The LAND GRANT LEGACY

The Past, Present, and Future of the Land Grant University
EVOLUTION OF THE LAND GRANT MISSION
On the 150-year anniversary of the Morrill Act, CALS reflects on the modern land grant mission.

FROM LAND GRANT TO WORLD GRANT
After more than a century in service to New York farmers, CALS is also becoming the land grant to the world.

HELP WANTED: JOBS OF THE FUTURE
What skills will be in demand in coming decades? Baby boomers with extreme longevity, a new-media ecology and our globally connected world are reshaping the jobs forecast.

DEPARTMENTS
DEAN’S MESSAGE
AROUND THE QUAD
IN THE MARKETPLACE
AROUND THE AFFILIATES
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ENDNOTE

ON THE COVER:
Senator Justin Smith Morrill, sponsor of the Morrill Act, which launched the U.S. land grant college system.

INSIDE:
Photos from the archives paired with recent photos show both change and continuity in the work of CALS.

Photos: Cornell Plant Pathology Herbarium, the Cornell Chronicle, and the Cornell Library Division of Rare and Manuscript Collections.
This year marks the 150th anniversary of the Morrill Act. By establishing the United States land grant university system, it opened the doors of higher education, specifically emphasizing the goal of educating our citizens across the full socioeconomic spectrum, with a focus on providing practical instruction in the context of a liberal education. Today’s challenges reinforce the relevance of our land grant system to our nation of consumers, commuters, and technophiles. As we as a society grapple with food security, energy, and a deluge of information, the need for an educated, adaptive, and engaged citizenry is more important than ever.

This transitional moment for higher education is redefining the nature and the context for teaching, research, and outreach. How is the College of Agriculture and Life Sciences responding? This issue of periodiCALS is dedicated to what it means to be a land grant college today. “Evolution of the Land Grant Mission” (page 10) reflects on the history of the land grant mission and its current role at CALS, and “Help Wanted” (page 18) forecasts the jobs of the future for CALS graduates.

Globalization touches nearly every aspect of our daily lives—money, media, politics, even the food we eat. The 21st century land grant university must be international in scope. To prepare our graduates to be effective global citizens, we must equip them to live and work in a world with problems that transcend national boundaries. Find out about our emerging position as a “land grant institution to the world” in the feature “From Land Grant to World Grant” (page 14).

Complex challenges call for comprehensive solutions that incorporate insights from several fronts. Our faculty work across disciplines to develop innovative, integrative responses; the photo feature “The Fine Art of Research” (page 20) provides some inspiring examples in profiles of our newest faculty.

Members of the CALS community embrace the land grant mission every day in their own way. Undergraduates featured in the Student pages are sharing their love of insects and practicing organic viticulture (pages 8 and 9). Alumnus John Noble ’76 is redefining sustainable farming through his innovative energy projects (page 27), and the entrepreneurial alumni featured in “Generations & Innovations” are changing the way we eat. In the Endnote essay (page 36), Ithaca mayor Svante Myrick ’09 shares how CALS’ land grant mission led him to pursue public service.

I invite you to share your own thoughts and experiences of what the land grant mission means to you through our online feature at periodicals.cals.cornell.edu/land-grant.

The land grant mission resonates deeply within me. I have pursued my entire higher education at land grant institutions, and the concept of “knowledge with a public purpose” has defined my scientific career. In my role as dean, I am committed to positioning the college to be a key contributor to our community, whether that community exists in Ithaca, N.Y., or around the globe. Please join me. Together we can ensure the land grant mission remains relevant throughout the next 150 years—and beyond.

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

In early September, Dean Boor met with growers and staff at the Hudson Valley Laboratory, one of many properties in the CALS portfolio throughout New York. Dean Boor is pictured with young growers who joined her to discuss new models for partnerships between CALS and growers in the region.
SOCIAL SCIENTISTS LOOK AT GLOBAL ‘FEEDING FRENZY’ FOR LAND

Victims of the U.S. real estate slump may not feel it, but there’s a worldwide land rush afoot. Nations, corporations, and private investors are buying enormous tracts of land around the world at a rate up to 20 times faster than in previous years, vying for new places to source water, food, and biofuels.

The Contested Global Landscapes project led by Wendy Wolford, the Polson Professor of Development Sociology, and Charles Geisler, professor of development sociology, will collaborate with a group from Cornell’s Institute for the Social Sciences to analyze the financial, political, and legal implications of this trend over the next three years.

The issue will also take center stage at the upcoming Second International Conference on Global Land Grabbing, which will be held Oct. 17-19 at Cornell, with expected participation from 200 scholars from around the world and a keynote address by José Graziano da Silva, director-general of the United Nation’s Food and Agriculture Organization.

“We’re expecting some big ideas to arise from this group project.”

“Large-scale land deals are radically transforming property, governance, political economy, and livelihoods around the world,” Wolford said.

The eight-member team will take diverse angles on the land deals, including new land policies in China, forestry resources and “sea-steading” (living in permanent dwellings on the oceans beyond international jurisdiction), land claim negotiations, and “South-South” land deals, particularly Brazil’s investments in parts of Africa.

“We’re expecting some big ideas to arise from this group project,” Geisler said. “The larger context is critical to understanding shrinking ‘global hectare’ trends as well as the precarious state of everyday people dependent on lands in the global South.”

Members of the ISS Contested Global Landscapes Team. Front row, left to right: Wendy Wolford, Sara Pritchard. Back row, left to right: Steven Wolf, Paul Nadasdy, Raymond Craib, Nancy Chau, Jon Parmenter and Charles Geisler.
PAY A VISIT TO THE NEW CALS WEBSITE

Although the address is the same, the College of Agriculture and Life Sciences’ home on the web has been completely renovated. The website has a new, streamlined look backed by a user-friendly architecture.

“It was built with you in mind, whether you’re a prospective student, a grower looking for extension resources, or an alumnus wanting to stay connected,” said Elizabeth Braun, assistant dean of communications. “We hope the new format will comprehensively promote the spectrum of CALS and keep important information within a few clicks away.”

The core site launched August 1, with features including quick links for students, staff, faculty, and alumni; daily events and news; and direct links to admissions, academics and research, outreach and extension, and campus life. The next phase, which will update department, major, and unit websites, will be completed this winter.

“The new format was developed with input from the CALS community using surveys, peer site assessment, and focus groups,” Braun said. “This resulted in an architecture that will allow for the seamless integration of additions as programs grow and departments get involved in web publishing.”

PREGNATAL CHOLINE FOR LONG-TERM HEALTH

Pregnant women may have added incentive to bulk up on broccoli and eggs: More choline during pregnancy can reduce a fetus’ response to stress and could cut a child’s chances of developing hypertension and diabetes later in life. In a 12-week study led by Marie Caudill, professor of nutritional sciences, pregnant women who consumed approximately double the recommended 450-mg daily intake of choline in their third trimester had babies with 33 percent lower concentrations of cortisol—the hormone produced in response to stress that also increases blood sugar—compared with a control group of pregnant mothers taking the recommended daily amount. Choline is a major supplier of methyl (CH₃) groups, which can attach to targeted regions of the genome and affect the level of a gene’s expression. Caudill credits the extra choline during pregnancy with easing the baby’s response to stress through changes in the methylation and expression patterns of the genes that regulate cortisol, which would be expected to reduce the child’s lifetime risk of stress-related diseases.
HAWKMOTHS USE HUMIDITY TO LOCATE NECTAR

Flower scent, color, and shape are not always honest advertisements of nectar availability. Professor of neurobiology and behavior Robert Raguso and his former post-doctoral researcher Martin von Arx found that hawkmoths can sense the slight rise in humidity caused by the evaporation of nectar at a distance of one tongue-length, allowing these discriminating consumers to maximize their sweet payoff for pollination.

THE TOMATO GENOME DECODED

The 35,000 genes of the tomato genome have been decoded by an international consortium, including a U.S.-based sequencing team led by adjunct professor of plant biology James Giovannoni, a scientist at the Boyce Thompson Institute for Plant Research and the U.S. Department of Agriculture. According to Giovannoni, it’s a giant leap toward improving the yield, nutritional value, disease resistance, and taste of the tomato.

