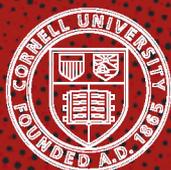
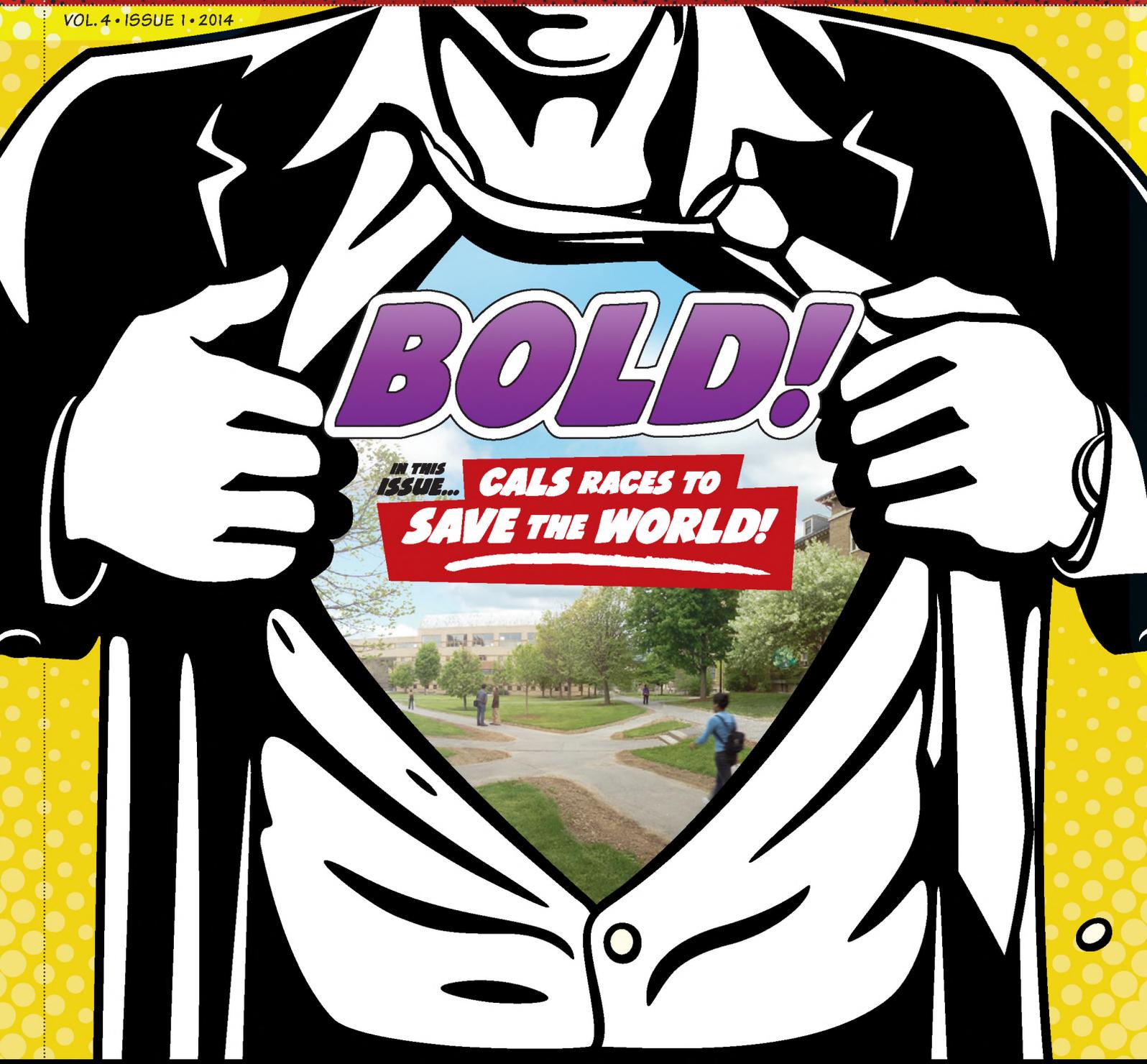


periodiCALS

THE MAGAZINE OF CORNELL UNIVERSITY'S COLLEGE OF AGRICULTURE AND LIFE SCIENCES

VOL. 4 • ISSUE 1 • 2014



Cornell University





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INSIDE: Graham Montgomery '15 has been capturing critters on camera as well as in the field since the age of 12. He has contributed thousands of photos to BugGuide.net, an online database for photographers and entomologists, and worked for the Lab of Ornithology and the Cornell University Insect Collection. He has also contributed to the annals of science, discovering several undocumented species, including a

leafhopper and pea-leaf weevil. His entomological and ornithological expeditions have taken him to Colorado, Arizona, Argentina, Chile, Malaysia, South Africa and Australia. This congregation of grasshopper nymphs was photographed in Gamboa, Panama. Read more about Graham and other outstanding CALS students on the CALS Notes blog at cornellcals.tumblr.com.

dean's message

Recently, CALS has enjoyed a series of significant milestones, with noteworthy discoveries across the research spectrum, the reopening of newly renovated college facilities, the launch of a new undergraduate major in Environmental Science and Sustainability, and the matriculation of the most competitive and diverse class of undergraduates in CALS history. Taken together, these and other achievements demonstrate that the college is clearly on a roll.

Yet, it is equally clear to me that we must build further upon our current momentum. To do this, we must embrace change and the many exciting new possibilities it presents to us.

In short, we must be bold.

That is why I have recently asked the CALS community to partner with the college leadership in a major strategic planning review. This

initiative has been spurred, in part, by a confluence of emerging challenges that make this an ideal time to reprioritize our goals and to assert who we will be and what we will contribute to society. Some of these challenges relate to the changing nature of science and the need to keep pace with evolving global issues connected to food security, sustainable agriculture, human health, energy and the environment. Others are driven by the aging of CALS faculty members, over 70 percent of whom will reach retirement age within the next 10 to 15 years. Still others correspond to the growing financial pressures we face from the long-term decline in state and federal funding for scientific research.

Our strategic planning process will result in bold and innovative new ways of pursuing our research, teaching and

extension programs to tackle the leading scientific questions of our time and ensure that our programs drive meaningful and positive outcomes in the lives of people around the world.

In this issue of *periodiCALS*, you will meet individuals in CALS who are pursuing their passions with similar boldness—people like Shorna Allred and Angela Gonzales, who are molding minds in classrooms and communities through innovative and inclusive teaching, and Michael Gore and Prabhu Pingali, who are exploring radical new scientific and social solutions to global poverty and malnutrition.

Together, these and the other excep-



tional Cornellians featured herein represent the true vibrancy of CALS' people, ever pushing boundaries, blazing new trails and boldly discovering new knowledge that is far beyond easy grasp. And as we collectively pursue a new strategic vision for CALS, I am committed to ensuring that the college will foster Cornellians' creativity, ambition and dedication, now and for generations to come.

I look forward to sharing the results of the strategic planning process with you in the next issue of *periodiCALS*.

Kathryn J. Boor
Ronald P. Lynch Dean of the
College of Agriculture and Life Sciences

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The College of Agriculture and Life Sciences has sustainability as a core value. This magazine was printed regionally using soy-based inks, on post-consumer fiber paper certified by the Forest Stewardship Council, in an eco-friendly process that recycles virtually all chemical, paper, and metal waste.

around the quad

OVER THE MOON: CORNELL DAIRY ICE CREAM RETURNS

By Stacey Shackford

It's been three years since Cornellians have been able to unravel the cool confectionary complexity of Cornelia's Dark Secret or revel in the simple splendor of super premium vanilla. The wait is finally over.

It took several months to build up enough supply to meet the expected demand of a campus hungry for old favorites such as Bavarian Raspberry Fudge or Nutty Buddy Franklin, but Cornell Dairy ice cream made a triumphant comeback this January, marked by a special celebration at the newly renovated Dairy Bar.

There were speeches by leadership from the Department of Food Science, the College of Agriculture and Life Sciences, and Cornell Dining, and scoops for all, including Cornell President David Skorton, who stopped by for a surprise visit.

CALS senior associate dean Max J. Pfeffer gave special thanks to the nine dairy plant staff members who got a well-deserved break from an afternoon of processing 4,000 gallons of milk from Cornell's own cows to attend the event.

"This dedicated team can always be relied upon to get the job done, no matter what the challenges, and all while being under the watchful eye of the public behind the glass walls and observation gallery of the new dairy plant," Pfeffer said.

He also thanked Perry's Ice Cream for keeping Cornell supplied with its own delicious product while the Cornell dairy plant was being rebuilt as part of the \$105 million state-funded renovation to Stocking Hall.

The Department of Food Science moved into the new building just a few weeks before classes began, in what proved to be a Herculean feat. The original 1923 Stocking Hall—now under renovation during Phase II of the project—had no elevator. Instead, a small dumbwaiter transported items among five floors, while larger items were carried up the stairs or lifted through windows by extended forklift or crane.

"We spent decades accumulating equipment on these floors but only had six weeks to move everything out," said Matt Stratton, business manager for the Department of Food Science, who oversaw much of the move.

Another complication: Ten freezers at 80 degrees (Fahrenheit) below zero full of temperature-sensitive samples needed to be moved within an hour of being unplugged. Rigging and moving teams from Dimond and Bacorn Inc. accomplished the feat with a crane and a custom-made steel platform, while 100-foot extension cords and generators were on hand in case a freezer got stuck in transit.

Building users report that the result was well worth the effort, as they enjoy the new state-of-the-art classrooms, labs, offices, dairy and winemaking facilities.



Photo: Robyn Wishna



Service with a smile: Cornell Dining staff and volunteers dish out some sweet treats during a January 14 celebration at the newly renovated Stocking Hall.
Photo: Lindsay France/University Photography



SEAVEY SETS HER SIGHTS ON SHOALS

For Jennifer Seavey, the Isles of Shoals archipelago holds appeal beyond its marine environment and population of nesting birds—neighboring Seavey Island was named after her ancestor William Seavey. Now the wildlife ecologist has become a steward of neighboring Appledore Island as the new director of the Shoals Marine Laboratory. Seavey is the first director to be based at the University of New Hampshire, Cornell’s partner at Shoals for the past 48 years. She succeeds Willy Bemis, who recently retired after nine years as director to return to Ithaca as professor of ecology and evolutionary biology. She comes to Shoals from the Seahorse Key Marine Laboratory at the University of Florida where she served as assistant director. In her new post, the expert in the ecology and conservation of coastal ecosystems hopes to expand the lab’s offerings to include additional course and research opportunities in sustainability engineering, conservation science and coastal community resiliency.



WATKINS TAKES HELM OF CCE

Horticulture professor Christopher Watkins has been named director of Cornell Cooperative Extension (CCE). The former associate director is appointed through Oct. 1, 2017, completing the term of Helene Dillard, who stepped down to become dean of the College of Agriculture and Environmental Sciences at the University of California, Davis. As director, Watkins will run the diverse portfolio of programs of CCE, which maintains a presence in nearly every county in New York as well as in New York City. “As we confront familiar and new challenges to human health, agricultural production, youth development, community sustainability and economic growth, I look forward to working with the local and regional programs throughout the state, and my colleagues in CALS and Human Ecology, on the front lines of helping CCE associations to meet these needs,” Watkins said.



SHULMAN TO LEAD E@C

Experienced businessman Zachary J. Shulman '87, J.D. '90, will help foster the entrepreneurial spirit of Cornell students, faculty and staff as director of Entrepreneurship@Cornell (E@C), a cross-campus initiative currently chaired by Dean Kathryn J. Boor that was created in 1992 to promote entrepreneurship education, experiential learning opportunities, programmatic activities and events for the Cornell community. The senior lecturer at the Samuel Curtis Johnson Graduate School of Management took the helm this fall. In prior roles as general counsel at Spike Broadband Systems and as a managing partner at Ithaca-based Cayuga Venture Fund, he helped raise more than \$130 million in venture capital funding.



PLANTATIONS SAYS ALOHA TO NEW DIRECTOR DUNN

In a horticultural contest between upstate New York and Hawaii, it’s hard to imagine Ithaca prevailing. But the area’s gorgeous gorges and seasonal variety won over leading botanist Christopher Dunn, who became the new Elizabeth Newman Wilds Director of Cornell Plantations on April 1. As director of the Lyon Arboretum at the University of Hawai’i, Manoa, Dunn helped revitalize a 193-acre tropical rainforest and botanical garden and established a new research center to preserve the biological and cultural diversity of the Pacific region. In a prior role, as executive director of research at the Chicago Botanic Garden, he developed a seed conservation program. Dunn said conservation and community engagement will continue to be at the top of his priority list, as well as academic collaboration and partnership development, as he takes over from Don Rakow, who stepped down to return full time to academia after 20 years as director.



FORMER PLAYER MAKES BASKETBALL HER BUSINESS

By Andrea Alfano '14

When Megan Hughes '08 first came to Cornell, she knew she was interested in business, but her sights were set on becoming a professional basketball player. Her passion for the sport never waned, but she soon began to consider ways to fulfill this passion off the court.

"I had some standout moments, but I realized my talent on the court was unlikely to take me to the WNBA as a player," Hughes said. "The next best thing was to get involved on the business side."

With the guidance of her adviser at the Dyson School, senior lecturer Debra Perosio '79, Ph.D. '95—"my rock," Hughes said—the 6-foot-1 forward crafted her own major, which she called marketing strategies and management.

Her experience in both basketball and business helped Hughes land a position at the WNBA upon graduation, and she has been a part of the organization ever since.

"The WNBA is a large brand, but it's like a small family," she said.

Now, as basketball operations and player relations coordinator, one of Hughes' favorite parts of her job is welcoming new family members.

"These are the lucky young women that I wanted to be when I was younger, and now I'm advising them," Hughes said.

Working in the male-dominated sports industry, Hughes is very mindful of the importance of female role models and grateful for the women who inspired her growing up.

"I wouldn't be here if there wasn't an example of a woman bouncing the ball," she said.



SUCCESS AT SOCHI

It was Big Red gold and bronze in Sochi this February, as five Cornell athletes earned medals at the 2014 Winter Olympics—four of them from CALS.

Former Cornell track star Jamie Greubel '06 (pictured, above) took home a bronze medal in bobsled. She is only the second Cornell bobsled racer in history to medal, joining Dick Parke '16 who won gold in the men's four-man bobsled at the 1928 games in St. Moritz, Switzerland.

At Cornell, the animal science major set records in the heptathlon and indoor pentathlon and won four indoor Ivy League heptagonal championships. She joined the U.S. bobsled team in the 2007-08 season after a college track teammate encouraged her to try the sport. Starting as a brakeman, she switched to driver after winning various medals on the America's Cup tour. She trains in Lake Placid, N.Y., and worked as a waitress for five summers in order to fund her Olympic dream.

Hockey stars Rebecca Johnston '12, Laura Fortino '13 and Lauriane Rougeau '13 helped Canada claim gold in a 3-2 overtime win over the United States.

It was a second medal win for Johnston, who won the gold medal four years ago with the Canadian women's hockey team in Vancouver. With her back-to-back gold medals, Johnston is the first-ever Big Red alumna to earn a pair of medals in the Winter Olympics, and the fifth Cornellian to earn multiple medals.

The five total medals makes the 2014 Big Red Olympic contingent the most decorated in the history of the winter games for Cornell and matches the best performance ever, which happened during the 1984 Summer Olympics in Los Angeles, when rowers David Clark '82 and Chip Lubsen '77 both won silver, and swimmer Pedro Pablo Morales Jr., JD '94, won two silvers and one gold.



PLAYING YOUTH SPORTS CONFERS LIFELONG BENEFITS

The fittest of the "Greatest Generation," the now-elderly men who played varsity sports before serving in World War II, have a message for the younger generation: "Get off your duff, kid. Play sports and you'll still be in reasonably good shape at my age." An analysis of health, lifestyle and longevity data from American veterans by Brian Wansink, John S. Dyson Professor of Marketing, found that former athletes had fewer visits to the doctor as they aged.

BIG LEAGUE BOOST FOR TATUM

Mark Tatum '91 made a name for himself on East Hill in baseball, but he's now one of the top names in the basketball world. The 15-year veteran of the National Basketball Association was appointed deputy commissioner and chief operating officer of the league in February. The applied economics and management major previously worked for Clorox, Procter & Gamble, PepsiCo and Major League Baseball. He currently serves on the CALS Dean's Advisory Council and the Cornell Athletic Alumni Advisory Board.

around the quad



CATALOGUES OF FUN AT MANN

Digital age gaming fun with old-time seed catalogues? A recent grant by the Institute of Museum and Library Services is putting money on it. It will fund a project to encourage public participation in improving the accuracy of digitized text in the online Biodiversity Heritage Library, including some gorgeously illustrated and whimsical materials uploaded by Mann Library from Bailey Hortorium's world-renowned Ethel Z. Bailey Horticultural Catalogue Collection. The seed catalogues will then be featured in an online game that involves the public in correcting mistakes in the computer-generated optical character recognition of historical printed texts digitized for the collection.



LAB OF O RELEASES WIZARD OF AN APP

Information overload is the bane of the beginning bird watcher—as anyone who has ever flipped through 40 species of sparrows in a field guide knows. What if an app could quickly tell you which birds are most likely based on your location, date and a brief description—and not just theoretically, but based on reports by other birders? That's what Merlin Bird ID does. The free tool helps users identify 285 of the most common birds of North America (with more on the way), and contains expert tips, photos and sounds for each species.



MELTING STARS

More than 10 species of sea stars are dying en masse at an "unprecedented" rate and geographic spread, and microbiologist Ian Hewson is trying to find out what organisms—bacteria, viruses, parasites—might be to blame. Ecology and evolutionary biology professor Drew Harvell is working with him to track whether environmental stressors might affect outbreak patterns.

