

CORNELL'S QUARTERLY MAGAZINE SUMMER 2014

# EZRA

e u r e k a

ideas and discoveries

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Nearly 100 Cornellians plant some 50,000 blooming flowers that spell out the word “rooted” in 10-foot letters on Libe Slope in April. To see “Picture Cornell” slideshows at the Cornell Chronicle, visit [www.news.cornell.edu/picture-cornell](http://www.news.cornell.edu/picture-cornell).

CORNELL'S QUARTERLY MAGAZINE

# EZRA

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**EZRA:** Cornell's quarterly magazine  
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### ON THE COVER:

Design, photography and photo composite by University Communications Marketing. Eye model: Gianna Zoppi '14. Star cluster image courtesy of NASA/CXC/SAO



Change can foster innovation or follow in its wake; often it goes both ways, and at Cornell, a passionate place full of inquisitive, creative people, we are always dealing with change in one way or another.

In late March we welcomed new Vice President for University Relations Joel Malina, who oversees both Government and Community Relations and University Communications. Joel is in the midst of a crash course in everything Cornell and is enjoying meeting Cornellians. If you see him on campus or at an event, introduce yourself.

Another change for us will be when President David Skorton leaves Cornell to become secretary of the Smithsonian Institution next year. When the Presidential Search Committee, led by Jan Rock Zubrow '77, held an alumni webinar in April, more than 90 participants shared their ideas with Zubrow and board of trustees Chairman Bob Harrison '76. Get updates on the search at [leadership.cornell.edu/president-search/](http://leadership.cornell.edu/president-search/).

And, speaking of change, this issue of Ezra teases a coming redesign for the magazine, most visible within our 16-page cover story on "Eureka!" moments, ideas and innovation. Let me know what you think!

When I was new to Cornell, Associate Vice President Jeff McCarthy shared a copy of a biography of Chuck Feeney '56 that describes how Feeney, as a poor School of Hotel Administration student, put himself through Cornell by buying white bread and baloney and selling ready-made sandwiches to students. To me he defines what I now understand to be the Cornell spirit. Decades later, Feeney's Atlantic Philanthropies is the foundation behind the Cornell Tech campus's transformative \$350 million gift (and nearly \$1 billion in giving to Cornell over the years).

Feeney's drive makes me think of the ideas in this cover story package, which at Cornell come from undergraduates and graduate students, faculty and staff. Did you know that Cornell's "Beyond Coal" initiative, which decommissioned the Ithaca campus's coal-burning Central Energy Plant in 2011, was staff-inspired and -driven?

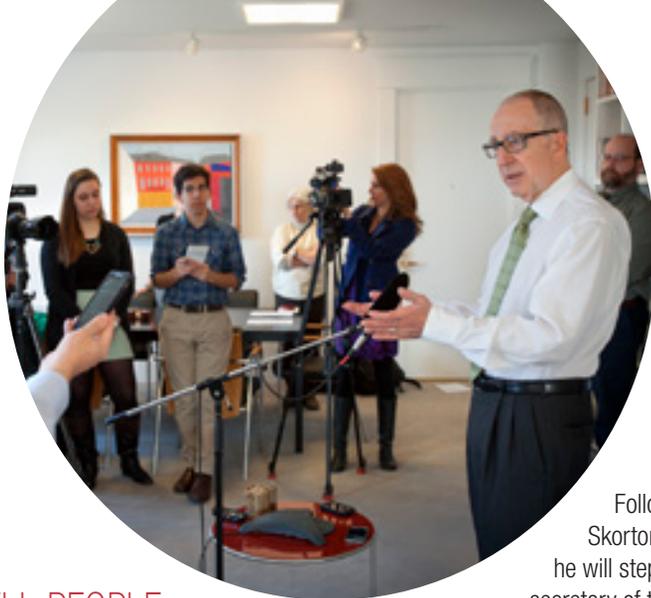
There are many more "Eureka!" moment stories to be told. As you read this issue, I'm sure many of you will think of your own stories, and I'd love to hear them. Send me an email at [avpcomm@cornell.edu](mailto:avpcomm@cornell.edu) and maybe we can feature your story online.

Cornell, across its campuses in Ithaca, Geneva, New York City and Qatar is an amazing place – an engine of innovation that will continue to fuel ideas, passion and "Eureka!" moments.

Tracy Vosburgh  
Assistant Vice President, University Communications  
University Relations



From "Robots with better listening skills." See page 15.



AROUND CAMPUS  
*Search for  
Cornell's  
13th president  
underway*

Following Cornell President David Skorton's March announcement that he will step down in July 2015 to become secretary of the Smithsonian Institution, board of trustees Chairman Robert Harrison '76 appointed a 19-member Presidential Search Committee, headed by Jan Rock Zubrow '77, chair of the Executive Committee.

"This is going to be a great search," said Zubrow. "Cornell is in a wonderful position in terms of its reputation, academic stature and financial position, and that bodes very well for this process. David Skorton has done an outstanding job."

Chairs Emeriti Peter Meinig '61 and Harold Tanner '52 are advising the search committee.

CORNELL PEOPLE

*Paying tribute to  
Rick Gannon '95*

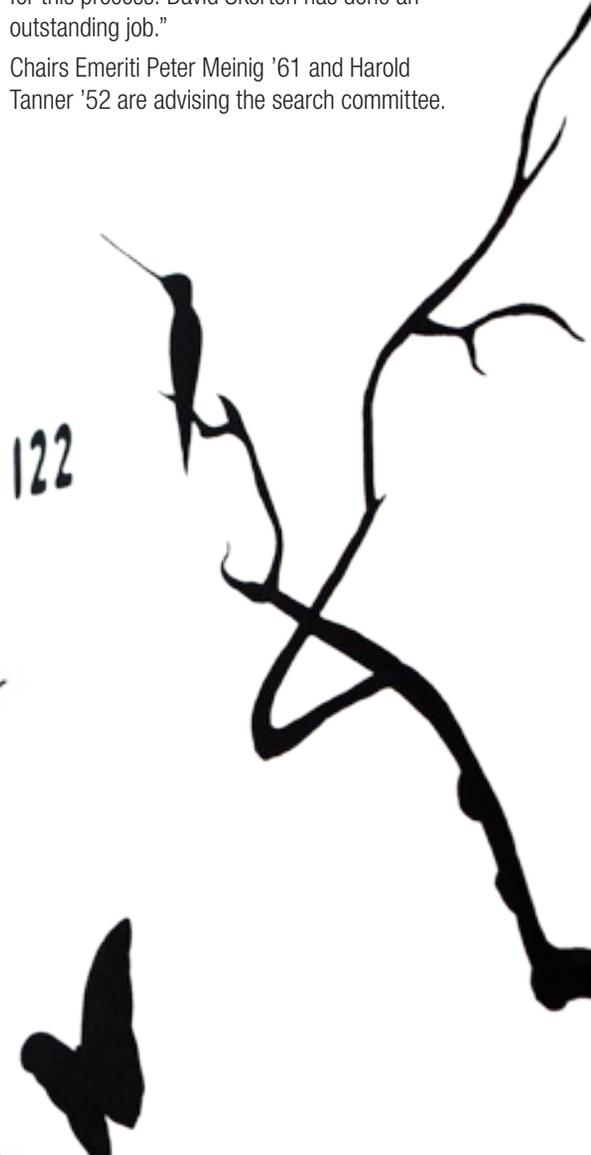
Maj. Richard "Rick" J. Gannon II '95 was one of two Cornellians who were killed in action in Iraq or Afghanistan. On March 30, Cornell paid tribute to Gannon at The National Museum of the Marine Corps, where his name has been inscribed in the Commandant's Circle of the Leatherneck Gallery. The inscription was paid for by an alumnus who wishes to remain anonymous.

More than 115 alumni, parents and friends attended the program and reception.

Speakers included Lt. Gen. Robert "Rusty" Blackman '70, a retired Marine Corps three-star general who is president and CEO of the Marine Corps Heritage Foundation; Gen. John M. "Jay" Paxton Jr. '73, a four-star general and the second-highest ranking officer in the United States Marine Corps; Cornell President David Skorton; Gannon's friend Brian Drumm '96; and A'ndrea Van Schoick, president of the Cornell Club of Washington. Gannon's widow, Sally, gave brief remarks to thank the organizers.



Johnny Biverra



## SEEN & HEARD

### *Silhouette mural takes flight on bird lab wall*

A permanent exhibit of simple black silhouettes of North and South American birds now graces the white north wall of the visitor's center in the Imogene Powers Johnson Center for Birds and Biodiversity, home of the Cornell Lab of Ornithology.

The 120-by-40-foot mural, by Connecticut artist James Prosek, also features black retro-styled numbers next



to each silhouette, suggesting a legend with species names. But Prosek purposefully left the key off the wall, as a way to force viewers to inquire or reflect on different aspects

of each image and to realize that knowing the name of an animal does not alone actually confer much information.

His mural is also a tribute to Roger Tory Peterson's 1934 "Guide to Birds" and its endpapers, which have silhouettes of birds with numbers that match a list of names.

Prosek's silhouettes are part of the lab's 2015 centennial celebration, which will acknowledge the lab's long history of combining science with the visual arts. The lab has commissioned permanent installations by Maya Lin, Jane Kim and Prosek. The other two installations are pending.

The wall features 140 different bird species and 170 total birds.



Provided

## AROUND CAMPUS

### *New health center design takes shape*

Cornell has unveiled the design for a new university health center planned to open in 2017.

The proposed center, designed by Chiang O'Brien Architects and Trowbridge Wolf Michaels Landscape Architects, is a new structure integrated into the current facility and will increase usable space for campus health services from 25,000 to 52,000 square feet.

The \$55 million project is being funded in part through a partnership of Cornell's schools and colleges and the central administration, including a lead investment from Student and Academic Services.

About one-third of the total cost is being raised through philanthropy. New gifts and commitments totaling \$9.81 million have been received toward a \$25 million goal.

The lead gift of \$5 million was made last July by Cornell Board of Trustees Chairman Robert Harrison '76 and his wife, Jane. Since then, other donors have stepped forward, including emeritus board member Martin Tang '70, who made his gift in memory of his mother and grandmother.

Gannett opened in 1956, and the last significant expansion to the building was in 1979, when Cornell had 5,000 fewer students. Pending approvals, construction is slated to begin in the spring of 2015.

## GLOBAL CORNELL

### *Semester abroad in Havana*

For the first time, Cornell students will have the opportunity to spend a semester abroad in Cuba, conducting research and taking courses at the University of Havana.

Beginning this August, students concentrating in the life sciences and enrolled full time in Havana for fall or spring semester will split their time between regular classes and biological laboratory and field research.

Fredrik Logevall, Cornell vice provost for international affairs, and Gustavo Cobreiro, rector of the University of Havana, recently signed an agreement on the Cornell Cuba Research Program – the first at any U.S. school to join American and Cuban science students in research.

The program will begin with two biology labs in Havana, taking up to two students initially.



Olga Tserej

# eureka



# that **MAGIC** moment of **DISCOVERY**

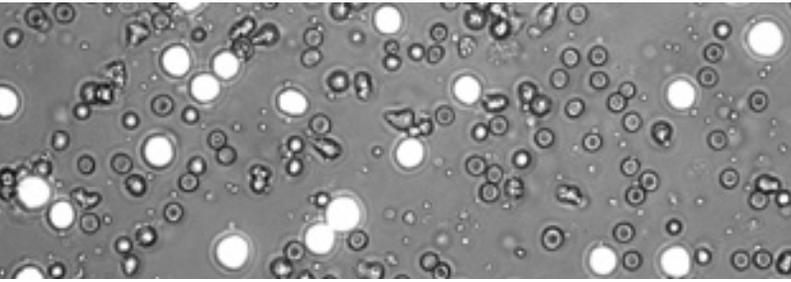
Science fiction writer Isaac Asimov once said, “The most exciting phrase to hear in science, the one that heralds new discoveries, is not ‘Eureka!’ but ‘That’s funny ...’” True, new ideas don’t always hit us with the drama of displaced bathwater rising, as in the exclamation attributed to Greek mathematician Archimedes (“Eureka” means “I have found it!”). In fact, ideas are sometimes not discoveries at all, but compromises or collaborations or slowly dawning truths. Here are some recent Cornell ideas that span inspired revelation, quirky suggestion, counterintuitive supposition and the culmination of a lifetime of careful study.