BREEDING BETTER BIOFUELS

The commercialization of shrub willow as a bioenergy crop could be years closer thanks to a $1.37 million grant from the U.S. Department of Energy. The project, led by associate professor of horticulture Larry Smart ’87, will identify the genes that trigger vigorous growth and biomass production in willow hybrids.

GETTING THE KNACK OF ‘NATURALIST OUTREACH’

Fifteen years ago, Linda Rayor, senior research associate and senior lecturer in entomology, started the Cornell Naturalist Outreach Speakers Bureau, a program that sends undergraduates and graduate students into local K-12 classes to give free, experiential natural history and ecology presentations. Bureau members learn the art of communicating science with passion and clarity from Rayor, a host of the Science Channel’s “Monster Bug Wars,” in her Naturalist Outreach Practicum course.

To date, she and 252 Cornell students have given 1,855 presentations and reached more than 41,000 people in individual presentations and 30,100 in large outreach events. Surveys indicate that over 36 percent of former bureau members have gone on to become teachers, taken leadership positions in existing outreach programs, developed their own programs, or redirected their careers into non-traditional areas of science education.

Rayor and naturalist outreach members, in association with New York State 4-H programs, have also produced classroom-ready videos and presentation guides on topics such as reptile diversity, how mammals avoid predators, and using cues from mammal skulls to understand what they eat.

More: http://www.cornell.edu/video/naturalist-outreach/

STUDENT-RUN FARMERS’ MARKET BRINGS LOCAL PRODUCE TO AG QUAD

By Rebecca Harrison ’14

Teaching assistant Daniel Green ’13 and John Dyson Professor of Consumer Behavior Brian Wansink challenged an interdisciplinary group of students to consider entrepreneurship opportunities in fresh food and nutrition on college campuses. Their solution—the Farmers’ Market at Cornell—is now in its second season.

James Critelli ’13, Audrey Boochever ’13, and Katerina Athanasiou ’13 collaborated with more than 50 volunteers to bring the market to fruition.

“I love it because it’s the only place on campus where you can go with friends and professors to eat a local hotdog and grab local veggies, all while listening to someone play the ukulele!” explained Boochever.

This market features 17 vendors, ranging from Dilmun Hill Organic Farm to Xeo Vietnamese cuisine.

More: www.rso.cornell.edu/farmersmarket/index.php
In a few years, Cathy Gaffney ’89, director of specialty cheese, delicatessen, and kosher deli for Wegmans Food Markets, hopes that shoppers will still find a distinctive and diverse cheese selection—but with a greater number of labels that boast “Made in New York.” To make this a reality, Wegmans is funding a three-year pilot program at Cornell to bolster training in artisan cheese making around the state.

“This strategic partnership with Wegmans will help us deliver on agriculturally based economic development for New York,” said College of Agriculture and Life Sciences Dean Kathryn Boor. “We have been looking for the right opportunity to partner, and we concurred that by taking on this project together we could have a significant impact on artisan cheese production in the state.”

Wegmans is the principal funder of the program, which will include the hiring of a new, dedicated artisan cheese extension associate position in the CALS Department of Food Science. The artisan cheese curriculum is intended to serve entrepreneurs in addition to the state’s many large cheese producers.

“We are very excited about the opportunity to work with Wegmans to boost the artisan cheese industry in New York,” said Martin Wiedmann, Ph.D. ’97, professor of food science. “This gift not only strongly demonstrates Wegmans’ commitment to the development of local food systems, but it is also a reflection of Cornell’s strength in cheese making and dairy extension.”

Cornell currently offers certificate programs in basic dairy sanitation and safety, fluid milk processing, yogurt and fermented products, and cheese production. The new extension associate will allow the program to expand its offerings in artisan cheese making, which is an important—but demanding—niche.

“The number of artisan cheese producers is growing by leaps and bounds, and we need to support that industry,” said dairy extension specialist Rob Ralyea, M.S. ’98. “Making a great, aged artisan cheese is an art, but it takes practice, science, and knowledge.”

“What matters more than the quantity is cheese makers who can work with us to meet our retail needs, such as altering their product size or quality characteristics, such as a cheese’s acidity.”

“What sets an artisanal cheese apart is the expertise of the cheese maker, who can adeptly adjust the recipe in response to differences in the milk. The milk chemistry may vary from day to day because of what the cows are eating at that point in the season, for example,” Gaffney said.

Gaffney, who grew up on a dairy farm and is a former Dairy Princess, is passionate about creating a New York cheese culture rivaling that of Vermont and Wisconsin, starting with increasing the number of Wegmans’ house-brand cheeses made entirely in-state.

“This is a shining example of how collaboratively developed business partnerships can help CALS deliver on the land grant mission of the university,” said Joseph Vinciquerra, director of corporate and foundation relations for CALS. “We are excited to begin our work with Wegmans right away.”
NEW APP CONNECTS SHOALS RESEARCHERS

Two million viewers worldwide watched the Cornell Lab of Ornithology’s live BirdCams this spring as a pair of great blue herons raised their family above Sapsucker Woods Pond and as three young red-tailed hawks hatched, grew, and finally fledged from the nest of “Big Red” and “Ezra” on the Cornell campus. With 24/7 streaming and panning cams, viewers caught rare glimpses of nighttime courtship, eggs hatching after a snowstorm, and the inspiring dedication of parents, whether defending the nest from great horned owls or delivering fish, chipmunks, and other fare to young that visibly grew each day.

More: periodicals.cals.cornell.edu/bird

PLANTATIONS PILOT PROGRAM AIMS TO CURE ‘PLANT BLINDNESS’

Do you have “plant blindness,” seeing landscape greenery as just background and decor? A summer pilot program, Plantations Environmental Education Program for Sustainability (PEEPS), gave high school students an appreciation of their integral role in our ecology and community.

“Our goal is to engage local high school students in a participation-based program that will raise ecological awareness and teach skills that will cultivate an environmental ethic for future actions,” said Donna Levy ’81, environmental education outreach coordinator at Cornell Plantations. “My sense is that we are asking young people to save the environment, when they may not even be sure what they’re saving. Environmental appreciation, I think, is quite appropriate.”

The six-week summer program continues through fall as students explore pressing environmental issues through the lens of an on-site project: a sustainable backyard demonstration garden.

“The backyard can be thought of as a metaphor for your lifestyle,” Levy said. “What do you do in your backyard? And, so, how does that impact the environment? And how does what you do in your life—or your backyard—connect you to your community?”

MANN LIBRARY EXHIBIT CATERS TO FORAGERS

Throughout human history, wild foods have sustained the hungry and delighted the connoisseur. The Mann Library exhibit “Beyond the Garden Gate: Wild Foods from Page to Plate,” which opened reunion weekend, celebrated both the lore and natural history of foraged foods.

“The exhibit was a response to recent, renewed interest in wild food and the very active, web-based community of foragers across the country,” said Liz Brown, Mann Library outreach specialist and exhibit curator.

From historical illustrations and recent books from Mann’s collections, visitors learned about wild foods including fiddlehead ferns, May apples, and cattails.

“One intriguing lesson of the exhibit is that many of the plants in the exhibit are truly ‘feral’ rather than wild,” said Brown. “Many were deliberately introduced by European settlers as medicinal plants, and they persist as weeds waiting to be harvested.”

The exhibit was funded by the Bondareff Family Fund for Mann Library, the Elizabeth (Betty) L. Rowley Fund at Mann Library, and the Mann Library Excellence Fund.

More: periodicals.cals.cornell.edu/mann
GENEVA SUMMER RESEARCH PROGRAM BRINGS SCIENCE CAREERS INTO FOCUS  By Sarah Thompson

In 2009, plant pathology and plant-microbe biology (PPPMB) faculty members Christine Smart, Harvey Hoch, Marc Fuchs, and Herb Aldwinckle spearheaded a grassroots effort to provide undergraduate science students the opportunity to explore the plant sciences through hands-on field and lab work. The gamble paid off; in three years the Geneva Summer Research Scholars program has grown from eight students to 28, boasts three Cornell graduate students who were former scholars, and is self-sustaining thanks to participation from the Departments of Horticulture, Entomology, and PPPMB.