BACTERIA BY ANY OTHER NAME

Food scientists have identified five new species of *Listeria*—and named one of them after Cornell. *L. cornellensis* and four others—*L. floridensis*, *L. aquatica*, *L. riparia* and *L. grandensis*—join the list of 10 previously described species of the bacteria, which can cause food-borne illness. Luckily, *L. cornellensis* does not seem to be pathogenic, according to researcher Henk den Bakker.



“Regardless of who you are, there’s a rhythm to the weight you lose. You’re going to weigh the most on Sunday night and the least on Friday morning.”



Brian Wansink,
John S. Dyson Professor of Marketing and director of the Cornell Food and Brand Lab

ANY WAY YOU SLICE IT

With its creamy white skin and flesh, the Silver Slicer doesn't look like a cucumber. But the organic variety, perfected by farmer Michael Glos and plant breeder Michael Mazourek Ph.D. '08, is a winner. With its sweet, mild flavor, thin, tender skin and resistance to powdery mildew, it was named one of the top new edible plants of 2014 by Better Homes and Gardens.

TEST TUBERS

Producing pathogen-free potatoes is now easier and cheaper thanks to an aeroponic propagation system constructed by virologist Keith Perry Ph.D. '89 and Uihlein Farm manager Chris Nobles '97. Started in test tubes, suspended in air inside a dark chamber, and misted with a nutrient solution, the sprouts yield 10 times the number of tubers as those grown in pots.

OJ, AWAY?

The deadly citrus greening disease is threatening the future of America's beloved breakfast beverage, but Cornellians are hard at work on solutions. Professor Michelle Cilia is studying insect proteins and developing biomarkers to create an early infection detection system, while Ricke Kress '73, president of Florida's Southern Gardens Citrus, is funding research on several fronts.

EYE OF THE TIGER

Speed is blinding. Just ask the tiger beetle, which runs so fast when chasing prey that it can no longer see where it is going. Rather than wave their "feelers" to acquire information like other insects, entomologists Daniel Zurek and Cole Gilbert found that tiger beetles rigidly hold their antennae directly in front of them to mechanically sense their environments and avoid crashing into obstacles.

HERD EXTINCT

Although cows are abundant around the world, selective breeding is making them genetically endangered. Vimal Selvaraj Ph.D. '07, assistant professor of animal science, is trying to capture global herd diversity by preserving pluripotent bovine stem cells in a subzero vault. When needed, they could be thawed and induced to form embryos implanted into a female cow to mature.

FIDO'S FOLKS

Your dog may have a wild streak, but it's not because he is a direct descendant of wolves. An analysis of canid genomes led by associate professor of biological statistics and computational biology Adam Siepel '94 found that modern dogs and gray wolves represent sister branches on an evolutionary tree descending from an older, common ancestor.

WASTE NOT

Leilah Krounbi is working on a novel solution to soil nutrient deficiency problems plaguing Kenyan farmers: pyrolyzed poop. By heating human waste in a special kiln in the absence of oxygen, the Ph.D. student of crop and soil sciences hopes to create solid, sanitized biomass that could be combined with urine to create fertilizer that is high in nitrogen and phosphorus.

WORK OF TART

Breeders may soon be able to predict the acid-producing potential of apple trees without waiting for fruit, thanks to research by horticulture professor Kenong Xu. The researcher hopes to understand a key gene in acid production and deliver reliable tools to discern early on in the breeding process whether a variety will induce praise or puckers.



FARM BILL RIPENS

It was a long and winding road, but the new farm bill—the Agricultural Act of 2014—was finally signed by President Barack Obama on Feb. 7, after five years of drafts, debates and debacles.

Experts at the College of Agriculture and Life Sciences were at the forefront of discussion about provisions of the new bill. Agricultural economist Andrew Novakovic, of the Dyson School, became the media's go-to guy when it came to dairy.

"This dairy program pretty much takes the preexisting programs for dairy, tosses them in the trash can and comes up with something completely new," Novakovic told The Advocate of Baton Rouge.

The old subsidy program made sense in 2000 when the corn fed to cows was \$2.50 per bushel, but when prices increased to \$6 to \$8 per bushel, those subsidies were anemic, he explained. Plus, the old program subsidized smaller farms and did not cover the losses of the larger operations that own the most cows, buy the most grain and produce the most milk.

"The new margin protection program expands access to larger scale farmers and redefines financial stress according to returns over feed costs instead of just the price of milk," Novakovic said.

Kathryn Boor, the Ronald P. Lynch Dean of CALS, commended Congress for passing the farm bill.

"Agriculture is a cornerstone of our economy, and having a farm bill in hand offers stability to farmers, producers and consumers alike," she said. "This is an important accomplishment, and though it took too long for us to arrive here, Congress can count this as a success."

But, Boor added, "The elimination of the direct payment program and the modifications in crop insurance resources do not change a fundamental truth—farming is an enterprise filled with risk, and farmers, regardless of the scale of their business, must be forward-thinking and proactive in their efforts, all of which culminate in the food on our table."

THE CHANGING CLIMATE IN ALBANY

By Stacey Shackford

Lawmakers face many daunting issues, some of which seem especially challenging due to their complexity. Climate change looms large amongst them.

While legislators try to deal with this complex issue, farmers in New York are experiencing firsthand the realities of climate variability and change, such as the increase in extreme weather events, floods or early season warming followed by devastating frosts.

Cornell's new Institute for Climate Change and Agriculture aims to foster a dialogue between lawmakers and farmers, providing both background knowledge and the practical research needed to help farmers address the current and future costs of climate change—and, in some cases, the benefits.

"Close communication among academics, agriculturalists and lawmakers is crucial," said institute director Allison Chatrchyan. "Farmers may not be aware of new information and tools to help them adapt to climate change, while scientists may not fully appreciate the problems that still need to be addressed. Lawmakers need to understand both so that they can help scientists and farmers create the positive framework to tackle the big challenges that lie ahead."

The institute was created in the fall of 2013 under the leadership of Mike Hoffmann, director of the Cornell University Agricultural Experiment Station, using federal Hatch Act capacity funds.

"While it's tough to think of the climate warming after a winter in which the polar vortex has captured everyone's attention, the reality is that our climate worldwide is warming and will continue to do so. With that warming comes

increased pressure on farmers in the form of new pests and pathogens found in the fields," Hoffmann said.

Chatrchyan made her first trip to Albany in October 2013, with members of the CALS Pro-Dairy program, to brief representatives of several state agencies about the effects of climate change on the state's dairy industry. Farmers will need new tools to help keep cows comfortable and productive during increasingly hot summers, for instance.

Chatrchyan continued to work with policymakers, farm and environmental advocates this winter, introducing them to the institute and getting feedback on their biggest needs.

Hoffmann and Chatrchyan have also partnered with the Northeast's new "climate change hub," one of seven recently established around the country by the U.S. Department of Agriculture. The hubs are regional networks that will operate out of USDA offices to connect government agencies, scientists and other

organizations more effectively with farmers, ranchers and forestland owners, and provide tools and information to them more quickly.

The Northeast regional hub is led by the USDA Forest Service in Durham, N.H. A co-hub located at the USDA's Robert W. Holley Center for Agriculture and Health on the Cornell campus was established with input from center director Leon Kochian, adjunct professor in the departments of Plant Biology and Crop and Soil Sciences, and Donna Gibson, also of the USDA and adjunct professor in the Department of Plant Pathology and Plant-Microbe Biology.

"Climate change is all hands on deck," Hoffmann said. "We need all the partners we can get."

"Climate change is all hands on deck. We need all the partners we can get."

—MIKE HOFFMAN



in the marketplace



A new fast-drying frosting formulation developed by Cornell food scientists has helped Corso's Cookies boost its business. Photo: Monica Ellinger

CALS EXPERTS JUMPSTART NEW YORK BUSINESS *By Krisy Gashler*

Business was booming at Syracuse-based Corso's Cookies. The supplier of decadent decorated cookies to Barnes & Noble, Amazon and Cracker Barrel, among others, was producing 10,000 cookies per shift. But there was a bottleneck in operations: its frosting.

Before shipping, the frosting has to dry completely, and that was taking two full days, said the company's quality director, Michael Ricci, Jr.

So Ricci turned to Cornell and, specifically, Carmen Moraru, an associate professor in the Department of Food Science. With help from two students, Moraru adjusted the frosting's ingredients and introduced a method to improve consistency, dropping drying time to about four hours.

"This was definitely a great learning experience for the students because they could see how research done in a laboratory could have a real impact on a problem in the industry," Moraru said. "And the fact that it was a small company, a New York company, that was a motivator for us."

"This result is having an immediate impact to our business," Ricci said. "We recently secured Costco's business. This necessitates the need for us to increase our production by 50 percent and to add a second shift. The logistics of this operational change would have been much more challenging without Cornell's help."

The project was part of the JumpStart program run by the Cornell Center for Materials Research (CCMR) with support from New York State and the National Science Foundation. It supplies up to \$5,000, which participating companies match, to cover supplies, lab work and student help.

OTHER CALS JUMPSTART PROJECTS

Oratel Diagnostics, of Hammondsport, N.Y., worked with researchers in the Department of Biological and Environmental Engineering to perfect a saliva test with a color-changing strip—similar to a pregnancy test—to detect imbalances in hormone-sensitive proteins linked to the human gynecological condition endometriosis. They are now working to apply the same principle in agriculture, using a vaginal mucosal test that can determine within 24 hours whether a cow is ready to be bred.

Specialty paper company **Omniafiltra LLC**, of Beaver Falls, N.Y., is collaborating with horticulture professor Alan Taylor to develop garden-friendly uses for a paper slurry byproduct that would otherwise go to the landfill. Pressed and dried, it can be made into sheets for a dense mulch to thwart germinating weeds, or seed mats embedded with vegetable seeds and fertilizers to give home gardeners a head start on the growing season.

NEW DRINK TAPS POTENTIAL OF MAPLE *By Ellen Mitchell*

It's being touted as one of nature's best-kept secrets and a sweet opportunity to tap into the potential of New York's extensive forest network: maple water.

Vertical Water™—produced by nature, bottled by Feronia Forests, and aided in several ways by Cornell University—recently made its nationwide debut.

Gallons of maple sap are boiled down each spring to make syrup, but as Uihlein Forest director Michael Farrell, Ph.D. '13, will attest, the subtly sweet watery sap tastes amazing straight from the tree. It's also nutritious. Sap is essentially mineral-rich water that travels from the soil, through the root system and vertically up through the tree to its buds, gathering sugar and nutrients along the way to nourish the tree and bring it back to life following a long winter.

Farrell spent several years working with sap enthusiast Paolo Cugnasca, managing director of Feronia Forests, to bring the product to market.

Researchers at the Food

Venture Center

at the New York

State Agricultural

Experiment Station in

Geneva, N.Y.,

helped Cugnasca perfect

a process that extends maple

water's shelf life from a few

weeks to a year,

and Cornell's sensory laboratory

conducted taste tests

comparing

maple water

with its likely competitor,

coconut water.

Participants overwhelmingly preferred the maple water.

"We never could have done any of this without Cornell," Cugnasca said.

His company is working with the New York Maple Producers Association to source the sap, which will be a big boon to the state's maple producers and forest owners, Farrell said.





Kirstin Torgerson '15 during a visit to Western Kenya, where she is constructing a dairy at an all-girls secondary school. Photo: Provided

KENYAN COW PROJECT WELL WORTH ITS WEIGHT

By Stacey Shackford

How many cows are you worth? It's a question frequently asked by the girls of the Jane Adeny Memorial School in Muhoroni, Kenya, whose dowries will likely be bovine.

Kirstin Torgerson '15 wants to help make cows even more valuable to the students and their communities by building a safe, sustainable dairy and teaching the girls how to make it successful.

The animal science major is working with Dairies in Developing Communities, a nonprofit affiliated with the investment company venture l dairy, that aims to increase the efficiency and productivity of small-scale dairy production in emerging markets. They are planning to invest \$100,000 to construct a 20- to 25-cow dairy at the private secondary school, which was founded by two professors at Northern Illinois University and houses 65 students.

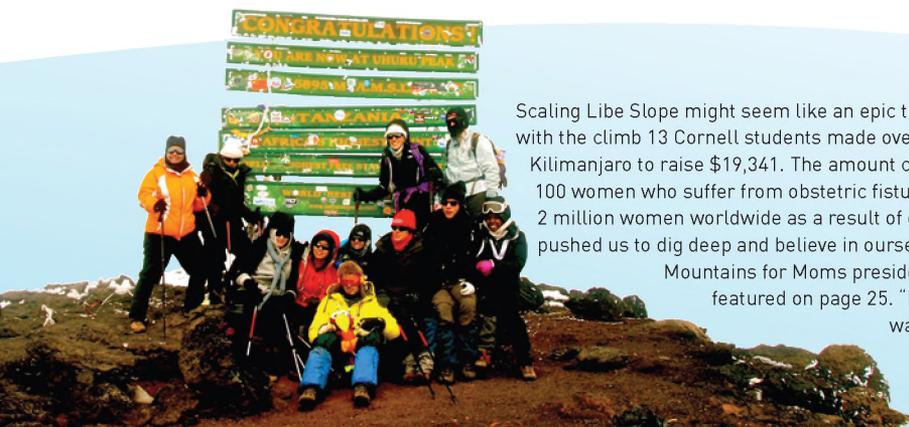
Cows are ubiquitous in rural Kenya. Nearly every household has at least one, and they are considered symbols of wealth. But their productivity is less than a gallon of milk per cow each day (compared with the U.S. average of 6.5 gallons per day). Much of the milk is unsafe, tainted with bacteria levels as high as 35 million cells per milliliter of milk (compared with the world standard of 200,000), and the prices it commands are inconsistent, Torgerson said.

Torgerson spent six weeks this summer on site, conducting a feasibility study for the project and sourcing and pricing building materials. The design is simple, so as not to intimidate local farmers who may want to replicate the operation at their own sites, and sustainable, with solar panels, rainwater collectors and a methane digester to manage waste and generate energy.

She plans to return this summer to help buy and calve the first cows, train a farm manager and students in day-to-day and long-term operations, and deliver a curriculum she is now developing. It will include lessons in food safety, pasteurization and marketing—lessons Torgerson learned at Cornell. The Wisconsin native grew up on a beef, sheep and llama farm but had no dairy experience prior to coming to Ithaca.

By teaching the girls how to care for cows and safely handle and process the milk they produce, she hopes to enhance their nutrition and that of the surrounding community. Torgerson also hopes to influence the girls' livelihoods by providing them with opportunities for future product development, such as yogurt or cheese, and by imparting knowledge they can apply on their own family farms once they graduate. Shared with others in their communities, those lessons will have a ripple effect that could make a marked difference across the region within a generation, Torgerson said.

"There's just so much potential in dairy," she added. "World hunger is not a hopeless challenge. It starts with teaching the very basics of agriculture to farmers. We're going for a ground-up approach."



Scaling Libe Slope might seem like an epic trek, but it's nothing compared with the climb 13 Cornell students made over winter break: 19,341 feet up Mount Kilimanjaro to raise \$19,341. The amount could help change the lives of around 100 women who suffer from obstetric fistula, which afflicts approximately 2 million women worldwide as a result of obstructed labor. "The mountain pushed us to dig deep and believe in ourselves more than ever before," said

Mountains for Moms president and Dyson student Kristen Barnett '15, featured on page 25. "In the end, we made it, and it felt so amazing to know it was for such a great cause."



BLIND AMBITION *By Stacey Shackford*

Mark Colasurdo '15 has a leg up on fellow biological engineering students when it comes to critical thinking and problem solving: He's legally blind.

Ingenuity and innovation are second nature to the New Jersey native, who is constantly coming up with creative work-arounds to compensate for severe limitations to his vision.

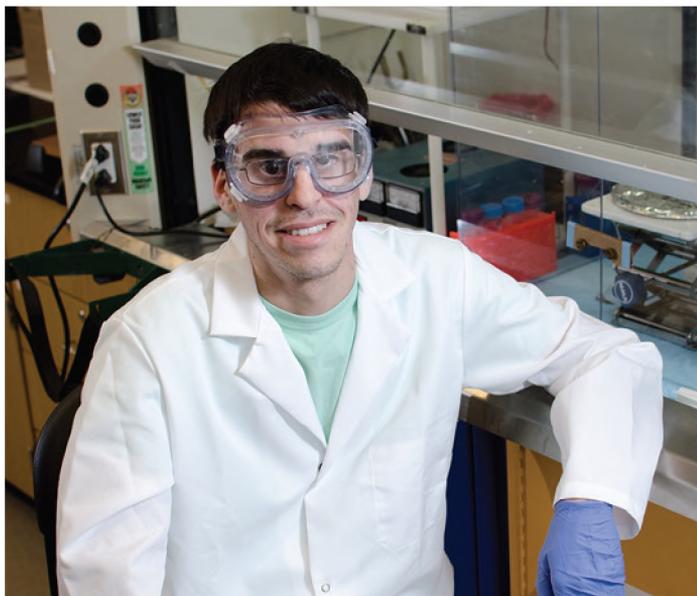
Although he still maintains some residual vision in one eye, Colasurdo uses assistive technology such as voiceover software to read most texts, and he incorporates non-visual techniques in many aspects of his life.

Colasurdo's lack of vision is not a limitation. He has aspirations of going to grad school, getting a Ph.D. and pursuing a career in biomedical engineering, perhaps in tissue engineering or regenerative medicine. He is well on his way, conducting research in the lab of new faculty

member Minglin Ma that involves creating synthetic scaffolding from polymer solutions and nanofibers thinner than spider webs, then culturing cells on the scaffolding.

Working on such a small scale complicates things, even for people with perfect vision. So how does Colasurdo manage it?

"I try to come up with non-visual ways to figure it out, using the resources I have



at hand. There's usually a pretty simple work-around," he said.