## 1. lighting the runway

At the 30th Cornell Fashion Collective runway show April 12, fashion aficionados glimpsed clothes of the future – sleek laser-cut bodysuits and 3-D printed glasses lined with blue LEDs and electroluminescent wire and tape. The four pieces, developed by fiber science undergraduate Eric Beaudette and Ph.D. student Lina Sanchez-Botero with support from professors Juan Hinestroza and Huiju Park and Toronto-based Myant Capital Partners, imagine “a time when humans and our computers will be more closely integrated,” Beaudette says.



## 2.



Michael King

### beating metastasis with an army of killer white blood cells

Most cancer deaths – about 90 percent – are related to metastasis, which spreads malignant cells throughout the body. But as Michael King, professor of biomedical engineering, explains, “now we’ve found a way to dispatch an army of killer white blood cells that cause apoptosis – the cancer

cell’s own death – obliterating [cancer cells] from the bloodstream. When surrounded by these guys, it becomes nearly impossible for the cancer cell to escape.”



King

In January, King and his colleagues published a research paper in the Proceedings of the National Academy of Sciences. The engineers combined a therapeutic protein with an adhesive protein that sticks to leukocytes – white blood cells. When a cancer cell comes into contact with the protein in the bloodstream, it kills itself.

King has been conducting studies since 2005, when he tried to scrub blood using a blood-contacting device outside

the body. His “eureka” moment occurred a year after moving to Cornell, in 2009, when he decided to “flip the geometry” to see the results of wiping out the cancer from within the bloodstream using nanoparticles.

While at Cornell, King and his colleagues treated cancer cells with the proteins in saline and found a 60 percent success rate in killing the cancer cells. Once the proteins were added to a flowing blood model that mimics human-body conditions, the success rate soared to 100 percent.

Since this new research was published, new mouse trials are underway to test the therapy for prostate cancer. Breast cancer and lung cancer mouse trials will start this summer.

King’s colleagues include Chris Schaffer, associate professor in biomedical engineering; Michael Mitchell, a Cornell doctoral candidate in the field of biomedical engineering; Elizabeth C. Wayne, a Cornell doctoral student in the field of biomedical engineering; and Kuldeepsinh Rana, Ph.D. ’11.

– Blaine Friedlander

## 3. algae promise greener energy



Provided

### It might be green, but is it a moneymaker?

Multidisciplinary Cornell research teams have increased the commercial attractiveness of algal biofuel, overcoming hurdles that have delayed private-sector use of this promising green fuel.

One idea being explored is to develop high-value coproducts at the same time as the algal fuel. Animal scientist Xingen Lei is doing just that. With a new \$5.5 million USDA grant to further research launched by Atkinson Center for a Sustainable Future seed funding, he is producing a nutritious animal feed from algae for broiler chickens, laying hens and weanling pigs. According to Lei, the animals like the literally and figuratively green alternative to their normal diet.

Also working with algal biofuel, Charles Greene, professor of earth and atmospheric sciences, and his research team parlayed a 2011 Rapid Response Fund award into an international algal biofuel partnership funded by a \$9 million grant from the U.S. Department of Energy. Algae can produce far more biomass and oil per acre annually than the most productive terrestrial energy crops.

– Sheri Englund

## 4. holistic and smarter IQ tests

Saddled with test anxiety, Cornell psychologist Robert Sternberg “failed miserably” on IQ tests as a boy, he recalls. “The school psychologist who gave the tests looked scary, and I would freeze up. Of course, I did poorly. My teachers thought I was stupid. I thought I was stupid. Each year in early elementary school, I did a little worse.”



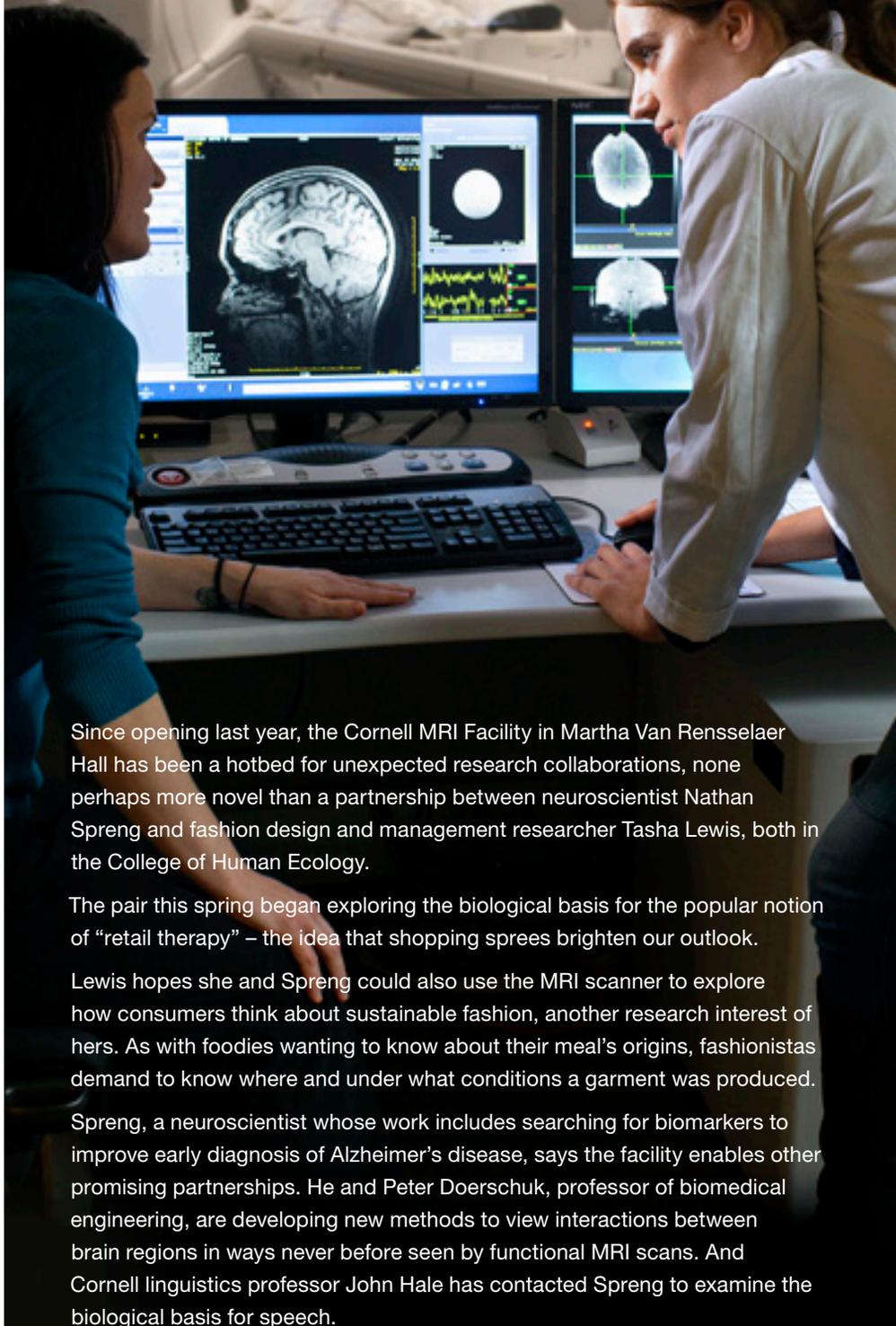
Sternberg eventually overcame his fears, which have fueled one of his life’s passions: constructing better intelligence measures. Now a professor of human development in the College of Human Ecology, Sternberg has traveled to remote locations in Africa, Asia, Alaska and elsewhere to develop alternatives to the SAT, ACT and other traditional tests of intelligence.

Traditionally, psychologists believed intelligence could be measured similarly to how a yardstick measures height – as basic mental skills that could be quantified. But Sternberg’s research suggests a more holistic view that includes “creative, practical, wisdom-based and ethical skills” that reflect our ability to succeed in our social and cultural contexts.

Working with the Luo people of Kenya, Sternberg and colleagues assessed children’s knowledge of natural herbal medicines used in the home. They theorized that if traditional academic measures are an overall indicator of intelligence, children who scored higher on such tests would also excel on tests of local knowledge. However, they found the opposite: For the Luo, having more academic knowledge was not adaptive to life success – local knowledge was. In isolated parts of Alaska and Russia, they made similar discoveries.

– Karene Booker

## 5. the view on shopping sprees from within an MRI



Since opening last year, the Cornell MRI Facility in Martha Van Rensselaer Hall has been a hotbed for unexpected research collaborations, none perhaps more novel than a partnership between neuroscientist Nathan Spreng and fashion design and management researcher Tasha Lewis, both in the College of Human Ecology.

The pair this spring began exploring the biological basis for the popular notion of “retail therapy” – the idea that shopping sprees brighten our outlook.

Lewis hopes she and Spreng could also use the MRI scanner to explore how consumers think about sustainable fashion, another research interest of hers. As with foodies wanting to know about their meal’s origins, fashionistas demand to know where and under what conditions a garment was produced.

Spreng, a neuroscientist whose work includes searching for biomarkers to improve early diagnosis of Alzheimer’s disease, says the facility enables other promising partnerships. He and Peter Doerschuk, professor of biomedical engineering, are developing new methods to view interactions between brain regions in ways never before seen by functional MRI scans. And Cornell linguistics professor John Hale has contacted Spreng to examine the biological basis for speech.

– Ted Boscia

# 6. have detector, will investigate.

Operators of a new X-ray detector at the Cornell High Energy Synchrotron Source (CHESS) had hoped that their March dry run of the device, "Maia," would produce some usable data.

They got that and more. The stunning, high resolution and at times surprising images of ferns, beetles and other objects offered a sneak peek into never-before-seen science.

Maia is an energy-dispersive X-ray fluorescence detector. It builds a pixel-by-pixel digital image of X-ray wavelengths, like chemical fingerprints, emanating from the sample. All this at blazing speed, thanks to Maia's ability to process tens of thousands of photons in

milliseconds, explains Arthur Woll, CHESS staff scientist.

Bug wings, ferns and feathers examined with Maia so far hint at a bigger role fluorescence detection could play in biological fields.

Take a fern leaf, in which Maia detected potassium, calcium and manganese. Such a striking presence of manganese near the tips of fern veins has never been reported before – a complete surprise to Karl Niklas, professor of plant biology. So, too, was the accumulation of potassium in the anthers of an iris (see image at left). The technique, Niklas says, could open up a "whole new view" of plant mineral nutrition.

– Anne Ju

# 7. stop campaigning (or, at least don't wear yourself out)

Research from Peter Enns, assistant professor of government, shows that all the money candidates spend on campaign propaganda might not do a thing to sway voters.



Enns

Enns analyzed responses from the National Annenberg Election Survey, which is conducted each day of the presidential campaign, and found that voters are much more concerned with "fundamentals" – economic conditions, approval of the incumbent president, partisanship and demographic interests – than campaign propoganda, except very early in campaigns.

"Our results suggest that the campaign plays a much smaller role with these fundamentals than previously thought," Enns says. "This conclusion does not, however, mean that campaigns don't matter. ... Looking ahead to 2016, we don't need to wonder if the campaign will get voters to rely on the fundamentals – most can (and will) do this on their own. The real question is whether the campaign (or other events) will get voters to deviate from the fundamentals."