“The faculty bought into the program because we select good scholars,” said program co-organizer Herb Aldwinckle. “The students are here because they truly want to be.”

This summer, students spent nine weeks at Cornell’s New York State Agricultural Experiment Station in Geneva working on what Smart described as an “incredibly diverse” set of projects in plant pathology, horticulture, and entomology. Most focused on important regional crops like grapes, cabbage, and apples and the diseases and pests that can damage them.

The 2012 cohort included students from across the United States, and for many, this was their first taste of field work. Jane Petzoldt, a biology and environmental studies major from Wesleyan University in Connecticut, worked on a joint entomology and horticulture project to identify which genes in the shrub willow—a plant being developed as a regional biofuel—provide it with resistance to damage from the potato leafhopper, a common pest. Ashley Williams, a plant science major from Southern University in Louisiana, examined the effects of extreme cold and hot temperatures on the fungus that causes grape powdery mildew, and Tyler McCann, a botany and geography major from the University of Florida, studied how light exposure affects fungal growth and spore production on grape leaves.

“This was my first summer research program,” McCann said. “It was a phenomenal experience to go from the lab to seeing the applied aspect of disease control in the vineyard.”

Putting theory into practice is central to the scholars’ program experience. Eight field classes introduced them to farmers, extension agents, and how their work makes a difference on the ground. The program also gives scholars full ownership of their projects: They are responsible for background research as well as data collection and analysis, and they present their findings to faculty, graduate students, and each other during a poster session at the program’s end.

The program’s organizers do not measure success by research alone but also by the impact they have on young scientists.

“We wanted to attract undergraduates from across the country, to offer them opportunities to learn about plant diseases and research, and for them to learn about career paths,” said Fuchs, program co-organizer. “This program is a fantastic opportunity to explore the possibilities.”

The inherent value in that opportunity—for scholars, graduate student mentors, faculty, and the future of the scientific field—is why Smart, Fuchs, and Aldwinckle call it a “win-win situation.”

GOODNESS GRAPENESS! STUDENT-RUN VINEYARD IS CERTIFIED ORGANIC  By Craig Cramer

A student-run vineyard at the Cornell Orchards is now certified organic by the Northeast Organic Farming Association of New York, LLC. The planting of about 500 grapevines—enough to produce over 200 cases of wine—is used in the course Sustainable and Organic Grape and Wine Production taught by assistant professor of viticulture Justine Vanden Heuvel and food science lecturer Kathy Arnink.

“To our knowledge, we are the only university in the country with a student-run organic vineyard. Organic viticulture is growing quickly in the U.S., but it’s really taken off in Europe, so this will help our graduates gain firsthand experience with these practices.” – Justine Vanden Heuvel
BUGGY FOR BUGS: STUDENT GROUP SPREADS ENTHUSIASM FOR INSECTS

By Amanda Garris, Ph.D. ’04

A student group is bringing insect appreciation to the community, one cockroach, butterfly, and mantis at a time. The undergraduate entomology club Snodgrass and Wigglesworth, which takes its name from two of the most influential entomologists of the 20th century, is now in its seventh year.

“We want to bring bugs into the community to foster a greater understanding and appreciation of insects and their kin in the Cornell and Ithaca communities,” said Ryan Reynolds ’13, president.

To accomplish this, ‘Snodwigg’ go on regular collecting trips to supply fresh specimens for entomology classes, camp out during insect expeditions in the middle of winter, and trek across campus to win converts with their bug displays.

The group assists with the Insectapalooza Insect Fair, the Cornell University Department of Entomology’s annual open house event, which will be held this year on Oct. 20 in Comstock Hall. Their interactive exhibits, including exotic beauties for the butterfly room, a cockroach racetrack, and aquatic bugs from local ponds, can elicit squeals of delight, disgust, or fascination.

Although in past years the group has served up waxworm stirfries and chocolate chip cricket cookies, this year they are offering a more familiar entomological treat. For a fall fundraiser, the Snodwigg will be selling honey donated by the research program of associate professor of entomology Nick Calderone.

CAREER TRAINING IN CALS CREATES OPPORTUNITIES

By Jennifer Pierre ’13

With high unemployment rates for recent college graduates, even ambitious Cornell students may have trepidation about entering the workforce. CALS students have access to mentorship and training programs that offer workshops, advice, and even a bit of encouragement for their career paths.

The Extern Program, run by Cornell Career Services, gives sophomores, juniors, and seniors an inside look into a day in the life of a specific career related to their major. Externs shadow a professional for one or two days during winter or spring breaks.

They may find themselves attending executive board meetings or working in Olympic National Forest, with ample opportunities to quiz professionals about their career paths. Many of the mentors are Cornell alumni who want to foster the Cornell connection.

David H. Nelson ’82, managing editor of Conservationist magazine, has offered extern program participants the chance to meet a real editorial board and join in conference calls, and Linda Stillman ’74, a United Nations consultant, meets with students at the Cornell Club in New York City each year.

Alumni are the core of the Communication Department’s Job CAMP (Communication Alumni Mentoring Program), which since 2010 has annually hosted an advisory board of highly talented and successful Cornell alumni from communication-related fields. This year’s all-star team included the chief research officer of Viacom, vice president of legal affairs at Showtime, and an Oscar-winning producer.

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“While it would be informative for the students to hear the alumni lecture, we wanted something different,” said Lee Humphreys ’99, Job CAMP co-organizer and assistant professor of communication. “Our focus is on integrating more interactive and unique activities.”

Along with Communications alumni events coordinator Aimee Woodruff, M.B.A ’04, Humphreys helps connect students with alumni during the daylong affair held each April. The timing is strategic: the skills learned by attending juniors and seniors can be immediately applied to spring job interviews. The day starts off with a one-on-one resume workshop where students receive direct feedback from members of the board.

“We want to make this more exciting and enhance the undergraduate experience,” Woodruff said. “When students leave Job CAMP, we want them to leave knowing their department and degree will open doors.”

A degree may help a student get a job, but succeeding in a global economy demands additional skills, which students in the Dyson School of Applied Economics and Management can develop in the Business Opportunities in Leadership and Diversity (BOLD) program. Headed by Dyson School director of diversity programs Cindy van Es, BOLD offers a two-year leadership certificate program, a speaker series, and a general diversity program that works closely with minority students on campus.

“We’re trying to enhance the skill set of students and add skills they don’t get in the classroom,” Van Es said. “BOLD participants develop presence, eloquence, and confidence.”

From the speaker series—which is open to all Cornell students—to the elite leadership program limited to 20 sophomores, the BOLD program promotes students’ development into ethical leaders. BOLD is training future business leaders who will promote an inclusive environment while safeguarding business practices that are economically, socially, and environmentally sustainable.
In the 1850s, half of all Americans lived on farms, hay was the state’s leading crop, and “book farming” was no compliment. In the next decade, the passage of the Morrill Act in 1862 and the subsequent establishment of Cornell as New York’s land grant college in 1865 elevated agriculture to the same academic rank as language, history, and philosophy. The act firmly aligned higher education with the public good, establishing a land grant ethic that still thrives in the College of Agriculture and Life Sciences today and drives the land grant mission into new frontiers.

EARLY DAYS
The Morrill Act granted each state a parcel of federal land to sell to establish at least one college “to teach the branches of learning related to agriculture and the mechanic arts … in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life.” At Cornell, the early years were marked by vigorous debates about the agricultural mission within New York’s land grant. Was it to teach would-be farmers to think like scientists or to educate the sons of farmers how to farm? To engage in research that would improve farm productivity or assess the miraculous claims of commercial feed additives and fertilizers? By the early 1900s, the land grant mission would firmly encompass three areas: education, extension, and research.