He might memorize the interface of lab equipment so he can operate it without

looking, for instance, or use pipettes with digital displays and automatic volume settings, which are more precise anyway. In a previous lab, he transformed a closed circuit television system into a makeshift giant digital microscope to enlarge live images of bacterial cultures.

Colasurdo could ask for help, or special equipment, but he'd rather try to come up with his own solutions first.

"Sometimes it's just easier. And it's nice to prove to myself that I can do it," he said. "It's important to me to learn how to be an independent researcher. Working late in the lab, I won't always have someone around to help me."

He hopes his experiences will help others. He has been involved with the National Federation of the Blind's science and engineering division for several years, both as a mentee and a mentor, and he recently received a national scholarship from the organization.

"I think the problem with blindness is not the blindness itself; it's being a minority in a majority world," Colasurdo said. "It's not a disability, it's a different ability. Rather than trying to fix us, why not try to include us?"

"I have an inner curiosity for a lot of things, and that comes out through science and engineering. Blindness just makes things a little more interesting," he added.

In the Spring 2012 issue of periodicals, we featured portraits of 12 outstanding seniors.



Student writer Andrea Alfano '14 has been checking in with these young alumni to find out what they've been up to. Head over to periodicals.cals.cornell.edu to see for yourself, in a special **Where Are They Now** feature.



NAJLA'S QUEST

It's been dubbed the Holy Grail of meiosis, the missing link that connects DNA repair, replication and recombination, and Najla Al-Sweel believes she may have found it. The Ph.D. candidate in the lab of molecular biology and genetics professor Eric Alani has identified a protein—Mlh3—that seems to play an integral role in maintaining the "genomic integrity" of cells. A \$20,000 Harry and Samuel Mann Outstanding Graduate Student Award will help further elucidate her discovery and share it with the world. It will also allow her to pursue other quests: creating better opportunities for women in science and bridging scientific communities in the United States and the Middle East. Al-Sweel plans to become a professor in Saudi Arabia, where higher education is still segregated by gender, while also keeping one foot in the United States, possibly through an adjunct faculty position.



Students in the College of Agriculture and Life Sciences are exposed to a wide variety of learning experiences, and hundreds of them hunker down in libraries, labs and landscapes to engage in original research. By the time they collect their diplomas, some are already accomplished scholars with published research under their belts. Here is a selection of a few:

KYLE CLARK '14

Kyle Clark's line of research is pretty sweet. A co-captain of the award-winning Cornell Product Development Team, the food science major develops culinary creations like Squashetti and Dough TEMPtations. His paper "Bittersweet: Understanding and Improving the Taste of Artificial Sweeteners" won first place in the Institute of Food Technologists Undergraduate Writing Competition and was published in the *Journal of Food Science Education* in January 2013. He has also interned at Heinz and Mars, and is involved in the Phi Sigma Pi Co-Ed National Honor Fraternity, Quill and Dagger Senior Honor Society, and Haven, Cornell's LGBTQ Student Union.

BENJAMIN VAN DOREN '16

Benjamin Van Doren's scientific inquiry began very early: the third grade. The burgeoning bird lover pursued his passion throughout high school when a project on bird migration earned him a fifth-place finish in the prestigious national Intel Science Talent Search. The ecology and evolutionary biology student learned to program as a Cornell freshman, and he used that experience to help create the dataset for a paper he co-authored, "Approximate Bayesian Inference for Reconstructing Velocities of Migrating Birds from Weather Radar," which won a Best Paper Award at the Computational Sustainability track of the AAAI Conference on Artificial Intelligence in July 2013. He continues to be deeply involved in research as a member of the BirdCast team at the Lab of Ornithology, and he is already preparing other papers for publication.

EMMALINE LONG '12

Agricultural sciences major Emmaline Long started doing research with nutrient management expert Quirine Ketterings as a freshman Hunter R. Rawlings III Cornell Presidential Research Scholar. It's a relationship that not only resulted in lots of lab and on-farm experience, but also a post-graduate position and a paper, "Survey of Cover Crop Use on New York Dairy Farms," which was published this February in the journal *Crop Management*. While an undergraduate, Emmaline was involved in Alpha Zeta and Agricultural Sciences Ambassadors, and she became a Certified Crop Adviser. She spent a summer working at a company that specializes in precision agriculture before returning to Ketterings' lab as a graduate student.



Photo: Robyn Wishna

There are many opportunities for undergraduates to conduct research and grants to help them do so.

- The CALS Charitable Trust awards several grants of up to \$1,200 to any full-time CALS student, with preference given to research into production agriculture.
- The Dextra Undergraduate Research Endowment Fund supports study in genomics, life sciences and/or environmental sciences.
- S. Ann and Robert R. Morley have provided funding to support four student projects in basic or applied research, at \$1,500 each.
- The Cornell University Agricultural Experiment Station has \$1,000 grants for students working on Hatch-funded projects.

ALYSSA CORNELIUS '14

Alyssa Cornelius has her eyes on the prize: veterinary medicine. She's already well on her way. The biology and animal science major trains puppies as president of Cornell's chapter of Guiding Eyes for the Blind, teaches youths as part of her department's 4-H youth development extension program, and conducts research in genetics professor Paula Cohen's lab. She explores the role of the Fanconi anemia pathway in maintaining genomic integrity in mammalian germ cells, and she will be presenting her findings at the annual Society for the Study of Reproduction meeting this summer, with publication to follow.

JAMES EAGLESHAM '15

DNA extraction, PCR, fluorescence microscopy—James Eaglesham had already acquired these skills by the time he matriculated, thanks to internships at the Boyce Thompson Institute while he was a student at Ithaca High School. The biology major has since submerged himself in the study of marine viruses, working in the lab of microbiologist Ian Hewson. His name already appears on four published papers, in *Applied and Environmental Microbiology*, *Journal of Great Lakes Research*, *Marine Ecology Progress Series*, and *Journal of General Virology*. Others are on the way. James is also a cellist in the Cornell Chamber Orchestra.

JANA WILBRICHT '14

Jana Wilbricht is a changemaker. The recipient of a fellowship from the Center for Transformative Action, Jana works with development sociology associate professor Angela Gonzales to study intercultural health communication among the Hopi. She has already presented a paper at a meeting of the National Communication Association, and she is preparing another for publication. Jana also did research at the Social Media Lab in the Department of Communication and at the Institute for Communication and Brain Research in Stuttgart, Germany, while still in high school. Despite a heavy courseload—she is pursuing a dual major in communication and development sociology with minors in American Indian studies and inequality studies—Jana also engages in a slew of other activities: she is president of honor society Ho-Nun-De-Kah, vice president of the National Society of Collegiate Scholars, and a member of the CALS Academic Integrity Hearing Board.

More information is available at cals.cornell.edu/academics/student-research/

THE HUNGER GAINS

Small farmers are big players in the next agricultural revolution

By Amanda Garris Ph.D. '04



Without even leaving their four-acre farm in Malawi, Modesta Munyani and Jacob Mvula have become pioneers on the pathway out of malnutrition. By diversifying their crops and introducing legumes to the mix, they have been able to improve their family's nutrition, supplement the soil, and save enough money on fertilizer to send four children to school.

They are part of a bold initiative to improve the health of millions worldwide by focusing on smallholder farmers as agents of change. With much of the world's food produced by farmers with less than five acres, smallholder farms number over half a billion. The Green Revolution of the 1970s sought to boost production with new plant varieties, chemical fertilizers and pest control, but the new frontier is the kitchen and family field.

Cornell plant breeders, geneticists and pathologists are helping to build a cache of enhanced foodstuffs—with a focus on nutrition rather than yield alone—and social scientists are equipping communities with the tools to defeat modern malnutrition in a systemic, grassroots way.

ON THE ROAD IN INDIA

In order to create a roadmap for the Tata-Cornell Agriculture and Nutrition Initiative (TCi)—established through a \$25 million endowment from the Tata Trusts—founding director Prabhu Pingali hit the road.

Setting off on his six-week, 2,500-mile journey through rural India, he knew solutions to malnutrition in India would not be simple. In the shadows of the global middle class, the rural poor are often unable to afford, access or absorb the calories and micronutrients essential for human health. And despite the bountiful harvests brought about by the Green Revolution—which tripled the output of cereal crops using new hybrid varieties with chemical fertilizer and pest control—one in eight Indians do not get the quantity or quality of food needed to be healthy, and poor nutrition causes nearly half of deaths in children under 5.

As he stopped in community after community—in 20 districts across four states—to talk to farmers about their needs and aspirations, bold new ideas began to take shape for using agricultural interventions to enhance the quality and quantity of food, expand rural household food budgets, and contribute to a healthier, hygienic and sanitary living environment.

“The idea of increasing income and crop productivity to improve nutrition is pretty standard, but on the trip we found other, really important parts of the

puzzle, including household behaviors that affect nutrition and the role played by whether women have control over resources within the house,” Pingali said.

In order to direct their activities, TCi has chosen to focus on agricultural-based interventions that have the potential to reduce the rate of childhood stunting and enhance the health of women in childbearing years, from age 15 to age 45. Stunting, which results from chronic malnutrition, affects more than 314 million children around the world. In India, the



A young girl receives lunch at a rural school in Hyderabad, Andhra Pradesh, India. Photo: Tzu-luan Chen

situation is particularly acute: 30 to 40 percent of children in rural areas suffer from the condition. Ultimately, it can rob them of lifelong cognitive and physical potential.

To meet these goals, Pingali and TCi teams in Ithaca and Mumbai have focused research and outreach efforts on bolstering nutrition in the first 1,000 days of life—from conception to age 2. Addressing nutritional needs cannot be separated from

the social and economic dynamic within households, especially for women, he said.

“When the food comes in from the field, allocation of food within the household may favor men and boys, with women and children eating from what food remains,” Pingali said. “But to have a healthy child also requires a healthy mother.”

He is building a team of TCi fellows, graduate student scholars, visiting fellows and interns to work in four key areas: rural incomes, food allocation within the household, improved food

supply and micronutrient nutrition, and clean water. These include students, faculty and scholars from diverse disciplines like nutrition, applied economics, engineering, food science, horticulture and biological science.

Many of the projects focus on the pivotal role of women in child nutrition. Working with Indian health workers and the burgeoning network of village-based women’s improvement groups, TCi scholar and nutritional sciences Ph.D. student Lua Wilkinson is using widely available digital technologies to help women create videos to teach each other about healthy behavior practices, such as hand washing and prenatal health. Dyson School Ph.D. student Soumya Gupta is studying the differences in dinnertime dynamics in food-based economies, where women control the harvested crop, and cash-crop economies controlled by the men. The ultimate goal is to analyze the effect that women’s empowerment might have on access to and intake of iron.

“In my travels through rural India I saw signs of positive change and a definite sense of optimism about the future,” Pingali said. “It is change from within the community, and is being driven by empowered women.”

KERNEL OF A REVOLUTION

When it comes to eliminating hunger, calories are only part of the story.

“Micronutrient malnutrition is considered the hidden hunger,” said Xingen Lei, professor of animal science. “It’s an unintended consequence of the Green Revolution, which selected mainly for high yields and decreased the dietary diversity that provided essential micronutrients.”

Iron, zinc and vitamin A are some of the most common micronutrient deficiencies, leading to anemia, blindness and abnormal cognitive development. One promising solution is to embed micronutrients into food in the field, through new varieties that produce—or accumulate, in the case of iron and zinc—higher levels of these important compounds.

Associate professor of plant breeding Michael Gore Ph.D. ’09 is using molecular breeding to abet an “orange revolution” in Africa. Working with the global



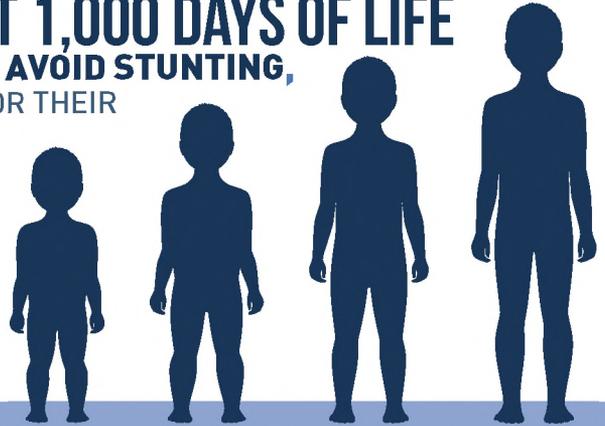
THE MEASURE OF MALNUTRITION



GOOD NUTRITION DURING THE FIRST 1,000 DAYS OF LIFE

–CONCEPTION TO AGE TWO– IS ESSENTIAL TO AVOID STUNTING, WHICH IS DIAGNOSED WHEN A CHILD IS TOO SHORT FOR THEIR AGE AS A RESULT OF CHRONIC MALNUTRITION

IRON, ZINC, AND VITAMIN A ARE SOME OF THE MOST COMMON MICRONUTRIENT DEFICIENCIES, LEADING TO ANEMIA, BLINDNESS AND ABNORMAL COGNITIVE DEVELOPMENT



AN ESTIMATED
341
MILLION CHILDREN UNDER FIVE YEARS OLD SUFFER FROM STUNTING

A STUNTED 5-YEAR OLD IS
4 to 6
INCHES SHORTER THAN A NON-STUNTED CHILD

STUNTING IS ASSOCIATED WITH IMPAIRED BRAIN DEVELOPMENT, LEADING TO REDUCED SCHOOL PERFORMANCE EQUIVALENT TO 2-3 YEARS OF EDUCATION

ADULTS WHO WERE MALNOURISHED AS CHILDREN EARN AT LEAST 20% LESS ON AVERAGE THAN THOSE WHO WEREN'T

HIGH RATES OF STUNTING CAN REDUCE GDP BY 2 TO 3%

MORE THAN
90%
OF THE WORLD'S STUNTED CHILDREN LIVE IN AFRICA AND ASIA

A STUNTED CHILD IS NEARLY
FIVE
TIMES MORE LIKELY TO DIE FROM DIARRHEA

SOURCE: THE WORLD BANK, THE WORLD HEALTH ORGANIZATION AND UNICEF

organization HarvestPlus, he is helping to introduce a new variety of orange maize that has grain high in the provitamin A carotenoid beta-carotene. Venturing outside the typical maize color spectrum not only has nutritional advantages.

"In Africa there is a strong preference for white-grained maize, which is very low in beta-carotene, and bias against the more nutritious yellow because it is associated with animal feed or lower quality food-aid grain," Gore said. "This new variety of orange maize can be promoted as a completely new, healthy option."

Gore is also closing in on the molecular pathways for in-plant production of beta-carotene, using thousands of maize lines to characterize the genes that convert precursors into vitamins. Like a busy highway with many possible exits, the complex pathway can lead to a dozen different compounds. Strategically placed weak genes can close off the other exits and drive traffic toward beta-carotene.

Gore has already identified five key regions in the genome and likely candidate genes within them that control provitamin A production in maize. He hopes it will give him

a head start with his next proposed project: working with collaborator Njoku Ndubuisi at the National Root Crops Research Institute in Nigeria to increase provitamin A in cassava roots, a South American native that has become a major staple food in the developing world, providing a basic diet for over half a billion people in Africa, Asia and the Caribbean.

Lei, who also serves as associate director of HarvestPlus China, has also been helping lead a team to work with beta-carotene in sweet potatoes. In a six-week intervention study in Chinese schools, they determined that sweet potatoes with high levels of beta-carotene could raise levels of vitamin A in children, reducing the vitamin A deficiency rate from 17 percent to 1 percent. HarvestPlus China has now set its sights on improving the iron, zinc and vitamin A nutrition of rice, corn and wheat as well.

Getting the nutrients into the food is just the first hurdle. Lei, with food science professor Dennis Miller Ph.D. '78, also studies bioavailability—how well ingested micronutrients are absorbed and used by the body.

"The difference between the bioavailability of different forms

"Micronutrient malnutrition is considered the hidden hunger. It's an unintended consequence of the Green Revolution, which selected mainly for high yields and decreased the dietary diversity that provided essential micronutrients."

—XINGEN LEI



Goats are the most abundant livestock species in Africa, and assistant professor of animal science Heather Huson predicts that productive yet adapted breeds will boost food security for farming families.

of iron can be 25-fold, so the bioavailability of iron may be as important as its concentration in a food or diet,” Miller said. “The absorption of iron is affected by several factors, including stomach acidity, illness—chronic infections reduce iron absorption—and what else is consumed along with the iron-containing food, because some foods can inhibit absorption and others enhance it.”

Miller and his team showed that biofortified beans are superior to conventional beans in supporting the production of iron-rich hemoglobin in baby piglets, suggesting that they may help prevent iron deficiency anemia in populations that consume beans as a dietary staple. Lei, working with Miller and Ross Welch from the Robert W. Holley Center for Agriculture and Health, has shown that inulin, a prebiotic that alters the balance of microorganisms in the colon, enhances iron absorption.

“For micronutrient nutrition we want to design foods that don’t require a change in lifestyle or habits,” Lei said. “There are 800 million people in the Asian Pacific with micronutrient deficiency or imbalance, and globally dietary diversity and staple biofortification are the key to nutrition.”

HEALTHY SOILS, HEALTHY CHILDREN

Associate professor of development sociology Rachel Bezner Kerr Ph.D. ’06 is tapping the power of crop diversity to boost food security and child growth, with the help of multi-tasking legumes. They provide nutritious protein, oil and micronutrients, while adding nitrogen to the soil to support the growth of maize.

“Simply increasing the amount of maize that a household produces does not address some of the root causes of child stunting, such as low dietary diversity, unequal sharing of food in households, or limited knowledge of healthy child feeding practices,” Bezner Kerr said.