– Kathy Hovis

# 8. local startup ecosystem



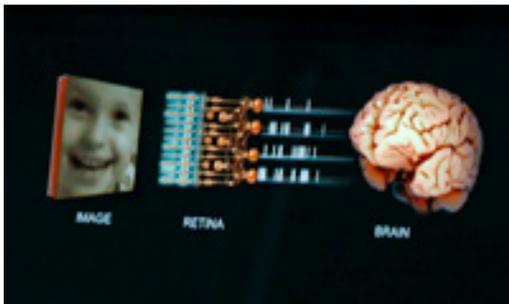
The new downtown Ithaca incubator, a collaborative venture among Cornell, Ithaca College and Tompkins Cortland Community College, opened in January, billed as a hub for economic activity in the area that will channel rising entrepreneurs from all three schools into the Ithaca community and surrounding area.

Located in the Carey Building in downtown Ithaca, the incubator is part of the new Southern Tier Innovation Hot Spot, a regional economic development initiative that received a three-year, \$750,000 award from the state's Regional Economic Development Council.

The incubator project is being led by Tom Schryver '93, MBA '02, Cornell's newly appointed executive director of new venture advancement.

# 9.

## computerized prosthetic eyes that bypass damaged photoreceptor cells



MacArthur “genius” fellow Sheila Nirenberg, associate professor of physiology and biophysics at Weill Cornell Medical College, has invented a device that could restore vision via

a computerized eyeglass prosthetic.



**Nirenberg**

Nirenberg, who explores fundamental questions about how the brain encodes

visual information, developed this alternate approach for patients with photoreceptor cell degeneration (such as those who suffer from macular degeneration and retinitis).

Instead of trying to replace lost photoreceptor cells, Nirenberg’s method bypasses the damaged cells entirely and interacts directly with ganglion cells, using neural “codes” generated in response to particular spatial and temporal visual patterns. The prosthetic transmits the codes to the ganglion cells, which then send them to the brain.

# 10. the growing biz

Every successful business, like any good idea, starts with a seed, that first moment of realization: *This could really grow.*

Shira Baly '14 got the idea for her company, GummyMed, in a Target store, while passing a shelf of gummy vitamins and wondering why no companies sell drugs in gummy form.

Michael Merrill '17 and Dan Masetti '17 got the idea for their daily coding challenge app, CodeProblems, while hanging out in Willard Straight Hall before a prelim.

Alex Krakoski '16 got the idea for his company, Worthy Jerky, when he made enough money selling homemade beef jerky out of his backpack at his high school in the Swiss Alps to pay for a trip around Europe. Arriving at Cornell the next year, Krakoski found many campus resources (classes, advice, contests, funding) to help entrepreneurial projects and started to grow his business. “It was an easy choice to pursue it further,” he says.

Krakoski gained valuable perspective from professor Dan Cohen’s Introduction

to Entrepreneurship course in ILR, and he has worked with professors in the College of Agriculture and Life Sciences extensively. eLab, Cornell’s startup accelerator based at the Samuel Curtis Johnson Graduate School of Management, has given him and his growing team access to veteran entrepreneurs and professors.

Worthy Jerky has matured from concept to business, with deals in place with several Ithaca stores and an e-commerce platform to take orders online. GummyMed and CodeProblems, both in development, won recognition at the Big Idea Competition in April.

Cornell has an atmosphere that encourages students to come up with new business ideas, and nurtures those new businesses, says Zach Shulman, director of Entrepreneurship@Cornell, a universitywide effort that helps students, faculty, staff and alumni find resources to start businesses, some in partnership with the Student Agencies Foundation.

– Kate Klein



Feifan Zhou '16, CEO of TuneTap, gives his four-minute pitch to the judges during the second annual Johnson Shark Tank competition on Feb. 4. TuneTap, a service that enables artists and fans to crowdfund live events, won the competition.

# 11. ideas to look at

From a conversation with Andrea Inselmann (and her excerpted museum exhibit text), edited by Emily Sanders Hopkins.

*A 1,800-square-foot gallery of the Herbert F. Johnson Museum of Art is as thick with beauty, “Eureka” moments, intellectual forays and ideas as any science lab. But who’s keeping score?*

*Here, Andrea Inselmann, the museum’s curator of modern and contemporary art and photography, explains and describes some of the pieces she decided to include in the current show, “beyond earth art • contemporary artists and the environment,” which features works by more*



Provided  
Inselmann

*than three dozen artists. She explains that art’s ability to comment upon and converse with science is a recurring theme of the show. The exhibit also looks back to Cornell’s 1969 exhibition “Earth Art,” one of the first museum shows in the United States to focus on Land Art – an art historical movement of the late 1960s and 1970s that is characterized by artists making works inextricably bound to their sites, using the earth itself as medium.*



“This whole gallery got started with **Adam Cvijanovic’s** 65-foot-long mural, **‘The Discovery of America’ (2012)**. Large portions are inspired by James Perry Wilson’s iconic wildlife dioramas at the American Museum of Natural History in New York, while the scene of men racing through the plains on horses is based on a photograph of the Oklahoma Land Rush of 1889. Smashing geological and

“More than 80,000 people visit the museum each year, including 8,000 schoolchildren. It is one of the only major art museums in this region of New York state, and since opening in 1973, it has been free of charge. We are really committed to keeping it free.”



Provided

“There’s a piece in this first-floor gallery, **‘Cigarette Butts’ (2012)** by **Chris Jordan**, which the museum’s education department really wanted me to include in the show, saying: ‘Children will just flip over this!’ It’s composed of 139,000 cigarette butts, the number discarded every 15 seconds in the United States. By visualizing statistics like this, Jordan involves people’s sense of wonder and curiosity, making a bunch of numbers much more engaging.”

“That’s why I also included these **historical photographs by O’Sullivan and Watkins** that were taken in the 1860s. They were hired by the government to survey the landscape, so in a way they were also implicated in the objectification of the land.” On the other hand, photographs like these also played a role in the establishment of the National Park system in the 1870s.

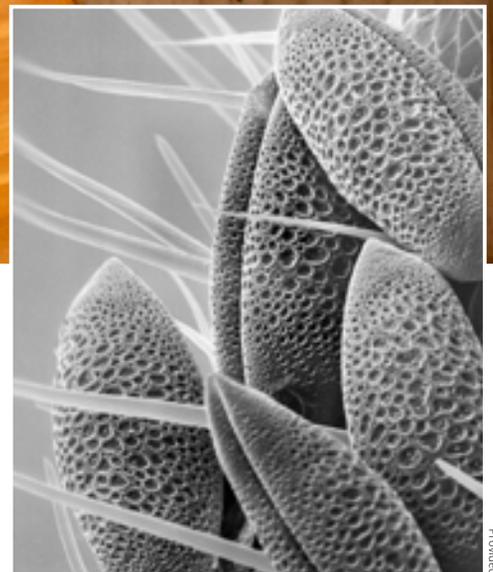
historical time in the corner, Cvijanovic also incorporates painted trappings of the artist’s studio in his collaged landscape commenting on how painted representations of the past and present are implicated in the formation of our fantasies about the natural world.”

“**Alexis Rockman** draws inspiration from old master painting but deals with very contemporary issues. ‘**Gowanus**’ (2013) is a scene from the Gowanus Canal in Brooklyn and its overwhelming pollution. He conducts research trips all over the world working with leading scientists to accurately represent ecological scenarios. In a recent interview Rockman noted that he ‘can say things that scientists can’t really get away with in public.’ Using the language of metaphor, artists can be blunt and subjective.”

“Using imagery of the Florida Everglades ‘**Floating Fire**’ (2012), by **Blane De St. Croix**, focuses on the ever more frequent forest fires.” Here a more interactive engagement with the represented land is required: viewers have to walk around the suspended diorama to see all of it rather than taking it in with one glance installed on a wall.”

“I was really excited about finding **Rose-Lynn Fisher’s** work because I could activate an architectural element that is hard to incorporate into the gallery installation. By hanging the photographs around the stairwell the installation seems to suggest a beehive in the middle of the gallery, paying homage to the bees’ central role in agricultural pollination as every third bite we take depends on them.”

“**Maria Park**, a professor in Cornell’s art department, seeks to investigate how nature has been packaged for us as a consumable image, in which a set of conventions operates to contain it. ‘**CN2 Object 1**’ has the look of a museum vitrine – usually a device to contain objects for viewing – with a painted image wrapped around two sides of it. Much like Rockman’s and Cvijanovic’s paintings, Park’s cube is about the clash between nature and civilization, expressed here by a parking lot pushing up against the land.”



Provided

## 12. tree rings provide insight

A handful of tree ring samples stored in an old cigar box have shed unexpected light on the ancient world, thanks to research by archaeologist Sturt Manning and collaborators at Cornell and in Arizona, Chicago, Oxford and Vienna.

The samples were taken from an Egyptian coffin; Manning also examined wood from funeral boats buried near the pyramid of Sesostris III. He used a technique called dendro radiocarbon wiggle matching, which calibrates radiocarbon isotopes found in the sample tree rings with the patterns known from other places in the world.

Because the dating was so precise – plus or minus about 10 years – it helps confirm that the “higher” Egyptian chronology for the time period is correct, a question scholars have hotly debated.

But the samples also showed a small, unusual anomaly following the year 2200 B.C., when paleoclimate research has suggested that there was a major short-term arid event about this time.

“This radiocarbon anomaly would be explained by a change in growing season, i.e., climate, dating to exactly this arid period of time,” says Manning, the Goldwin Smith Professor of Classical Archaeology and director of the Malcolm and Carolyn Wiener Laboratory for Aegean and Near Eastern Dendrochronology. “We’re showing that radiocarbon and these archaeological objects can confirm and in some ways better date a key climate episode.”



Sturt Manning

That climate episode, says Manning, had major political implications. There was just enough change in the climate to upset food resources and other infrastructure, which is likely what led to the collapse of the Akkadian Empire and affected the Old Kingdom of Egypt and a number of other civilizations.

“The tree rings show the kind of rapid climate change that we and policymakers fear,” says Manning. “This record shows that climate change doesn’t have to be as catastrophic as an Ice Age to wreak havoc. We’re in exactly the same situation as the Akkadians: If something suddenly undid the standard food production model in large areas of the U.S., it would be a disaster.”

– Linda B. Glaser

## 13. let’s pay more for parking

According to Michael Manville, assistant professor in City and Regional Planning, municipalities would be wise – and richer and more efficient and more pleasant to live and drive in – if they established market-based street parking rates.

The price of street parking should vary by block and time of day, with the aim of always keeping one to two spaces open on every block. Charging the right price for parking would deliver a better service to drivers – by ensuring they always find an open space – and also encourage more walking, cycling and transit use. Not least, it would raise revenue (without raising taxes) that cities could spend on services that residents value.

“Cities everywhere give away valuable land to drivers,” Manville says. “Ending this quiet but huge subsidy will help the environment, the economy and the transportation system.”

– Emily Sanders Hopkins



Amranda Rohde/Hidex



S. Cristanetti, A. Whyte/Oriental Institute, University of Chicago

# 14. journal club

Monday in Mudd Hall is neurobiology and behavior journal club day, led by professors Kerry Shaw and Carl Hopkins, both in the Department of Neurobiology and Behavior. Hopkins had the idea for journal club, introduced in 2011, which asks undergraduate students to dive into the very latest research before they have mastered the fundamentals of biology and scientific research.

"Somehow," Hopkins explains, "the fact that the student is learning about something that most people in the university don't know about gives them a special feeling of being in the in-group. Since the results are so new ... students are allowed to wonder if the data are solid, if the experiments are properly controlled."