By 1869, only four years after the university was founded, professors had already begun an informal extension program through lectures and farm visits. By 1882, undergraduate students could study in five agricultural disciplines: applied agriculture, agricultural chemistry, economic entomology, horticulture, and veterinary science. The earliest research bulletins, dating to 1888, show researchers engaged with topics from growing greenhouse tomatoes to expediting the separation of cream from milk.

Starting in 1892, a special winter session—with no admission requirements—offered young farmers instruction in subjects like poultry husbandry and vegetable gardening. By 1902, Cornell had extended the reach of its extension program with a three-year home study program for farmers, and its counterpart, The Farmers’ Wives’ Reading Course, was a landmark in outreach to women. By the turn of the century the land grant mission had sturdy roots and statewide influence.

Times have changed: Today’s society is predominantly urban and technologically advanced, and we rely on globally interconnected food and fuel systems. Agriculture research remains at the core of CALS, but the initial five courses of study have matured into 20 academic departments and the Dyson School of Applied Economics and Management. Departments such as Communication, Biological Statistics and Computational Biology, and Neurobiology and Behavior have expanded the boundaries of the land grant mission, and the next generation of scholars is taking CALS research not only to fields and forest but also to streets and schools.

URBAN EXPANSION
The expansion to urban areas is one of the most significant extensions to the land grant mission in the last 150 years. From the persistent plague of cockroaches to the current epidemic of bedbugs, entomologists have long found their
expertise in demand, and innovations like the compaction-resistant soil mix for street tree roots developed by horticulture professor Nina Bassuk have brought science to sidewalk shade.

Climate change is bringing urban natural resources sharply into focus. Many cities have begun large scale tree planting initiatives like New York City’s Million Tree Project, but growing the urban forest requires an army of volunteers and residents to provide water—15 to 20 gallons per week—to young trees.

Christine Moskell, a graduate student in Natural Resources and a 2012 EPA Science to Achieve Results (STAR) Graduate Fellow, has noted that city planners and residents don’t always see eye to eye about tree plantings. Planners anticipate the improvements in air quality and temperature from shade trees, but some residents may be angered by street tree plantings because of future financial and legal costs, including cracked sidewalks from roots and property damage from falling branches.

“If residents are not involved in the tree planting process, tree survival suffers,” Moskell said. “My research will look at the relationship between property owner involvement in tree planting, their willingness to steward the trees, their satisfaction with the trees afterwards, and tree survival rates in communities across the state.”

Her project is just one example of how the land grant mission has spread well beyond its rural beginnings and blends social science with biological science. In 2017, the land grant mission will begin to set down concrete roots in the city, with the opening of CornellNYC Tech, on Roosevelt Island in New York City.

REACHING NEW AUDIENCES

While farm families were the first land grant clientele, the modern land grant mission serves the public at large. Today, scientists and scholars at Cornell collaborate with and offer programs useful to diverse audiences, including entrepreneurs with new products, policymakers wrestling with the municipal impact of climate change, and farmers in developing countries struggling with new pests. Land Grant Fellow Rebecca Robbins, a graduate student in Communication, is taking aim at a very drowsy demographic: the sleep-deprived adolescent.

According to Robbins, teens need on average 9¼ hours of sleep per night for proper endocrine function, weight management, and development. Many get far less.

“If you listen to the people in line for coffee in high school, many are telling battle stories about how they pulled all-nighters,” she added. “The perception is often that if you’re sleeping enough, you’re lazy, and this can result in negative health behaviors proliferating across friend networks.”

Robbins suspects the social impact of communication is an important piece of the puzzle. Using models from psychology to understand how people process messages, she is studying how high school students communicate about sleep to identify promising strategies for promoting good sleep behaviors among teens. Her sleep education program will be tested in several high schools in Tompkins County as part of the larger land grant mission to promote health and wellbeing of families and young people in the community.

INNOVATION IN EXTENSION

Translating research results into practice has always been central to the land grant mission. Early efforts attempted to spread research results beyond a day’s carriage journey, sometimes with a missionary zeal.

“The results of the experiment station work must be carried to every farmer’s door; and if he shuts the door, they must be thrown in the window,” wrote Liberty Hyde Bailey, the first dean of Cornell’s College of Agriculture, in his 1896 annual report on the Agricultural Experiment Station.

Innovative extension efforts included a train that functioned as a mobile classroom and traveling expo as it plied the tracks from Brockport to Watertown to Poughkeepsie. Today, extension experts are harnessing new technologies, from handy apps to webinars that bring the classroom to the convenience of home, no broken windows required.

Recent examples include Rust-Tracker,
which is monitoring 42 million hectares of wheat in 27 developing countries for the virulent wheat rust disease, and a Whale Alert app that alerts ships to the presence of endangered right whales in their shipping lane. However, the challenge of using new media well has spawned a new field—understanding how these communication technologies can best be used to reach new audiences—and it drives the research of Land Grant Fellow Liz Newbury, also a graduate student in Communication.

“It’s a big task to understand the norms of interaction for particular social media,” Newbury said. “For example, Facebook fosters person-to-person contact, while Twitter is where people go for up-to-the-minute news. To capitalize on the strengths of each, you have to understand the expectations, perceptions, and motivations of the users of social media.”

Newbury is harnessing this information to develop a new media training program tailored to the needs of Cornell Cooperative Extension educators for collaboration, reaching new audiences, and answering questions. In the age of new media, technological literacy is a critical part of effective land grant extension, teaching and research.

SMART TECHNOLOGY, SMARTER DECISIONS

Only a few years after the Morrill Act, the first steam-powered tractors were tested, which would eventually revolutionize U.S. farming. Technology development was embraced as part of the CALS land grant mission, and today, CALS-produced technologies run the gamut from new plant varieties and biocontrol strategies for insects to a nanoscale biosensor to detect toxins and pathogens. They are joined by a new breed of technologies that are not for control or detection, but for making decisions.

Recent efforts include Review Skeptic software, developed by Jeff Hancock, associate professor of communication, with Claire Cardie, professor of computer science. Review Skeptic uses language models to detect phony online hotel reviews with nearly 90 percent accuracy. The CALS New York State Center for Rural Schools recently released three data analysis tools—Budget Playground, School Benchmarker, and Reorganizer—that allow school officials to instantly create scenarios and projections based on real education data with the click of a mouse or touch of a screen.

Another example is the work of Land Grant Fellow Shadi Atallah, a graduate student in the Dyson School of Applied Economics and Management, whose work draws on biology and economics to provide a hand-held, customized advisor on managing a global vineyard disease. Grapevine leafroll virus spreads from vine to vine via an insect vector, decreasing vine yields and reducing fruit quality over time.

His goal is to generate an online bioeconomic tool that will be as straightforward as the disease is stealthy. Vineyard managers will be able to include parameters specific to a vineyard block, such as the number of infected vines, their ages and locations, how fast the disease is spreading, and the price for the grapes, and then “play it forward” in time to see how the disease will spread and the hit they’d take on their bottom line if they do nothing to manage it.

“It’s quite a departure from situations where we are limited to leaflets or PowerPoint presentations that outline general recommendations,” Atallah said. “The growers are savvy and they have access to technology. This will empower them to make decisions based on their specific vineyard situation.”
“The modern land grant mission includes the discovery, dissemination, and application of new knowledge in the life sciences, community and economic vitality, food and energy systems, and the environmental sciences. In all facets of our mission, the College of Agriculture and Life Sciences honors the past, is engaged in the present, and aims to shape the future.” —Kathryn Boor, Dean of the College of Agriculture and Life Sciences

THE NEW SMALL FARM

With seven million farmed acres producing more than $4 billion worth of food, feed, fiber, and fuel, New York is still an agricultural state. Elements of the original core mission to improve farm productivity are going strong today, including plant breeding, managing diseases and pests, animal husbandry and food chemistry, but with a new emphasis on sustainability and global food systems. A major difference today is in the training of farmers themselves, many of whom are not the presumed “farmer’s sons” of the early land grant years: They are new to farming.

The teaching of skills to new farmers—from growing salad microgreens to guerilla marketing—is a mantle the Cornell Small Farms Program assumed in 2005 with the Northeast Beginning Farmers Project.