“How do we achieve our goal of reducing malnutrition in India while respecting the aspirations of the rural poor and their evolving food habits?”

—PRABHU PINGALI

“High levels of poverty also mean that families may have to sell their maize, rather than eat it, to pay for school fees, medicine or other household needs.”

As part of the Soils, Food and Healthy Communities project, farmers in Malawi experimented with intercropping legumes and rotating with maize, incorporating the crop residue to build healthy soil. With six years of data on

more than 3,000 children, Bezner Kerr saw significant increases in child height and weight for age in households that diversified using legumes.

“It was impressive, because although this was an intervention in the field, it had a larger effect than typical, direct health interventions,” she said.

HERDING DIVERSITY

Assistant professor of animal science Heather Huson ’97 thinks steps toward food security in Africa can be taken one cloven hoof at a time: by the continent’s diverse, locally adapted goat populations.

“They are compact, sturdier and heartier than cattle,” said Huson, who holds the Robert & Anne Everett Endowed Position in Dairy Cattle Genetics. “They are already

the most abundant livestock species in Africa, and most people can afford to have one or two goats—so they are economical.”

Although Africa is home to many unique breeds that can survive harsh climates and sparse vegetation for grazing, there has been minimal breeding for growth, milk yield or reproduction—traits that directly affect a family’s food security.

Working as part of the African Goat Improvement Network, a project funded by the U.S. Agency for International Development’s Feed the Future initiative, Huson and her collaborators surveyed smallholder farmers in 10 countries about their ideal goat.

“For women it is often milk production, since milk is used within the household; for men it is bigger goats, because meat can be sold, so it serves as their bank account,” Huson said. “And pretty much everyone would like to see higher rates of twins.”

The first phase of the project—a char-



Goats such as this Abergelle in Sekota, Ethiopia, are a source of milk for growing children or cash to meet other household needs.

“While modern agriculture is the art of optimized simplicity, post-modern agriculture must be the art of optimized complexity.”

—REBECCA NELSON

acterization of the genetic makeup and physical characteristics of more than 2,500 goats representing more than 30 African breeds—is nearly complete, and genomic data analysis attests to the genetic uniqueness of the breeds and the potential for finding valuable, adaptive traits, Huson said.

Its ultimate goal is to empower villages to start local breeding programs for goats that are both well-adapted and productive.

“A cheap genetic assay for a small panel of traits would help them select parents more efficiently,” Huson said. “Enhanced African expertise in genomics will help them develop superior, adapted goats to help meet demands of local food security through community breeding programs.”



Heather Huson

BIG PICTURE FOR SMALLHOLDERS

Rebecca Nelson, professor of plant pathology and plant-microbe biology, spent the last 25 years working with national and international institutes in Asia, Africa and the Americas to research natural sources of disease resistance, but she now has a bully pulpit—or two—to advocate for a change in the research agenda for small farms.

In her roles as scientific director for the McKnight Foundation’s Collaborative Crop Research Program, which funds agricultural research in developing countries, and as co-chair of the United Nations Sustainable Development Solutions Network’s thematic group on Sustainable Agriculture and Food Systems, she’s become an activist for the more than 2.2 billion people whose livelihoods depend on success on small farms.

“While modern agriculture is the art of optimized simplicity, post-modern agriculture must be the art of optimized complexity,” Nelson said. “We need to support agro-ecological intensification that incorporates diversification, healthy soils and biological interactions that reduce pest and disease pressure.”

Key components of the approach are the participation of farmers in setting the research agenda, tapping into global knowledge and technologies, and a focus on local adaptation. Nelson predicts that the performance of smallholder farms could be radically transformed with decentralized, local approach, low-cost sensor technologies, and information sharing made possible by communication.

“The goal of R&D is to increase the choices available to farmers,” Nelson said. “And a process that engages rural people enhances their self-determination and wellbeing.”



Rebecca Nelson



FIELD NOTES FROM INDIA: JULY 2013

As we were driving into a remote village in the hills of Melghat, a region of impoverished tribal populations in Eastern Maharashtra, a local development worker was bemoaning the fact that traditional foods were disappearing from local diets. He was complaining about the missing links in the food chain, foods that complement the calories provided by the staple cereals with essential micronutrients. He talked about the loss of traditional minor millets in the local food system, said to be high in micronutrients, and attributed much of this change to the easy availability of highly subsidized rice and wheat through government shops.

We arrived at the village, which sat at the top of a hill. We drove the last 20 kilometers up the hill on a narrow muddy track that is not traversable by cars for three months during the rainy season. We seemed to have caught the tail end of the accessibility period. There were two small kiosks on the main street, selling shining packets of snack food, bread, soap and other consumer items. I noticed little kids buying packets of cheese balls and potato chips. Global diets had made their way to the hills of Melghat.

A 70-year-old grandmother reflected on the changes in diets during her lifetime in the village. She talked about the time when sorghum rotis were the predominant food, but today young children refuse to eat them. They prefer wheat rotis or rice. She did not see any reason to go back. Her sons in the meantime switched from subsistence sorghum production to commercially lucrative cotton and soybean. They saw themselves as better off and did not see any particular reason for going back to the way it was. The group gathered under the tree where we were sitting nodded in affirmation.

Like it or not, diets are changing in rural India as they are in urban areas. We, as development practitioners, have to figure out how to work with that. Projects promoting the return to traditional ways in diets, as in production systems, have generally failed. The rural poor aspire for a modern life. Television commercials and movies provide appealing images of the life they could lead. How do we achieve our goal of reducing malnutrition in India while respecting the aspirations of the rural poor and their evolving food habits?

—Prabhu Pingali

INNOVATIVE INSTRUCTION IN ANY STUDY

By Krisy Gashler

A photograph of four students standing in a greenhouse filled with yellow flowers. From left to right: a woman with glasses wearing a 'HOLLISTER' t-shirt, a woman with long dark hair, a man with sunglasses, and a woman wearing a hat and giving a thumbs up. The entire image has a yellow tint.

Since Ezra Cornell promised to found an institution where any student could find instruction in any study, excellent teaching has been a hallmark of a Cornell education. But as technology changes exponentially, along with students' needs, the people leading Cornell's classrooms are evolving, too: flipping classrooms to maximize class time spent on problem solving and application; bringing real-world problems to the classroom to increase students' motivation and to help struggling communities around the world; and creating inclusive classrooms where creativity and diversity can flourish. Here's a look at just a few of the innovations that are engaging CALS students inside and outside the classroom.

Pictured: Helen Cen, Rebecca Chew, Samuel Ritholtz, Kanjana Bounviboolvat, Skonrach Thongkumkoon. Photo: Jarinee Iochawna



George Hudler is a much-beloved professor of plant pathology who has won half a dozen major teaching awards and reached more than 10,000 students through his popular classes on Pathology of Trees and Shrubs and Magical Mushrooms, Mischievous Molds.

“One of the things I try to do is to be sensitive with the students and what they might know or not know when they walk in the door,” Hudler said. “I try to keep one foot in the students’ shoes and not lose myself in everything I’ve done in the last 30 years.”

How does he manage to engage individual students in a class of 500? Three times each semester, Hudler eschews Magical Mushroom lectures for walk-in demonstrations in his lab.

“When I think about my days as an undergraduate, a lot of the stuff that I saw on a chalkboard didn’t make any sense until I actually saw it,” Hudler said. “My sense is that the students really enjoy that experience and learn quite a bit from it.”

Lee Humphreys ’99, assistant professor of communication, faces the opposite problem in her course on new media and society.

“Nobody is new to media. They’re surrounded by it, they use it all the time. So how do we, as teachers of this topic, get them to think differently about something that they do practically every minute of the day?” she said.

Humphreys begins by flipping the read/lecture/repeat model on its head, using innovations like Twitter and small-group discussions. Students are required to tweet a 140-character comment or discussion question about their readings prior to every class.

“It’s really helpful to go over the tweets ahead of time,” Humphreys said.

Plant pathology professor George Hudler instructs a student during a lab section of his popular Magical Mushrooms, Mischievous Molds class. Photo: University Photography

"I can see what's there and not there, or there incorrectly, and I use that to inform my teaching."

In class, Humphreys' 150 students are assigned to seats and to semester-long break-out groups. During each class period, Humphreys makes time for group discussions, and students submit summaries of those discussions after class. She said it's been a great way to encourage cooperative learning because the students know it'll be much easier to complete their write-up assignment if they use their group time effectively.

"When I first started lecturing, I felt like I had to do all the work, and I wanted them to just sit there and absorb everything I had done," Humphreys said. "Now I feel like it's so much more important to let them do the work, finding examples, finding non-examples, and then guiding them through that process."

BRINGING THE REAL WORLD INTO THE CLASSROOM

When Angela Gonzales, associate professor of development sociology, was tasked with teaching her department's new senior capstone course this spring, she had two primary learning outcomes in mind: a culminating experience where students could apply the knowledge, theories and methods they'd learned as majors in development sociology, and real-world service to a community in need.

The course Gonzales developed connects her 15 students with three non-profit organizations in the Hopi



Reservation in northeastern Arizona to work collaboratively on projects that address a range of community needs. The Hopi community partners will keep in contact with the students via WebEx, email and an on-campus visit.

One group of students will develop survey instruments and methodologies to assess Hopi opinions and attitudes about educational needs and priorities. Another will create nutritional policies for Hopi schools and prepare a grant proposal for a text message campaign to promote health behaviors to reduce the incidence of diabetes in the community. The final group is developing a web site, radio show and workshop materials to help a sustainable food organization spread its message.

The broadness and flexibility of the course assignments is both terrifying and exciting for students, Gonzales said.

"On the first day of class I told students, 'Unlike the many courses that you've taken that have been content-driven, this course is more process-driven.' By focusing on the process, I want students to learn as much as they can about applying the methods of development sociology to these projects," Gonzales said. "They are anxious because this is an entirely new approach for many of them, but they are also really excited that their work can make a real

“One of the things I wanted students to do during this immersion experience was to really reflect on how learning occurs. What are the challenges? What are you learning and how does that fit with the frame of your major? How does this fit with who you are as a person? This is about learning about yourself, not only as a student at a university but as a global citizen.”

—Shorna Allred, associate professor of natural resources



Justin Kondrat '14, teaches a lesson to students in the Barranco School, as part of Marcia Eames-Sheavly's Experiential Garden-Based Learning in Belize course. Photo: Ava Ryan '13

and tangible difference.”

Shorna Allred, associate professor of natural resources, also wanted to give her students the opportunity to learn and serve in a real-world context. Allred developed what is essentially a year-long course on the social dimensions of water resource management in Thailand.

Its focus is flooding, a global problem that will increase as the world's climate changes. In a two-credit preparatory class taught for the first time in fall 2013, Allred's students learned about water governance issues in Thailand, and about domestic responses to flooding, visiting sites in Binghamton and Owego, N.Y., that were extensively flooded in 2011. During winter break, they spent three weeks in Thailand on a trip co-led by Allred and Amy Kuo Somchanhmvong, associate director of service learning at Cornell's Public Service Center. There, they worked with Thai students from Mahidol University in two project teams to learn about how people in Bangkok coped with the devastating flooding they also experienced in 2011. This semester, Allred's students are compiling the information they gathered during their trip and creating materials for organizations they worked with in Thailand as

part of a service learning

component of the class.

“One of the things I wanted students to do during this immersion experience was to really reflect on how learning occurs,” Allred said. “What are the challenges? What are you learning and how does that fit with the frame of your major? How does this fit with who you are as a person? This is about learning about yourself, not only as a student at a university but as a global citizen.”

ENGAGED LEARNING

Kathy Berggren '90, MAT '93, senior lecturer in applied economics and management, has made inclusivity and responsiveness hallmarks of her teaching. She has been recognized with multiple advising and teaching awards, including an international Clarion Award for curriculum development.

A 20-year veteran of the Department of Communication, Berggren recently moved to the Dyson School, where she recruited seven undergraduate students to help her develop the curriculum for an introductory management communication course, offered for the first time this spring.

The course focuses on written and oral communication and, based largely on student input, also includes a large component meant to help the business students land first jobs. They write resumes, practice interview questions and craft elevator pitches.

“The Dyson undergraduate population is different,” Berggren said. “They're very self-confident and bold. One of my big goals is to help them learn to critique themselves, to practice self-reflection. Cornell students, who are very smart, have rarely had big academic disappointments. The reflection



Science is about discovery, and thanks to the Investigative Biology Lab (BioG 1500), first-year students can learn the basics of the scientific method and how research is performed in a creative, customized way. Instead of performing canned lab experiments, students are able to design experiments that answer questions they themselves have conceived. That can create a lot of work for instructors and lab technicians, who have to prepare materials with only one week's notice. But the lab team—director Mark Sarvary Ph.D. '06, course coordinator Louise Lattin, laboratory coordinator Martha Lyon '71, and assistant laboratory coordinator K.C. Bennett M.S. '94—has proven itself up to the challenge. They helped revamp what was previously a two-semester course (BioG 1103-1104) using an alternative approach that has proven very popular since its introduction in 2010. Praised for its innovative components of active learning, the course has been described as “the experimental foundation for our entire major in biological sciences,” and it has become a model now used by other universities around the country.



piece encourages creative thinking and helps them maneuver the bumps and disappointments in their paths.”

Self-reflection and civil engagement are also key to the teaching success of Marcia Eames-Sheavly '83, MPS '99, senior lecturer and senior extension associate in the Department of Horticulture, who teaches the popular Art of Horticulture course. Her goal is to establish a classroom environment based on trust, with evident structure, open communication and mutual respect. Her students' grades are dependent on final projects, reflective writing, collaborative work and class participation, based on a clear, fully discussed participation rubric.

“Participation is not necessarily always about sticking your hand in the air and showing how much you know; it may be asking a question or sharing a comment that shows you're interested in what somebody else has said,” Eames-Sheavly said. “At Cornell, we can sometimes be lone rangers in high achieving. So when you come into class and find that you're also being graded on your civility, not just your accomplish-

ment, that can be eye-opening.”

Eames-Sheavly uses flipped classroom techniques, such as posting readings online and devoting class time to student projects. She also leads a service learning course that takes students to Belize, and she helps students create e-portfolios of their work at Cornell.

But while specific techniques and technology may vary from one course to another, the most important ingredient for innovative, engaged teaching is keeping courses “learner-centered,” she said.

“Education experts talk about the twin sins of course design. One of them is having all this stuff that you want to cover and cramming it into one class. The other is

trying to be so hands-on that it's no longer minds-on,” she said.

“That balance may vary with each course, each instructor, each group of students. The fundamental questions for me are: What do students need? Where do I want them to be? What matters to them? How do we speak to them? How do we acknowledge them as human beings?”



Students learned first-hand about social dimensions of water resource management in Thailand during a January trip to Bangkok.

Bryan Duff likes his students to get their hands dirty—both figuratively and literally. Authentic performance is a hallmark of his courses and service activities, and his students' experiences include teaching in an afterschool program and getting down on the floor with kids to examine dinosaur dung. Duff has introduced several new learning opportunities—and re-imagined others—since coming to Cornell as a lecturer in education in 2011. In his Engaging Students in Learning class, students no longer linger in the back of local classrooms; they lead 20 teenagers through a collaborative storytelling project in an after-school program they help design. In his What is School For? class, students express their ideas in public forums, including the comments section of The New York Times online and poster sessions evaluated by people outside the class. And in his role as North Campus Faculty Fellow, he has paired Cornell first-years with local children for shared educational experiences at the Museum of the Earth,

the Johnson Art Museum and Lincoln Hall. “Arranging these experiences for students is tricky, and students quickly see how ‘messy’ real work with real kids is. But all the logistical hassle and unpredictability is totally worth it when you see the growth in student understanding—and the eventual smiles,” Duff said.



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Photo: Lindsay France/University Photography



Students build a sod sofa as part of the Art of Horticulture class taught by Marcia Eames-Sheavly, below
Photos: University Photography



Cornell students aren't the only ones benefiting from CALS classroom innovations. Some classes will soon be available to the masses.

Marianne Krasny '74, professor of natural resources, will apply her experience as director of the Civic Ecology Lab in an interactive online course, "Finding Meaning in City Life." It was recently selected as one of four courses to be offered by the university in its second batch of MOOCs (massive open online courses). The popular new learning platform allows people from around the world to take Cornell classes for free, via the edX.org website. Cornell's first foray into MOOCs attracted more than 55,000 registrants. Students in Krasny's course will be able to learn how and why people cultivate communities in places damaged by disaster and conflict, or blighted by disinvestment, poverty and crime.

Irby Lovette, associate professor of ecology and evolutionary biology, is teaming up with the Lab of Ornithology to create an interactive online learning module, bringing to life key topics in evolution related to natural selection, sexual selection and speciation. He received a grant from the provost to create the "Incentives for Understanding Evolution" project with Lab of O eLearning specialist Mya Thompson Ph.D. '08.

Communication professor **Jeffrey Hancock** also received a grant to help take his popular multi-college interdisciplinary course "Six Pretty Good Books" online, and **Ashim Datta**, professor of biological and environmental engineering, will be creating a SPOC—small private online course—to supplement his course "Biological and Bioenvironmental Transport Processes."

"I will be developing online problem solving modules that intersperse video-based instructions with probing questions that provide feedback on learning to achieve many of the benefits of a flipped classroom for this class of 90+ students," Datta said.

Associate professor of communication Sahara Byrne chose an unconventional venue for one of her classes: her living room. Every Monday last fall, 25 students curled on her couches to munch on popcorn and sip cider while watching TV and tweeting. It was all part of the course Hit or Miss: Understanding the Television Drama, which explored the use of social media in the launch of new shows. In this case, it was Fox's new adventure-mystery drama, "Sleepy Hollow," and students got to interact with network staff members, including Fox's chairman of entertainment, Kevin Reilly '84, before each episode. Byrne is faculty-in-residence at Mews Hall, and the course was one of several offered as part of the Learning Where You Live program, aimed at providing students opportunities to

learn, as well as to get to know faculty and other students, in a relaxed setting close to home. "It's a casual environment—pajamas and popcorn are welcome—but they have to come intellectually ready to think and talk and have questions for whoever calls in," Byrne said.



