banners hanging in the Cornell Botanic Gardens' Nevin Welcome Center are part of a new exhibit, "Quiet Labor," which will run until June 25.

The exhibit features naturally dyed textiles by students and local artists who contribute to the Cornell Natural Dye Studio, organized by Denise Green '07, assistant professor of fiber science and apparel design in the College of Human Ecology.

The banners were made by Blossom Schmitt '17, who took the class in her last semester at Cornell. She was invited back this year as a guest artist.

"I've been a florist for eight years and natural dyeing was a whole new outlet to explore, where I could be sustainable and thoughtful with it," Schmitt says. She adds that much of the natural dyeing process requires chemistry, using metals and elements and techniques to change and fix colors extracted from plants.

"Now I feel I can create something purposefully, rather than just throwing a bunch of plants in," she says.

This coming summer, Schmitt plans to sell her plant-dyed textiles at art festivals and flea markets. "I want to pursue this. I love it," she says.



SECOND-CENTURY MOSAIC INSTALLED IN KLARMAN HALL ATRIUM

A fragment of a second-century floor mosaic that sat in storage for nearly 80 years now holds a place of honor in the Groos Family Atrium in Klarman Hall.

The mosaic, a gift from Princeton University researchers to Cornell colleagues, was located in the dining room in a house of Iphigenia in the northeastern part of the city of Antioch on the Orontes River in southernmost Turkey. The luxury homes of this period exhibited a dazzling array of floor mosaics depicting scenes from ancient myth and "real life."

The precision and regularity with which the tesserae – small cubes of black, grey, red, yellow and white limestone – have been cut and arranged betray sophisticated craftsmanship (detail pictured at right).

The presentation of Cornell's mosaic almost 80 years after its discovery is due to the efforts of Henry Crans, director of facilities for the College of Arts and Sciences, and the restoration efforts of local art conservator Kasia Maroney. The project was funded by the College of Arts and Sciences.

After the mosaic's restoration, it was lifted with hydraulic lifts to the height of the installation site below the giant digital screen in the atrium, where the mosaic was framed and enclosed behind glass.



RECOMMENDED READ CORNELL ALUMNI MAGAZINE

How did you earn your PE credit?

Did you know that, in addition to Ezra Cornell's vision of '... any person ... any study,' founding President Andrew Dixon White believed that all students should participate in what was



then known as "physical culture"? Ever since, Phys Ed has been an essential part of the Big Red experience. (The swim test came about 40 years later!)

Read all about the history – as well

as Cornellians' current options, which range from ballroom dancing to birding, paddleboard yoga to backcountry photography, figure skating to archery – in the March/April 2018 issue of Cornell Alumni Magazine.

Other highlights include: the Cornellian who is New York Gov. Andrew Cuomo's top aide; Stocking Hall's state-of-the-art Sensory Evaluation Center; and remembering National Book Award winner and MacArthur "genius" grant recipient A.R. Ammons. Plus: Louie's Lunch turns 100!

Check it out and subscribe at cornellalumnimagazine.com.

A moment from the 2018 Cornell Fashion Collective runway show in Barton Hall, which showcased the work of 29 student designers.



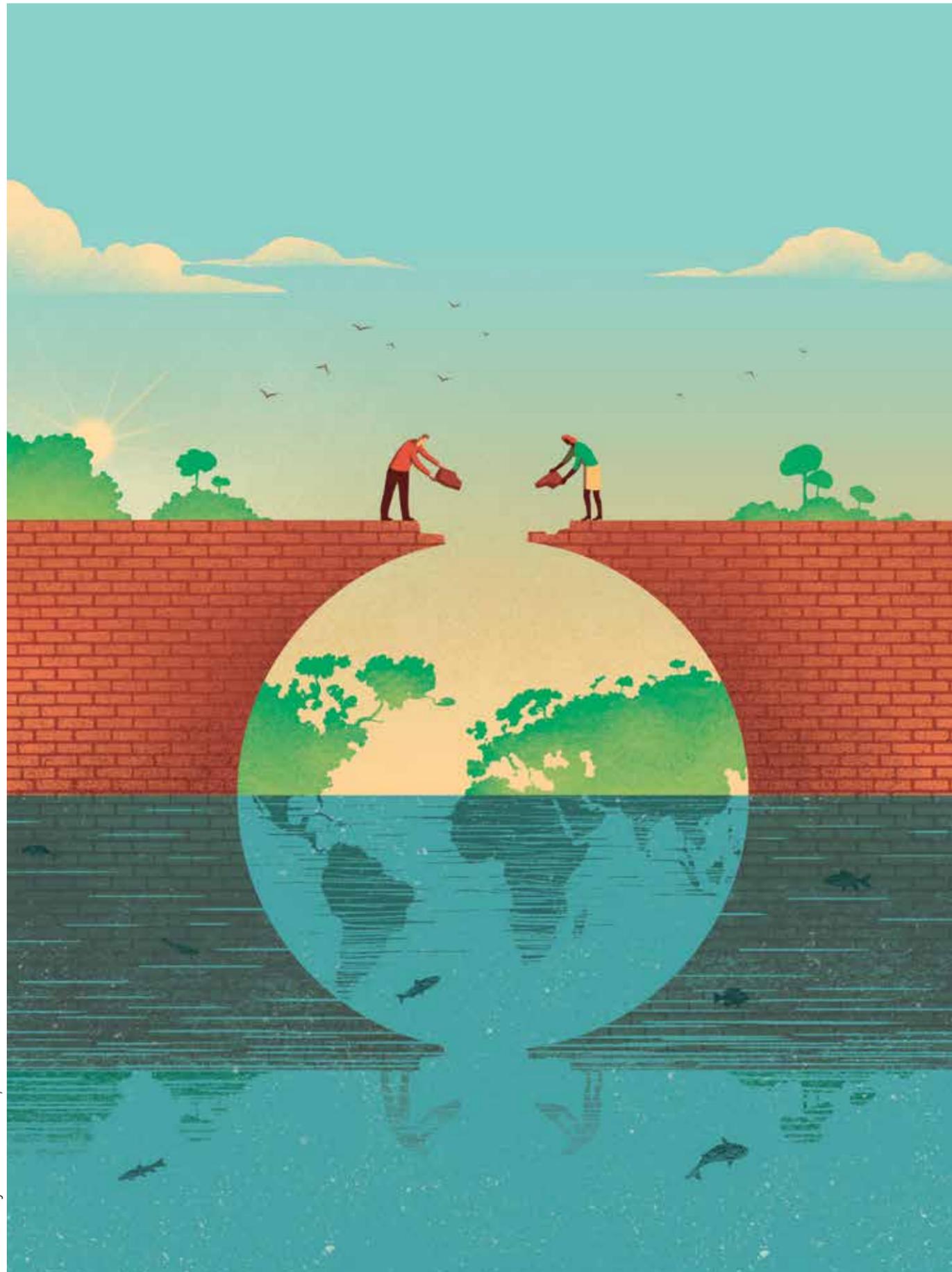


Illustration by Davide Bonazzi / salzmanart

“Cornell is the best place for me because you find experts in all these different areas, in the basic sciences ... to environmental sciences, and the center provided us the first support to collaborate.”

Miguel Gómez, associate professor of applied economics and management

FROM IDEAS TO IMPACT: Atkinson Center charts a path to a sustainable future

Miguel Gómez had a very expensive problem. Several years ago the economist was working on a multidisciplinary collaboration to explore the connections between birds, soil, production systems and sustainability in direct-trade coffee in Latin America. The team was ready to start its fieldwork and needed to ship soil samples from coffee farms in Colombia to Cornell. The samples were already boxed up. The clock was ticking.

The problem?

“The shipping cost turned out to be super expensive,” Gómez now admits with a laugh. “We were short. And we needed the samples fast. I didn’t know what to do.”

Gómez applied for funding from the Atkinson Center for a Sustainable Future’s Rapid Response Fund, which supports time-sensitive sustainability projects, usually with a price tag under \$20,000.

These urgent and emerging projects have included tracking parasitic infections that threaten New York state’s dwindling moose population and capturing vocal recordings of the Javan rhinoceros, one of the most critically endangered species in the world. And, like those projects, Gómez’s funding came through. The soil samples shipped. Gómez, associate professor in Cornell’s Charles H. Dyson School of Applied Economics and Management, is frank about the effect the Atkinson Center support had on the project.

“It saved us,” he says.

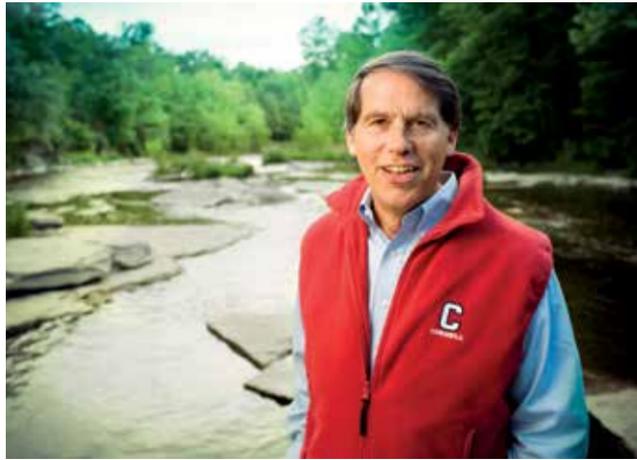
Founded as the Cornell Center for a Sustainable Future in 2007 and then named and permanently endowed by David R. Atkinson ’60 and Patricia Atkinson three years later, the Atkinson Center funds multidisciplinary solutions to sustainability challenges throughout the world. The center has more than 500 faculty fellows

from across Cornell whose research touches upon crucial sustainability areas such as food, energy, climate, human behavior, the built environment and the interconnections between human, animal and environmental health, known as One Health. The center offers grants and fellowships for researchers, internships for students, and opportunities to collaborate with external partners, from corporations to nonprofits and policymakers, supporting sustainability work that takes risks and bridges disciplines.