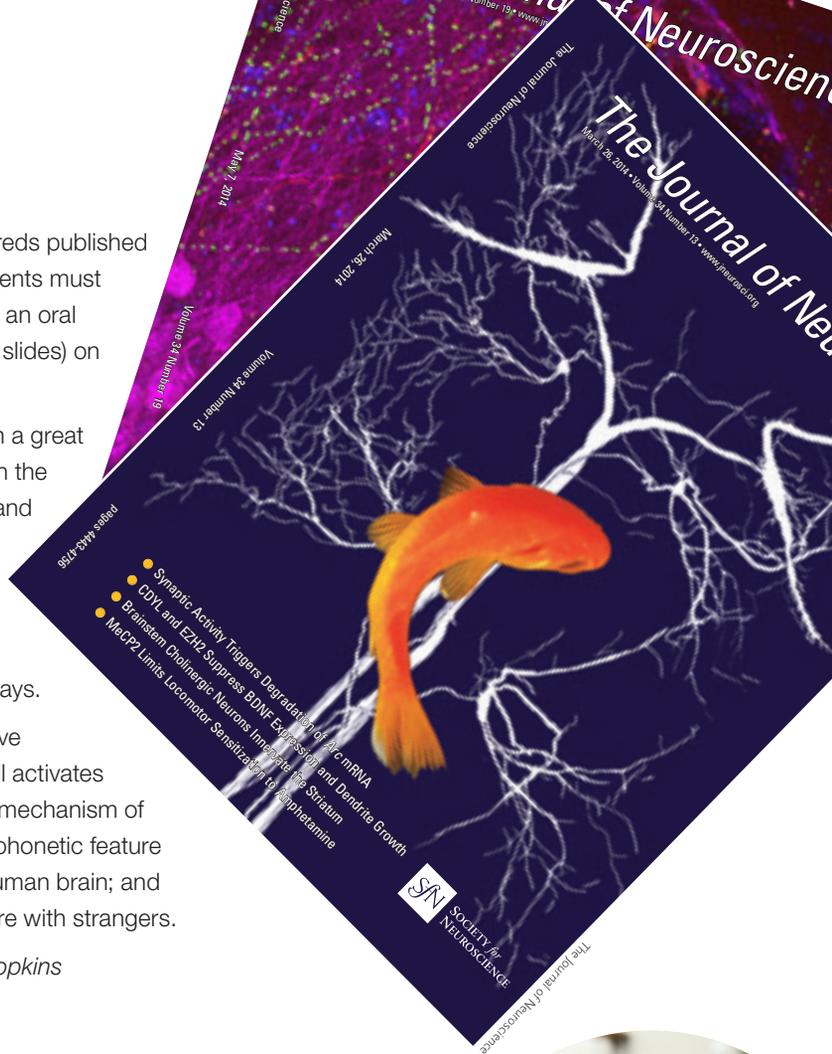
After they've selected a paper to

study out of hundreds published every month, students must analyze and make an oral presentation (with slides) on the new research.

"The students learn a great deal grappling with the primary literature and take away lifelong lessons on how to evaluate the newest scientific research," Shaw says.

Recent papers have covered how smell activates appetite; a neural mechanism of first impressions; phonetic feature encoding in the human brain; and why bonobos share with strangers.

— Emily Sanders Hopkins



# 15. robots with better listening skills

Hadas Kress-Gazit, assistant professor of mechanical and aerospace engineering, is teaching robots to understand "natural

language," turn it into the detailed instructions they need, and if necessary, tell their human handlers if there's a problem.



Kress-Gazit

A software package called SLURP (Situating Language Understanding Robot Platform) starts by checking words in your command against a database of verbs and the qualifiers that go with them. For example, if you say, "Go to the kitchen and get me a glass of milk," it knows that "to" labels a destination for "go." The language processor hands off to software that converts the English words into steps

in "linear temporal logic," a language that includes symbols for concepts like "until," "while," "always" and "never," which in turn lead to standard computer programming steps like "if ... then," and the robot creates a short temporary program for the job it has to do.

Of course science fiction is full of uncooperative robots. "That does not compute" is a familiar catchphrase.

The nonexpert robot handler needs that feedback to give better instructions or fix whatever might get in the way. Kress-Gazit's software runs through the steps the robot has planned and checks each one for feasibility. If there's a problem, it composes a natural language reply by combining part of the original command with a few words of explanation like, "I can't get you a

glass of milk.

We're out of

milk." The

robot also

will check the

actions against

a list of rules: "I

can't get you a glass

of milk because the cat

is sleeping in the hall and you

told me never to frighten the cat."

The next step in the research will

be to equip the robot to suggest

solutions: "Do you want me to order

milk?" By the time we have personal

robots it might be, "The refrigerator

has ordered milk; it should be

delivered in about an hour." And by

that time, cats will probably be used

to robots.

— Bill Steele





# 16.

## how many butterflies have you *really* seen?

Anurag Agrawal

Evolutionary ecologist Anurag Agrawal's idea was sparked in 2012 at the Monarch Biology and Conservation conference, which attracted some 200 butterfly enthusiasts – academics, conservationists and hobbyists.

There, participants debated two recently published yet conflicting papers: One study reported a decline of monarch populations over the past 18 years, while another study analyzed those same years but found no such declines. During discussions, Agrawal noticed that some participants disregarded science that didn't agree with their personal views.

That was when Agrawal first conceived of a project – funded by a 2013 Academic Venture Fund seed grant from Cornell's Atkinson Center for a Sustainable Future – to shed new insight on the debate of whether monarchs are indeed in decline, through a rigorous mathematical analysis of nearly 40 years of citizen science data of monarch counts in North America.

And with all censuses showing the last three years having the lowest monarch populations on record, Agrawal and colleagues hope to better understand the causes behind the population trends.

In addition, Agrawal will work with environmental sociologists (including Cornell faculty members Steven Wolf and Bruce Lewenstein) to clarify what the butterflies represent for people – how messaging about monarchs occurs, and how ambiguous scientific information is used by environmental organizations, for example.

Monarch butterflies have “become iconic because their story is so remarkable,” including their cross-continental migrations, the toxins monarchs sequester from milkweeds, and their ubiquity in American childhoods, Agrawal says.

– Krishna Ramanujan



## 17. single-dose cure for disease

Henry Murray '68, M.D. '72, is an infectious disease and tropical medicine specialist and the Arthur R. Ashe Professor of Medicine at Weill Cornell Medical College. He has spent the last 30 years working on leishmaniasis, a parasitic infection found worldwide, particularly in India,

that is spread human-to-human by the bite of sandflies.

Murray's life's work on leishmaniasis recently culminated in the development of two effective

Weill Cornell Medical College  
Murray

treatments for the disease.

In March, the U.S. Food and Drug Administration granted fast-track approval of oral miltefosine (trade name: Impavido), a treatment for the three forms of leishmaniasis that Murray's effort helped bring to clinical fruition. It is the first effective oral treatment for the disease.

But Murray's "Eureka!" moment happened in 2000; it has led to the single-dose intravenous treatment using liposomal amphotericin B (trade name: AmBisome) that has dramatically changed how the visceral form of infection is managed in the Indian subcontinent.

Untreated visceral leishmaniasis is fatal. As many as two-thirds (about 200-250,000) of the world's new cases each year appear in a New England-sized region of the Indian subcontinent that includes the northeast state of Bihar, part of Bangladesh and southern Nepal, where it causes an estimated 20,000-25,000 deaths per year.

Visceral leishmaniasis (called kala-azar, "black fever," in the region) "has always been there in near- or true-epidemic

form," Murray says. A treatment to greatly reduce or potentially eliminate the disease would need to be well-tolerated, highly effective and efficient, require no lab testing, guarantee 100 percent compliance and able to be administered in a rural health center setting. Tens of thousands of patients would need to be treated.

Lipid formulations of drugs, including liposomal amphotericin B, that came on the scene in the 1990s made it possible to target the actual cells in which the parasite multiplies. The treatment trials unit Murray helped to establish in India had already used this drug to dramatically improve and shorten kala-azar treatment from 28 to 5 days. Murray's idea was to find a way to roll the treatment into a single intravenous dose – a regimen that would need to be safe and as effective as multiple-dose therapy.

The first single-dose trials reached about a 90 percent cure rate (the acceptable benchmark is 95 percent). By the time of a third study, published in the *New England Journal of Medicine* in 2010, they had reached 96 percent.

"It took us 10 years to come up with a regimen which ultimately has changed the face of treatment in the Indian subcontinent," Murray says. Also gratifying: Murray's regimen is at the core of the National Kala-Azar Elimination Program shared by India, Bangladesh and Nepal; its goal is to essentially eliminate the disease, reducing its prevalence from 30-35 new cases per 10,000 population each year to fewer than 1.

– Joe Wilensky

## 18.

### love, not war

Why compete when we can collaborate?

That's the question Anne Kenney – Cornell's Carl A. Kroch University Librarian – asked in February 2009, after an unproductive meeting with a big group of research libraries.

All the libraries were slammed by a major recession, shrinking budgets, skyrocketing journal prices and increased demands for specialized content and expert librarians.

Later that year, Cornell and Columbia formed an unprecedented partnership between two Ivy League libraries: 2CUL – pronounced "too cool," for two libraries with the same "CUL" acronym.

Five years later, the two libraries collaborate on a range of initiatives, plans and programs, with support from The Andrew W. Mellon Foundation, and the partnership is working for both institutions.

Together, Cornell and Columbia are creating purchasing and licensing agreements to negotiate better deals with publishers and vendors; developing infrastructure to support sharing expertise and specialized subject areas; improving programming for humanities Ph.D. students; and developing strategies for preserving e-journals.

Cornell and Columbia students and faculty now have access to each other's physical facilities, so a Cornellian can get a Columbia library card, walk into Butler Library in Manhattan and borrow a book.

How's that for peace, love and understanding?

– Gwen Glazer

# 19. see music, hear architecture: a fruitful collaboration



Musician and doctoral candidate Taylan Cihan recently picked up some architectural blueprints and saw music.

They were the plans for a building designed by architect Andrew Lucia, a lecturer in the College of Architecture, Art and Planning – yet Cihan realized then that a blueprint is very much like a musical score.

“It is one hundred percent identical,” he says, “a representation of a very complex phenomenon.” A set of blueprints deals with material in much the same way that a musical score deals with sound.

Cihan and Lucia now work together to find common patterns and processes that underlie their different disciplines. Their groundbreaking ideas on musical and visual art have led to several fruitful collaborations.

The partnership started incidentally in 2012, when Lucia ran into some technical trouble with a sound visualization piece he was creating. Cihan helped him with the equipment needed to create a visual display from the sound of a viola de gamba quartet and liked the work he was doing.

“A couple weeks later,” says Cihan, “we were playing our first show.”

Their first live improv “noise” piece was presented during a Cornell Contemporary Chamber Players concert; in May 2012, the Cornell Symphony Orchestra premiered “An,” a piece by Cihan accompanied by a visualization by Lucia.

To compose the piece, Cihan ran a violin bow across the edge of a cymbal, created a computer-aided spectral analysis of that sound and re-orchestrated it for symphony orchestra. To create the visual display, Lucia wrote an algorithm inspired by Cihan’s process. The result was an evolving white, black and colored field whose edges dance like flames to the pulse of the music.

Their real creation, they said, is not the sound or the image but the generative process that creates both the visual art and the music.

The duo also shared their ideas with students by co-teaching a spring course, *Sound and Image: Studies in Production and Affect*, that challenged students to develop creative audiovisual projects.