POW!

CALS STUDENTS MAKE THEIR MARK

THE BOLD RESEARCH AND OUTREACH BEING DONE IN AND THROUGH THE COLLEGE OF AGRICULTURE AND LIFE SCIENCES ISN'T JUST THE DOMAIN OF FACULTY AND STAFF. OUR UNDERGRADUATES ARE LEAVING THEIR BIG RED PAW PRINTS FROM ITHACA TO INDONESIA.

JOIN US AS WE GET TO KNOW SOME SUPER STUDENTS, INCLUDING AN ENTOMOLOGICAL EXPLORER, A GASTRONOMIC SOCIAL SCIENTIST, A CRUSADING BREEDER, A CONSCIENTIOUS CONSULTANT, AND YOUNG SCIENTISTS PURSUING CURES FOR CANCER AND MULTIPLE SCLEROSIS.

BY ELLEN LEVENTRY

PHOTOS BY ROBYN WISHNA
unless otherwise noted



AMY ZHAO, FROM CANINES TO CANCER

CELLULAR BIOLOGY AND SALSA DANCING ARE THE TWO GREAT PASSIONS AMY ZHAO '14 HAS DISCOVERED DURING HER TIME AT CORNELL. A TRANSFER STUDENT FROM RUTGERS, ZHAO ORIGINALLY STARTED DOWN THE PRE-VET PATH UNTIL A COURSE IN DOMESTIC ANIMAL BIOLOGY TOOK HER FROM PUPPIES TO PORPHYRINS. BY MANIPULATING ONE OF THE BEST-KNOWN PORPHYRINS, HEME—THE CORE OF THE SUBSTANCE THAT GIVES BLOOD ITS COLOR—CANCER CELLS CAN BECOME PHOTOSENSITIVE. THIS COULD LEAD TO NOVEL LIGHT-BASED TREATMENTS FOR TRICKY CANCERS LIKE ORAL, ESOPHAGEAL, COLON AND LUNG. ZHAO IS TRYING TO ENCOURAGE THE BODY'S OWN CELLULAR MECHANISMS TO PRODUCE MORE OF THESE CANCER-FIGHTING AGENTS. ZHAO SAYS SHE SLEEPS AT HOME AND LIVES IN HER LAB, BUT THIS ENERGETIC GAL FROM THE GARDEN STATE DOES TAKE THE OCCASIONAL BREAK TO SHAKE HER HIPS AT THE BIG RED BARN. NEXT ON HER TO-DO LIST? HORSEBACK RIDING. SHE PLANS TO STAY IN ITHACA AND CONTINUE ON AS A DOCTORAL CANDIDATE IN THE DEPARTMENT OF ANIMAL SCIENCE.

SAUL SCHUSTER, **AGENT OF CHANGE**

FROM CULINARY SCHOOL TO COMMUNITY COLLEGE TO CORNELL, SAUL SCHUSTER '14—LIKE ODYSSEUS—HAS TAKEN A CIRCUITOUS ROUTE TO ITHACA. BUT IT'S IN THE DEPARTMENT OF DEVELOPMENT SOCIOLOGY WHERE HE'S BEEN ABLE TO COOK UP THE PERFECT PROGRAM FOR HIS INTEREST IN NUTRITIONAL INEQUALITY AND FOOD INSECURITY. BORN AND RAISED IN ROCHESTER, N.Y., SCHUSTER HAS A SPECIAL INTEREST IN THE DISPROPORTIONATE RATE OF DIET-RELATED HEALTH ISSUES AMONGST NATIVE AMERICAN POPULATIONS. HE IS CURRENTLY WORKING WITH ASSOCIATE PROFESSOR ANGELA GONZALES ON TAILORING DIABETES EDUCATIONAL OUTREACH TO HOPI AUDIENCES. A HOSPICARE VOLUNTEER, HE FURTHER SERVED TOMPKINS COUNTY LAST SUMMER AS ONE OF THE FIRST CALS NEW YORK STATE INTERNS, WORKING FOR COUNTY ADMINISTRATION TO CREATE A GRANT DEVELOPMENT AND MANAGEMENT DATABASE. ALTHOUGH SCHUSTER WILL BE PURSUING A MASTERS IN PUBLIC HEALTH AT COLUMBIA UNIVERSITY'S MAILMAN SCHOOL OF PUBLIC HEALTH IN THE FALL, THIS GASTRONOME'S TRUE AMBITION IS TO OWN AND OPERATE A BIZARRE FOODS FOOD TRUCK.



KRISTEN BARNETT, SCALING NEW HEIGHTS

KRISTEN BARNETT '15 DOESN'T BELIEVE IN OBSTACLES. BE IT MT. KILIMANJARO OR THE GLASS CEILING, THIS DYSON SCHOOL STUDENT IS FINDING A WAY TO SCALE THE HEIGHTS. ENTERING CORNELL WITH AN EYE TOWARD ENGINEERING, BARNETT SOON REALIZED THE IMPORTANCE OF BUSINESS AND HOW IT COULD BE APPLIED TO ADDRESS THE CHALLENGES FACING THE GLOBAL COMMUNITY. SPECIALIZING IN INTERNATIONAL TRADE AND DEVELOPMENT, THIS MASSACHUSETTS NATIVE TOOK HER PASSION FOR EXPANDING HER HORIZONS TO TANZANIA AS AN ORGANIZER OF CORNELL'S MOUNTAINS FOR MOMS EXPEDITION. TOGETHER WITH A DOZEN OTHER STUDENTS, SHE SCALED THE HIGHEST MOUNTAIN IN AFRICA TO RAISE AWARENESS AND FUNDS FOR THE TREATMENT OF OBSTETRIC FISTULA. WORKING FOR WOMEN CLOSER TO HOME, BARNETT TEAMED UP WITH PROFESSOR DEBORAH STREETER TO ORGANIZE THE DYSON SYMPOSIUM ON WOMEN IN LEADERSHIP, A FORUM FOR UNDERGRADUATE WOMEN WHO ARE PASSIONATE ABOUT BUSINESS TO UNITE AND NETWORK WITH MENTORS IN INDUSTRY. BARNETT HOPES TO BECOME A CONSULTANT AFTER GRADUATION.



RONGKUI HAN, GROWING THE FIELD

GROWING UP IN HARBIN, A CITY OF MORE THAN 10 MILLION PEOPLE IN NORTHEASTERN CHINA, THE CLOSEST RONGKUI HAN '15 GOT TO HORTICULTURE WAS THE HOUSEPLANTS IN HER FAMILY HOME. NOW SHE IS A PASSIONATE ADVOCATE FOR AGRICULTURE, HAVING DISCOVERED THAT THE FIELD IS THE PERFECT WAY TO APPLY HER LOVE OF BIOLOGY. ORIGINALLY ENROLLED IN THE COLLEGE OF ARTS AND SCIENCES, HAN TRANSFERRED INTO CALS'S POPULAR NEW AGRICULTURAL SCIENCES MAJOR. WORKING WITHIN THE CROP PRODUCTION AND MANAGEMENT CONCENTRATION, HAN IS EXPLORING THE PLANT PHYSIOLOGY, ECOLOGY AND GENETICS OF STAPLE CROPS SUCH AS CASSAVA AND RICE. CURRENTLY, SHE IS WORKING WITH A GROUP IN JAPAN TO INVESTIGATE THE EVOLUTION OF RICE AND WHY CERTAIN VARIETIES HAVE AWNS, BRISTLE-LIKE APPENDAGES EXTENDING OUT FROM THE MAIN GRAIN. WHEN SHE'S NOT BUSY SINGING THE PRAISES OF HER PROGRAM AS AN AGRICULTURAL SCIENCES AMBASSADOR, SHE PRACTICES WHAT SHE PREACHES AS CHAIR OF PUBLIC RELATIONS OF HORTUS FORUM, THE UNDERGRADUATE HORTICULTURE CLUB.



CAMERON JONES, MAD FOR MANTIDS

CAMERON JONES '15 HAS BEEN FASCINATED WITH PRAYING MANTIDS—A PLURAL FOR MANTIS—SINCE THE AGE OF 8 WHEN HIS UNCLE SHOWED HIM SOME RECENTLY HATCHED NYMPHS THAT WERE EATING EACH OTHER. THE ENTOMOLOGY MAJOR NOW WORKS TO UNDERSTAND HOW ECOLOGICAL PRESSURES SHAPE DIFFERENT BEHAVIORS OF THESE INSECTS, WITH A PARTICULAR EYE TOWARD THE EVOLUTION OF THEIR INFAMOUS SEXUAL CANNIBALISM. CURRENTLY STUDYING AT THE NATIONAL UNIVERSITY OF SINGAPORE, HE IS TRYING TO DETERMINE WHETHER MALE MEMBERS OF A LOCAL SPECIES, *HIERODULA VENOSA*, THAT ARE EXPOSED TO FEMALES DURING DEVELOPMENT ARE MORE LIKELY TO REJECT LOW-QUALITY FEMALES—A STRATEGIC DECISION-MAKING PROCESS THAT APPEALS TO THIS CORNELL CHESS CLUB MEMBER. AN AVID OUTDOORSMAN, HE HAS THOROUGHLY ENJOYED COLLECTING SPECIMENS IN SOUTHEAST ASIAN RAINFORESTS, AS IT ALLOWS HIM TO ALSO ENCOUNTER EXOTIC AND INTERESTING PLANTS AND ANIMALS. THE NATIVE CALIFORNIAN PLANS TO EXPLORE ANOTHER WILD WORLD AFTER OBTAINING A PH.D. IN ENTOMOLOGY: ACADEMIA.

Photo provided

RYAN RADWANSKI, **FROM MILITARY TO MEDICINE**

RYAN RADWANSKI'S PASSIONS AND PURSUITS ARE TRULY A FAMILY AFFAIR. FOLLOWING IN HIS BROTHER'S FOOTSTEPS, HE ENLISTED IN THE U.S. MARINE CORPS AFTER HIGH SCHOOL. HE SERVED FOR FOUR YEARS, INCLUDING A DEPLOYMENT IN AFGHANISTAN, BEFORE COMING TO CORNELL TO STUDY PLANT SCIENCES. BUT THANKS TO TIME SPENT SHADOWING HIS COUSIN AND OTHER SURGEONS AT THE BARROW NEUROLOGICAL INSTITUTE IN ARIZONA, THIS NEW JERSEY NATIVE DISCOVERED HIS TRUE CALLING WAS NEUROBIOLOGY. HIS OTHER VOCATION: VOLUNTEERING IN THE DOMINICAN REPUBLIC WITH HANDFULS OF HOPE, A CHRISTIAN ORGANIZATION THAT HOSTS MEDICAL CLINICS AND REFURBISHES SCHOOLS. HE AND HIS WIFE, JULIA, WERE INTRODUCED TO THE ORGANIZATION BY RYAN'S FATHER AND SISTERS, AND THEY RETURN TO THE ISLAND TWICE A YEAR. RYAN '15 WILL BE SPENDING THE SUMMER AT THE KECK SCHOOL OF MEDICINE AT THE UNIVERSITY OF SOUTHERN CALIFORNIA IN THE LAB OF WILLIAM MACK '96, STUDYING TECHNIQUES TO REPAIR LIMITED BLOOD FLOW TO THE BRAIN.



Photo provided

PHOEBE DAWKINS, **CONSERVATION AND CULTURE**

A SUMMER SPENT AT SHOALS MARINE LABORATORY HELPED PHOEBE DAWKINS '16 CHART A COURSE TO ITHACA, AND EVENTUALLY TO INDONESIA. BORN AND RAISED IN BRONX, N.Y., THIS CITY GAL HAD A LOVE OF ENVIRONMENTAL CONSERVATION AND DISCOVERED MARINE ECOLOGY WHILE ON APPLIEDORE ISLAND. AN EARLY DECISION APPLICANT, SHE'S WORKING WITH ONE OF HER SHOALS MARINE LAB MENTORS, ECOLOGY AND EVOLUTIONARY BIOLOGY PROFESSOR DREW HARVELL, TO DETERMINE THE EFFECTS OF ENVIRONMENTAL FACTORS ON THE PREVALENCE AND SEVERITY OF AN EMERGING PATHOGEN IN THE CARIBBEAN SEA FAN, AS WELL AS ITS IMMUNE RESPONSE TO INFECTION. OF BALINESE DESCENT HERSELF, DAWKINS IS MINORING IN SOUTHEAST ASIAN STUDIES, AND SHE IS HEADING TO THE INDONESIAN PROVINCE FOR TWO MONTHS TO IMMERSE HERSELF IN THE CULTURE. HER GOAL: TO EDUCATE LOCAL INDONESIAN COMMUNITIES ABOUT HARMFUL FISHING PRACTICES, SUCH AS OVERFISHING, AND HELP THEM IDENTIFY COASTAL AREAS IN NEED OF CONSERVATION. WHEN NOT PRACTICING JAVANESE GAMELAN OR BALINESE DANCE, YOU CAN FIND HER PARTAKING IN CAMPUS TABLE TENNIS TOURNAMENTS.





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JAMES SPANJAARD, CONSULTING WITH A CONSCIENCE

THE DYSON SCHOOL'S UNIQUE CURRICULA OF BUSINESS AND INTERNATIONAL DEVELOPMENT BROUGHT JAMES SPANJAARD '14 ALL THE WAY FROM SOUTH AFRICA TO UPSTATE NEW YORK. HAILING FROM PORT ELIZABETH, SPANJAARD FOCUSED ON ACCOUNTING, FINANCE, AND TRADE AND DEVELOPMENT WITH A DESIRE TO DEVELOP A STRONG FOUNDATION IN BUSINESS THOUGHT AND PRACTICE, AND ITS APPLICATION TO EMERGING MARKETS AND DEVELOPMENT CHALLENGES. THAT PASSION TRANSLATED INTO HIS WORK WITH CORNELL'S SOCIAL BUSINESS CONSULTING (SBC) GROUP—A PRO-BONO SERVICE TO SOCIAL ENTERPRISES AND NON-PROFITS—IN WHICH HE SERVED AS A CONSULTANT, A PROJECT MANAGER, CONSULTING DIRECTOR AND PRESIDENT. IRONICALLY, HE WASN'T ABLE TO WORK ON THE TEAM THAT TACKLED HIS MOST PERSONALLY MEANINGFUL PROJECT: KHAYELITSHA COOKIE COMPANY, A SOCIAL ENTERPRISE THAT HIRES PREVIOUSLY UNEMPLOYED AND DISADVANTAGED WOMEN FROM THE CAPE TOWN TOWNSHIP OF KHAYELITSHA. AN AVID MOUNTAIN BIKER AND SOCCER PLAYER, SPANJAARD IS CURRENTLY WORKING FOR A FAMILY BUSINESS WHILE WAITING TO START EMPLOYMENT WITH BOSTON CONSULTING GROUP THIS AUGUST.

NICK BIEBEL, A NEW BREED

GROWING UP IN THE CHICAGO SUBURB OF CAROL STREAM, ILL., NICK BIEBEL '14 LOVED TWO ACTIVITIES IN PARTICULAR: CHEERING ON THE CHICAGO BEARS AND GARDENING. WHILE HE NOW CHEERS ON THE CORNELL BIG RED AS A TROMBONE PLAYER IN THE "ONLY REAL MARCHING BAND IN THE IVY LEAGUE," BIEBEL IS PURSUING HIS SECOND LOVE IN THE DEPARTMENT OF PLANT BREEDING AND GENETICS, WORKING WITH ASSISTANT PROFESSOR MICHAEL MAZOUREK PH.D. '08 ON RIND PATTERNING IN WINTER SQUASH AND THE DEVELOPMENT OF HULL-LESS SQUASH SEEDS AS A NEW HEALTHY SNACK FOOD POSSIBILITY. HE FINDS THE IDEA OF BECOMING A PUBLIC PLANT BREEDER APPEALING AS A MEANS TO INCREASE GENETIC DIVERSITY AND IMPROVE PEOPLE'S DIETS IN A MORE DISTRIBUTABLE MANNER. AN ACTIVE MEMBER OF CRU, THE COLLEGE MINISTRY OF CAMPUS CRUSADE FOR CHRIST, BIEBEL IS EAGER TO SHARE HIS FAITH JOURNEY WITH OTHERS AND HE WILL INTERN WITH THE ORGANIZATION FOR A YEAR BEFORE GOING TO GRADUATE SCHOOL FOR PLANT BREEDING.



MARTIN ZORRILLA, **INTERNATIONAL INGENUITY**

EXPERIENTIAL LEARNING ISN'T JUST A BUZZ PHRASE TO MARTIN ZORRILLA, JAN. '14. HAVING GROWN UP IN A CLOUD FOREST RESERVE IN THE NORTHWEST OF ECUADOR, ZORRILLA HAS WORKED ALONGSIDE HIS FATHER TO BRING SUSTAINABLE DEVELOPMENT TO HIS HOME REGION OF INTAG, WHILE RESISTING ENVIRONMENTALLY DAMAGING MINING OPERATIONS. AN EXPERIENCED GLOBETROTTER, HE SAW A REAL DISCONNECT BETWEEN HIS CLASSMATES' CLASSROOM LEARNING ABOUT GLOBALIZATION AND THE REGIONAL REALITIES HE EXPERIENCED IN ECUADOR. ORIGINALLY AN ENTOMOLOGY MAJOR, ZORRILLA WAS ENCOURAGED BY HIS ADVISERS, COLE GILBERT AND LINDA RAYOR, TO PURSUE HIS INTERESTS IN SOCIAL JUSTICE, SUSTAINABILITY AND DEVELOPMENT THROUGH INTERDISCIPLINARY STUDIES AND A CORNELL PUBLIC SERVICE CENTER SCHOLARSHIP. THE RESULT: IARD 401, A CLASS HE CREATED WITH THE SUPPORT OF NATURAL RESOURCES PROFESSOR JIM LASSOIE AND THE LATE PROFESSOR CHARLOTTE JIROUSEK. IT ATTEMPTS TO BRIDGE THE GAP BETWEEN ITHACA AND INTAG WITH REAL-WORLD PROJECTS IN RURAL COMMUNITIES. ZORRILLA IS CURRENTLY A PUBLIC SERVICE CENTER FELLOW AND IS TEACHING THE REFLECTION PORTION OF THE CLASS.