Among notable Atkinson-supported projects in its short history:

- Identification of the microbe that caused the mass die-off of sunflower sea stars along the west coast of North America.
- A collaboration with the Smithsonian Conservation Biology Institute that resulted in the first puppies born by in vitro fertilization. (See sidebar, p. 17.)
- A greater understanding of how climate change’s weakening of the polar vortex leads to severe winter weather outbreaks in the Northern Hemisphere’s middle latitudes.
- Support for Adapt-N, cloud-based computer modeling software that gives farmers precise nitrogen recommendations for their fields, reducing runoff into nearby bodies of water while increasing profitability.
- The development of NutriPhone, a mobile diagnostics platform that monitors and tracks individual vitamin and micronutrient levels quickly and at low cost.

Now, Atkinson leadership is collaborating with its faculty fellows, partners and stakeholders to shape a new strategic plan that will keep the center at the forefront of Cornell’s sustainability efforts, identifying the planet’s most pressing threats and nurturing the solutions that remedy them.



“Emerging themes revolve around rural-urban systems, and include increasing food security, reducing climate risks, accelerating transitions to renewable energy and advancing One Health.”

David Lodge, the Atkinson Center's Francis J. DiSalvo Director

“Building on the tremendous success of the Atkinson Center's first eight years, and in concert with Provost Michael Kotlikoff's radical collaboration initiative on sustainability, we are now planning some future investments on topics of great global importance where Cornell can make distinctive contributions working with partner organizations to help drive more sustainable societal practices, products and policies,” says David Lodge, the center's Francis J. DiSalvo Director. “Emerging themes revolve around rural-urban systems, and include increasing food security, reducing climate risks, accelerating transitions to renewable energy and advancing One Health.” Lodge says the center will be working closely with deans over the next five years to add a new cohort of Atkinson Center-affiliated senior faculty to Cornell to contribute research, as well as educational programs, around these themes.

FACULTY SUPPORT

The soil shipping incident was only one of the ways in which the Atkinson Center has supported Gómez's research. Gómez, who entered academia as an industrial engineer and economist, credits the center with inspiring him to expand his ideas about how food system supply chains work and delve deeper into linkages with other disciplines – ultimately reshaping his career.

“Cornell is the best place for me because you find experts in all these different areas, in the basic sciences, from genetics to nutrition to environmental sciences, and the center provided us the first support to collaborate,” Gómez says.

But not all projects start out as successes. Gómez's first Atkinson-funded project, in 2009, sought to assess the sustainability of local and conventional food systems, but the effort never jelled. The topic proved to be too broad, according to Gómez, and there were too many researchers and competing priorities involved.

However, in hindsight, this hardly seems like a failure.

The project introduced Gómez to a handful of kindred researchers, such as Oliver Gao, associate professor of civil and environmental engineering, with whom Gómez soon developed a more focused project: the Enhancing Northeastern Food Security with Regional Food Systems initiative, which was funded by the Agriculture and Food Research Initiative and administered through the U.S. Department of Agriculture's National Institute of Food and Agriculture. This five-year, \$5 million project, which concluded in February 2018, connected researchers from 12 institutions in the Northeast to find opportunities to bring healthy foods produced in the region to underserved communities.

To get an idea of the multiplying effect Atkinson seed grants can have, consider that Gómez's initial project was launched with \$120,000 from the Academic Venture Fund, which is the center's flagship funding mechanism, and this project paved the way for \$5 million in federal funding. This is a prevalent trend among many Atkinson



Above: Drew Harvell, far right, professor of ecology and evolutionary biology, examines a sick Pacific blood star with members of the Harvell lab at Friday Harbor Laboratories on San Juan Island, Washington, in 2014.

Right: “I came to Cornell from Ohio State University,” says Amanda Rodewald, the Garvin Professor of Ornithology and director of conservation science at the Cornell Lab of Ornithology and Department of Natural Resources. “For me, the Atkinson Center profoundly affected the ease with which I could become established here and become connected to other faculty. Midcareer moves are not easy, but that really made a big difference. And [the center's] topical lunches and the ways they bring people together greatly facilitate connections with people across campus.”



Provided

Guillermo Santos



“IT WAS REALLY GREAT TO KNOW THAT WE’RE SOLVING A REAL-WORLD PROBLEM THAT EXISTS FOR A LOT OF COMPANIES.”

Tasha Lewis, assistant professor of fiber science and apparel design

partners and projects. Gómez estimates Atkinson support has multiplied – many times over – the funding he receives from the U.S. Department of Agriculture, the National Science Foundation and other organizations.

FASHION AND BUSINESS PARTNERSHIPS

Sustainability is not always associated with the world of high fashion, but Tasha Lewis, assistant professor of fiber science and apparel design, sees the two as intricately linked. Fashion’s fragmented supply chain leads to tremendous pollution, in the form of water wasted to make textiles, dyes that are not environmentally friendly, the global transportation of goods and the way consumers treat clothing as disposable, depending on whims or trends.

These sustainability issues are a growing concern within the industry, making businesses ideal partners, explains Lewis, whose research aims to reduce waste in the “post-consumer” stage.

“If we can start using our waste to make new products and close that loop, maybe we can make as much as we want because we’re constantly reclaiming it and reusing it and not taking up so many other new resources to make it,” she says.

Lewis first turned to the Atkinson Center when she was seeking rapid-response funding to pair with an Environmental Protection Agency grant to create an equipment prototype for the EPA’s National Sustainable Design Expo in Washington, D.C. The result was the Fiberizer, a machine that shreds old garments into a fibrous mass that can be reused to make new products. A year later Lewis received a Walmart Foundation U.S. Manufacturing Innovation Fund grant to design a newer, more powerful version of the Fiberizer in collaboration with faculty colleague Anil Netravali. Lewis also partnered with clothing brand Eileen Fisher’s Green Eileen recycled apparel division to work on the project.

“Eileen Fisher was very interested in us helping them with their excess textile waste,” Lewis says. “It was really great to know that we’re solving a real-world problem that exists for a lot of companies.”

This type of industry partnership has its own kind of multiplier effect, given the amount of sway a company like Eileen Fisher has among its apparel peers.

“They have the capability to scale it up,” Lewis says. “They have more influence with their peers and their industry circle. It’s something that can actually have legs and go further.”

NGO PARTNERSHIPS

The Atkinson Center’s reach and impact are also amplified by long-term collaborations with nongovernment organizations that have the potential to effect change on a large scale.

For example, in 2015 the center launched a three-year pilot program with the Environmental Defense Fund (EDF) to finance projects that address urgent public health

and environmental issues. So far, 13 projects that leverage Cornell’s multidisciplinary research and EDF’s policy expertise have been funded. The projects range from feeding people through sustainable fisheries and farms to reducing methane emissions from industrial sites.

In addition, 18 Cornell undergraduate students have received summer internships with EDF.

One project, “Integrated Approach to Climate Change,” led by Douglas MacMartin, senior research associate and senior lecturer in mechanical and aerospace engineering, is exploring the question of whether to integrate solar geoengineering – a process of reflecting sunlight back into space – with other strategies, such as carbon dioxide removal, to fight climate change. The project is helping shape a growing discussion about geoengineering governance and research needs, with MacMartin testifying before the House of Representative’s energy and environment subcommittees in November 2017.

“As academics, we can engage with people and together identify problems, come up with ideas and test those ideas,” says Alex Travis, professor of reproductive biology in the College of Veterinary Medicine, associate dean of international programs and public health, and an Atkinson faculty fellow, who oversees several of the center’s NGO partnerships. “But to really have impact at scale, you need to either have a commercial partner who can change their practices, roll out a sustainable product, work with an NGO that can help change human behavior or work with government to change policy.”

Adam Seth Levine, associate professor in the Department of Government, agrees that changing public policy and changing individual behavior are two critical pieces of the solution to unlocking a more sustainable future.

“Truly novel ideas for doing so require regularly convening a diverse set of people who bring a wide range of knowledge and cognitive tools to the table,” Levine says. “That’s precisely what the Atkinson Center does, and it’s important, irreplaceable and impactful.” Levine’s AVF project created a networking site that connects people from the academic, nonprofit and government sectors who are interested in collaborating.

Another collaboration, with the Smithsonian Conservation Biology Institute, has generated insight into a fungal disease that is destroying amphibians, as well as the application of genomics to endangered canids, like the African painted dog.

One advantage of maintaining multiple collaborations is the ability to share resources and knowledge in fresh, often unexpected, ways. For instance, when EDF and Smithsonian began working in Myanmar, the Atkinson Center connected the two institutions.

“Even though Cornell and EDF were starting a new project together, Smithsonian was happy to help and share 20 years’ worth of data and their understanding and connections,” Travis says. “So these connections actually build and provide synergy between our partners as well.”



POSTDOCTORAL SUPPORT

Other key Atkinson partners include CARE and The Nature Conservancy (TNC), the latter of which proved to be essential, along with EDF, in providing postdoctoral support for marine ecosystems expert Drew Harvell’s research into ocean health.

In 2014 Harvell was joined by Joleah Lamb, who came to Cornell through the NatureNet Science Fellows Program, a partnership between TNC and a number of leading research universities that supports early career scientists working at the intersection of conservation, business and technology. Lamb’s two-year stint as a fellow was dedicated to studying infectious disease in coral reefs around Indonesia’s Spermonde Islands. After the fellowship ended, she received additional support from an EDF-Atkinson grant through the Innovation for Impact Fund.