“Because of the aging demographics among U.S. farmers, Secretary of Agriculture Tom Vilsack has set a goal of recruiting 100,000 new farmers to replace those that are retiring,” said Anu Rangarajan, director of the Cornell Small Farms Program. “We are seeing people from all walks of life, from high school students to retirees exploring a second career, interested in getting into farming.”

Small farms—defined as those that bring in less than $250,000 in annual income—make up over 90 percent of the farms in New York state, according to the 2011 census. New York small farms yield a diverse range of products: vegetables, maple syrup, dairy and livestock, grains, fruits, and flowers, to name a few. The resources available through the Small Farms Program are comparably diverse, including workshops, farmer-to-farmer mentoring programs, and online courses.

“Our Northeast Beginning Farmers Project offers interactive, online courses on topics for those just beginning to think about farming—such as ‘Square One’ and ‘Markets and Profits’—to more advanced courses on marketing and financial planning that benefit even more experienced farmers,” Rangarajan said. “I’ve been impressed by the inspiration and enthusiasm for agriculture in the small-farms community.”

The land grant mission in CALS has managed to move forward, without leaving its roots behind, and the broad mandate of “Knowledge with a Public Purpose” ensures that the next 150 years will see an engaged—and still evolving—land grant mission.
Comayagua and Cortland may be thousands of miles apart, but development sociology professor Max Pfeffer found an unexpected link between the two cities while conducting research on Central American forest conservation.

Pfeffer, who also serves as senior associate dean for the College of Agriculture and Life Sciences, made the discovery while in Honduras and Costa Rica working on ways to resolve tension between conservationists and subsistence farmers. His efforts helped the farmers stay on the land, while making changes to farming practices that preserved soils, water quality, and forest land.

Surprisingly, while Pfeffer gained a better understanding of Central American farmers, he also found answers to another project he was tackling: the integration of new immigrants into upstate New York. He found that while Upstate communities were losing population, immigrants from Mexico and Central America were breathing new life into the region, not just by filling necessary jobs, but by re-opening churches and revitalizing communities. The key to a successful transition for these immigrants and their new neighbors was to develop strong social ties.

“As people are able to share information and help each other, there is a tangible benefit for everyone,” Pfeffer said.

Such experiences are central to the mission of CALS, whose land grant ethos now crosses national borders. 

CALS’ international commitment is rooted in principles of participation, equality, and problem solving: To teach as well as learn, to help without dictating, to bridge the gap between ivory tower and and the individual on the street.

“I think the land grant approach to the world is to take science—the best, cutting-edge science—and use it to help people in making informed decisions on their own,” Pfeffer said. “It aids the democratic approach, in the best sense of the word, because it helps people take control of their own lives in a way that’s informed by the best knowledge available in the world.”

BORDERLESS HISTORY

Cornell has been extending the land grant mission beyond its original borders for almost a century.

In the 1920s, Cornell launched its first big international undertaking, when a CALS plant breeder and an economist took their expertise to China. The Cornell-Nanjing Crop Improvement Program not only developed high-yielding varieties of wheat and other crops, it prepared Chinese scientists to continue making advancements in plant breeding.

After World War II, Cornell’s strongest international ties were to the Philippines, according to Ronnie Coffman, Ph.D. ’71, director of international programs for CALS. The federal gov-
ernment matched U.S. universities with countries in need of development and re-building after the devastation of the war, and Cornell was paired with what is now the University of the Philippines at Los Baños. More than 100 professors from Cornell and Los Baños participated in the international exchange.

In the 1960s, Governor Nelson Rockefeller expanded New York and Cornell’s commitment to international development by adding nine new faculty lines for “International Professors.” There are now 73 professors with that title in departments from animal science to sociology, Coffman said.

Today, CALS’ strongest international tie is with South Asia. Grant-funded projects in that region include a partnership to help Indian universities revise their agriculture curricula and a project to develop eggplants with better insect resistance. However, with 523 active international exchange agreements between Cornell and foreign universities, governments, businesses, and non-governmental organizations, the university’s international collaborations span the globe, crossing borders and disciplines.

**BORDERLESS RESEARCH**

Natural resources professor Jim Lassoie and his Ph.D. student, Jamie Herring, came up with a creative way to cross the boundaries that separate conservationists in the field from students in classrooms. While professors struggle to teach students using fictitious case studies, real-world conservation professionals drown in oceans of work. In the best tradition of the land grant commitment, their idea was to build a bridge between teaching, research, and public benefit. “The practitioners we work with tend to be isolated and very, very overworked. The opportunity to do scholarly internet research is just really difficult for them — many in developing countries don’t have high-speed internet access,” Lassoie said.

Their Conservation Bridge website, www.conservationbridge.org, introduces real-world problems—from Ithaca, N.Y., to Yunnan, China—through short, high-quality videos, then provides context and questions for students to contemplate. Herring, who creates the videos, came to Cornell with a background in new media, video, and web site design, and he travels the globe, collecting stories that span ocean management in the Arctic to integrated conservation development in Africa.

While Lassoie and Herring certainly aren’t the first to employ real world challenges as classroom studies, their website provides a unique multi-directional flow of information. Conservation professionals provide information and pose research questions, students’ work is actually read by those responsible for solving problems, and policymakers and the YouTube-watching public have direct access to some solutions, aiding advocacy.

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**CONSERVATION BRIDGE CASE STUDY: HUMAN-WILDLIFE CONFLICTS IN BHUTAN**

The kingdom of Bhutan is one of the most isolated and least developed countries in the world. With strict legislation in place to protect the country’s unique biodiversity, the main threat to wildlife stems from human-wildlife conflict in villages that border prime habitat for Bhutan’s charismatic mega-fauna, including tigers, leopards, snow leopards, and elephants, which can attack livestock or damage crops. The loss of one animal can equate to a loss of over 80 percent of a family’s annual cash income, which can lead to retaliation against wildlife, breeding a conflict of interest between local communities and wildlife managers.

The previous scenario is just one of 15 case studies on the Conservation Bridge website and is typical of issues that involve coupled natural and human systems, according to natural resources professor Jim Lassoie. “The core question posed by our Bhutanese collaborators is what should the government of Bhutan do to protect both wildlife biodiversity and rural livelihoods,” explained Lassoie. “Students in my class consider Bhutan’s current national strategy, design a scheme that would involve the use of payment for ecosystem services, and consider the role of democracy in garnering support for conservation as they prepare resources for park managers and scientists, including a proposal to the Bhutan government with a process for engaging local participation in nine key sites.”

More: periodicals.cals.cornell.edu/bridge
CALS alumni hold prominent positions in governments, agencies, and businesses around the world.

To name just a few:

• Lee Teng-hui (Ph.D. ’68 Agricultural Economics) served as president of Taiwan from 1988-2000.

• Uma Lele (M.S. ’63 Agricultural Economics, Ph.D. ’65 Economics and Statistics) has served as policy adviser in the World Bank’s Development Economics Department for the Africa, East Asia and Pacific regions.

• Walter Vergara (M.S. ’77 Food Science) currently serves as chief of the Sustainable Energy and Climate Change Unit for the Inter-American Development Bank.

• Esteban Godilano (Ph.D. ’98 Field Crop Science) is a senior technical advisor for the Department of Agriculture, using geospatial technology to predict climate change-related natural disasters.

• Anila Dias Bandaranaike (Ph.D. ’81 Statistics) has served as assistant governor of the Central Bank of Sri Lanka.

• Robert Zeigler (Ph.D. ’82 Plant Pathology) serves as the Director General of the International Rice Research Institute in the Philippines.

“I think students, especially at Cornell, really want to feel like their work is relevant and what they’re doing actually means something,” Herring said. “So in terms of motivation, I think it’s been key for students to contribute to somebody who’s working on a really important project.”

Lucia von Reusner ’12 has used Conservation Bridge in two courses, including her natural resources capstone course. She and three other students worked with The Nature Conservancy (TNC) in Skagit Valley, Washington, on balancing the conflicting needs of farmers and migratory birds.

“I thought it was very helpful to talk with practitioners throughout the semester for reality checks along the way and to direct us to variables we might not have thought of,” she said.