KATHRYN BEAUMONT, **OCEAN HEALTH MEETS OUTER SPACE**

KATHRYN BEAUMONT '15 CAME BY HER LOVE OF THE WATER HONESTLY HAVING GROWN UP AT A DIVING RESORT IN ROATAN, HONDURAS. ATTRACTED TO THE COLLEGE FOR ITS OPPORTUNITIES IN BOTH FIELD WORK AND INTERDISCIPLINARY STUDIES, THIS SCIENCE OF EARTH SYSTEMS MAJOR IS CURRENTLY PARTICIPATING IN THE EARTH AND ENVIRONMENTAL SYSTEMS SUSTAINABILITY FIELD PROGRAM IN HAWAII -- A SEMESTER LONG PROGRAM CONSISTING OF COURSES ON EARTH SCIENCE, OCEANOGRAPHY, BIOGEOCHEMISTRY, AND LOCAL CULTURE, AS WELL AS A SHORT INTERNSHIP. HER SOPHOMORE YEAR SAW HER CONNECTING OCEANS WITH OUTER SPACE, PROCESSING SATELLITE IMAGERY TO DERIVE WATER QUALITY DATA FOR THE COAST OF HAWAII ISLAND IN ORDER TO PROVIDE A GREATER CONTEXT TO A CORAL DISEASE DATA SET. WHEN NOT TAKING ADVANTAGE OF THE REEFS IN HAWAII FOR SCUBA DIVING, KATHRYN SERVES AS A MODERATOR FOR THE BI-ANNUAL HUMANS VS. ZOMBIES CAMPUS-WIDE GAME OF TAG SPONSORED BY THE CORNELL OUTDOOR RECREATIONAL GAMES INITIATIVE, AND IS A ROCK CLIMBING INSTRUCTOR WITH CORNELL OUTDOOR EDUCATION.



Photo provided

ADAM SCHLUSSEL, **DIGITAL DETECTIVE**

FROM ANCIENT TEXTS TO SOCIAL MEDIA, INFORMATION SCIENCE MAJOR ADAM SCHLUSSEL '16 HAS DECIPHERED DISTANT DECADES' DATA. ORIGINALLY A PRE-MED STUDENT IN THE COLLEGE OF HUMAN ECOLOGY, THE SIGMA ALPHA MU BROTHER FROM TEANECK, N.J. WAS INTRODUCED TO INFORMATION SCIENCE BY JEFF HANCOCK, COMMUNICATION PROFESSOR AND CHAIR OF THE INFORMATION SCIENCE DEPARTMENT, DURING A PSYCH 1101 CLASS. NOW PART OF HANCOCK'S SOCIAL MEDIA LAB, ADAM IS DEVELOPING, AND PUBLISHING ABOUT, AN ALGORITHM THAT CAN DETECT ACADEMIC FRAUD IN SCIENTIFIC PAPERS VIA KEYWORDS. A MODERN ORTHODOX JEW WHO SPENT A YEAR AFTER HIGH SCHOOL STUDYING JEWISH TEXTS IN JERUSALEM, ADAM IS ACTIVE IN CORNELL HILLEL AND SERVES ON THE EXECUTIVE BOARD OF THE CORNELL ISRAEL PUBLIC AFFAIRS COMMITTEE, WHICH ORGANIZES MANY EVENTS, SUCH AS MIDEAST FEST, WHICH IS CO-SPONSORED BY CORNELL'S ARAB STUDENT ASSOCIATION, PERSIAN STUDENTS ORGANIZATION AND ARMENIAN STUDENTS ORGANIZATION. HE IS ALSO A COMMISSIONER OF THE CORNELL STUDENT ASSEMBLY FINANCE COMMISSION.



Photo provided

SAM OLYHA, **HURDLING FROM ITHACA TO OXFORD**

WHEN NOT BUSY TRAINING TO TAKE PART IN PENTATHLONS AND HEPTATHLONS AS PART OF THE CORNELL TRACK AND FIELD TEAM, THIS POUGHKEEPSIE, N.Y., NATIVE WORKS ON DIFFERENT MUSCLES—THOSE AFFECTED BY MUSCULAR DYSTROPHY. AN EDITOR OF THE UNDERGRADUATE NEUROSCIENCE JOURNAL SYNAPSE, OLYHA IS CURRENTLY INVESTIGATING WHETHER DYSFUNCTIONAL STEM CELLS ARE TO BLAME FOR THE MUSCLE WASTING DISEASE. RECENTLY, SHE SPENT A SUMMER AT THE HARVARD STEM CELL INSTITUTE WORKING ON TURNING EMBRYONIC MOUSE STEM CELLS INTO MATURE CARDIAC CELLS. A WINNER OF A MARSHALL SCHOLARSHIP, OLYHA '14 WILL BE TAKING HER TALENTS AND LOVE OF TRANSLATIONAL RESEARCH TO OXFORD UNIVERSITY, WHERE SHE WILL TURN TO ONCOLOGY, SPECIFICALLY SEARCHING FOR NEW DRUG THERAPIES TO TREAT LUNG CANCER. WHEN NOT TEASING OUT PROTOCOLS IN THE LAB, OLYHA ENJOYS LISTENING TO PODCASTS SUCH AS RADIOLAB AND WAIT, WAIT, DON'T TELL ME, AND SHE IS ACTIVE IN POSTCROSSING, A PROJECT THAT ALLOWS ANYONE TO RECEIVE POSTCARDS FROM RANDOM PLACES IN THE WORLD.



NEW ALUMNI AFFAIRS AND DEVELOPMENT DIRECTOR LOOKS TO BROADEN ENGAGEMENT IN CALS

The new year brought a new face to the college's Office of Alumni Affairs and Development: Margaret Ann Bollmeier. The new associate dean and director will oversee the college's fundraising efforts and collaborate with CALS and Cornell senior leadership to grow and develop the college's alumni engagement programs and advancement strategy.

"Margaret Ann steps into this role at an important time for the college, as CALS seeks to foster greater donor support for the cutting-edge work of our faculty, students and staff," said Kathryn J. Boor, the Ronald P. Lynch Dean of the College of Agriculture and Life Sciences.

"Particularly as CALS works through our strategic planning process and we continue to move ahead with new majors, programs, expanded internship opportunities and other initiatives, her expertise and experiences offer us key leadership," Boor added. "Without



investment by our alumni, friends, and other partners, CALS will be limited in what we can achieve. I'm confident she—and we—will succeed."

Bollmeier is a seasoned development professional with more than 20 years of

experience in a variety of institutional settings. Previous roles include executive director of the Curry School of Education Foundation at the University of Virginia and assistant dean for advancement in the College of Education at the University of Washington. She also directed Humanities Washington, the state affiliate of the National Endowment for the Humanities in Washington State, for 10 years, and she led successful fundraising efforts at the Virginia state humanities council.

She is a second-generation fundraiser (both her parents were development professionals), who received her B.A. from the University of Texas at Austin and her J.D. from Washington and Lee University School of Law.

"The faculty, students, and staff of CALS are at the center of such important work. They are literally changing the world, and I am honored to have a part in fostering that success," Bollmeier said.



From CALS to the silver screen, actress Adepero Oduye '99 continues to collect accolades. Most recently, she was seen on stage at the Academy Awards as one of the cast members accepting the Best Picture award for "Twelve Years a Slave" (she played Eliza) and on Broadway alongside Cicely Tyson, Cuba Gooding Jr. and Vanessa Williams in a revival of Horton Foote's "Trip to Bountiful."

Cornell Club of London president Natalie Teich '65 recently received one of the United Kingdom's highest honors. In a ceremony with Prince Charles, the retired cancer researcher was awarded the Most Excellent Order of the British Empire—MBE—for her significant contributions to public health. An expert on oncogenes and oncogenic viruses, Teich started her career at the National Institutes of Health in Bethesda, Md., and continued at the Imperial Cancer Research Fund in London. She has also been an active alumna, as a class officer and member of the Cornell Council and the President's Council of Cornell Women.

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Re2014 union



JOIN CALS FOR REUNION WEEKEND: JUNE 5-8, 2014

THURSDAY, JUNE 5

Earth and Atmospheric Sciences Open House

10 a.m.-4 p.m., Snee Hall Atrium

Visit the Timothy N. Heasley Mineral Museum and inspect our mastodon and fossil exhibits while keeping an eye on the Earth's last rumblings at the Snee earthquake seismograph. Enjoy a stroll with the self-guided tour through the Engineering Quad Rocks.

Beebe Lake Natural History Walk 3-4 p.m., tent on Beebe Beach

Did you know Beebe Lake was originally a forested swamp? Join botanist Robert Wesley on a stroll around the lake and learn more about the history, flora and fauna of Cornell's favorite natural area.

FRIDAY, JUNE 6

Earth and Atmospheric Sciences Open House

10 a.m.-4 p.m., Snee Hall Atrium

Visit the Timothy N. Heasley Mineral Museum and inspect our mastodon and fossil exhibits while keeping an eye on the Earth's last rumblings at the Snee earthquake seismograph. Enjoy a stroll with the self-guided tour through the Engineering Quad Rocks.

Brewing on the Horizon: A Revival of Hops and Craft Beer Production in New York State

10-11:30 a.m., Room 160, Mann Library
New York is fermenting a renaissance. Cornell Cooperative Extension hops specialist Steve Miller and Randy Lacey '77, M.Eng '99, owner of Hopshire Farm and Brewery in Freeville, N.Y., will highlight the history and current developments in the production of hops and the emergence of farm breweries in New York. The program will include a guided tasting of locally produced craft beers. Afterwards, stop by Mann Library for the related exhibit: "For a Quart of Ale is a Dish for the King."

Plantations Botanical Garden Highlights

10-11 a.m., Nevin Welcome Center

Enjoy a relaxing guided one-hour tour through the Botanical Garden and discover the beauty and diversity of the Bowers Rhododendron Collection, Robison Herb Garden, Young Flower Garden, Robison Container Garden and more.

CALS Admissions Information Session 10:30-11:30 a.m., visit website for location

CALS Admissions Information Sessions focus on freshman and transfer admissions and include a general overview of the college, a glimpse into the admissions process, and plenty of time to answer questions about both academic and student life. Visit cals.cornell.edu/admissions/ visit to RSVP online.

Mundy Wildflower Garden Tour 11 a.m.-12 p.m., Plantations, Caldwell Road

Enjoy a variety of flowers—from anemones to zizzia, and everything in between—as you explore Cornell Plantations' wildflower garden with native plants gardener Krissy Boys and staff botanist Robert Wesley. Meet at the Caldwell Road entrance to the garden (across from the Arboretum) or take one of the shuttle vans and walk from the Nevin Welcome Center.

Tour of the Cornell Insect Collection 11 a.m.-12 p.m., second floor of Comstock Hall

Tour the famous Cornell Insect Collection, home to the most beautiful and bizarre insects in the world. Explore more than 7 million insect specimens representing 200,000 species and view fascinating examples of insect beauty and diversity.

All-Alumni Lunch Extravaganza 11:30 a.m.-1:30 p.m., Barton Hall

Newly redesigned and packed full of energetic music, fabulous food, children's entertainment, a photo booth and wine tasting—you won't want to miss this destination event! Lunch tickets available on site.

Liberty Hyde Bailey Lecture "Modifying the Future of Food: What if GMOs are the Only Option?"

1-2:30 p.m., B25 Warren Hall

What role should genetically modified organisms (GMOs) play as we try to find a sustainable way to feed the world's growing population? Many argue that they represent an important technological option—and possibly the only option for some crops threatened by devastating diseases. Moderator Margaret Smith will discuss the science behind GMOs, while panelists cover the challenges faced by the papaya and citrus industries and their biggest hurdle: public perception.

Moderator: Margaret Smith, professor of plant breeding and genetics, associate director of the Cornell University Agricultural Experiment Station Panelists: Dennis Gonsalves, former Cornell University Liberty Hyde Bailey Professor of Plant Pathology, with more to be announced.

Landscape Architecture Open House 1-3 p.m., 440 Kennedy Hall (Gallery)

The undergraduate landscape architecture degree is the only one of its kind in the Ivy League. Visit the studio and mezzanine, enjoy drinks and snacks, and chat with faculty, staff and fellow alumni.

Plantations Garden Mini Tours 1-4:30 p.m., Nevin Welcome Center

Don't have a lot of time to spend? Take a mini-tour! Approximately every 20 minutes, docents will lead short (15-minute) tours highlighting some significant plants and gardens.

Olin Lecture 3-4:15 p.m., Bailey Hall

The Olin Lecture, established at Cornell in 1986 through a generous gift from the Spencer T. and Ann W. Olin Foundation, brings to campus an internationally prominent speaker to address a topic relevant to higher education and the current world situation.

Natural Resources Tour and Lecture "Leading the Way on Campus Sustainability"

3:30-4:40 p.m., Fernow Hall

The renovation of Fernow Hall and the new Environmental Science and Sustainability major both highlight Cornell's commitment to sustainability. During this hour, faculty will describe the new curriculum and lead a tour of Fernow Hall to see firsthand how this century-old building was renovated to save energy, reuse original materials and provide a modern working and teaching environment.

Earth and Atmospheric Sciences Seminar "Watching Glaciers Change from Space"

3:30-4:30 p.m., Snee 2146

Associate professor Matt Pritchard will present a special seminar about pioneering Cornell glaciologist Ralph Stockman Tarr (1864-1912).

The Charles H. Dyson School of Applied Economics and Management: Warren Hall Reception and Book Talk

3:30-5:30 p.m., Warren Hall Central Lounge
Remarks at 4:30 p.m., book talk to follow in Warren 101. Enjoy special Dyson School wine and hear from new director Chris Barrett, as well as professor David Just, author of Introduction to Behavioral Economics and director of the Cornell Center for Behavioral Economics in Child Nutrition Programs, who will share his insights into why people sometimes make irrational decisions and how their behaviors do not follow the predictions of economic models.

Let your fellow classmates and faculty know you will be attending; pre registration is requested, but not required.

Register at: alumni.cals.cornell.edu/reunion

Neurobiology and Behavior Lecture “How Evolution Can Point the Way Out of the Tragedy of the Commons” 4-5 p.m., Morison Room (A106), Seeley Mudd Hall

Join professor Hudson Kern Reeve for this exciting lecture about behavioral ecology.

SATURDAY, JUNE 7

Museum of the Earth lecture Time: TBD, Museum of the Earth, 1259 Trumansburg Road

A special lecture about the Marcellus Shale will be presented by Warren Allmon, Earth and Atmospheric Sciences Hunter R. Rawlings III Professor of Paleontology and director of the Paleontological Research Institution.

Reunion Run

7:30 a.m., Barton Hall, Garden Ave entrance
Pre-registration required for the two- or five-mile courses.

Reunion Breakfast and Open House 8-10 a.m., Stocking Hall

Don't miss this reimagined CALS Reunion Breakfast! Explore the renovated Stocking Hall and talk with Dean Kathryn Boor, alumni, faculty and friends of the college. Guests are welcome any time between 8 and 10 a.m. for a free continental breakfast. Dear Boor will give a CALS update in the PepsiCo Auditorium at 8:45 a.m. CALS Alumni Association president Michelle Colban '08, MBA '09, will host the association's annual meeting. Guests can also learn more about the CALS Strategic Planning process now underway. Stocking Hall, the home of the Cornell Dairy Bar, is conveniently located near a visitors' parking lot. Register at: alumni.cals.cornell.edu/reunion

Plantations Spring Plant Sale

9 a.m.-4 p.m., Plant Production Facility,
397 Forest Home Dr. (across from Flat Rock)
Take home some of our gardeners' top picks for your home landscape. This spring's offerings will include small shrubs, a wide variety of perennials and some new additions to the horticulture trade.

Alumni Reception and Open House at Mann Library

9:30 a.m.-12:30 p.m., Mann Library
CALS, CHE and other Cornell alumni are cordially invited to explore what makes Mann Library, in the words of our students, “the best place to discover 10 million new ideas.” Come explore the library's collaborative learning technologies, fresh study spaces, rich collections and summer exhibits. Guided tours will be available on request, and—in a grand departure from library tradition just for the reunion—a local-foods themed Finger Lakes brunch will be served at the Mann circulation desk.

Tour the Museum of the Earth (affiliated with Cornell's Department of Earth and Atmospheric Sciences) 10 a.m.-5 p.m., Museum of the Earth, 1259 Trumansburg Road

A right whale skeleton suspended in the atrium welcomes you to a beautiful museum in which you can follow the major transformations of life

through the ages, as displayed through fossils and videos. Observe the seismograph display and view research by EAS faculty and students. Collect fossils from the Devonian seas of Ithaca. Fun for all ages. Free admission is offered to alumni and families (please show Reunion button). Donations are appreciated.

State of the University Address

10:30 a.m., Bailey Hall
Cornell University President David J. Skorton will deliver his annual Reunion State of the University Address. All registered Reunion attendees and their guests are welcome.