Lamb has since been the lead author of two papers published in Science in the last year – one concerning the way seagrass can improve polluted seawater by reducing bacterial exposure for corals, the other about the devastation caused when plastic debris activates new infectious disease on coral reefs. Both papers grew out of Atkinson-funded surveys.

“Joleah is the dream postdoc,” Harvell says. “She’s accomplished everything we could ever hope for, in terms of coming in with very strong expertise, but also an

incredible capability to collaborate and bring research teams together.”

Postdocs have come to play a more integral part in Atkinson research in recent years, which isn’t much of a surprise to Harvell. When she served as the center’s faculty director for environment from 2009-13, she saw the potential of drawing more postdocs into the fold and proposed the idea to the rest of the Atkinson leadership.

“That’s something I thought was a vital vision for how the Atkinson Center was going to be able to develop the kinds of collaborative projects it was interested in,” Harvell says.

In addition to graduate and postdoc opportunities, the center also has been increasing its efforts to involve more undergraduate students, whether through sustainability-related student research teams with Cornell partners like AguaClara and Shoals Marine Laboratory or assisting faculty in Academic Venture Fund projects through additional funding from the Office of Engagement Initiatives. And there are AVF projects like Imagining Energy Futures, led by associate professor of comparative literature Anindita Banerjee and Albert George, professor of mechanical and aerospace engineering, in which undergraduates from radically different disciplines teamed up to present bold new visions of a world beyond fossil fuels.

As for the evolution of her own research, Harvell credits the Atkinson Center with enhancing her relationships with EDF and TNC and also inspiring her to embrace policy-related issues. In 2014, she helped U.S. Rep. Denny Heck (D-Wash.)

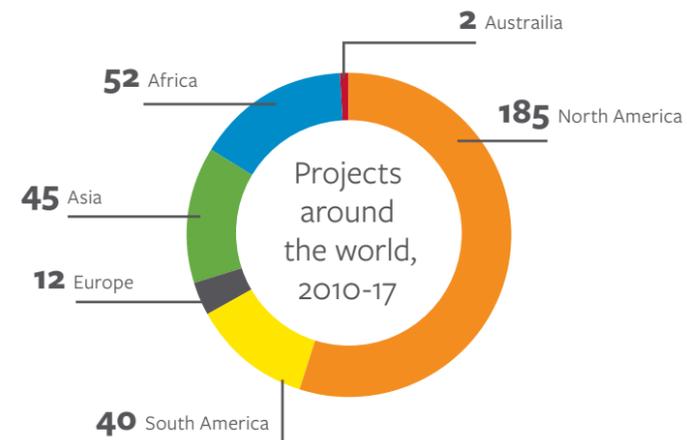
ATKINSON FACULTY FELLOWS

517

number of faculty fellows



from 10 Cornell colleges/
schools, representing
87 departments



“To me, it’s more reasons to experiment. You have to do experiments to succeed.”

Todd Cowen, the Kathy Dwyer Marble and Curt Marble Faculty Director for Energy at the Atkinson Center

Cornell’s new Master of Public Health program is off to a healthy start

Launched in fall 2017, the two-year interdisciplinary program is the first Master of Public Health (MPH) program to emphasize understanding the relationships among humans, animals and the environment, and how those feed back into human health. This “One Health” or “planetary health” approach leverages Cornell’s strengths to offer two initial concentrations in food systems and health, and infectious disease epidemiology.

In its first year, the program has welcomed 15 students, and next year’s incoming class is expected to grow to 25 or 30, according to Alex Travis, who directs the program. It is currently going through the accreditation process, which should be completed in 2020.

After that, new concentrations will be added. The program will grow in size, while still maintaining its focus and personalized attention, with no more than 20 students in any concentration-specific course.

The program’s core principles of sustainability, equity and engagement make it a compatible partner for the Atkinson Center. Indeed, it was inspired by an Atkinson Center brainstorming session to identify programs Cornell needs to develop to “move the needle” on global sustainability. The MPH program partly sponsors three current Academic Venture Fund projects that have a One Health focus: removing mercury from artisanal gold mining; reducing antibiotic use in animal agriculture; and developing a handheld diagnostic tool that delivers near-instant information about a patient’s infection type to reduce unnecessary antibiotic use.

Travis considers the MPH program’s link with the Atkinson Center to be one of its greatest strengths.

“This planetary health perspective is essential for maintaining the advancements of human health that we’ve enjoyed up to now,” Travis says. “We have to look at human health using the lens of sustainability or we’re not going to be able to maintain our current progress. Unfortunately, the first people to suffer from issues like loss of species, climate change and pollution are usually the poorest among us – both in our country and in countries around the world. These issues of equity and sustainability go hand in hand.”

– David Nutt



“The Atkinson Center was recommended to me by one of my colleagues during the job talk and is one of the reasons why I felt Cornell is the right place for me. It provides excellent support for young faculty to start research projects, and it provides an invaluable platform for networking.”

Timur Dogan, assistant professor in building technology and environmental systems, College of Architecture, Art and Planning

craft a proposed Emergency Marine Disease Act that would develop a rapid-response plan for addressing underwater disease outbreaks, and she also writes op-eds for The Hill.

“I don’t think I would’ve taken on some of the policy implications of our work without the awareness that’s been fostered by the Atkinson Center,” Harvell says. “It has been a cultural shift for me.”

BENEFITING THE PEOPLE OF NEW YORK

Of course, there’s no better way to help shape policy than by working directly with policymakers. The Atkinson Center has partnered with Avangrid (the parent company of New York State Electric and Gas Corp.), BMW North America, Tesla, Distributed Sun and Cornell Cooperative Extension of Tompkins County to work with New York state to develop a pilot program for new residential electric storage systems that allow consumers to better control their energy use through smart meters and an online energy manager.

These “smart” systems have the potential to make power grids more flexible, integrate distributed renewable energy sources, lower household electricity costs and help cut greenhouse gas emissions.

The Energy Smart Community project, which is part of New York state’s Reforming the Energy Vision initiative and is also funded by a \$1 million grant from the National Science Foundation, is led by Todd Cowen, the Kathy Dwyer Marble and Curt Marble Faculty Director for Energy at the Atkinson Center.

Cowen taps not only Cornell’s energy and engineering expertise for the project, but also experts in the social sciences who specialize in energy and behavioral economics with the goal of understanding what will motivate consumers to embrace smart energy solutions.

After it is launched in Ithaca, the Energy Smart Community prototype will be rolled out to 1.4 million customers across NYSEG and Rochester Gas and Electric, also owned by Avangrid, starting as early as 2019.

But the project has the potential to reach far beyond New York. Avangrid itself is owned by Iberdrola, a Spain-based multinational company that operates on three continents, which means this prototype project will likely shape the future of the company’s smart grid projects, Cowen says.

In the meantime, Cowen and his team also are making inroads with New York state policymakers – specifically the New York Public Service Commission and New York State Energy Research and Development Authority.

“To me, it’s more reasons to experiment,” Cowen says. “You have to do experiments to succeed.

“And in a larger sense, this is how I see the Atkinson Center,” he continues. “I’ve been involved since its inception, and our success has exceeded my wildest expectations. As we finalize our new strategic plan, I am confident the Atkinson Center and its impact worldwide will just continue to grow.”



Pet perks of pioneering research

In 2015, after a team of Cornell and Smithsonian Institution researchers succeeded in producing the first puppies born by in vitro fertilization, there was one piece of unfinished business: What to do with the puppies?

The researchers did what many people do: They took their work home with them.

Of the seven beagles that were bred, wildlife biologist and Atkinson fellow Alex Travis adopted two, named Red and Green. When living in the Baker Institute for Animal Health, where the work was performed, the dogs had been nicknamed different colors based on the nail polish the researchers painted on their nails to tell them apart. The nail polish is long gone, but one of the names has stuck.

“Red has stayed Red,” Travis says. “Green is now Jubs. Don’t ask me why. That’s what my kids decided.”

Travis confirms the beagles are happy, healthy and adored by his children. The family furniture, however, has taken a beating.

“They’re like giant furry termites,” Travis says. “They’ve never quite

learned not to chew stuff up. But they’re very happy.”

Another two went to individuals associated with the Baker Institute. The remaining three beagles are now living with team members in Virginia, where the Smithsonian Conservation Biology Institute (SCBI) is based. Those team members include Jennifer Nagashima ’09 – the first graduate of the joint training program supported by the Atkinson Center and the Smithsonian, and lead author on the project. The others include her mentor at the Smithsonian, Nucharin Songsasen, and David Wildt, who directs wildlife species preservation efforts at SCBI.

“That is really rewarding for me because in some ways I got into this whole line of work by seeing Dave on TV when I was in eighth or ninth grade,” Travis says.

“He did some of the very first work on assisted reproduction with endangered species like cheetahs and black-footed ferrets. So to interact with him as a colleague and have him adopt one of these first dogs

is cool. It’s like coming full circle.”