– *Kate Klein*

**Above: “after [no title] by Warhol, 1967” (2014), from the duo’s exhibit “Portraits,” which uses Lucia’s algorithm to transform and reorder still images.**



## 20. shop global (for professors)

Infectious diseases; maternal and child health in Africa; community-based planning and poverty in Southeast Asia; theories of cultural differences in China; and the development of remote sensing satellites are at the heart of research by some of Cornell's most talented junior faculty. This summer, Saurabh Mehta, nutritional sciences (College of Human Ecology); Victoria Beard, city and regional planning (College of Architecture, Art and Planning); Andrea Bachner, comparative literature (College of Arts and Sciences); and Daniel Selva, mechanical and aerospace engineering (College of Engineering), begin three-year terms with the Mario Einaudi Center for International Studies as the first cohort of International Faculty Fellows (IFF). (Above, from left, Mehta, Bachner, Selva and Beard.)

They are expected to contribute to the intellectual life of Einaudi by hosting workshops in their fields of study. They will interact with various international programs housed within the center and enjoy opportunities to work across disciplines.

This new initiative is a centerpiece of Vice Provost for International Affairs and Einaudi Center Director Fredrik Logevall's "Call to Action: Advancing Cornell's International Dimension." It is meant to foster new collaborations between the colleges and the Einaudi Center, to enhance the connectivity of internationalization across campus, and to assist Cornell's colleges and schools with recruitment and retention of superb faculty whose research and teaching has an international focus.

– Laurie Damiani



## 21. the first metritis vaccine

One of the most common cattle diseases, metritis, affects about a quarter of the roughly 9 million dairy cows in the United States and causes a domino effect of harm. Metritis sickens cows and makes them less productive; cuts into farmers' profits; and because of the



Stephanie Specchio

Bicalho

widespread use of antibiotics to combat metritis, there is a serious impact on human public health: Antibiotics given to cows pollute the groundwater and milk supply and contribute to the growing epidemic of antibiotic resistance.

"Our lab has been developing a vaccine for years now based on our research of this disease," says Rodrigo

Bicalho, assistant professor of dairy production medicine at the College of Veterinary Medicine.

Happily, the work has led to results even better than expected. Cornell scientists, with funding from Merck Animal Health, have created new vaccines that can prevent this infection of the uterus from taking hold and reduce its symptoms when it does, a prospect that could save the United States billions of dollars a year and help curb antibiotic resistance.

Metritis develops after a cow gives birth, when bacteria take advantage of the open vagina and cervix to settle in the uterus. Infected cows suffer fever, pain, inflammation, lack of appetite, depression and reduced reproductive abilities. It is the No. 1 cause of systemic antibiotic use. Three of the vaccines Bicalho's lab created decreased metritis incidence from 49 to 83 percent and lessened its symptoms when it did infect cows that received the vaccination.

"The powerful protection these vaccines produced surprised us. We expected some protective effect but nothing as strong as what we found," said Bicalho, who is working to move the vaccines toward USDA licensing.

– Carly Hodes

# 22. mentors matter

**Jonathan Lunine** (pronounced Loo-NEEN), holds the David C. Duncan Professorship in the Physical Sciences, the chair once held by Carl Sagan. He is director of the Center for Radiophysics and Space Research and lead investigator on a mission to

send a probe into Saturn's atmosphere. He also is a co-investigator on NASA space mission Juno and interdisciplinary scientist on Cassini. Last year, Lunine's work led to the first measurement of the depth (400 feet) of a liquid methane sea

on Titan. Lunine is a science adviser to "Cosmos," the new Fox television series based on Sagan's 1980 PBS series.

In this interview with Ezra contributing editor Emily Sanders Hopkins, Lunine recalls that beginning in the 1970s, he and Sagan exchanged several letters:

So there I was in New York City. ... My father died in 1974. He was an alcoholic. It was a pretty dark and dismal time. After every chapter [of Sagan's book "The Cosmic Connection"], I would go to my mother and say, "I need to read this part to you." She finally got fed up and said, "Why don't you write to him?" and I said ... "Well, he wouldn't write back to me! He's a famous professor at Cornell and I'm just a high school student."

But I did write him a letter. Sometime later, I got a letter back from him. It was actually a package in a manila envelope, which I still have, and it contained the letter and two reprints of scientific articles on his studies of the Martian moons Phobos and Deimos with data from Mariner 9, the first mission to orbit Mars. I was thrilled.

I'd asked him how one could become an astronomer, what should you study in high school, and what are the good places to go to college to major in astronomy. And he wrote and told me all

about what to do. ... I then wrote to him a couple of more times. And he wrote me back.

Unbeknownst to me, in 1987 my mother then wrote to [Sagan]. By that point I'd gone to college at Rochester and graduated with a Ph.D. from Cal Tech, and I was a faculty member at Arizona. And I think my mother couldn't contain her desire to write ... to tell him I'd really become an astronomer. He wrote back to her. It's dated March 18, 1987.

*Dear Mrs. Bean,*

*I want you to know how much I appreciate the letter you sent me last December. The accumulation of mail has now reached such a state in my office that I am not answering as many of the letters from younger versions of Jonathan Lunine as I should. And among many other things, your letter reminds me of the importance of finding ways to write to youngsters. I know and admire your son's planetary research sufficiently that we made a serious effort to attract him to an assistant professorship here at Cornell. And if I have helped inspire Jonathan and taught him something about planetary science, he has certainly returned the favor.*

*With warm good wishes, cordially,*

*Carl Sagan.*

That letter is actually the one I treasure the most.

It was his unbridled visionary enthusiasm that transported so many people into the universe with Carl. ... we are doing things today Carl envisioned and wished we could do: exploring planets around other stars, seeing if they have atmospheres suitable to support life, mapping seas of another world, discovering liquid water environments deep in the interiors of Saturnian moons ... That which he imagined humankind could do and should do are the things that will carry us across many generations into the cosmos as a spacefaring species. Those of us inspired by Carl need to continue articulating that vision.



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Cordially,



Carl Sagan

CORNELL UNIVERSITY  
Radiophysics and  
Sciences



# WORLDWIDE CELEBRATION OF CORNELL'S Sesquicentennial

## ARE YOU IN?

Throughout the 2014-15 academic year, Cornell University plans to party like it's 1865 with Sesquicentennial festivities and attractions online, on campus and around the world. The aim: to entice as many Cornellians as possible to celebrate the 150th in ways that feel most meaningful to them. "This is a historic occasion that celebrates all of us – faculty, students, staff, alumni, parents and friends. Our strong sense of community and our collective contributions across the generations have had a tremendous impact on the university and on the world," says Peter Meinig '61, emeritus chair of the board of trustees and co-chair of the Sesquicentennial celebration with his wife, Nancy Meinig '62.

## Sesquicentennial 101

True to Cornell's DNA, one way to get in on the celebration will be ... to study.

Glenn Altschuler, Ph.D. '76, dean of the School of Continuing Education, the Litwin Professor of American Studies and chair of the Sesquicentennial Steering Committee, and Isaac Kramnick, the Richard Schwartz Professor of Government and a member of the Sesquicentennial Steering Committee, have co-authored the upcoming book, "Cornell: A History, 1940-2015," published by Cornell University Press, which will be available in

September. The two will share insights from the book as the Reunion 2014 Olin Lecturers and will also teach a Cornell Adult University course this summer and a four-credit course this fall.

"The Sesquicentennial is an appropriate and joyous occasion for Cornellians everywhere to take a moment, or many moments, to understand the distinctiveness of Cornell's traditions, to recognize the astonishing array of achievements by people connected to Cornell, and to reflect on the exciting future that lies before us," Altschuler says.



## Festivities, from the Big Apple to Big Ben

Cornell will also bring an official Sesquicentennial celebration to Ithaca and eight other cities around the world, open to all Cornellians: first up, the official launch Sept. 13 at Jazz at Lincoln Center in New York City, with two shows – a matinee and an evening event. A month later, the Ithaca campus kickoff in October will feature the first-ever combined Homecoming weekend and Trustee-Council Annual Meeting. Highlights will include a fireworks and laser show at Schoellkopf Stadium; the Big Red football game against Lehigh University; and the dedication of the Sesquicentennial Grove, a commemorative site designed by Marion Weiss and Michael Manfredi, M.Arch. '80, located close to the crest of Libe Slope – in line with the statues of A.D. White and Ezra Cornell.

## Charter Day on campus

The climax of the celebration year will be on Charter Day weekend. “Cornell 150: A Festival of Ideas and Imagination,” a campus-based event, will open with a tribute to the Ithaca community on Friday and close on Monday with a re-enactment of the granting of Cornell’s charter. In between, the weekend will be dedicated to events highlighting the best of Cornell. These include talks and presentations by faculty and alumni, covering a wide range of topics – the revolution in the humanities, global poverty reduction, securing and sustaining our future. The weekend also will feature literary readings, musical performances, and faculty and student showcases.

In addition, for the first time in the university’s history, Cornell’s living presidents (David Skorton, Hunter Rawlings, Frank H.T. Rhodes and Jeffrey Lehman '77) will share the stage to discuss the future of higher education.

## Local Charter Days

Cornellians not making the trip to Ithaca for Charter Day can still take part. Cornell clubs in the U.S. and around the world will partner with the Office of Alumni Affairs to invite their local Cornellians to simultaneous Charter Day weekend celebrations – a bit like Zinck’s Night meets New Year’s Eve. Key campus events will be livestreamed for a simultaneous experience – time zones permitting – and recorded for viewing on CornellCast, and social media conversations will connect Cornellians to the action and to one another wherever they are.

## Scan it and share it

The diverse tapestry of Cornellians’ experiences is one of the university’s greatest assets – and collecting and celebrating those stories will be central to the university’s events and online activity. The Sesquicentennial website will be a place to share and explore histories, timelines and media, and also add personal stories – in the form of videos, photos, memories and more.

In collaboration with the Cornell Association of Class Officers (CACO), alumni will be encouraged to hold “scanning parties” for pictures and memorabilia (see examples of alumni-provided images at left). The stories collected during the year will become a lasting document of the 150th anniversary year and the Cornellians who contributed to it.

## All in!

“Whether it means wearing Cornell sweatshirts to work, posting their memories and photographs, or volunteering in their communities, we hope everyone will stand up and be counted as a proud Cornellian this year,” says Jim Mazza '88, associate vice president for alumni affairs. “And we hope, too, that thousands of Cornellians will get into the Sesquicentennial spirit by attending an event, because they are going to be very special gatherings.”

For more information and details, contact [alumniaffairs@cornell.edu](mailto:alumniaffairs@cornell.edu).



**Save the Dates**

- NEW YORK CITY • SEPTEMBER 13, 2014
- ITHACA (Homecoming) • OCTOBER 17-18, 2014
- WASHINGTON, D.C. • NOVEMBER 14, 2014
- HONG KONG • DECEMBER 15, 2014
- BOSTON • JANUARY 17, 2015
- WEST PALM BEACH • FEBRUARY 14, 2015
- SAN FRANCISCO • MARCH 6, 2015
- LOS ANGELES • MARCH 8, 2015
- LONDON • MAY 14, 2015

**Charter Day Anniversary Weekend**

ITHACA • APRIL 24-27, 2015

# The world as our classroom: MOOCs foster a global student body



For 55,907 global villagers sitting in online Cornell classrooms, the sage Marshall McLuhan’s idea of a shrinking world in an electronic age is reality. Any person, anywhere, in any corner of the Earth may become a virtual Cornellian – for free – from the comfort of home.

This spring Cornell introduced four MOOCs – massive open online courses – that feature unlimited student participation and are open to anyone. Cornell offered MOOCs on relativity and astrophysics, wiretaps and surveillance, networks and crowds, and a history of American capitalism. In spring 2015, the university will offer four more MOOCs on smartphone computer systems, global hospitality management, civic ecology and a philosophy course, *The Ethics of Eating*.