Eventually, Lassoie hopes Conservation Bridge will become organic and self-sustaining, connecting professors and professionals all over the world. It’s not just a pipe dream; the project has won three competitive grants so far, and dozens of other U.S.-based teachers are lining up to collaborate.

“This is my passion,” Lassoie said. “Over my career I’ve done extension, I’ve done administration, I’ve done research, and I’ve done teaching, and Conservation Bridge brings all of them together.”

BORDERLESS LEADERS

CALS not only strives to prepare its graduates to become good global citizens, it produces world leaders, said Steven Kyle, associate professor of economics and director of graduate studies for the International Agriculture and Rural Development (IARD) Master of Professional Studies program.

“Cornell is the premier agriculture school in the world. You’d be hard-pressed to go to a ministry of agriculture anywhere in the world and not find somebody who either went to Cornell or thinks very fondly of Cornell,” Kyle said.

John Edgar, M.S. ’08, is currently serving as Deputy Team Leader for the Sustainable Economic Growth Office of USAID in Malawi. His work focuses on two presidential initiatives: Feed the Future, the U.S. government’s Global Hunger and Food Security program, and the Global Climate Change Initiative.

“Malawi has a fast-growing population, limited use of modern agriculture inputs, huge amounts of environmental degradation, erosion, deforestation, along with changing weather patterns and lack of family planning. So we have to think about many different issues when we’re talking about achieving food security,” Edgar said. “At Cornell, I was able to take classes in crop science, animal science, applied economics and management, nutrition—this helped me gain the broad experience I needed to succeed in a very complex environment in Africa.”

BORDERLESS CLASSROOMS

By the early 1900s, students from Canada, England, Russia, Brazil, and other countries were enrolled in CALS. Those first international students were pioneers in what has become a college-and university-wide commitment to teach students from around the globe. In the 2010-2011 school year, Cornell hosted 4,357 international students, and it also offers unique fellowship programs for international mid-career professionals to spend a year on campus. The Humphrey Fellows program, for example, has trained more than 300 professionals from Bangladesh to Bulgaria.

This exchange of people and ideas is a two-way street, with nearly 200 CALS undergraduates spending at least one semester studying abroad. In fact, several majors require international internships as part of the curriculum, including the undergraduate IARD program. CALS began offering the IARD major ten years ago with just two or three students, but now there are almost 75 students in the program, said director Peter Hobbs, Ph.D. ’72, professor of crop and soil sciences and associate director of academic programs for CALS’ International Programs.
Plant Breeding Ph.D. candidate Jessica Rutkoski takes notes on stem rust resistance levels in experimental wheat breeding lines at the stem rust screening nursery in at the Kenya Agricultural Research Institute in Njoro, Kenya.

“Plant breeding Ph.D. candidate Jessica Rutkoski works in the Durable Rust Resistance in Wheat project. She’s using prediction models based on genetic fingerprints to more quickly improve rust resistance, working with plants and people in Ithaca and Njoro, Kenya.

Rutkoski was drawn to Cornell because of its commitment to international work. “In the United States, you look at our agricultural system and it’s so advanced. Then you take a plane ride for a few hours and it’s like a different world,” she said. “There seem to be things that could make a big difference for people with just a little bit of collaborative effort.”

Marshall McCormick, a graduate student in the College of Architecture, Art, and Planning, worked this summer coordinating internships for all the Cornell students who went to Chiapas.

“Cornell has such a presence here and throughout the world—people here don’t care that it’s CALS or IARD, they know students as Cornell,” McCormick said. “It’s amazing. You’ll say, ‘I’m from Cornell,’ and the interaction they’ve had with previous students is so positive, everybody is surprisingly open and welcoming.”

Through a cultivated combination of international research, outreach, and educational programs, CALS’ legacy as the land grant to the world has created an environment with limitless opportunities for students, giving them critical knowledge that can only be obtained from experience.
HELP WANTED JOBS OF THE FUTURE

By Stacey Shackford

What will drive the jobs of the future? According to the nonprofit research group Institute for the Future (IFTF), global connectivity, smart machines, and new media are just some of the things that will reshape how we think about work and the skills we will need to be productive contributors.

EXTREME LONGEVITY

There are 78 million baby boomers—defined by the U.S. Census Bureau as those born between 1946 and 1965—in the United States. They began reaching the retirement age of 65 last year, and 10,000 more will reach that milestone every day for the next 18 years. Boomers will increasingly demand opportunities, products, and medical services to accommodate healthy and active senior years. Many of these seniors have at least one chronic health condition, which they are trying to control through fortified foods or dietary supplements. Products to prevent the loss of muscle mass and maintain mental alertness are also predicted to grow in popularity, creating many opportunities for food scientists and nutritionists. As baby boomers age, their palates will change, so flavor experts will likely be in high demand. Faculty and students in the Division of Nutritional Science work closely with colleagues in Microbiology, Molecular Biology and Genetics, Neurobiology and Behavior, and even Animal Science, to understand the intricacies of human health. The Department of Food Science is a leader in the field; its students are highly sought after by companies around the world, and many participate in national product development competitions before they even leave Cornell.

COMPUTATIONAL WORLD

As the IFTF notes, “the diffusion of sensors, communications and processing power into everyday objects and environments will unleash an unprecedented torrent of data and the opportunity to see patterns and design systems on a scale never before possible.” The ability to parse and manipulate this data will be essential. In the Department of Biological Statistics and Computational Biology, data scientists create models, both micro and macro, to uncover new patterns and relationships in science and social systems, shedding light on processes from evolution to global pandemics.

NEW-MEDIA ECOLOGY

New technologies are transforming the way we communicate; they are already influencing the ways we construct and manage our identities, as well as the ways we interact in individual and group contexts. Media literacy has also taken on a new urgency, as our sensibility toward truth and reality is being altered by new media. Every sector of the population is becoming more savvy when it comes to...
computers and other gadgets. Physical limitations may require some adaptive technologies for the aging baby boomers, while the popularity of mobile devices among children presents new opportunities to encourage healthy behaviors. In the Department of Communication, social scientists are investigating new-media dynamics, and students are already working closely with faculty in the Interaction Design and Social Media labs to develop new ways to harness the potential of mobile technology.

**GLOBALLY CONNECTED WORLD**

Increased global interconnectivity is leading nations to reach beyond their borders when it comes to business and politics, and rapidly growing populations will present new development challenges. At the Dyson School of Applied Economics and Management, experts analyze the impacts of economic networks in emerging markets around the world, as well as in our own backyards. In the Department of Development Sociology, students are learning how to analyze new empirical realities and historical trends and advocate for a future that encourages equality of opportunity for all.

**CHANGING CLIMATE**

Changes to the global ecosystem—both subtle and dramatic—will require careful management of natural resources and innovative environmental remediation. Urban ecologists, engineers, and planners will be in high demand, as will extreme weather experts. Plant scientists, breeders, pathologists, and entomologists will be called upon to respond to shifting growing zones and invasive pests and diseases. Solutions to climate change and food security are being approached by many departments across the college, including Biological and Environmental Engineering, Crop and Soil Sciences, Earth and Atmospheric Sciences, Ecology and Evolutionary Biology, Entomology, Horticulture, Landscape Architecture, Natural Resources, Plant Biology, Plant Breeding and Genetics, and Plant Pathology and Plant-Microbe Biology.

**SKILLS OF THE FUTURE**

In addition to scientific learning, technical training and hands-on experience, employers are placing an increased value on “soft skills.” The top-ranked soft skill employers consistently identify is communication, but many other soft skills are rising in importance. These include critical thinking, insight, and analysis; social intelligence and cross-cultural competency; the ability to collaborate and work in groups; a design mindset that approaches every problem as a design problem; and new-media literacy.

The Institute for the Future advocates for the integration of interdisciplinary training that allows students to develop skills and knowledge in a range of subjects, an objective embraced by the College of Agriculture and Life Sciences (CALS).

Over the past decade, the CALS curriculum has evolved to meet the emerging interests of its students and needs of employers, according to Donald Viands, associate dean and director of CALS Academic Programs. Many majors have internships embedded in their programs, and several have created capstone experiences to integrate student learning with real world issues.