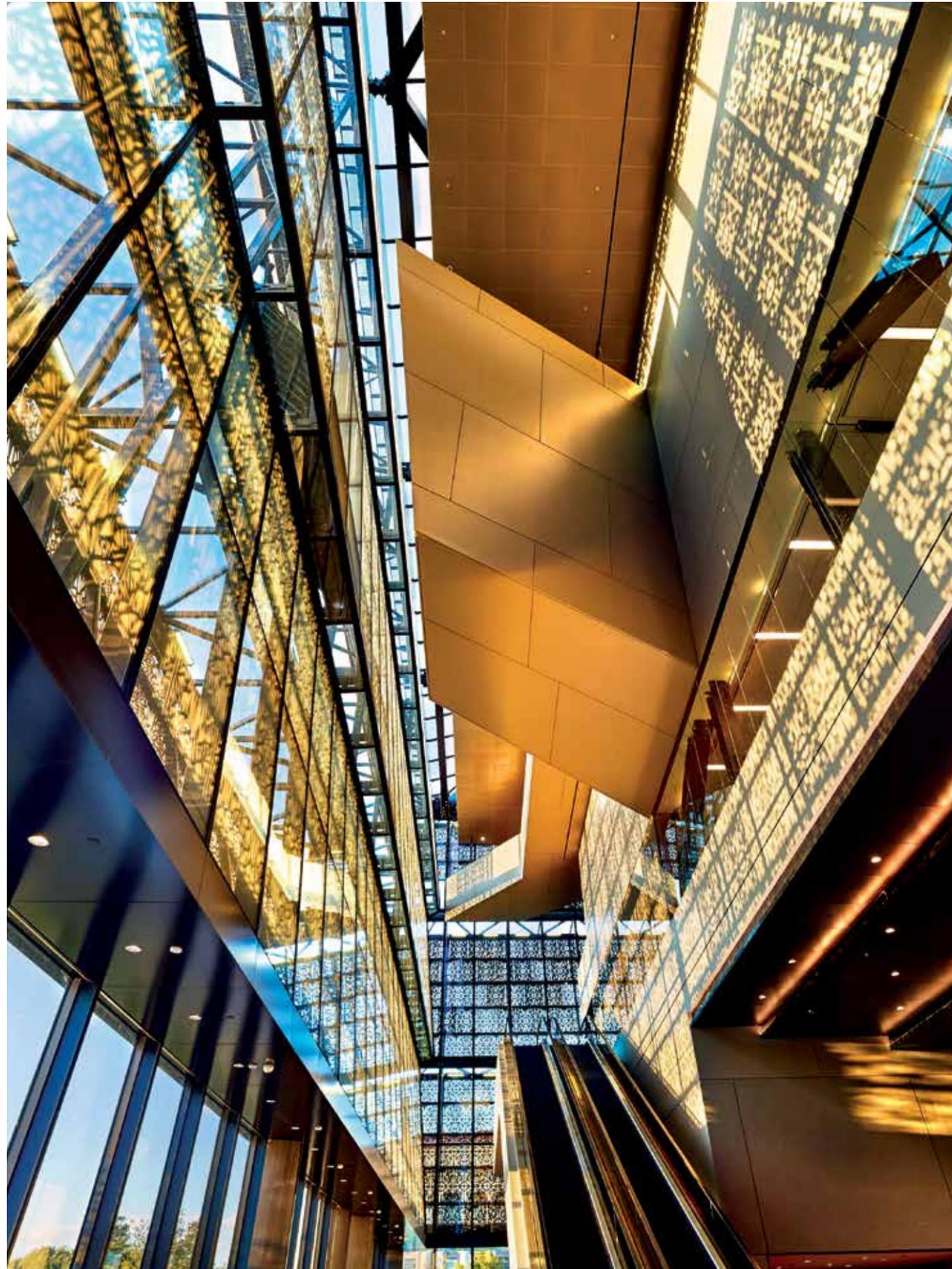
The team has since bred several more puppies by IVF and continues to explore ways to apply the technique to preserve genetic diversity and cure disease in endangered species of wild dogs. And eventually, perhaps, even in people.

“This project has tremendous application for human health,” Travis says. “More than 400 genetic traits and conditions have been identified in dogs that have direct analogy to a human genetic condition, which is about twice as many as any other species. As we learn how to perform these IVF techniques and combine that with modern gene-editing approaches, we can look at the dog as a genetic model to cure diseases in both dogs and people. It’s not really about making more beagles.”

– David Nutt

Students celebrate Dragon Day 2018 on the Arts Quad.





Alan Karchmer

Left: The light-filled National Museum of African American History and Culture, in Washington, D.C.

Right: President Martha E. Pollack, center, surrounded by just a few of the more than 1,000 alumni, parents and friends who attended the Cornell event at the museum in November 2017.



MUSEUM EVENT CELEBRATES AFRICAN-AMERICAN HISTORY AND CORNELL CONNECTIONS

By Jose Beduya

It was a celebration of centuries of African-American history, and it sold out within hours. In November 2017, alumni, parents and friends gathered in Washington, D.C., for “Cornell at the National Museum of African American History and Culture,” to explore the exhibits, connect with the Cornell community and affirm the university’s motto of “... any person ... any study.”

“We can’t be excellent unless we’re diverse.”

Martha E. Pollack, Cornell University president

Cornell President Martha E. Pollack led the gathering. “We can’t be excellent unless we’re diverse,” she said. “I want to reaffirm my own commitment to furthering these inseparable goals of academic greatness and diversity and inclusion.”

The evening also was an occasion to recognize the many ways Cornellians have contributed to the museum and helped tell the story of the struggle against prejudice and oppression, seen from the African-American experience.

A museum of heirlooms

Several artifacts in the museum were family heirlooms, including mementos donated by Cornellians. The weathered Cornell banner in one of the exhibits was once owned by the late Frank Thompson, Class of 1924, and it was donated by his daughters Carolyn Thompson Brown ’65, M.A. ’68, and Judith Thompson Hamer ’60, both retired educators. The banner represents Cornell as one of the first American universities to welcome black students, and it has become a must-see attraction for alumni.

Thompson was a first-generation college student who became a civil engineer in New York City. He taught his two daughters the Cornell alma mater when they were very young and once brought them to Cornell’s campus in Ithaca, where he jotted down their future Cornell graduation years on a blackboard, Hamer recalled.

Thompson’s predictions for his daughters came true, but he could not have foreseen the museum and his beloved banner finding a place in it. “I know that my father would have been breathless, truly amazed,” Hamer said.

Sharing collections, sharing knowledge

Items from Cornell’s archives also augment the museum’s collections. In particular, reproductions of ephemera from the Cornell Hip Hop Collection helped contextualize the musical genre that first exploded from the Bronx in the ’70s.

At the gathering, Cornell also lent the expertise of faculty to guide museumgoers: Kevin Gaines, the W.E.B. Du Bois Professor of Africana Studies; Sandra Elaine Greene, the Stephen ’59 and Madeline ’60 Anbinder Professor of African History; Robert L. Harris Jr., professor emeritus at the Africana Studies and Research Center; Noliwe Rooks, associate professor in the Africana Studies and Research Center and in the Feminist, Gender and Sexuality Studies program; and Penny Von Eschen, the L. Sanford and Jo Mills Reis Professor of Humanities.

A pioneering fraternity

Founded at Cornell in 1906, Alpha Phi Alpha, the first black intercollegiate fraternity, has an extensive presence in the museum. The nationwide brotherhood continues to unite black students and alumni like Eric Elmore ’86, J.D. ’89, president and co-founder of the Cornell Black Lawyers Alumni Network and the alumni chapter president of Alpha Phi Alpha.

“I really take inspiration from those who came before me, particularly the founders of Alpha Phi Alpha who showed that I too can make it at a university like Cornell,” he said.

Elmore is an attorney with the Federal Trade Commission. When he was growing up, Martin Luther King Jr. and Thurgood Marshall – both members of Alpha Phi Alpha – were his heroes. “We stand on the shoulders of so many great people who came before us,” he said.

As a tribute to Alpha Phi Alpha’s founders, Elmore has been spearheading a project to recognize the fraternity’s two original meeting places in Ithaca as historic landmarks.

An investment for the future

Philanthropy has been a bedrock of the museum, and Robert F. Smith ’85 is its second-largest donor. CEO of Vista Equity Partners and a member of Alpha Phi Alpha, Smith believes that the university and the museum are intertwined in their commitment to diversity and inclusivity.

In 2016, Smith and the foundation he directs made a gift to fund chemical and biomedical engineering, with targeted support for African-American and female students, at the College of Engineering. Cornell named the Robert Frederick Smith School of Chemical and Biomolecular Engineering in recognition of his generosity.

“I invest in Cornell because it has always been, and must continue to be, a breeding ground of meritocracy and an incubator for big ideas,” he said in a prerecorded speech at the event. “I’ve invested in this museum because it beautifully and vividly captures the struggles and triumphs of the African-American experience, which is the American experience.”

The Atlantic Philanthropies, a charitable organization established by entrepreneur Charles F. Feeney ’56, also holds a prominent spot on the museum’s list of benefactors.



“I invest in Cornell because it has always been, and must continue to be, a breeding ground of meritocracy and an incubator for big ideas.”

Robert F. Smith ’85



Faculty, volunteers and friends engage with the museum and each other. Clockwise from top: Sandra Elaine Greene, the Stephen ’59 and Madeline ’60 Anbinder Professor of African History; from left, Neoma Mullens ’98, Samantha Castillo-Davis ’00 and Sara Hernandez, MRP ’07; Robert L. Harris Jr., professor emeritus at the Africana Studies and Research Center; and, from left, President Martha E. Pollack with volunteers and event drivers Katrina James ’96, alumni-elected trustee; Laura Wilkinson, MBA ’85, J.D. ’86, chair of Cornell Mosaic and a Cornell trustee; and Terry Horner ’92, Ph.D. ’98, president of the Cornell Club of Washington, D.C.