In addition to providing worldwide access to Cornell’s academic excellence and adding value to teaching and learning on campus, “MOOCs also have promotional value for participating colleges and universities,” wrote Cornell President David Skorton and Glenn Altschuler, dean of continuing education and summer sessions, in a 2013 *Forbes* magazine blog. “It’s one thing to brag on a website about brilliant faculty. It’s another when tens of thousands of people experience their brilliance firsthand, with the college’s name attached.”

Similar to in-person classes, the professors who teach Cornell MOOCs prepare a course syllabus, record short weekly lectures, assign reading and homework, require written essays, give quizzes and provide close to real-time

discussions on the edX website. While no course credit can be received, the students may earn – for free – a certificate of completion.

With ample registrants from the United States, the classes enroll nonnative English speaking students from Europe, Asia, Africa and South America, who may be farmers, lawyers, nurses, scientists, factory workers and high school students.

Louis Hyman, assistant professor in the ILR School and an economic historian, estimates that he spent about 250 hours preparing his MOOC with Ed Baptist, professor of history, with whom he co-taught the capitalism course. “I spent a lot of time on my video lectures, which means compressing my ideas and synthesizing my remarks into five- to eight-minute segments,” Hyman says. “I had to stick to the main point

... the classes enroll nonnative English speaking students ... who may be farmers, lawyers, nurses, scientists, factory workers and high school students.



eCornell

of my lectures, which I think has improved the clarity of my teaching in the classroom.”

Students even politely debate the very meaning of capitalism. “I view capitalism as a system that involves somewhat of an economic survival of the fittest atmosphere, one that relies on free market and free trade to drive the economy,” suggested one online student. “It can be defined by a clear system of a varied economy, with several different entities producing the same product that start market competition.”

Lighthearted humor snuck into sometimes weighty discussions. Capitalism students opined in Haiku: “We buy and we sell/Futures of commodities/The way of the Dow.”

In Steve Wicker’s wiretaps MOOC, his readings ranged from his own text on “Cellular Convergence and the Death of Privacy” (Oxford, 2013) and “A Brief History of Wi-Fi,” (The Economist, 2004) to “The Right to Privacy,” by Samuel Warren and Louis Brandeis (Harvard Law Review, 1890).

Wicker, professor of electrical and computer engineering, was impressed by the students’ desire to learn. For his class, about 14,000 students registered and about 800 will earn certificates, a completion rate on par with other major university MOOCs.

For the MOOC “Networks, Crowds and Markets,” professors Éva Tardos (computer science), David Easley (chair, economics) and Jon Kleinberg (computer science, information science) enrolled more than 12,500 who wanted to know how social, economic and technological realms intertwined.

Student registration exceeded 17,000 in astronomy professor David Chernoff’s astrophysics MOOC, a stimulating introduction to relativity. They explored

photons, paradox, pulsars and the infinite speed of the universe. Students faced real equations for concepts like gravity ( $G = 6.67 \times 10^{-8} \text{ cm}^3 \text{ s}^{-2} \text{ g}^{-1}$ ), parsecs ( $1 \text{ pc} = 3.086 \times 10^{18} \text{ cm}$ ) and astronomical units ( $1 \text{ AU} = 1.496 \times 10^{13} \text{ cm}$ ).

More than 2,700 students in the astrophysics MOOC completed at least one homework assignment and over 700 earned a course certificate. At semester’s end, the students cheered themselves in the online discussion groups whenever one earned a certificate.

With the rising popularity of MOOCs, the recent Report of the Cornell Distance Learning Committee (March 2014), chaired by Laura Brown, senior vice provost for undergraduate education, encourages creative distance-learning trials, noting that these investments also benefit on-campus teaching.

For Wicker, the most surprising aspect of teaching a MOOC: “We really can reach out effectively to tens of thousands of students.”

*Cornell offers numerous online and distance-learning opportunities. Check out eCornell, the School of Continuing Education and Summer Sessions and the CyberTower channel on CornellCast in addition to numerous choices within Cornell’s individual colleges and schools.*

## MASSIVE CLASSROOMS

ASTROPHYSICS:  
17,000 STUDENTS

CAPITALISM:  
11,500 STUDENTS

NETWORKS, CROWDS AND MARKETS:  
12,500 STUDENTS

WIRETAPS:  
14,000 STUDENTS

[www.edx.org/school/cornellx](http://www.edx.org/school/cornellx)

[www.ecornell.com](http://www.ecornell.com)

[www.cornell.edu/academics/continuing.cfm](http://www.cornell.edu/academics/continuing.cfm)

[www.cornell.edu/video/channel/cybertower](http://www.cornell.edu/video/channel/cybertower)

# '67 Across

AL LUSTROUS M N U S



*Adam Perl '67, Nicholas Altenbernd '68, and Brian Little '67, propose a journey into the ground. The trio and photographer traveled to the border by train and bicycle through*

tural affairs officer at the U.S. embassy in Ceylon.

Cecil B. Lyon, the U.S. ambassador to Ceylon, also took time to write to President Perkins about his reaction to the visiting Cornellians.

"In a climate where Americans are too often looked upon with suspicion,"

## CORNELL GLEE CLUB ON TOUR

Both collectively and i

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**A**dam Perl '67 was beaming as his toughest puzzle of the day stumped Rex Parker at the second annual Finger Lakes Crossword Competition in early March in Ithaca. Parker, the self-described “King of the Crossword” and a competition juror, sat muttering oaths at Perl’s ingenious grid.

“I am a very fast puzzle-solver, and Adam’s puzzle ground me to a halt,” says Parker, author of the popular blog “Rex Parker does the NY Times Crossword Puzzle.” “His crosswords could hold their own in any major tournament in the country.”



Franklin Crawford  
Perl

Perl, who is a regular contributor of crosswords to The New York Times, created three original puzzles for the local competition, a fundraiser for the Tompkins Learning Partnership, an Ithaca-based nonprofit that provides free tutoring services in reading, writing and speaking English.

Perl says he started crafting puzzles and word games in the mid-1980s; his first puzzle was published in The New York Times in 1998. He’s since had 22 puzzles published in the paper, at every level of difficulty, and has more awaiting publication. That’s no small feat, considering how much work goes into constructing puzzles unaided by computers.

Perl came to Ithaca in 1957 when his mother, Inez Garson, became assistant director of the then-Cornell Art Museum. He entered Cornell in fall 1963 and became a music major and joined the university’s Glee Club. In 1966,

the singing group was chosen by the U.S. State Department’s Office of Cultural Presentations to serve as goodwill ambassadors on an extended three-month tour of what was then called the Far East; the 44-member ensemble performed in 10 Asian countries in 90 days.

“We had memorized three complete concert programs and also learned the national anthem of each country we were to visit as well as one or two songs in the language of each land,” says Perl.

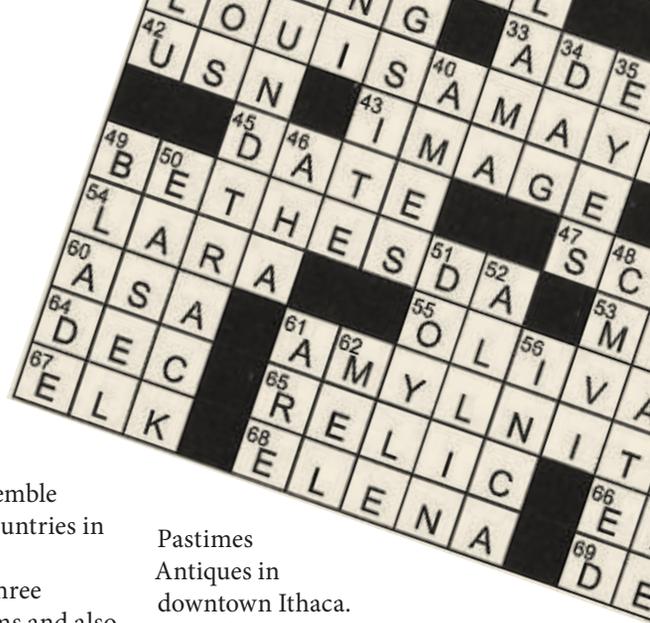
**“The arrangement we sang of the Sri Lankan national anthem, ‘Sri Lanka Mata,’ was so well received that our recording was used on official Sri Lankan radio for many years after that.”**

The club performed nearly every day during the tour, on local radio or TV stations, at universities and in concert halls.

Perl has organized two Glee Club reunions since then, in 1991 and 2006, and is working on a third for 2016, at which they will sing their old tour songs and also perform with current Glee Club members.

Perl is the middle of three generations of Cornellians, and words and music run in the family. His daughter, Amanda Perl, graduated in 2003; his sister, Rachel Garson, in 1963; and his father, Arnold Perl, attended the university in the 1930s before leaving for a career as a writer (one of his plays, “Teveye and his Daughters,” based on the Yiddish folk stories of Sholom Aleichem, was the basis for the musical “Fiddler on the Roof”).

After Cornell, Adam Perl spent four years in New York City as a stage manager for the New York Shakespeare Festival. He returned to Ithaca in 1972 and in 1979 opened



Pastimes  
 Antiques in  
 downtown Ithaca.

He’s been singing in various Ithaca groups since the 1970s and is choral director of the Savage Club of Ithaca, founded in 1895 and home to many alumni and former Glee Club members. The Savage Club performs regularly at Reunion Weekend and other times throughout the year; a nonprofit, it also has raised more than \$20,000 for local youth performing groups.

Perl got the crossword bug, he says, because antiquing left him with considerable time to kill. “I go to a lot of auctions, and even at a good auction, there’s a lot of down time,” Perl says. “So I used to just solve crossword puzzles.”

One day Perl decided to try his hand at making his own. At the challenge of a co-worker, he submitted it to the Times. He’s been at it ever since, also creating crossword puzzles for fundraisers and special occasions.

“I feel very proud to have found a way to turn my crossword making skills and singing into charitable events,” he says. “(And) having a crossword ‘celebrity’ like Rex here last March definitely added to the cachet of the tournament.”

Parker is looking forward to helping promote next year’s crossword event and will come prepared for Perl’s next brain drainers.

## Make a 'grandchildren gift' in support of sustainability

According to recent polling, 83 percent of American adults say protecting the world's ecosystems is important. Another poll shows a record-high 71 percent of American adults say they take the environment into consideration when making purchases. The David R. Atkinson Center for a Sustainable Future's (ACSF) vision statement mirrors that attitude: "To create a world in which



The Atkinsons

people can meet their needs and pursue their dreams without compromising the ability of future generations to do the same."

The development of a loyal, generous group of supporters for ACSF is still nascent. It was established with a commitment from David and

Pat Atkinson to provide an endowment (\$50 million) that ensures the center's permanence and anchors its research program funding, enough to launch eight to 10 multidisciplinary projects annually. This past year, 38 researchers from 18 departments in six colleges participated in the center's projects.

But the Atkinsons, along with center director Frank DiSalvo and more than 350 ACSF Faculty Fellows, have a bigger end game in mind: reliable support from many, and growth. The center today is able to fund eight to 10 projects a year, only about a third or fewer of the 35 to 50 proposals it receives annually. They hope to increase funding capacity of these by around 20 percent by the end of 2015.

The Atkinson Center is a promising place to invest philanthropically, says DiSalvo, based on its track record of research and innovations, the emergence of sustainability as a major point of interest, and the fact that the center is one of the largest and most active interdisciplinary programs at Cornell, bringing together chemists with engineers, city planners with nutritionists and biologists, and more. It is also the largest and most comprehensive center of its kind in American academia.

Perhaps its most impressive statistic? For every dollar ACSF spends, about \$7 in research funding comes to Cornell, mostly from government agencies. Making an impact is the goal of all ACSF programs. To speed delivery of research-based solutions, the center is building relationships with nonprofits that have on-

the-ground capacity, including CARE, Oxfam and The Nature Conservancy, as well as with corporations and state and federal government agencies.