“All of our new majors developed in the last decade have been interdisciplinary, and CALS created a policy where students could double major and/or minor in other subjects to broaden their education,” Viands said.

For example, the agricultural sciences major was created to provide a broad, interdisciplinary education for students interested in agricultural production, from organic farming to international development. It provides a flexible curriculum that students can tailor to their interests and career goals, Viands said. The major has become incredibly popular, growing from 16 students to 94 within six years.

A major in environmental science and sustainability, created by merging science of natural and environmental systems and natural resources, is tailored to students interested in environmental biology, applied ecology, environmental policy and governance, environmental and resource economics, and biogeochemical sciences. Plant Sciences has also created new concentrations that are no longer disciplinary or departmental, addressing modern issues such as plant and human health.

Classes such as Leadership Development in the Life Sciences (ALS 3100) aim to provide the type of professional development skills that teach aspiring scientists to manage other people, as well as their own careers. New cross-college offerings through the Dyson School can also train them to manage their finances and be successful business leaders.

Programs such as BOLD—Business Opportunities in Leadership and Diversity—also seek to transform undergraduates into ethical leaders who promote inclusion and sustainability. BOLD promotes strong communication skills, personal awareness, and emotional intelligence as well as practical seminars and workshops on topics like global business etiquette.

According to the U.S. Bureau of Labor Statistics, the following CALS-related careers are projected to be in demand over the next decade:

- Accountants and auditors
- Biotechnology experts
- Biochemists and biophysicists
- Biomedical engineers
- Computer systems designers
- Computer and mathematical scientists
- Media and communications specialists
- Medical scientists
- Scientific and technical consultants
- Survey researchers
- Urban architects and engineers
Curiosity. Intuition. Creativity.
Characteristics of a great artist and a great researcher.
Science isn’t just statistics, surveys, and test tubes.
It’s about observing the world through a unique lens; unraveling complex challenges through artful inquiry and exploration. When the newest College of Agriculture and Life Sciences faculty members gathered at the Herbert F. Johnson Museum of Art this summer, introductory small talk soon led to discussion of potential creative collaborations and newly discovered synergies. Representing 13 different departments, the work of these 19 original thinkers diversifies the already extraordinary portfolio of talent in the college.
Adrienne Roeder

PLANT BIOLOGY

Adrienne Roeder is fascinated by patterns in plant growth and the rules that regulate them. Seemingly identical cells take divergent paths to form petals, roots, or leaves. In leaves, some divide to form new cells while others just grow into larger “gi-ant cells.” How they coordinate this growth is still a mystery. Roeder, an assistant professor in plant biology, hopes that cracking the code will someday lead to breakthroughs in food and bioenergy. She uses computational morphodynamics, an approach that integrates microscopy, advanced image processing, and computer modeling, to develop, test, and refine hypotheses about the laws of plant growth.

Robin Dando

FOOD SCIENCE

Imagine a taste test: one plate contains your mom’s homemade lasagna, the other a restaurant-cooked dish made with exactly the same ingredients. Nobody would mix up the two, says Robin Dando, an assistant professor in food science. Dando was trained in physics, physiology, and neuroscience, and he plans to use the techniques and principles of those fields to refine our understanding of taste. He’ll be studying the signaling events and neurotransmitter interactions that occur between detection of a taste and our brain’s perception of that taste, and what makes it possible for us to recognize mom’s cooking anywhere.

Shanjun Li

DYSON SCHOOL OF APPLIED ECONOMICS AND MANAGEMENT

There’s a chicken and egg problem in the electric car industry: consumers are reluctant to buy electric cars because there aren’t enough charging stations, and investors don’t want to build charging stations because consumers don’t buy many electric cars. That’s just one of the eggs Shanjun Li is trying to crack. An assistant professor in the Dyson School of Applied Economics and Management, Li studies environmental and energy economics, from domestic and international cap-and-trade policies to consumer vehicle choices.

Mingming Wu

BIOLOGICAL AND ENVIRONMENTAL ENGINEERING

How does a physicist engineer better micro-scale machines for cancer treatment and alternative energy? Study Mother Nature. Associate professor of biological and environmental engineering Mingming Wu was drawn to the field of biology by her admiration of the exquisite micro- and nano-scale machinery found in the natural world. For example, E. coli bacteria are only about one micrometer long—1/100th the width of a hair—but they can swim ten times their body length in one second, an engineering marvel. Wu will use biologically inspired engineering to develop micro-scale biosensors and pumps to solve critical health-related and environmental problems.
Josh Cerra
LANDSCAPE ARCHITECTURE
Josh Cerra knows about integrating competing goals and interests. Cerra trained and worked as a biologist before pursuing a career in sustainable planning and environmental design. An assistant professor in landscape architecture, Cerra has practiced as an environmental designer and biologist for over 18 years, working on interdisciplinary teams to meet the needs of both human and natural systems. Cerra will be working with communities across New York to develop new methods for urban ecological planning and design, with the goal of direct benefits for citizens and the urban environment.

Katja Poveda
ENTOMOLOGY
Generations of gardeners have known that you plant onions and garlic to deter deer. Turns out, the same principle works for bugs. Katja Poveda, an assistant professor in entomology, is working to reduce moth damage to potatoes in her native Colombia. Initial findings show that when farmers spray garlic pepper extracts to push insects away and plant another potato variety to pull the bugs in, that’s as effective as spraying insecticide on the primary crop. This type of “push-pull” system for managing insects has been used successfully in Africa for years. Poveda hopes Africa’s model will work for Colombia and, in the future, for New York.

Sharon Poczter
DYSON SCHOOL OF APPLIED ECONOMICS AND MANAGEMENT
In the past 60 years, there have been 120 financial crises around the globe. Sharon Poczter ’01 was surprised by their similarities. An assistant professor in the Dyson School, Poczter studies crises in emerging markets and sees a common pattern: the massive deregulation of credit and subsequent risky over-borrowing by households and businesses followed by a crisis trigger. Poczter is distilling these lessons into strategies to avoid future crises, not only by regulation of the financial industry, but through awareness and accountability from every investor.

Julio Giordano
ANIMAL SCIENCE
As the grandchild of two dairy farmers, Julio Giordano has been working with cows since before he could walk. An assistant professor of animal science, he studies the physiological mechanisms and management practices that limit reproductive success in cows, including nutrition, genetics, and animal welfare. Giordano will also help dairy farmers make better-informed economic decisions. Free online tools he developed allow farmers to enter farm-specific data and compare their current operation against a proposed change. He believes that continued advances in reproductive management, paired with economically savvy decision support tools, can keep New York dairy farms in the black.
Jacob Bien  
**BIOLOGICAL STATISTICS AND COMPUTATIONAL BIOLOGY**

What do a genome map, a complex linguistic analysis, and a Google search have in common? Statistics. Jacob Bien, an assistant professor in biological statistics and computational biology, develops statistical methods that allow other scientists to make sense of enormous datasets. For example, 20 years ago biologists often collected ten variables about a group of people. Now they routinely collect 10,000. Increasingly complex datasets require increasingly sophisticated methods to extract the useful information. Bien’s work will help facilitate cutting-edge research in medicine, computing, or just about any area that involves large quantities of data.

Ludmilla Aristilde  
**BIOLOGICAL AND ENVIRONMENTAL ENGINEERING**

Ludmilla Aristilde’03 knows firsthand about environmental pollution. As a child in Haiti, she witnessed people around her sickened with cholera. Now, as an assistant professor in biological and environmental engineering, she wonders what happens to the synthetic chemicals, pharmaceuticals, hormones, pesticides, and natural toxins present in the environment. What interactions occur in different types of soils, how do they degrade or persist, and what are the potential effects on sensitive organisms? Aristilde’s work directly addresses Cornell’s land grant obligation to farmers, but it benefits all who value safe food and clean water.