Clockwise from top left: A stained glass window in Sage Chapel memorializes, from top, James Earl Chaney, Michael Henry Schwerner '61 and Andrew Goodman; the centennial memorial to the founding of Alpha Phi Alpha outside Barnes Hall; members of Alpha Phi Alpha, who made a pilgrimage to Cornell in November 2005 to mark the beginning of the fraternity's centennial celebrations, gather in Sage Chapel for a group photo.

Service, advocacy and achievement

Military veterans have left their mark on history through their service, and included in the collections are artifacts related to the Tuskegee Airmen, the first African-American pilots who fought in World War II and helped to break down racial barriers in the military. Air crew badges and other mementos owned by Fenton B. Sands '42, M.S. '53, Ph.D. '54, are among those on display.

Community organizers and civil rights activists also feature prominently, including Michael Schwerner '61, who worked to register black voters in Mississippi in the '60s. Schwerner and his colleagues, James Chaney and Andrew Goodman, were killed by members of the Ku Klux Klan, and the three are remembered in the museum's exhibit on the modern civil rights movement. At Cornell, their images are enshrined in a stained-glass window in Sage Chapel.

Alumni luminaries like Nobel Prize-winning writer Toni Morrison, M.A. '55, and astronaut Mae Jemison, M.D. '81, appear in the collections, inspiring visitors. As special guests on Cornell's campus, they also have delivered talks and met with faculty and students, bringing their insights and experiences to the Hill.

At the museum, Cornellians also have contributed behind the scenes: Architects Michael Rantilla '96, Mark Hill '84 and Brandon Padron '02 were involved in the building's planning and construction; Mindy Magyar '97 designed the museum's Sweet Home Café; and Rhea Combs, MPS '94, is the curator of film and photography and the head of the Earl W. and Amanda Stafford Center for African-American Media Arts.

Building a community, making a difference

The event brought to light another vital component: regardless of creed or color, the Cornellians who come together to make a difference for the university and for their communities.

"It's not a black museum with black things. It's really an American story that's being told," said Frank Wilkinson '84, an architect based in New York City and a member of Alpha Phi Alpha and the Cornell Black Alumni Association. "We're not fighting a struggle only for ourselves. We're truly fighting the struggle to make America better."

Ruben Ortega '13, treasurer for the Cornell Latino Alumni Association and a member of the LGBTQ community, added: "Even though we represent different identities, I think it's amazing that we can all come together to celebrate our community and recognize the historical artifacts and everything that's led up to where we are today."

"Everyone needs an ally, and we're stronger in numbers and stronger as a community, as one," he said.

For Terry Horner '92, Ph.D. '98, president of the Cornell Club of Washington, D.C., the event was an example of how diverse Cornell groups come together to marshal their forces for greater causes. "We look for intersections where people have overlapping interests, and that's what this weekend is about," he said.

Horner praised the community-building work of Cornell staff like those at Diversity Alumni Programs, and highlighted the collaborations among alumni groups like the D.C. Cornell Club, the Cornell Black Alumni Association (CBAA), the Cornell Black Lawyers Alumni Network (CBLAN) and Cornell Mosaic, an umbrella organization for alumni of color and from the LGBTQ community.

Across the United States and overseas, Cornell clubs and associations continue to strengthen their memberships while building ties in their localities. In celebration of Cornell Cares Day in January, for example, groups partnered with nonprofit organizations – from the New York City chapter of Cornell University Gay and Lesbian Alumni Association (CUGALA) helping at an LGBTQ homeless youth shelter, to the Cornell Club of Hong Kong volunteering at a nursing home.

Cornell groups also help raise funds for financial aid, giving underprivileged and underrepresented students the opportunity to enroll and thrive at Cornell. With numerous scholarships like CBAA's Cornell Tradition Scholarship and CBLAN's George Washington Fields Scholarship (named after a former slave-turned-lawyer and Class of 1890 Cornell graduate), Cornellians are looking back to the university's egalitarian founding principles and continuing the story of "... any person ... any study" for generations to come.

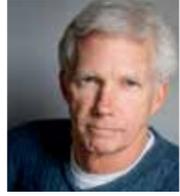
Get involved with your community of Cornell alumni, parents and friends. Learn more at alumni.cornell.edu.

"We're not fighting a struggle only for ourselves. We're truly fighting the struggle to make America better."

Frank Wilkinson '84, an architect based in New York City and a member of Alpha Phi Alpha and the Cornell Black Alumni Association

PICTURE CORNELL BY ROBERT BARKER

For nearly a quarter of a century, much of Cornell's visual beauty has been captured and shared through the eyes – and camera lenses – of University Photography Director Robert Barker, who is retiring this spring.



Barker's images have ranged from the microscopic to the celestial, from local to global, all within a Cornell-centric context. He crafted indelible and varied images of Cornellians at work, at play and so many places in between.

"To me, this pin oak is a wonderful metaphor for Cornell – its breadth, beauty, stature and growth," Barker says. "After many attempts to capture my feelings about this tree, which appeared isolated in the fog on an early April morning, I waited for a single student to enter the frame to add proper scale."



FACULTY PROFILES



ENGINEERING ROBOT COLLECTIVES THAT MIMIC SOCIAL INSECTS

When you first step inside the Collective Embodied Intelligence Lab at Cornell, you might not guess you've entered a robotics laboratory.

An empty termite nest and beehive are stationed in a display case near the entrance. A preserved bee sits lifeless inside a small glass jar on a table. A chunk of wood is being devoured by live termites in the back of the laboratory as a small colony of ants diligently digs through an encasement.

The lab is run by Kirstin Petersen, assistant professor of electrical and computer engineering, who designs tools that can analyze and learn from social insects, and then uses that knowledge to build robots that work in similar ways.

"If you look at ants and bees and termites in nature, for instance, you see that they're capable of remarkably complex behavior like foraging, nest construction, defense," explains Petersen, "and we can build robot collectives like them ... that are capable of achieving tasks in a manner that's more efficient and error tolerant than traditional robot systems."

Petersen drew inspiration for such a robot collective after observing an African species of mound-building termite while in Namibia. By combining 3-D scanners with software to automatically track and label the insects, she was able to continuously observe their behavior and collect data.

That data was used to code a system in which large numbers of robots could build human-scale structures using some of the same collaborative principles observed in the termites.

A more recent project of Petersen's aims to develop submillimeter flight recorders that can be attached to honeybees. The goal of the project is to map foraging patterns to learn more about the insects' pollination habits, as well as to extract data that could analyze the health of crops.

"It is incredibly exciting to see robots becoming more and more commonplace in our daily lives," she says. "Soon we may see large collectives of robots working alongside human and biological teams to solve complex tasks in the real world."

– Syl Kacapyr



"The students here ... come to the university with a genuine interest in urban issues, problems, and how they can develop solutions."

Nicholas Klein

TRANSPORTATION PLANNING AS SOCIAL MOBILITY

"I am passionate about transportation planning," says Nicholas J. Klein '01, assistant professor in the Department of City and Regional Planning in the College of Architecture, Art and Planning. "Not so much the things of transportation – like buses, cars and transit systems – but the people who use them."

In his research and teaching, Klein examines the ways that transportation is both an influencer and marker of economic outcomes in people's lives. He studies how transportation options affect people over time, in terms of individual lifetimes and generationally, with particular attention to how life events play a role.

Klein's quantitative research has looked closely at both car ownership and access to public transportation as tools for social, economic and physical mobility.

For example, while there are some neighborhoods with great public transportation where families without cars can achieve the same outcomes as families with cars, unfortunately that is not the case for neighborhoods in most of the country. In most places, access to a car is more likely to lead to gaining a job and moving up the economic ladder as well as shorter commutes. Making and keeping health care appointments is easier, and access to other enrichments is increased.

"The policy solutions are not so clear," says Klein. "How can transportation planning be used as a social mobility tool? That is the real question."

In addition to a bachelor's degree in operations research and industrial engineering from Cornell in 2001, Klein received a master's degree in urban spatial analytics from the University of Pennsylvania and a Ph.D. from Rutgers University. Hired in July 2017, Klein says he was pleased to return to Cornell after teaching at Columbia University, Temple University and Pratt Institute.

"The students here ... come to the university with a genuine interest in urban issues, problems, and how they can develop solutions," Klein says. He looks forward to engaging with collaborators across the university, particularly in engineering and civil engineering, where there are opportunities for overlap in the area of urban planning and transportation.

– Patti Witten

THE MICROSCOPIC FIGHT AGAINST A DEADLY TROJAN HORSE

As an 8-year-old growing up in Tepic, Nayarit, Mexico, Hector Aguilar-Carreno watched the climbing tendrils of a squash plant and measured how fast the tendril circled around a neighboring twig. “I wanted to know how the plant shoot knew which way to go – and realized there must be a way for the plant to sense the twig,” he says. “It got me thinking more microscopically.”

Aguilar-Carreno joined the College of Veterinary Medicine as an associate professor in July 2017. “Cornell is a place where we can do great things in the field of virology,” he says. “It’s the one of the best environments in the country – and in the world.”

His research interests have expanded from squash tendrils to understanding the behavior of some of the most mysterious and deadly viruses in the world – how they fuse with, enter and replicate in host cells. Aguilar-Carreno studies members of the Paramyxoviridae family, including the Nipah and Hendra viruses, which are carried by bats and can pass easily across the animal kingdom, killing most of their human hosts.

“A tiny piece of genetic material can overtake an entire complex animal,” he says.

These viruses are known as envelope viruses, so-called because they cloak themselves in the membranes of their host cells like a microscopic Trojan horse, making them relatively less visible to the host’s immune system. Aguilar-Carreno describes blocking membrane fusion as his research holy grail, and his lab is working to uncover more viral and cellular proteins that can play a key role.