In late 2013, the Atkinsons made another major gift (\$12 million) to the center to endow its directorship and provide challenge funds (\$1 million each) for each of the three faculty directorships – one for energy, one for environment and one for economic development – the three areas around which ACSF organizes its work.

The positions, which will carry the names of donors' choosing, will have a faculty member appointed to them on a three-year rotation. They are currently held by eminent, midcareer professors: Todd Cowen, civil and environmental engineering, Alex Travis, reproductive biology, and Wendy Wolford, development sociology. Endowing the positions will boost their profile and the amount of time faculty directors can devote to ACSF, which will advance efforts to develop collaborations with outside organizations. Each gift of \$2 million unlocks \$1 million from David Atkinson to endow each of these positions at the \$3 million level.

"Building a sustainable future is about enabling our grandchildren (yours and mine) to flourish in a world that we know will be quite different than the one in which we grew up," DiSalvo says. "A world that will be increasingly determined by human activities and value systems. Hopefully, our grandchildren will think us wise for helping to create the world they will inherit. A gift to the Atkinson center is a down payment on their future."

The center also has received gifts from Kathleen Marble '63, who this year provided \$75,000 and has for several years supported the center's Academic Venture Fund. Other recent gifts included \$27,000 from Pat '84 and Barbie Murphy '84 and an \$8,000 gift from Kim Erle '87.

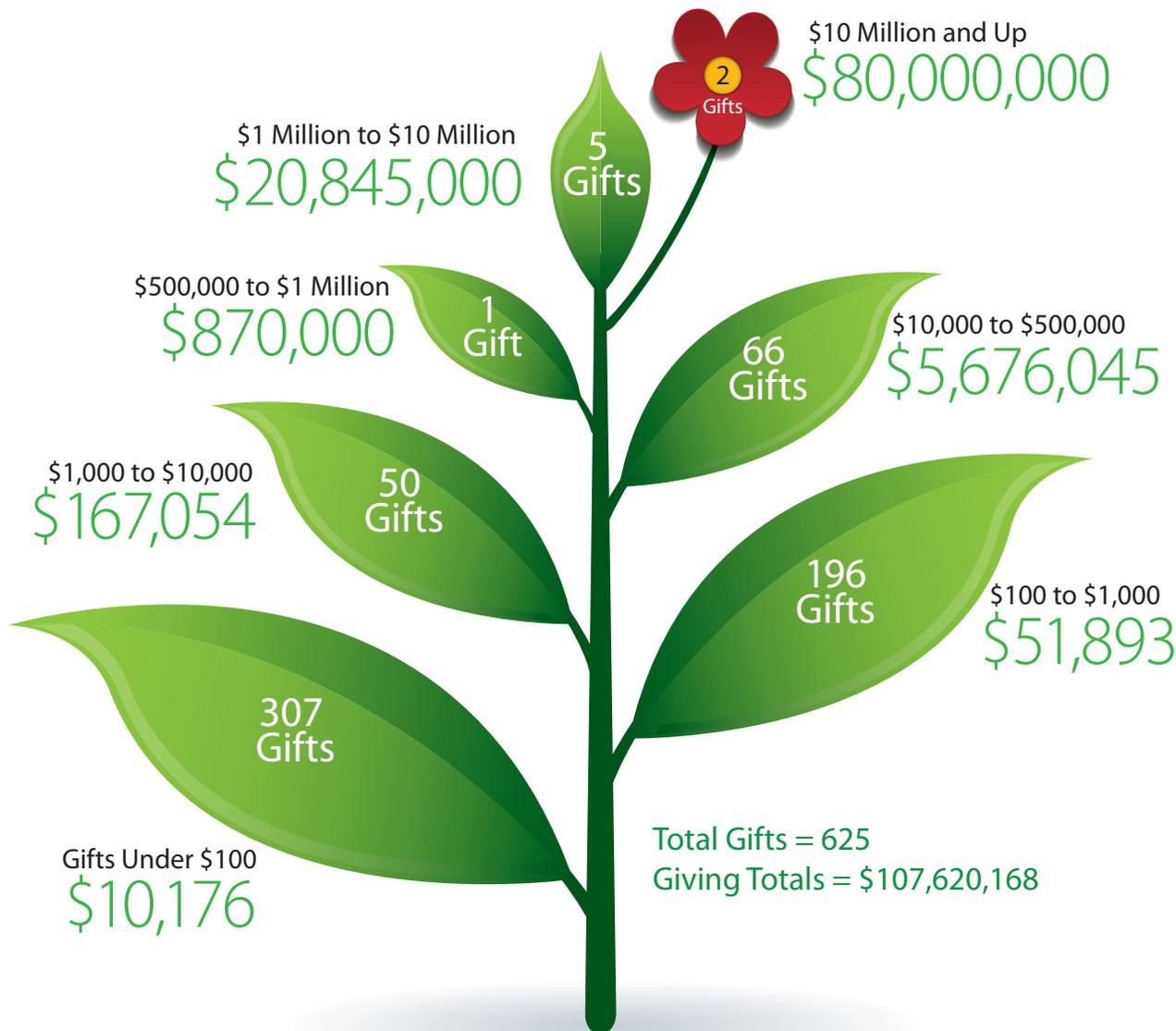
"Gifts of all sizes matter," says Chris Miller, director of development for ACSF. "There are so many people who care about creating a sustainable future and so many people who are recognizing how urgent these issues are. When they also realize the impact their contributions could have when directed to Cornell, both the Atkinson Center and partner programs in the colleges will soar. We only have a few dozen donors annually today, and we'd like to have a lot more."

– Emily Sanders Hopkins

**"Building a sustainable future is about enabling our grandchildren (yours and mine) to flourish in a world that we know will be quite different than the one in which we grew up,"**

–Frank DiSalvo

## Sustainability Gifts Universitywide, 2008–14



**How to give green?** There are a thousand ways at Cornell; here are just a few ideas: Support graduate students in biological and environmental engineering, give a gift to the Atkinson Center or the Lab of Ornithology or the Institute for Computational Sustainability, invest in the School of Civil and Environmental Engineering, support the Center for Sustainable Enterprise at Johnson or Human Ecology's Department of Design and Environmental Analysis, or create a scholarship for undergraduates pursuing a major in environmental science and sustainability in the College of Agriculture and Life Sciences.

Infographic by Wendy Kempisberg/University Communications/Marketing

## Strauch brothers endow AAP visiting critic with focus on sustainability



Roger Strauch, left, and Hans Strauch

For the past several years, Hans, B.Arch. '80, and Roger Strauch '78 have made a yearly gift to the College of Architecture, Art and Planning to fund a visiting critic in the Department of Architecture who focuses on environmental and sustainable design. Now, thanks to a \$750,000 gift from the brothers, the position will exist in perpetuity.

"Sustainability is so important to the future of design that it needs to become part of the vocabulary – threaded into the normal course of all design work and not a specialization," Hans Strauch says. "Roger and I know this will take time, but we believe that

Cornell is the place to push for this new future. Here, sustainability will be brought to a much higher level than it would be elsewhere."

Starting in fall 2014, the endowed Strauch Visiting Critic in Sustainable Design will be at AAP for one semester each academic year. The critic will focus on issues of environmental impact, conservation and sustainability within the field of design. Previous Strauch critics include Greg Keeffe, Claudia Pasquero, Marco Poletto and Christiane Sauer.

– Becca Bowes

# You can make it happen

Summer 2014

## Tear down this wall!

The number of students using the materials science and engineering labs is terrific, but the space has become outdated and seriously cramped. Help buy new laptops, desktops and software, from \$5,000; lab equipment starting at \$6,000; and improvements to make the space more efficient and user-friendly, **starting at \$500.**



## There's no substitute for real practice, hands-on know-how

Putting design into action is the core of student project teams that create, build and assemble devices: cars, robots, planes, subs, even houses. The Emerson Manufacturing Teaching

Lab is where many students learn to turn raw materials into working parts. Milling, lathe work, welding and computer numerically controlled (CNC) skills are taught and put to use in the shop. The demand for CNC milling has so increased that it has become a design constraint for the program. Purchase a new CNC machine: **\$100,000.**

## Donate energy auditing training

Help educate the next energy efficiency trendsetters. Thirty students in Cornell's Green Revolving Fund Class are seeking to attain Building Performance Institute (BPI) certification. The training will be used to conduct energy audits of Cornell's campus and identify opportunities for energy savings. Sponsor five students: **\$7,500.**

## Grow a career

Every summer, 10 Cornell student interns get to dig into a hands-on work experience at Cornell Plantations. Applications are encouraged from majors in horticulture, landscape architecture and the environmental sciences or from any student who wants to learn about plants and help people connect with nature. Interns are mentored by professional staff and paid full time for 12 weeks from late May to early August. Fully fund one Plantations internship: **\$5,000** (or support the program with a gift at **any amount**).

## Adopt an elephant

Elephants are disappearing almost before our eyes, but there is still a chance to keep them roaming the Earth for future generations. Support Cornell's Elephant Listening Project with a symbolic adoption of an elephant family in Dzanga Bai. You will receive photos of your elephant family, videos, biographies and fact sheets: **\$50-\$250.**



## Challenge the Class of 2015 with a match

Since 1979, one generous individual or couple has stepped forward to create a challenge match for the Senior Class Gift, spurring classes to greater philanthropic achievement. Be a beacon of hope and an inspiration to a younger generation of Cornellians: **\$25,000 or more.**

## Give expertise to poverty fighters

Help further the unique alliance that connects Cornell Atkinson Center research teams with CARE (one of the world's most active humanitarian agencies) on the ground in communities throughout the world, speeding delivery of science-based solutions. Cornell scientists also provide background research to inform CARE positions on policy issues related to international food assistance and relief aid. Fund one project development grant: **\$10,000.**

## Help Johnson meet its goal

Be part of the Samuel Curtis Johnson Graduate School of Management's **drive to raise \$50 million** with their "Innovation Challenge." As Nayra Otinkorang, MBA '14, puts it: "I give back because it's a blessing to be able to give back in any form and make a difference."

## Pipe up for the 'king of instruments'

Cornell is the home of two massive pipe organs, the nearly 75-year-old Aeolian Skinner Organ in Sage Chapel and the recently constructed 18th-century reproduction Baroque Organ in Anabel Taylor Hall. Both magnificent instruments are used regularly for concerts, classes, weddings and services. Considered the "king of instruments," these leather, wood and metal works of art (there are 1,847 pipes in the Anabel Taylor organ alone!) require regular maintenance to sound as good as they look. **\$10,000** goes a long way, although **any amount** helps.



## How many Cornellians does it take to change a light bulb?

To save energy and be gentler on resources, the Herbert F. Johnson Museum of Art is transitioning all of its galleries to LEDs. Cost per bulb: \$60. Help retrofit the entire first floor for **\$7,200** (120 bulbs) or the entire second floor for **\$6,300** (105 bulbs). New bulbs for both floors – an illuminating gift – totals **\$13,500.**

To make a gift, or for more information about these and other giving opportunities, email [MakeItHappen@cornell.edu](mailto:MakeItHappen@cornell.edu).

# REFUELING AND EMPOWERING STUDENT-ATHLETES



In a world promising that peak athleticism is just a supplement away, Cornell Athletics has gone back to basics to make sure Big Red athletes are ready to win. Conceived and led by coordinator of sports nutrition Clint Wattenberg '03, a former standout wrestler for Cornell, the Big Red Sports Nutrition program uses a “food first” fueling strategy to help student-athletes achieve their potential on the field and in the classroom.

Harvard competitor. The primary nutritional issue confronted by young athletes is under-fueling and imbalanced fueling rather than excessive eating.