All-Alumni Lunch Extravaganza

11:30 a.m.-1:30 p.m., Barton Hall
Newly redesigned and packed full of energetic music, fabulous food, children's entertainment, a photo booth and wine tasting—you won't want to miss this destination event! Lunch tickets available on site.

Plant Biology Reunion Gathering for the Plant Sciences

11:30 a.m.-1 p.m., G37 Plant Science
(MacDaniels Room)
Please join plant sciences for light refreshments and an opportunity to reminisce with friends, faculty and alumni. Historical Cornell photos will be on display.

Biological and Environmental Engineering Alumni Gathering

11:30 a.m.-1:30 p.m., Lobby, Riley Robb
Enjoy a light lunch while visiting with fellow alumni and current and former faculty. Lab tours will be available.

Tour of the Cornell Insect Collection 12 p.m., second floor of Comstock Hall

Tour the famous Cornell Insect Collection, home to the most beautiful and bizarre insects in the world. Explore more than 7 million specimens representing 200,000 species and view fascinating examples of insect beauty and diversity.

Plantations Garden Mini Tours

1-4:30 p.m., Nevin Welcome Center
Don't have a lot of time to spend? Take a mini-tour! Approximately every 20 minutes, docents will lead short (15-minute) tours highlighting some significant plants and gardens.

Wine Tasting

1-3 pm, Trillium, Kennedy Hall
Savor the flavor of New York wines and meet winery owners at this very popular annual reunion event. Free admission to all alumni and guests, 21 years of age and older.

Atkinson Center for a Sustainable Future Lecture “Grappling with Uncertainties: Climate Change and Decision-making”

1:30-2:30 p.m., Statler Auditorium
Join the Atkinson Center for a Sustainable Future, CALS, and other university partners for this compelling discussion about climate change.

Allan H. Treman '21 Memorial Concert
2:30-3:30 p.m., Jackson Grove in the F.R.
Newman Arboretum (Flat Rock entrance)
Relax in the shade and enjoy this performance

by The Hangovers, the a cappella subset of the Cornell Glee Club. This is an outdoor event, so please bring sunscreen, sun hat and umbrella (the concert will be held under a tent). Accessibility for disabled persons is limited. Refreshments provided. Bus will depart from Barton Hall at 2 p.m. and return after the concert.

Cornelliana Night

9:30 p.m., Bailey Hall
Join the Alumnae Chorus and the Alumni Glee Club in songs of Cornell. Reunion attendance and giving will be recognized. A real-time, live stream will be available for viewing on a large screen at our overflow location in David L. Call Auditorium at Kennedy Hall.

SUNDAY, JUNE 8

On the Move: Tours of the Department of Communication's New Space in Mann

10 a.m.-12 p.m., fourth floor, Mann Library
The Department of Communication will host tours and answer questions about its future home on the fourth floor of Mann Library. Come see the space in its current state, hear about the status of moving plans and get updated on the exciting faculty research happening in the department, which will flourish in the new space.

Ongoing Weekend Events

**Check the reunion program or website for times

Cornell Plantations

Cornell Plantations is the botanical garden, arboretum and natural areas of Cornell University. During Reunion our rhododendrons, irises and magnolias should be blooming, and you may still find many spring wildflowers in the Mundy Wildflower Garden and natural areas. Take one of our shuttle vans from Barton Hall, West Campus or North Campus to the Nevin Welcome Center, where you can take a mini-tour, pick up a visitor map and explore on your own, browse the exhibits and gift shop, or just relax and enjoy the beauty and serenity of the gardens and grounds.

The Nevin Welcome Center will be open from 9:30 a.m.-5 p.m. Friday, Saturday and Sunday.

Mann Library

8 a.m.-5 p.m. Thursday and Friday
9:30 a.m.-5 p.m. Saturday

For a Quart of Ale is a Dish for the King: The Craft Beer Tradition and Its Revival Mann Library Lobby and Top Shelf Gallery, first floor

Whether at the Chapter House below Cornell or at an upscale pub in Manhattan, the craft beer tradition may seem all the rage these days, but it has deep roots in New York, home to the earliest breweries in North America and once the largest supplier of hops to the rest of the country. Drawing from the rich historical resources in the library's collection, this summer exhibit will trace the regional New York history of craft beer and hops production and highlight current developments that suggest a promising future for hops farmers, microbrewers and beer connoisseurs ahead.

Keep tabs on all reunion events at:
www.alumni.cornell.edu/reunion



THE EVOLUTION OF EXPERIENCE DESIGN

By Holly McIntyre Hartigan

Michael Turri could make an evolutionary study of his career path—from science, to banking, to design.

As director of experiential strategy at marketing firm Sid Lee, Turri '98 works to understand how people interact with technology, and he develops strategies to use in commercial and marketing contexts.

"I look at how technology and behavior and culture all intersect in the world," he said, "whether it's designing the conference center of the future in a hotel or an augmented reality app to help people move through a city."

As an ecology and evolutionary biology major at Cornell, Turri realized becoming a doctor or biologist wasn't for him. Accounting courses at Cornell led him to four years working at an investment bank, which in turn introduced him to the world of commercial marketing and design.

He went on to receive a M.S. in product design from Stanford (led by IDEO co-founder David Kelley), where he worked to reinvent the museum experience, studying how people interact with exhibits and trying to bring those exhibits to life.

This March, Turri shared his thinking on experience design with an audience, co-leading a workshop at SXSW Interactive, part of the South By Southwest festival in Austin, Texas, on how museums can build more meaningful experiences.

Turri credits his studies at Cornell with teaching him how to understand the world around him.

"What I learned most from ecology was how to see the whole as a function of its parts and the parts within the whole," he said.

Evolutionary biology, in turn, taught him to look for the factors that make something uniquely suited to compete in its environment.

He applies these principles to experience design to help him understand how concepts work in the world and to create competitive advantages.

COMMUNICATING HER VISION FOR FACULTY OF THE FUTURE

By Stacey Shackford

When it comes to investing in new media, Peggy Koenig '78 is shrewd yet daring. When it comes to investing in her alma mater, the communication graduate is focused on faculty renewal. She recently made a \$500,000 gift that enabled her former department to attract a rising star of social media research.

"We need to make sure we are attracting the very best faculty, which in turn will attract the best students and enhance the reputation of the university," Koenig said.

Koenig named the new position in honor of outgoing department chair Geri Gay MPS '80, Ph.D. '85.

"Geri has had a tremendous impact upon the relevance of the department, the rankings of the department, the recruitment of top-notch professors, and engagement with alumni," Koenig said. "She's a visionary."

Assistant professor Drew Margolin was hired in July to be the Geri Gay Sesquicentennial Faculty Fellow. Margolin studies how social networks develop and evolve in new media channels such as Facebook and Twitter. For instance, the former postdoctoral associate at Northeastern University studied social media and cell phone use during the Boston marathon bombing, using behavioral data to see how people activate their networks in times of uncertainty.

As managing partner of Boston private equity firm Abry Partners, Koenig is responsible for the sourcing, negotiation and oversight of transactions including radio broadcasting, business-to-business magazine and directory publishing, and couponing. She also has extensive media financing experience in feature film production, cable television and magazine publishing.

As an alumni leader—a member of the Cornell University Board of Trustees, the Cornell University Council, the Cornell University Council on Career Advising, the Advisory Board to the Department of Communications and the CALS Advisory Council, who previously served on the President's Council of Cornell Women—Koenig wants to set an example that she hopes fellow Cornellians will follow.

"Peggy's tremendous generosity has enabled Cornell—and in particular, the Department of Communication—to make significant and forward-thinking investments that will help sustain and enhance the excellence of our faculty," said Kathryn Boor, the Ronald P. Lynch Dean of the College of Agriculture and Life Sciences. "Cornell is a more vibrant place thanks to her energy, vision and enthusiasm."



THE HUB OF COMMUNICATION

Faculty renewal isn't Peggy Koenig's only Cornell interest. She has also helped kick-start a campaign to create a new home for the Department of Communication on the fourth floor of Mann Library.

In addition to faculty, staff and graduate student offices, the plan includes multiple formal and informal meeting spaces, and state-of-the-art media and technology research labs.

Designs are being developed and construction is set to begin next summer, with completion expected in summer of 2015. Koenig's \$250,000 gift helped launch a fundraising initiative to offset the estimated \$5 million price tag.

TAKING THE OFF-RAMP FROM AN MBA AND THE ON-RAMP TO ENTREPRENEURSHIP *By Morgan Beller '13*

Put on a dress shirt, walk into a study room, power up your computer, open up your browser and start talking to a prospective employer. Doesn't that sound better than sending countless scheduling emails to recruiters, spending money to travel to an office, waiting in the reception area as those butterflies build, and sitting across the table from a managing director?

Danielle Weinblatt '05 thinks so, too. Her company, Take the Interview, is revolutionizing the recruitment process for HR employees and applicants alike.

The traditional process of resume reviews, phone screenings and in-person interviews is "very inefficient and too linear for organizations today," Weinblatt says.

"Screening job candidates is a huge waste of time. Recruiters often know after just a few minutes whether a candidate is worthy of an in-person interview, but they go on interviewing anyway," Weinblatt added. "For big companies with endless recruiting needs, this is a problem."

Founded in 2011, Take the Interview replaces phone screenings with video-based interviews, thus eliminating travel and simplifying the scheduling process, while retaining the "face-to-face" feel. Other features such as interview recording and review, note capturing and feedback sharing can lead to enhanced collaboration among hiring teams. Take the Interview is also the first company to offer digital in-person interviews using Google Glass. It is solving a \$400 billion problem: the expense and energy spent when the wrong people are recruited, Weinblatt said.

She recently presented at an Entrepreneurship Women panel at the South by Southwest Interactive festival, and she is a member of Springboard Enterprises, a network of female founders and CEOs who lead high-growth companies.

While a student at the Dyson School, Weinblatt prepared for job interviews by religiously reading Vault career guides. Upon entering the workforce, she got to sit on the other side of the table as junior captain of the Cornell recruiting team for Citigroup. It was there that Weinblatt fostered her love for "helping people figure out what they wanted to do in the future." This passion would later spur her to think of ways to use newer technologies to improve the recruiting process.

After several years working as an analyst in the banking industry, Weinblatt enrolled at Harvard to pursue an MBA. A trip to the Silicon Valley for an entrepreneurship immersion program led to a detour from her business school plans, however. She presented a business idea—the foundation of Take the Interview—that was received with "electric" energy.

"When you can't stop thinking about your idea and no other opportunity seems more exciting than pursuing your venture, then you owe it to yourself to try," Weinblatt said.

Weinblatt credits Cornell with helping her recognize the potential of a timely market opportunity and the conviction to seize it. And what classes led her there?

"Finance with Rich Curtis in my major; outside of my major, Opera. Two of the most useful classes ever—seriously," Weinblatt said.



CALS FUN FACTS QUIZ

① **WHO** was the first dean of the college?

② **CALS** can claim three Nobel Laureates. Who are they?

③ **COMPLETE** the name of this popular course: Magical _____, Mischievous _____.

④ **HOW MANY** apple varieties has Cornell developed, including the two newest, SnapDragon and RubyFrost?

⑤ **WHEN** the Titan arum bloomed in 2012, the crowds who thronged to see (and smell) the rare blossom named it _____.

⑥ **WHERE** are white snakeroot, poison ivy, and pokeweed intentionally cultivated on campus?

⑦ **WHAT** is the name of the American Indian Program residence hall on North Campus?

— ANSWERS —

This page: 1. Liberty Hyde Bailey • 2. George Beadle, Barbara McClintock, James Sumner • 3. Mushrooms, Molds • 4. 68 • 5. Wee Stinky • 6. Plantations Poisonous Plant Garden • 7. Akwe:kon • 8. Communication stalls of the old Warren Hall • 9. Entomology • 2. Tomato, watermelon, squash, and cucumber, all developed by faculty in Plant Breeding and Genetics • 3. Ecology and Evolutionary Biology • 4. The chicken nugget • 5. A coconut • 6. Cornelia and Cal • 7. The restroom

SAVNEET SINGH '05

President and founder, Gold Bullion International LLC

As a new applied economics and management graduate working at a large hedge fund, Savneet Singh became aware of a problem encountered by thousands of other money managers: purchasing physical gold was difficult, expensive, non-transparent and completely offline.

"Physical metals like gold don't trade on an exchange, they trade over the counter, by calling desks or going up to stores," Singh said. "The last time the gold market innovated was with the invention of the telephone."

Singh saw an opportunity for innovation. His solution was logical, but also audacious; he set out to create the world's first real exchange for precious metals, where investors could buy and sell online, and have their gold stored in insured vaults around the world.

The entrepreneur was 25 when he founded Gold Bullion International (GBI). For the first year and a half, GBI had no clients, but Singh and his partners persisted.

"We all believed in what we were doing and knew that this was better for our clients and partners," Singh said.

The first large client they signed was Merrill Lynch. GBI is now the largest supplier of physical metals to the wealth management industry in the United States, Singh said.

"Cornell is a very competitive environment, and I think that's actually really helpful when you're getting off the ground, because you've developed a really strong work ethic," Singh said.



ERIC SUSSMAN '92

Radio-Coteau Vineyard and Winery

As an undergraduate in agriculture at Cornell, Eric Sussman became intrigued by two things: the natural process that turns grapes into wine and the importance of place—soil, climate, and natural and human-driven inputs—in the creation of any agricultural product.

In his innovative career since Cornell, Sussman has combined these two passions as the winegrower and proprietor of Radio-Coteau in Sebastopol, Calif., a small, artisanal winery that has been garnering big accolades from around the world.

Radio-Coteau is a French colloquialism for "word of mouth"—a phrase Sussman first heard while apprenticing in wineries in Bordeaux and Burgundy, France—but the literal translation is "broadcasting from the hillside."

Sussman chose the name to express his winemaking philosophy of intervening as little as possible and

NEERAJ KHEMLANI '92

Co-President, Hearst Entertainment & Syndication, and President, Hearst Digital Studios

Neeraj Khemlani covered conflicts in Haiti and Bosnia, exposed unguarded plutonium stockpiles in Siberia, and set up sting operations to purchase weapons of mass destruction in Pakistan.

But perhaps the strangest moment in his award-winning media career was having a barbecue of couscous and freshly butchered camel meat with the late Muammar Gaddafi.

In 2001, as a producer for CBS News' 60 Minutes, Khemlani convinced Gaddafi to do a series of inter-



NANCY ROISTACHER '72

Clinical Cardiologist and Echocardiographer, Memorial Sloan Kettering Cancer Center

Nancy Roistacher didn't come to Cornell planning to go to medical school—as a freshman in 1968, that was still not something women were encouraged to do.

Then almost overnight, in the middle of Roistacher's sophomore year, "it became socially acceptable."

"Two years before I applied, there were a handful of women in medicine," Roistacher said. "One quarter of my class were women, and it was the first time that was the case. We were the first generation who thought we had other options."

Roistacher specializes in non-invasive heart care and echocardiography for cancer patients and survivors. She's co-authored a dozen scholarly papers, most dealing with cardiac complications related to cancer surgery, but her primary focus is clinical patient

care. She's been with Memorial Sloan Kettering Cancer Center for almost 25 years.

"It's a very high-stress job in some respects, and it's hard taking care of critically ill patients—it's very emotional at times," she said. "But on the other hand, you can really help make people better, and patients are so appreciative."

Roistacher said her time at Cornell provided a solid foundation for medical school, but it's also provided a lifelong source of education and friendship. She and husband Wayne Merkelson '73, JD '75,

These creative alumni exemplify innovation in their fields, from broadcasting and biology, to gold and grapes.



letting the grapes speak for themselves. He doesn't add any cultured strains of yeast to affect alcoholic fermentation, instead relying on the yeast that exists naturally on the grapes and in his wine cellar. The fermented grapes—grown in organic, and some biodynamic, vineyards—are left undisturbed in barrels for 15 to 22 months and then bottled without filtration.

"The fermentation of grapes into wine is a natural process. So the philosophy is starting off with really high-quality raw materials coming from specific, cool-climate locations, and then stepping back once the raw materials are brought in the cellar and letting the natural process run its course," Sussman said. "It may differ from the norm today, but it's basically a philosophy and an approach that's been around for a very long time."

views with Charlie Rose. The setup involved back channel messages through Khemlani's sources in other countries, a surprise 3 a.m. wakeup by Gaddafi's armed guards in a Tripoli hotel, and a middle-of-nowhere meet-up at the edge of the Sahara.

"There's an RV in the middle of the desert and out steps Gaddafi in a black and white track suit and a Russian fur hat," Khemlani said.

The notoriously bizarre leader sniffed roses while ignoring the TV crew, until Khemlani approached him.

"He greets us, and then he says something to one of his guards, who immediately shoots a camel. He wanted us to try camel hump, which is a delicacy," he said. "To meet a man the U.S. called a terrorist—at the height of his tyranny—and to find him in the desert so disconnected from the rest of the world, it's quite a stunning thing."

After 14 years as a journalist for ABC and CBS, Khemlani was recruited to run Yahoo! News. In 2009, he joined Hearst to help accelerate its digital media efforts. Today, he co-heads Hearst Entertainment, where he serves on the boards of A+E Networks and Mark Burnett's production company, One Three Media.

Khemlani's media career began at The Cornell Daily Sun, where the communications major served as editor-in-chief.

met as dorm mates at Risley Hall when it first became co-ed. Both have provided service to Cornell through reunion committees, the Plantations Advisory Council, and the Cornell University Council. Roistacher is currently president of the Class of '72.

"If you want it to be, Cornell can be a lifelong association," Roistacher said. "When I think about Cornell, I don't only think about the past, I think about the future. I feel like I continually learn from Cornell and get something out of it."



THOMAS FUERST, PH.D. '85

Director, Institute for Bioscience and Biotechnology Research, University of Maryland

Thomas Fuerst's ability to innovate across disparate fields—basic science, business, government and technology development—has led to a stellar career for him and a safer world for the rest of us.