Although blocking membrane fusion in the body is tricky, it’s clear Aguilar-Carreno has the tenacity to see these efforts through. “I am a very determined person,” he says. “If we’re able to find broad antivirals that can target these enveloped viruses, we will solve so many problems. It would dramatically improve both veterinary and human health.”

– Melanie Greaver Cordova



“If we’re able to find broad antivirals that can target these enveloped viruses, we will solve so many problems. It would dramatically improve both veterinary and human health.”

Hector Aguilar-Carreno



TRANSFORMATIVE SCIENTIST

Humans have long understood the general concept of natural carbon recycling: when animal and plant wastes are applied to farm fields, the soil is more productive. Yet the underlying chemistry of that process – how natural organics are trapped, transported and cycled through plants and soils – is still largely a mystery.

Ludmilla Aristilde ’03 plans to solve it. An assistant professor of biological and environmental engineering in the College of Agriculture and Life Sciences, Aristilde works at the interface of natural and engineering systems. She seeks to understand how organic contaminants affect sensitive ecosystems, how organic chemicals are secreted by plants and microbes, how these organics are transformed into useful plant nutrients or harmful greenhouse gases, and how natural and contaminant organics move in the environment.

With a better understanding of these processes, engineers could develop technologies that trap and recycle organic waste more effectively and reduce the need for synthetic chemicals, including fertilizers. Her work has implications for problems ranging from water pollution to ecosystem damage and agricultural costs to climate change. Last year alone, Aristilde was awarded over \$1 million from the National Science Foundation for multiyear research projects.

Born and raised in Haiti, Aristilde became aware of the devastating impact of deforestation and water pollution on human health during an epidemic of cholera. She first came to Cornell as an undergraduate, just three years after emigrating to the U.S., and she completed dual degrees in science of Earth systems and fine art. In 2012, she returned as a faculty member, drawn back by Cornell’s commitment to academic diversity.

“What I love about collaboration in academia is people have different perspectives on how to address a similar problem,” she says. “This process enables us to develop insights beyond our own individual capabilities; from there, we can advance the scientific field to solve the most difficult problems.”

– Krisy Gashler





CHALLENGE INSPIRES GIFTS TO THE CORNELL SC JOHNSON COLLEGE OF BUSINESS

By Kate Klein

In January 2017, a \$150 million gift from H. Fisk Johnson '79, M.Eng. '80, M.S. '82, MBA '84, Ph.D. '86, and SC Johnson named the Cornell SC Johnson College of Business. Johnson and his company designated a third of this gift – \$50 million – as a challenge grant to leverage philanthropic support from others on a 1:3 basis, allowing the college to raise an additional \$150 million in endowment and bring the total potential impact of the gift to \$300 million.

“Fisk Johnson had a very strong commitment to helping each of the three schools in the college by making the challenge part of his gift,” said Jon Denison, associate dean for alumni affairs and development at Cornell SC Johnson.

In the year since, more than 50 donors have responded to the SC Johnson Challenge.

Leading the way

The first donor to respond to the SC Johnson Challenge is a familiar name in Cornell business education: John Dyson '65, who, along with his brothers, Robert Dyson, MBA '74, and Peter Dyson, named the Charles H. Dyson School of Applied Economics and Management in 2010. Dyson and his wife, Kathe, named the Peter L. Dyson Professorship of Ethics in Organizations and Life in memory of his brother.

“We named a professorship for Peter Dyson in ethics because it symbolizes the way Peter lived his life with the highest business and personal standards,” said John Dyson. “It is also a field that needs new emphasis in the current world, where lack of high ethical standards has led to a

number of shocking mistakes in finance, personal behavior and business ethics. We hope that ethics and ethical behavior will take its proper place in the education of business leaders and, more generally, all Cornell students.”

To help keep Cornell SC Johnson faculty members – particularly those focused on hospitality – at the forefront of their discipline, Dharmendra “D.J.” Rama, MMH '96, and his family leveraged challenge dollars to endow a faculty immersion program that has taken faculty members on a hotel tour in Washington, D.C., and a food and beverage trip in New York City.

“It’s building a bridge between faculty and the industry,” said Rama, president and CEO of his family’s company, Auro Hotels. “The hospitality industry is moving at a faster pace than the books you could produce, so it is important that the faculty see the trends.”

Expanding student experience

Many gifts in response to the challenge benefit students through scholarship endowments and endowments focused on enhancing the student experience.

Paul “Spike” Gerwin '51, MBA '52, had such a formative experience at Cornell – as a celebrated athlete and top-of-his-class scholar – that his wife, Marie Gerwin, endowed a scholarship at Johnson in his memory.

“He so loved his years at Cornell and was grateful for all Cornell offered him to succeed,” she said. Gerwin was so impressed with the first recipient of this scholarship, a first-generation college student from West Virginia, that she endowed a second scholarship in the College of Arts and Sciences in response to a universitywide scholarship challenge, another of several recent fundraising challenges launched in the past two years.

Sandy Solmon, founder and CEO of Sweet Street Desserts and a Cornell parent, also gave to enhance students’ business school experiences by establishing the Sweet Street Endowment for the Pillsbury Institute of Hospitality Entrepreneurship in support of an annual business plan competition, for which she serves as a judge.

“I believe in the distinctiveness of the Hotel School,” she said. “I hope it retains that unique character with the changes and innovations the Cornell SC Johnson College of Business provides. I’m doing my part to support the things that are distinctive and unique.”

Innovative programs, innovative spaces

Two gifts to the challenge provide flexible resources for innovation and space for that innovation to grow.

The challenge inspired Jay Shah '90 to create the Hersha Center Endowment in the School of Hotel Administration, a dean’s discretionary fund named in honor of his parents, Hersha and Hasu Shah. Working closely with Hotel School Dean Kate Walsh, Shah hopes these funds will contribute to programs that further technology in the hospitality industry.

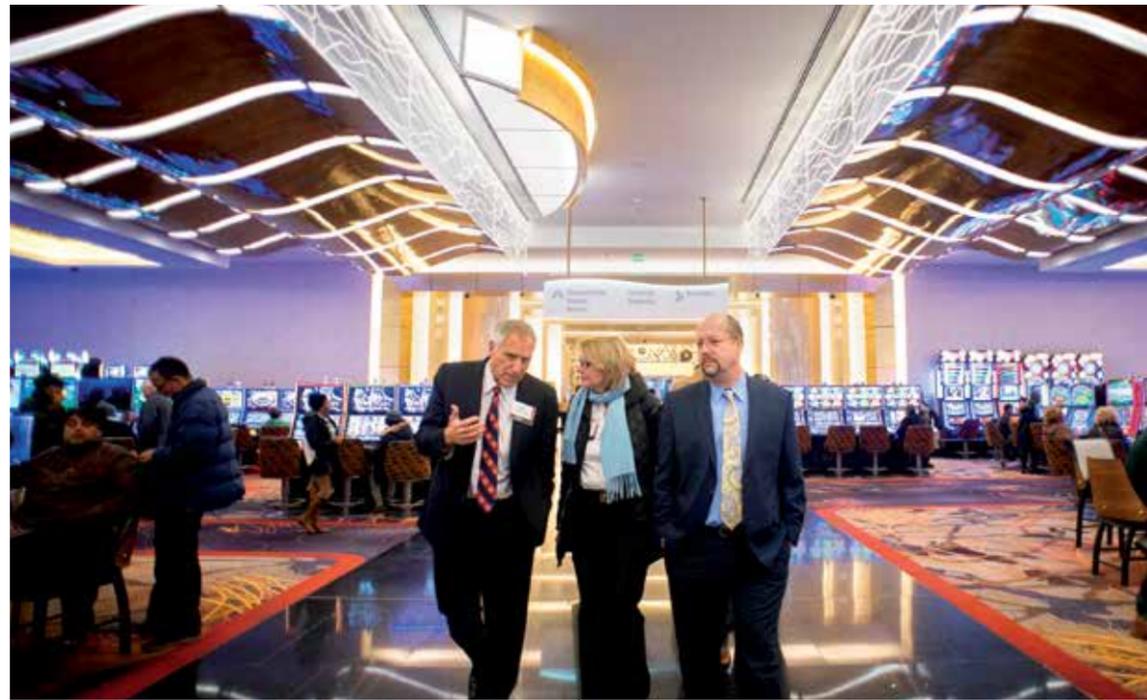
“The hospitality industry is all about delivering unique experiences. That’s what’s exciting about this particular room,” Shah said of the view overlooking Sage Hall from the Hersha Center, the experiential learning center on the

“Fisk Johnson had a very strong commitment to helping each of the three schools in the college by making the challenge part of his gift.”

Jon Denison, associate dean for alumni affairs and development at the Cornell SC Johnson College of Business



Judges at the 2017 Hospitality Business Plan Competition Finals. Cornell parent Sandy Solmon is the judge at the far right.



Erin Scott

“We’ve long supported Johnson. We like to get things started.”

Mark Wurzel '73, MBA '74, president and CEO of candy company Calico Cottage

top floor of Statler Hall named in recognition of the gift. With an industrial kitchen adjoining, the room is used as a student-run restaurant and for receptions and recruiting events.

Two-hundred and thirty miles away on Cornell Tech's New York City campus, Mark Wurzel, president and CEO of candy company Calico Cottage, looks out the window of the Ellen and Mark Wurzel 1973, MBA '74 Conference Room in the Tata Innovation Center. Their gift to name the room inside the building adds to an endowment fund for use by the dean for unrestricted purposes.

“We’ve long supported Johnson,” said Wurzel, the first to name a space inside the Samuel Curtis Johnson Graduate School of Management section of the Tata Innovation Center. “We like to get things started.”