Says Wattenberg: “The most common issue we run into is that 75-90 percent of female athletes are not consuming enough carbohydrates. For both men and women, inadequate carb consumption affects everything – performance on game day, recovery, brain function and academic performance.”

While the Big Red Sports Nutrition program connects many campus resources like Cornell Dining, the Cornell Healthy Eating Program and Gannett Health Services to support student-athletes, it shares a particularly delicious partnership with the Cornell Dairy. After each varsity team’s training session in the Friedman Strength and Conditioning Center, team members enjoy a beverage that’s nutritionally ideal for training recovery: chocolate milk.

“Lactose, the naturally occurring sugar in milk, is half glucose, which the body converts to glycogen and uses for energy during an athlete’s strenuous activity,” explains Wattenberg. “These milk sugars speed up glycogen synthesis to rebuild glycogen stores while the protein rebuilds damaged muscles so that our athletes can be ready to give it their all at their next practice. The sugar in low-fat chocolate milk creates the perfect ratio for this rapid replenishment.”

Right now, all the milk consumed as part of the Big Red Refueling program comes from Cornell cows. This closed system food chain fits in nicely with the “local is better” environmental sustainability movement as well.

*Molly Kate McDowell '03 is a program assistant and writer for Alumni Affairs and Development within the Department of Athletics and Physical Education.*



Cornell University Athletics  
Wattenberg

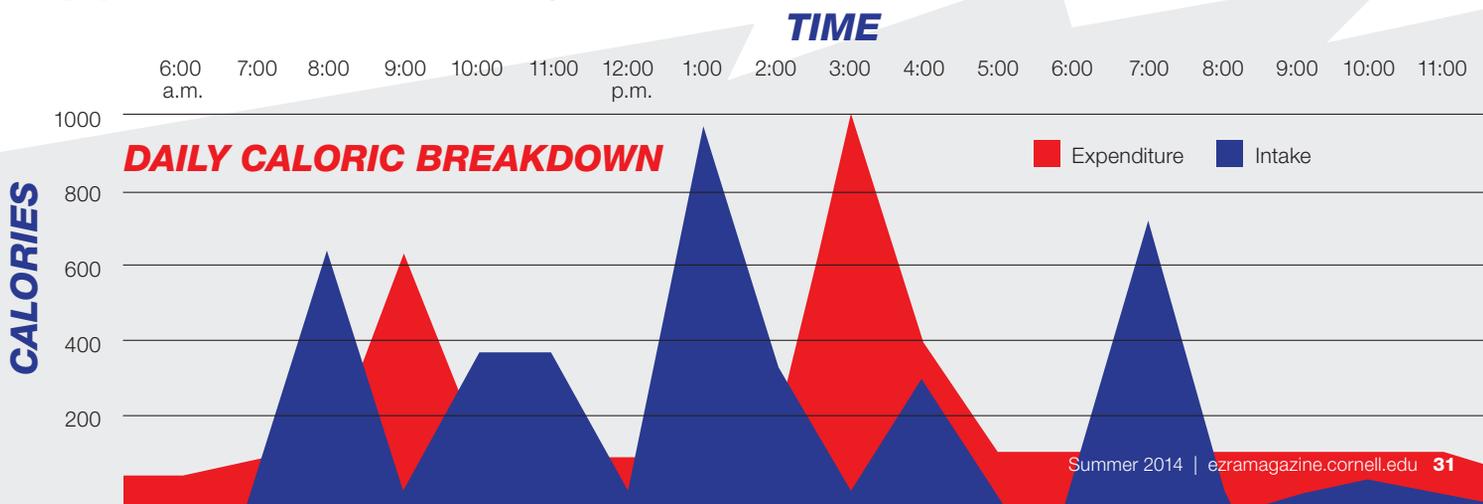
The program doesn’t focus on good foods versus bad foods, nor does it forbid athletes from indulging in a favorite treat. “We want to educate and empower our student-athletes to make healthy choices for themselves,” says Wattenberg. This philosophy not only gives athletes agency over their health and development, it equips them with the knowledge to successfully navigate Cornell’s dining halls.

After graduating from the College of Human Ecology with a bachelor’s degree in nutrition, Wattenberg served as an assistant coach for the Big Red until 2006, when he stepped down to pursue his Olympic wrestling dreams (he finished third at the trials). He returned to the Hill, earning his registered dietician certification in 2010 while also doing nutritional consulting with Cornell teams.

As an athlete who competed in a sport that demands strength, speed, skill, agility, flexibility, resilience and mental quickness, Wattenberg has a perspective that few others can bring when it comes to fueling for athletic performance and the consequences of poor preparation.

He recalls one match during his junior season when as a result of suboptimal fueling he became mentally fatigued, abandoned his pre-match strategy and got reversed late to lose a close match to a rival from Harvard. “That season I also dealt with chronic injury and illness, problems exacerbated by my undernourished body struggling to heal from the strain of training and competing,” he says.

Now Wattenberg strives to help student-athletes prepare themselves to do better than he did against his



# "The Straight"



**WILLARD DICKERMAN STRAIGHT**, CLASS OF '01, WAS AN ARCHITECT, "WIDOW" EDITOR, AND CHEERLEADER. HE WENT TO THE ORIENT AFTER GRADUATION, BECAME A U.S. CONSUL, THEN A RUSSO-JAPANESE WAR CORRESPONDANT AND A BUSINESS-MAN. HE WAS A MAJOR IN THE AEF. WHEN HE DIED PREPARING THE PEACE NEGOTIATIONS. HE HAD RECIEVED THE DISTINGUISHED SERVICE MEDAL, HAD BEEN A CORNELL TRUSTEE, AND HAD GIVEN SCHOELLKOPF MEMORIAL BUILDING. THE MURALS IN "THE STRAIGHT" LOBBY SHOW THE TRAITS OF ALL FINE MEN OF HIS TYPE. ↓



STRAIGHT SO WISHED TO INCREASE STUDENT FRIENDSHIPS AT CORNELL THAT HE WILLED HIS ESTATE TO THAT CAUSE. HIS WIDOW FULFILLED HIS WISH BY BUILDING WILLARD STRAIGHT HALL.

**Willard Straight Hall** WAS SET UP TO SERVE CORNELL'S SOCIAL AND RECREATIONAL NEEDS. SO WELL EQUIPPED AND MANAGED IS IT THAT FEW OTHER COLLEGE UNIONS CAN COMPARE WITH IT. IT IS A THEATER, LIBRARY, ART CENTER, DANCE HALL, RESTAURANT, HOTEL AND MANY OTHER THINGS ROLLED INTO ONE. 'TIS HERE WE GO WITH OUR FRIENDS FOR A CHAT AND A "COKE," OR TO READ, TO LISTEN TO GOOD MUSIC, TO PLAY POOL, TO SEE AN ART EXHIBIT, OR JUST TO LOLL AROUND. 'TIS HERE WE ATTEND CLUB MEETINGS AND HEAR FAMOUS LECTURERS. HERE WE CAN EAT OUR MEALS OR GET OUR HAIR CUT. THE LIBRARY MAY BE "THE HEART OF CORNELL," BUT THE TRUE SPIRIT OF CORNELL DWELLS WITHIN "THE STRAIGHT."



**WE RUN "THE STRAIGHT" — WE STUDENTS.** WE ELECT ELEVEN MEMBERS TO THE BOARD OF MANAGERS. THREE HUNDRED AND FIFTY OF US SERVE ON THE COMMITTEES THAT CONTROL THE MANY ACTIVITIES. AND WE USE THE STRAIGHT — WE PAY IT THOUSANDS OF VISITS DAILY. FOSTER COFFIN, ITS DIRECTOR, AND THE FACULTY MEMBERS AND ALUMNI ON THE BOARD OF GOVERNORS ARE CAREFUL TO KEEP THE STRAIGHT AN ORGANIZATION OF THE STUDENTS, BY THE STUDENTS, FOR THE STUDENTS.

This panel from "We Cornellians," the 1940 illustrated look at Cornell University by then-undergraduate student Steve Barker '41 and published by the Cornell Cooperative Society, looks at "The Straight" — Willard Straight Hall, as well as its namesake, Willard Dickerman Straight, Class of 1901. One of the first college student unions in the country, today it is the last remaining student union in the country to be fully operated by students. The Willard Straight Student Union Board oversees all policy and programming within the building, which also houses lounges, galleries, three dining facilities, Cornell Cinema and many offices.

# Icy cold, right now



In this day and age, when we want something, we want it now.

When I want to talk to my parents, I grab my iPhone and give them a call. When I want to find information, I type a search into Google. When I want to heat something up, I put it in the microwave.

When I want a cold drink, however, the solution is less clear. Unless I've taken the anticipatory steps to cool my desired drink in advance, I'm left with something lukewarm.

This is what inspired my team to develop the Polar Chiller. The concept – a device that uses proprietary technology to cool any canned or bottled beverage in less than a minute without water or ice – will save users time, money and space. And most importantly, it chills your drink of choice at the touch of a button.

The concept has come a long way since its birth as our team's engineering lead Willie Mendelson's class project for assistant professor Robert Shepard's Innovative Product Design course last fall. When our team first assembled in February, the vision was to create a device that would precisely cool and aerate wine poured by the glass. After debate, we strategically pivoted our idea to use similar technology with broader applications and quickly evolved into the Polar Chiller.

Our team pitched this new concept to a panel of judges at the Cornell Big Idea Competition. We were awarded first place in the for-profit track of the competition, providing us valuable exposure to potential investors in addition to further validation of our idea.

While we plan to market our device as a countertop appliance for consumers, we've leveraged the School of Hotel Administration's network to collaborate with professors and alumni to identify a number of commercial uses for rapid cooling technology. Whether it's for restaurants, hotels, catering services or supermarkets, our product

has the potential to increase operational efficiency, expand beverage offerings and deliver energy savings, which could result in a quick return on investment. We're currently completing a case study with The Establishment, the student-run restaurant in Statler Hall, to prove the concept. At this stage, our team's priorities include perfecting our technology, securing patents and continuing the customer discovery process.

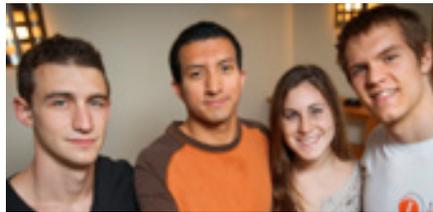
As the business lead for the project, I've had the opportunity to collaborate with an impressive team of engineers: Willie Mendelson '14, Kelsey Kruse '16 and Kevin Kreher '16. Given my undergrad business background, it's been incredibly engaging to apply a layman's perspective to working through complex engineering challenges. Further, I've gained exposure to methodologies such as design thinking. This experience has been

beneficial for my teammates, whose exposure to the hospitality applications for this product will continue to influence their development efforts.

As of mid May, our engineering team is focused on finalizing our first prototype, using \$7,000 in grant and prize money we received after placing second in the School of Materials Science & Engineering's Advanced Materials Enabled Innovation Competition. Our goal is to develop a prototype by the end of the summer that matches our calculations to cool a beverage to near freezing in under 60 seconds.

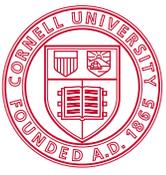
Should all go as planned, you can expect to see our product on crowdfunding websites early next year.

*Bryan Dunn '14 is a student in the School of Hotel Administration.*



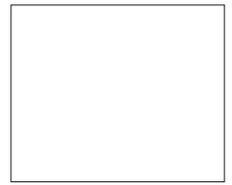
**From left, Bryan Dunn '14, business lead for the Polar Chiller team; Willie Mendelson '14, engineering lead; Kelsey Kruse '16, marketing lead; and Kevin Kreher '16, electrical lead. Below right: rendering of the Polar Chiller.**





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