In 2004, the Department of Health and Human Services (HHS) recruited Fuerst to serve as director of vaccines and biologics in the Office of the Secretary. There, he helped the government prepare its response to bio-threats like anthrax, smallpox, botulism and pandemic flu.



"We needed to develop and manufacture medical countermeasures against these threat agents on a more accelerated, cost-effective and reliable basis," Fuerst said. "In conjunction with HHS and the Department of Defense, I helped put together a concept to engage larger pharmaceutical companies and the biotech industry to apply their technical expertise and infrastructure to help develop these new medical countermeasures against biothreat agents, in which there is limited or no commercial market."

Fuerst has worked in a variety of public and private positions, including as a scientific founder and research director of MedImmune, which was acquired by the pharmaceutical giant AstraZeneca in 2007 for \$15 billion.

His latest role is professor and director of the Institute for Bioscience and Biotechnology Research at the University of Maryland, where his goal is to help make Maryland one of the top five biotech hubs in the world.

"Cornell is a world-class organization and has such a wonderful research and teaching environment," Fuerst said. "My experience at Cornell helped instill in me the notion of what is possible if one has an idea and perseveres."

FACTS in

FIVE

Consider coriander:

...and dill, parsley, cilantro, caraway and fennel. Herbs make great companions to your vegetables, thanks to their fragrance and foliage. They multitask by repelling pests and attracting other, beneficial insects such as wasps, which feed on caterpillars and grubs. Thyme, rosemary and mint can also provide cover for ground beetles.

Perfect timing:

An aggressive invasive fruit fly, spotted winged drosophila, has wreaked havoc on berry farms across the Northeast. But don't lose hope. Late-bearing fruit seem to be the worst damaged, so one of the simplest ways to avoid the pest is to plant early maturing varieties. For blueberries, try Draper, Bluejay, Northland, Bluetta, Earliblue, Duke or Reka.

HOW DOES YOUR GARDEN GROW?

Silver bells and cockle shells may not do the trick when it comes to combatting pests, but marigold and dill might. Don't value aesthetics or food values alone—think strategically when planning your plantings. We've turned to CALS experts in integrated pest management to share five of their top tips.

Bees, please:

Vegetables don't always have the showiest flowers. To make sure bees and other pollinators can find your prize melons, plant flowers with high nectar concentrations and/or in shades of blue, yellow or white. Some choices: cosmos, larkspur, mints, sunflowers, sweet peas and zinnias.

Mix it up:

Confuse insect pests by interplanting things they love with things they won't touch. Differences in plant height, species, color and fragrance are appealing to gardeners and bad news for pests. Using a variety of plants that bloom at different times can also provide season-long food and habitat for beneficial insects.

Flower power:

Popular ornamentals from the aster family—marigolds, dahlias, daisies, asters, cosmos, calendula, coreopsis, tansy, yarrow, zinnia and sunflowers—are also great for attracting insects, both good and bad. They can pull in ladybugs and hoverflies or be used as a trap to entice aphids and thrips away from peppers and other vegetables.



Photo: Kathryn Coldren



HAPPY BIRTHDAY, DR. BORLAUG *By Stacey Shackford*

Whist-deep in wheat, Norman Borlaug paused only briefly when his wife Margaret drove up to the Mexican field and shouted across an irrigation ditch that he had won the Nobel Peace Prize.

"I was with him that day, and it is a day etched indelibly in my mind," said Ronnie Coffman Ph.D. '71. "At first Dr. Borlaug did not believe Margaret. But even after she told him, he went back to work on the wheat plants."

Now, 44 years later, Coffman returned to Mexico to pay tribute to his former mentor, the man who developed high-yielding, semi-dwarf wheat varieties that are credited with sparking the Green Revolution and saving more than 1 billion people from starvation.

Coffman was joined by nearly 600 people from 66 countries who gathered in Ciudad Obregón, Mexico, on March 22-28 to celebrate what would have been Borlaug's 100th birthday—the scientist died in 2009—with a series of meetings.

At a technical workshop organized by the Cornell-based Borlaug Global Rust Initiative (BGRI), researchers reported on developments and progress in the fight against resurgent wheat rusts.

Wheat is a key source of calories and protein for 4.5 billion people in more than 100 countries; more than 1 billion of them live on less than U.S. \$2 per day and rely on wheat as their main food.

First grown in Mexico, India, Pakistan and Turkey in the 1960s, Borlaug's varieties boosted harvests in those countries, prevented a South Asian famine and sparked widespread adoption of improved crop varieties and farming practices. They were also resistant to wheat-killing stem rust, which some consider the "polio of agriculture." However,

those varieties are now vulnerable to new strains of the disease.

Meeting attendees learned that the latest outbreak had just been discovered in Ethiopia, the largest wheat producer in sub-Saharan Africa. The pathogen—different from the Ug99 strain that originated in Uganda in 1999 and spread around the world—has already decimated more than 25,000 acres of wheat, but it was detected quickly, and the scientific community was well prepared to mobilize in response, said Coffman, vice-chair of the BGRI.

At the Borlaug Summit on Wheat for Food Security, experts focused on wheat's critical role in global food security, examined Borlaug's legacy, and discussed what needs to be done to spark the next revolution.

Cornell participants included: applied economics and management professor Robert Herdt; emeritus professor Per Pinstrup-Andersen; plant breeding professors Mark Sorrells and Susan McCouch Ph.D. '90; crop and soil sciences professor Peter Hobbs Ph.D. '72; plant pathology professor Gary Bergstrom; postdoctoral researcher Hugues Barbier; graduate students Jessica Rutkoski and Lynn Veenstra; and undergraduate Valeria San Juan '16.

"Norman Borlaug championed the development and adoption of improved varieties of wheat for smallholder farmers that were nutritionally adequate and best adapted to future challenges," Coffman said. "New technologies—including biotechnologies—must be made accessible to all the world's farmers so that nutritionally superior seeds that are well-adapted to climate change are put into the hands of farmers with limited resources."

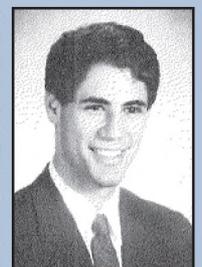


Norman Borlaug's legacy is already being borne out in the next generation of agricultural and social revolutionaries. Among them is Nosa Akol, a high school student from Binghamton, N.Y., who participated in Borlaug commemorations in Washington, D.C., and presented her research to U.S. Secretary of Agriculture Thomas Vilsack (pictured). In remarks at the USDA Borlaug Symposium, Akol spoke about how her experiences with The New York Youth Institute, the CITIZEN U program at Broome County Cornell Cooperative Extension, and other 4-H programs at Cornell like Career Explorations, quite literally set her life on a new course. An émigré from South Sudan, Akol was a participant in The New York Youth Institute, a program sponsored by the World Food Prize Foundation and IP-CALS, where she was selected to attend the World Food Prize Youth Institute in Des Moines, Iowa. Her essay, "Achieving Human Rights Through Education for the Women and Girls of South Sudan," explored how micro-farming in South Sudan can become a mechanism for helping women and young girls overcome gender-based violence, illiteracy and poverty, and it inspired her to study international policy in college. She also recently received a USDA Wallace-Carver Fellowship and will return to Washington, D.C., for a summer internship at the USDA.

There were two other Cornell attendees, Katherine Young '15, and Christian Guzman MS '10, a Ph.D. candidate in biological and environmental engineering, who presented a poster.

CORRECTION

The yearbook photo that appeared on page 31 of the Fall 2013 issue of *periodICALS*, attributed to Outstanding Alumni Award winner **Daniel Goldman** '87, was incorrect. The correct photo is included here.



MY CORNELL STORY Ronnie Coffman, Ph.D. '71

You could say that I flunked childhood because from a very early age I loved doing meaningful work. Thanks to a lot of good advice and good fortune, I have had the chance to do meaningful work for my entire life.

I grew up on a small, diversified farm in western Kentucky, where I learned to work long days. In 1953, when I was about 10, we suffered a severe drought and my father was forced to take a job in the mines. Within a couple of years, I was working alongside my grandfather and uncle, handling most of my dad's share of the farm.

A few weeks ago I celebrated my 70th birthday. It has now become apparent to me that I am probably going to flunk retirement the same way I flunked childhood.

I came to Cornell in 1967 to pursue a Ph.D. in plant breeding, having never even seen the ocean. The Rockefeller Foundation supported my thesis research under Norman Borlaug, who was working in a remote area of northwestern Mexico. I was his first Ph.D. student. Because Dr. Borlaug won the Nobel Peace Prize in 1970 while I was working with him, I was also his last and only Ph.D. student, and he remained my lifelong friend and mentor.

Upon graduation in 1971, I went to the International Rice Research Institute in the Philippines, where I spent 10 years successfully breeding rice, returning to Cornell as an International Professor of Plant Breeding in 1981. Since then, I have crossed the ocean many times, roaming the globe to advance international agricultural development. The experience has given me a unique perspective on CALS and some insight into our global future.

For more than a century, our college has been a locus of discovery. Drawing on our excellence in teaching and research, we have extended knowledge to people of other nations to such a degree that Cornell is synonymous with international agriculture and rural development. We have reached out to industry and to businesses large and small. We have reached out to people of every economic stratum and social persuasion. Mostly, we have been able to do it with public money, whether from appropriations, as was true in our earlier years, or with

competitive grants, as has been true since we passed into the era of big science.

Recently, Dean Kathryn Boor asked us to answer a crucial question: Is CALS best positioned to address the challenges of global agriculture? In terms of conceptualizing technology, I think the answer is "yes." An example in my own field of plant breeding would be the potential of the new tools of genomic selection. CALS may lead the world in developing the concepts, but we will never be able to implement the technologies on our own. We need to build lasting partnerships.

Forging partnerships has been a major thrust of our Office of International Programs for over 50 years. Perhaps the best example is our Durable Rust Resistance in Wheat (DRRW) project, where we have mobilized the global rust research community to deal with new races of wheat stem rust. This deadly plant disease is the source of the great Biblical plagues and threatens

the entire global wheat crop. The DRRW project exemplifies the scientific leadership that Cornell can bring to bear on the challenges of global food security.

Over the years, CALS and our counterparts in other states and other parts of the world have succeeded in producing more with less in an absolutely exemplary way. Over the years, we have dramatically reduced all the inputs needed to produce a bushel of corn, wheat, rice and other food grains. But we have not done an effective job of communicating this fact—what economists in our own Dyson School would call "total factor productivity."

If we are going to be more relevant in the future, CALS needs to connect with people and show them how what we do improves their lives. When I was a kid, the benefits of the science developed by land-grant institutions were self-evident. But generating knowledge for public good requires the development and adoption of new technologies and communication skills that are constantly evolving. We need to advocate more successfully on behalf of all the new life sciences—especially biotechnology—and make certain that science does not bypass the poor.



Ronnie Coffman, Ph.D. '71, is professor of plant breeding and genetics and director of International Programs at the College of Agriculture and Life Sciences. He also serves as principal investigator of the Agricultural Biotechnology Support Project, the Durable Rust Resistance in Wheat project, and the Agricultural Innovation Project. Previous positions include associate dean for research and director, Cornell University Agricultural Experiment Station; chair of the Department of Plant Breeding and Genetics, and plant breeder at the International Rice Research Institute. He was recently awarded the 2013 World Agriculture Prize for his work in international agriculture and development.

CALS UNDERGRADS BY THE NUMBERS

NUMBER OF CALS UNDERGRADUATES **3475** 

27% WILL STUDY ABROAD BEFORE GRADUATION

ENTERED CALS AS:
FRESHMEN TRANSFERS

80%  **20%**

UNDERREPRESENTED STUDENTS

24%

29 NUMBER OF INTERNATIONAL EXCHANGE PROGRAMS FOR CALS STUDENTS



in Argentina, Australia, Austria, Canada, Chile, China, Denmark, Ecuador, France, Germany, Ireland, Italy, Netherlands, Singapore, Spain, Sweden, Switzerland, United Kingdom.



7% INTERNATIONAL STUDENTS

CITIZENS OF **83** COUNTRIES



NUMBER WITH FELLOWSHIPS FROM:

137

CORNELL TRADITION
(for integrating work experience, public service, and academic achievement)

62

HUNTER R. RAWLINGS III
CORNELL PRESIDENTIAL RESEARCH SCHOLARS
(for research in collaboration with faculty mentors)

47

MEINIG FAMILY CORNELL NATIONAL SCHOLARS
(for outstanding leadership)

NUMBER WHO HAVE RECEIVED ACADEMIC CREDIT FOR:
CREATING AN INDEPENDENT STUDY **386** PARTICIPATING IN UNDERGRADUATE RESEARCH **530**

21 Majors

Agricultural Sciences

Get a broad overview of agriculture, as well as more intense study and hands-on experience in one of five concentrations: animal science; crop production and management; sustainable agriculture; business; education and communication.

Animal Science

Prepare for study in veterinary medicine or careers in animal production, biotechnology, and conservation, in a program that has been nationally recognized in animal breeding and genetics, nutrition, physiology, growth, behavior, and dairy management.

Applied Economics & Management

The Charles H. Dyson School of Applied Economics and Management provides management education and the opportunity to specialize in accounting; agribusiness management; applied economics; entrepreneurship; environmental and resource economics; finance; food industry management; international trade and development; marketing; or strategy.

Atmospheric Science

Examine the behavior of weather and climate, and gain experience in the analysis, interpretation, and forecasting of meteorological events.

Biological Engineering

Integrate engineering and biology to solve some of the challenges facing our world, such as ensuring an adequate and safe food supply, protecting natural resources, and developing systems that monitor, replace, or intervene in the mechanisms of living organisms.

Biological Sciences

Study the fundamentals of biology while concentrating on: animal physiology; biochemistry; computational biology; ecology and evolutionary biology; genetics, genomics and development; insect biology; marine biology; microbiology; molecular and cell biology; neurobiology and behavior; human nutrition; plant biology; and systematics and biotic diversity.

Biology & Society

Examine the social, political, and ethical aspects of modern biology, research, and practice.

Biometry & Statistics

Apply statistics, mathematics, computing, and other methods to solve problems in diverse fields, from the life and social sciences to business and finance.

Communication

Study communication processes and put theory to use in understanding audiences, shaping messages, and interacting with individuals and technologies. Focus areas include: communication, environment, science, and health; communication media studies; communication and information technologies; and communication and social influence.

Development Sociology

Contribute to understanding societal development and factors to solve social problems, both local and global, in a program that is well known for international, domestic, rural, environmental, agricultural, and population studies.

Entomology

Get an education in biological and environmental sciences, with a special emphasis on insects—the most diverse group of organisms on Earth. The Department of Entomology was the first of its kind in the U.S., and remains one of the largest programs in the nation.

Environmental Engineering

Prepare for careers in the technical management of natural resources, including work in water, soil, and air quality, in a program that incorporates engineering and the study of the natural environment.

Environmental Science & Sustainability (Science of Natural and Environmental Systems)

Gain a comprehensive and integrated view of the biological, physical-chemical, ecological, and social dimensions of environmental and natural resource issues. Concentrations include: environmental biology and applied ecology; environmental policy and governance; environmental economics; biogeochemical sciences; or a student-designed concentration.

Food Science

Explore food systems from processing and packaging to distribution, evaluation, and safety, and solve real-world problems by combining chemistry, microbiology, nutrition, and engineering. Focus on food science or food operations and management.

Information Science

Examine the cultural, economic, historical, legal, and political contexts in which information systems are employed and understand their impact on individuals and institutions. Areas of study include: human-centered systems; social systems; and information systems.

International Agriculture & Rural Development

Learn about the challenges and opportunities that exist in less-developed countries, with concentrations in economics and development; agricultural and food systems; and environment and ecosystems. Overseas experiences and studies are incorporated into the major.

Landscape Architecture

Design outdoor areas including parks, restored wetlands, urban plazas, historic sites, and botanical gardens. Also work in urban development, land use planning, conservation, historic preservation and ecological designs.

Nutritional Sciences

Understand relationships among human health and well-being, food and lifestyle patterns, food quality and agricultural systems, and social and institutional environments, while drawing on chemistry, biology, and social sciences. Focus on: human nutrition; community nutrition; international nutrition; and molecular nutrition.

Plant Sciences

Study the biology, growth and development of plants, as well as the use of plants for food, fiber and ornamental purposes. Concentrations include: evolution, systematics and ecology; plants and human health; plant genetics and breeding; plant physiology and molecular biology; and sustainable plant production and landscape management.

Science of Earth Systems

Build the foundation for the future management of our planet by studying the Earth's system, with a focus on understanding and managing the resources of the lithosphere, biosphere, hydrosphere, and atmosphere.

Viticulture & Enology

Prepare to become a leader in the wine industry. The program includes coursework in grape growing, winemaking, vineyard development, economics, and management.

CHANGE SERVICE REQUESTED

1 SNODGRASS
& Wigglesworth is a club in which department?

2 IRON LADY, Stars & Moons, HoneyNut, and Silver Slicer are varieties of what fruits or vegetables developed in Plant Breeding & Genetics?

3 GREG GRAFFIN of the punk band Bad Religion is a lecturer in which department?

4 WHAT is Professor Bob Baker known for inventing?

5 WHAT SEED got stamped and mailed directly to Plant Biology in the 1930s addressed to the "Chief Palmist"?

6 WHAT is the name of the fiberglass cow and her calf that reside in Stocking Hall?

7 WHERE did the tiles in the entryway of the newly renovated Warren Hall come from?

8 SVANTE MYRICK graduated from which department?
Ithaca mayor

CAL'S FUN FACTS QUIZ
How well do you think you know CALS?
...find the answers -and more questions- on page 35