Gifts inspired by the challenge total more than \$30 million (as of mid-March) and have been matched by more than \$10 million of the available \$50 million 1:3 matching funds. “This challenge is a very real way to address priority needs while also growing the endowment,” Denison said.

Above: Bob Alter '73, left, president of Seaview Investors, shows Hotel School faculty members Mary MacAusland, senior lecturer in accounting, and Adam Klausner, senior lecturer in law, around MGM National Harbor Resort & Casino on the Potomac during a faculty immersion trip to Washington, D.C., in 2017.

Left: Ellen and Mark Wurzel '73, MBA '74, gave a gift to name a conference room in the Tata Innovation Center on the Cornell Tech campus on Roosevelt Island in New York City. From right, Ellen and Mark, along with their daughter, Jill Wurzel '02, make a stop in the conference room during a tour of the center in February.



Joe Wilensky

\$50 million investment launches Tata Innovation Center

A \$50 million investment from Tata Consultancy Services (TCS), a leading global IT services, consulting and business solutions organization, will advance Cornell Tech's mission to create pioneering leaders and technologies for the digital age.

The commitment includes a significant gift for the first phase of capital development on the Roosevelt Island campus, recognized by naming the Tata Innovation Center, a corporate co-location building formerly known as The Bridge. It also will support research collaborations between TCS and Cornell Tech and enable mutual efforts to expand K-12 digital literacy programs in New York City, with a focus on girls, minorities and the underserved.

TCS's partnership continues a tradition of philanthropy to Cornell by Trustee Ratan Tata '59, B.Arch. '62, the Tata Trusts and the Tata family of companies. “The Tata Group and TCS have a long and celebrated history of investments in education and institution building in the communities in which we operate,” said Natarajan Chandrasekaran, chairman of the Tata Group. “The Tata Innovation Center will drive applied research and collaboration between Cornell, industry and the startup ecosystem in emerging areas including human-machine interaction and cybersecurity, benefiting both U.S. business and local communities.”

TCS will become one of the tenants in the Tata Innovation Center, a first-of-its-kind building where TCS researchers and those from other cutting-edge companies from diverse industries

– including Two Sigma, Citibank and Ferrero – will have the opportunity to work alongside groundbreaking Cornell academic teams. They include recent Cornell Tech graduates seeking to commercialize new ideas and work with startups and established companies developing leading-edge technologies and products.

“Cornell Tech stands apart because of our focus on academic excellence, coupled with real-world impact, and this new partnership with TCS will dramatically improve our ability to make a difference, from commercializing research to engaging with public school students across New York City,” said Dan Huttenlocher, the Jack and Rilla Neafsey Dean of Cornell Tech and vice provost. “TCS shares our vision of ensuring all students and teachers have meaningful engagements with computer science in the classroom, and with their help we will reach even more schools.”

A distinguishing characteristic of Cornell Tech's research is that it engages deeply with external communities, organizations and industry to address real-world problems.

“The Tata Innovation Center will become a hub for New York's tech sector and a global icon for how academia and industry can collaborate to leverage technology for the greater good,” said Cornell President Martha E. Pollack.

– Diane Lebo Wallace



Max Touhey/Cornell Tech

PICTURE CORNELL BY JASON KOSKI
Cornellians make midday use of the Barton Hall track.





“I FELT THERE’S GOT TO BE SOMETHING BETTER THAT CAN BE DONE.”

Laura C. Harrington, professor of entomology

1 million
approximate number
of deaths associated
with mosquito bites
every year

Tackling mosquitoes, deadly vectors of transmission

By Caitlin Hayes

The mosquito is one of the deadliest animals worldwide, according to the World Health Organization. They transmit diseases such as malaria, dengue, yellow fever, chikungunya, West Nile virus and Zika. They’re responsible for millions of deaths each year, and strategies to control outbreaks are limited, even in the United States.

When Laura C. Harrington, professor of entomology, was a graduate student doing fieldwork in Thailand, she experienced the danger and suffering firsthand, contracting malaria and dengue. Malaria made her so delirious she thought she was being euthanized, a fevered hallucination that referenced her job in a veterinary clinic as an undergraduate. She was hospitalized for both infections, traveling many miles from northern Thailand to Bangkok to get treatment for dengue.

“It’s what really influenced me, disappointed and inspired me – knowing that there were a lot of people who couldn’t get their kids to a hospital like I was in for dengue treatment,” Harrington says. “It was a big source of guilt for me. I felt there’s got to be something better that can be done.”

For Harrington, that something better is improving control of the vectors of transmission. At Cornell and field sites around the world, she and her team study aspects of mosquito biology and behavior, often overlooked, which can be exploited to control vector populations and disease transmission.

The mosquito’s mating habits

Reproduction is a potential vulnerability in mosquitoes’ life cycle. “We feel strongly that the mating system represents an ideal target for mosquito control,” Harrington says. In most species, females’ need for a blood meal increases after mating. Males do not feed on blood, but females need it to develop their eggs. “We’ve noted these marked differences in females after she mates or after we inject the male’s seminal fluid,” Harrington says. “It definitely affects her feeding biology, and we’re exploring that now,

trying to figure out if it makes her take larger or more frequent blood meals, which of course is important for transmission.”

Harrington’s group, in collaboration with the lab of Mariana F. Wolfner, the Goldwin Smith Professor of Molecular Biology and Genetics, also is investigating ways to exploit this juncture in the life cycle, with a particular focus on seminal fluid. By genetically altering the male mosquito, its semen could be made into a weapon, stopping the female from mating or reproducing by over- or under-expressing certain molecules that are transferred to the female. The semen could even be made poisonous, by over-expressing a scorpion toxin (this has been done in fungi but not yet in mosquitoes).

Harrington’s lab is looking into a number of promising alterations, using CRISPR/Cas9, a cutting-edge genome editing technology, to knock out certain genes to understand their function in males, as well as a few receptor genes in females. They’re also partnering with assistant professor Lena Kourkoutis’ lab in applied and engineering physics to image the structure of the sperm cell and how it changes once it enters the female reproductive tract. Targeting the process of capacitation, which may enable sperm to fertilize, could be a focus for control as well.

“I’m pretty optimistic about genetic control,” Harrington says. “You release the males that don’t feed on blood anyway – so you’re not adding to the risk of transmission.” She is also hopeful about species-specific insecticides.

This optimism comes with a note of caution, however, because there’s a lot of work to do, including outreach to communities where mosquitoes or insecticides would be disseminated.

“What would you say if I told you I was going to stop by your house this weekend and release some mosquitoes?” Harrington says. “It requires a lot of trust.”

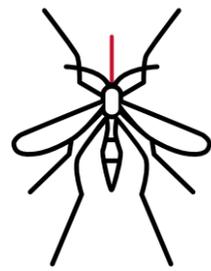
Who’s attracted to whom

Harrington’s group also studies how mosquitoes are attracted to each other in the first place. Her lab made breakthroughs when they discovered that male and female *Aedes aegypti* mosquitoes, the vectors for dengue and yellow fever, change the frequency with which they flap their wings when they come into close proximity. They perform a kind of mating duet the team called harmonic convergence. The findings were reported in *Science* in 2009.

With former student Lauren Cator, Ph.D. ’11, Harrington is continuing to probe the implications of this behavior and whether the male’s ability to harmonically converge is a signal of fitness to the female. It’s possible that females use the quality of buzzing in the males to determine the strongest, healthiest genetic partner.

If this is true, it’s important that any genetically altered males are able to harmonically converge. “These knockout mosquitoes are not great because their fertility is going to be low. If females can sense that they’re not very sexy, [that] they’re ‘out of tune,’ then they’re not going to mate with them, and the project won’t work,” Harrington says. “With

ZIKA VIRUS



The Asian tiger mosquito is a vector for Zika



There is **NO** vaccine



Incubation period, in days



1 in 5 people infected with Zika virus will become ill

Zika virus can cause microcephaly in unborn babies, causing abnormally small heads and brains



colleagues at Harvard we’re actually finding that, indeed, one of the mutants has this diminished ability to converge harmonically.”

These detailed biological behaviors are often overlooked when genetically altered mosquitoes are released in the field, Harrington continues. “Before any kind of release, it’s really important to understand how effective they’re going to be.”

Potential outbreaks in the United States

Closer to home, Harrington’s group is tracking what could become a vector for outbreaks in the United States – the Asian tiger mosquito. An invasive species introduced to the United States in the 1980s, Asian tiger mosquitoes lay their eggs in man-made containers, tires or shipping bins. The embryos can stay dormant for six months or more until the conditions are right for hatching. The scariest thing about the species is that they’re excellent vectors of disease.

“In other parts of the world, they’re very important in the transmission of dengue, yellow fever and Zika,” Harrington says. “In New York state, they’ve been found infected with West Nile virus, and they’re very important in heartworm transmission in dogs. In the laboratory, at least, they’re known to transmit 20 or more different viruses that affect human and animal health. It’s actually the best overall mosquito vector of viruses.”

The species has already spread throughout the southeastern United States and is moving north. Doctoral student Talya Shragai is tracking this expansion, working with Cornell Cooperative Extension to enlist the help of gardeners in New York state. She has trained groups to trap mosquitoes and their eggs, giving her a much broader sampling effort than she could accomplish alone.

Shragai also is exploring the types of containers the mosquitoes are breeding in and how they adapt to cooler

temperatures, with an eye toward limitations in the species that scientists can exploit.

Grant establishes center tackling vector-borne diseases

The United States has been spared from major mosquito-borne disease introductions, with the exception of West Nile, but recent cases of Zika in Florida and Texas are a reminder of our vulnerability. Amid a broad effort to better prepare the United States, the Centers for Disease Control and Prevention (CDC) awarded Cornell a \$10 million grant to establish the Northeast Regional Center for Excellence in Vector Borne Diseases, which Harrington directs.

Cornell’s center has three goals. The first is to train the next generation of public-health entomologists, with a new master’s program beginning this year, and to add courses to the Master in Public Health program in the College of Veterinary Medicine. The second aim is to create a regional research community in the Northeast, promoting and providing support and infrastructure for collaboration. The third is to find solutions that can be applied in the near term.

While Harrington is excited about these goals, her passion is teaching and training. “The rewards for me are really about the students, giving them what I have so they can be better than I ever could be,” she says. “Cornell’s a really great place for this. There’s a lot of talent and a certain intellectual buzz that you don’t find other places. It’s not something we have control over – it happens or it doesn’t. But the fact that we have it here is really special.”

This article originally was posted at Cornell Research, research.cornell.edu.



Two students enjoy a warm winter afternoon on Libe Slope.



‘UNMATCHED’ WASON COLLECTION MARKS A CENTURY OF NURTURING ASIAN STUDIES

In 1912, Hu Shih, Class of 1914, and a group of friends donated 350 Chinese-language books to Cornell University Library “to add something to the completeness of the library itself.”

“As long as Cornell has Chinese students, this collection, I believe, will increase every year,” wrote Shih – who later served as China’s ambassador to the United States – in a letter to University Librarian George Harris.

Shih’s words proved to be prophetic. The donated books became the foundation of the Charles W. Wason Collection on East Asia, now one of the largest collections of its kind in North America and celebrating its centennial this year.

“The Wason Collection is unmatched because of the passion, commitment and generosity of those who spent a century creating it,” says Liren Zheng, Wason Collection curator. “It’s an unparalleled resource that inspires countless discoveries.”

With around 740,000 volumes on China, Japan and Korea, as well as comprehensive online resources, the Wason Collection has nurtured East Asian studies at Cornell for generations. Through partnerships and shared access to collections, the Wason Collection also helps maintain relationships between Cornell and East Asia. International students say the Asian newspapers and Asian-language books and databases in the collection help them stay connected to home.

The collection is named for Charles W. Wason, Class of 1876, who began collecting Asian materials after a cruise to Japan and China with his wife in 1903. When he died in 1918, he bequeathed that collection to the Cornell library, along with a \$50,000 endowment. His gift encompassed 62,000 articles on China and more than 9,000 volumes, including the Yongle Dadian, the 15th-century Chinese encyclopedia.

Beginning with Shih and Wason, gifts from alumni have helped build a collection that draws researchers from around the world.

Today, its resources are used beyond the physical library, with more than 100 online databases providing access to exclusive electronic resources from China, Japan and Korea. Digitized collections include Willard D. Straight’s Korean and Chinese archives and cartoons depicting the Russo-Japanese war.

Sherman Cochran, the Hu Shih Professor Emeritus, says: “As I have broadened my research interests, I have found that I could move into every conceivable subfield of Chinese history – social history, cultural history and immigration history, among others – and still pursue new topics and make discoveries in the Wason Collection.”

– Melanie Lefkowitz



Left: Illustration of Japanese poets composing, 19th century.
Right: Crow on a branch, Kawanabe Kyōsai, 1887.



Above: Trade card with color images of Korea, advertising Liebig’s Extract of Meat, 1904.
Left: Chinese National Party Anti-imperialism propaganda poster, 1926.

YOU CAN MAKE IT HAPPEN SPRING 2018

Adopt-a-collection: Arecibo Observatory records

Fund the processing and organization of 25 cubic feet of historical records to be added to the Arecibo Observatory collection in the Cornell University archives. Since its opening in 1963, the Puerto Rico-based and Cornell-developed observatory has been recognized as one of the most important national centers for research in radio astronomy, planetary radar, terrestrial aeronomy and the search for extraterrestrial intelligence. **\$5,000**



Digital makeovers for distressed neighborhoods

Help revitalize distressed neighborhoods in many cities by funding projection mapping technology, which creates interactive murals on open walls from a mobile platform. Your support will enable College of Human Ecology faculty and students to bring this novel urban renewal project to communities across New York and around the Northeast. **\$20,000**

Crisis management support

When a Cornell student has a crisis, crisis managers are there to help, connecting students and their families to resources (such as health or legal) until the crisis is resolved. Your gift will provide training, plus a small stipend for four dedicated crisis managers, in addition to covering costs such as hotel rooms, travel expenses or food for families. **\$12,000**

Students transforming Buffalo

Pay for one High Road Fellowship, an intensive two-month summer program where students work with local organizations to help transform Buffalo, New York, from a rust belt to a green economy. Student contributions to economic development range from youth participation in the arts to urban farming and local business development. **\$5,000**

Field trips in earth and atmospheric sciences

Send students from the Department of Earth and Atmospheric Sciences to places such as Wyoming, central Ontario or the Adirondacks. Each trip introduces students to aspects of earth science, research disciplines and new field methods as they explore classic geology and facilities used to observe and manage earth processes and resources. **\$5,000**



Lab of Ornithology teacher scholarships

Provide financial aid for one teacher attending the Summer Educators' Retreat. This program helps teachers from all over North America discover ways to connect students to nature while building kids' interest in science. **\$1,500**



Build a soundstage

Fund the construction of a permanent soundstage for the Department of Performing and Media Arts' growing film concentration. Like any lab environment, the soundstage will help students learn the craft of filmmaking in a hands-on way. **\$20,000**

To make a gift, or for more information about these and other giving opportunities, email MakeItHappen@cornell.edu.



Saving snow leopards

Fund a trip to Tajikistan or Kyrgyzstan for professor Martin Gilbert of Wildlife Health Cornell to conduct fieldwork aimed at conserving highly threatened populations of wild snow leopards. **\$10,000**

ENDNOTE



Alumna advocates for diversity, justice through Cornell Mosaic

By Laura Wilkinson

Laura Wilkinson, MBA '85, J.D. '86, center, chats with Andrianne Payson, left, and Katherine Ward Feld at the 2013 Clarke Business Law Institute Transactional Lawyering Competition at Cornell Law School.

I grew up in Brooklyn, New York, during the civil rights era of the 1960s and '70s. I was the first person in my family to even think about going to college – and I had the audacity to want to become a lawyer. I was interested in driving social change through using law to increase diversity and inclusion.

After graduating from the University of Pennsylvania, I came to Cornell to enroll in the Law School and the Johnson Graduate School of Management. The J.D./MBA program changed my trajectory and focused me on a business law career. Upon graduation, I joined the Federal Trade Commission, where we challenged unlawful mergers and ensured that markets remained competitive. After 10 years, I switched to private law firm practice, where I now advise companies and guide them through the process of securing approval for strategic mergers and acquisitions.

Although I did not become a civil rights attorney, I have continued to advocate for diversity and inclusion in the workplace and for social and economic justice in society.

I feel an obligation to give back to Cornell, which gave me the training to excel in my career, and to make sure that diverse and first-generation students have the resources they need to succeed. Throughout the years, I have been involved in various alumni activities. I became the first African-American to chair the President's Council of Cornell Women, and I currently serve on the board of trustees and as chair of Cornell Mosaic.

Cornell Mosaic was conceived in 2006 to bring together and celebrate the diversity of Cornell alumni. Although its structure has varied over the years, Mosaic remains the lead advisory organization of Cornell's diverse alumni communities. We seek to increase the number of active and engaged alumni of color, LGBTQ alumni, first-generation alumni and differently abled alumni and to advance inclusion in all aspects of university life.

In November 2017, Cornell Mosaic co-hosted a night at the Smithsonian's National Museum of African American History and

Culture, and unveiled the Medal of Distinction, which will recognize alumni, faculty and administrators for their commendable impact or leadership in creating opportunities and access for diverse communities within the academy, industry, public service and the professions.

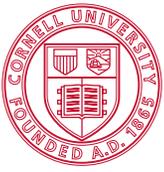
I was proud to present the inaugural Medal of Distinction to Lance Collins, the Joseph Silbert Dean of the College of Engineering, in recognition of his outstanding leadership and commitment to diversity. Under Dean Collins, the college has implemented a wide range of innovative programs and processes that have not only increased diversity at the admissions stage, but also have focused on the retention and success of underrepresented minorities and female students and faculty.

Under President Martha E. Pollack's leadership, Cornell Mosaic is embarking on a new formal structure as a council.

The goal of the Cornell Mosaic Council will continue to be ensuring that the needs of diverse students and alumni are an integral part of Cornell's strategic direction. Mosaic members will provide input on diversity related programs, offer feedback and perspective on university initiatives, and contribute to Cornell as volunteers, donors and ambassadors. Later this year, an inaugural group of outstanding alumni who are leaders in their professions and have an interest in advancing diversity and inclusion will be nominated to serve as at-large members of the Cornell Mosaic Council.

I am proud of Cornell's founding as a place where any person can pursue any study. And I am pleased to contribute to ensuring that Cornell continues to be a place where all students, faculty, staff and alumni – regardless of their race, ethnicity, religious and spiritual background, abilities, gender identity and sexual orientation – can coexist and thrive in a safe and respectful environment.

Laura Wilkinson, MBA '85, J.D. '86, is a Cornell University trustee and chair of Cornell Mosaic.



Cornell University

Ezra magazine
Circulation
130 E. Seneca St., Suite 400
Ithaca, NY 14850

Non-Profit Org.
U.S. Postage
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alumni.cornell.edu/reunion

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