Matt Ryan  
**CROP AND SOIL SCIENCES**

For Matt Ryan, an assistant professor in crop and soil sciences, it all started with weeds. With a farmer’s heart and a scientist’s eye, Ryan set out to help address one of the biggest obstacles facing organic farmers—weed management without herbicides. He quickly learned, however, that weeds are part of the delicate web that makes up a cropping system, and focusing exclusively on one component of the system can have unintended consequences on other factors, like soil fertility and insect pest populations. Ryan’s holistic approach draws from half a dozen disciplines and emphasizes practical, sustainable problem solving.

Thomas Oles  
**LANDSCAPE ARCHITECTURE**

How do we build sustainable communities when laws are based on private property rights, but land-use decisions have landscape-wide—even global—consequences? Thomas Oles, an assistant professor in landscape architecture, focuses on processes of political deliberation that can transcend the limitations of a segmented landscape. Do you think a wind turbine is an eyesore or an environmental asset? Oles’ research indicates that your answer may be influenced by whether it was brought there by a local energy cooperative or a big energy company. His approach to community design and planning draws upon the core principle of inclusive participation, from start to finish.
Robert D. Reed  
ECOLOGY AND EVOLUTIONARY BIOLOGY

Everyone appreciates the beauty of a butterfly’s wings. Robert Reed can tell you what functions the wings serve in the natural world, what pigments and structures make up the colors, and which genes are mutating to alter color patterns within populations. An associate professor in ecology and evolutionary biology, Reed’s lab uses everything from tropical field ecology to computational genomics to understand how and why insects evolve into so many bizarre and splendid variations. Butterflies in particular have both beauty and brains—they’re an ideal species to use in studying new technologies in environmental science, agriculture, and even medicine.

Rachel Bezner Kerr  
DEVELOPMENT SOCIOLOGY

Reducing malnutrition in southern and eastern Africa isn’t just about crop yields. Rachel Bezner Kerr, Ph.D. ’06, an assistant professor in development sociology, has found that soil health, social inequality, and even HIV/AIDS status can impact whether people are getting enough to eat. For the past 12 years, she was the research coordinator for the Soils, Food and Healthy Communities Project in Malawi, working with academics, medical professionals, and more than 4,000 farmers working toward the goals of healthier soils, stronger children, and sustainable communities. Her research in the sociology of food systems will help identify the societal contributions to—and solutions for—hunger.

Arnab Basu  
DYSON SCHOOL OF APPLIED ECONOMICS AND MANAGEMENT

Growing up in India, Arnab Basu experienced how the economic development theory he was learning in his classroom played out in the real world. A professor of international economics, Basu uses economics as a lens to study a host of topics, including minimum wage laws, consumers’ willingness to pay higher prices for eco-labeled and Fair Trade products, and international aid disbursement after natural disasters. He also studies the intersections of law, economics, and conflict. As globalization impacts more and more people around the world, Basu’s work will help inform policy decisions affecting millions.

Joshua Woodard  
DYSON SCHOOL OF APPLIED ECONOMICS AND MANAGEMENT

From the frost damage affecting this year’s apple crop to the summer drought that decimated corn yields, managing risk is as important to production agriculture as managing weeds. Joshua Woodard, an assistant professor of agricultural business and finance in the Dyson School, focuses on risk management, including crop insurance, weather risk, credit risk, and commodity crops. Presently, the federal government is putting an increased emphasis on crop insurance and other risk-management programs. This changing policy focus—coupled with increased price volatility and climate risk—makes understanding risk management more important than ever.
C. Lindsay Anderson
BIOLOGICAL AND ENVIRONMENTAL ENGINEERING

Lindsay Anderson works with moving targets. Not just with the wind energy she wants to help harvest more effectively, but with rapidly evolving technology, changing policy, and fickle markets. An assistant professor in biological and environmental engineering, Anderson is working to integrate renewable energy into existing energy markets. With a background in engineering and financial mathematics, Anderson’s projects address both the use of technology to store wind power and the market forces needed to release it. She’s poised to overcome some of the bumps in the road to a sustainable, renewable energy future.

Adam Bogdanove
PLANT PATHOLOGY AND PLANT-MICROBE BIOLOGY

Adam Bogdanove started with an important question: How to combat pathogens that devastate rice crops? His work is now being used to solve an array of challenging problems. Bogdanove, a professor in plant pathology and plant-microbe biology, discovered how bacterial proteins called TAL effectors bind to specific locations in plant DNA. That knowledge is allowing scientists to target and modify genomic sequences in various organisms. Applications range from studying gene function, to human gene therapy, to improving livestock and crops with greater precision and predictability than traditional genetic engineering. Bogdanove’s work has already resulted in disease-resistant rice; scientists are hopeful that solutions to human genetic disorders such as cystic fibrosis are not far behind.

Jonathon Schuldt
COMMUNICATION

What’s in a word? Assistant professor of communication Jonathon Schuldt ’04 knows their power in shaping public opinion. He was the lead author of a study which found that people were more skeptical of “global warming” than of “climate change.” (See story, page 4) Schuldt’s interests lie at the intersection of psychology, communication, and science. As issues such as global climate change, natural gas drilling, obesity, and health care reform increasingly impact New York, he’ll be tracking the dynamics that underlie public opinion.

A Special Thank You

This feature was shot at The Herbert F. Johnson Museum of Art, an I. M. Pei & Partners building. As part of Cornell’s land grant mission, the Johnson continually seeks to fulfill its cultural and educational responsibility to serve a broad and diverse audience. The museum is open to all without charge. The permanent collection numbers more than 35,000 works, spanning six millennia and encompassing art from most world cultures. Among the strengths of the collection are the holdings of Asian art; more than 22,000 prints, drawings, and photographs ranging from the fifteenth century to the present; modern and contemporary painting and sculpture; European art from ancient times to the present, African sculpture and textiles, and pre-Columbian sculpture and ceramics.

For more information on the latest exhibits, visit museum.cornell.edu.
CALS Alumni Association President’s Message

— THE LIVING LAND GRANT MISSION —

As CALS alumni, we are not only the living legacy of the land grant mission: We are also the guardians of this legacy for current and future students.

The land grant was a pivotal democratic event in U.S. history because it opened the door of higher education to the “industrial classes.” Cornell’s need-blind admissions policy preserves this democratic commitment to educate everyone, not just today’s elite. Support for undergraduate scholarships can bring a life-changing Cornell education within reach of deserving students.

Virtually every alumnus or student I’ve met has shared stories of a special professor who had a positive influence on their life. As Cornell faces a huge turnover in faculty and seeks out tomorrow’s great teachers, crucial support of the college through the CALS Annual Fund will provide College of Agriculture and Life Sciences Dean Kathryn Boor with flexible funds to support faculty start-up costs and other key college programs.

Current students and recent graduates will enter the workforce in a precarious economy. Because of this, we can have a particularly positive impact by offering internships, on-campus interactions, or regional events.

I am proud to be associated with a college that is making the world a better place. From new varieties of rust-resistant wheat, biofuels from plants, and advances in food safety, CALS is at the forefront of solving the world’s most pressing problems.

As I begin my year as president of the CALS Alumni Association, I am thankful for the opportunity to interact with students, faculty, and alumni throughout the country and lead this distinguished group of volunteers. I encourage each of you to become more involved with the college and continue a journey of lifelong learning.

Todd Wolleman ’80
President, CALS Alumni Association

NEW YORK DAIRY LEADS THE WAY AS RENEWABLE ENERGY PRODUCER

By Holly McIntyre

There’s a revolution under way in the dairy industry, embracing new technologies that protect the environment while improving the bottom line.

John Noble, a 1976 Agricultural Sciences graduate and president of Noblehurst Farms in Linwood, N.Y., has been at the forefront of this movement since 2003 when the farm installed one of the first biogas digesters in the area and started turning cow manure into electricity.

Adopting new technologies can be risky, and Cornell has been instrumental in providing him with training and tools that inform decisions he makes for his business, said Noble, also the president and chief executive officer of Synergy Dairy in Covington, N.Y.

Today, Noble is still part of scaling up the technology. Under Noble’s leadership, Synergy Dairy has partnered with CH4 Biogas and Synergy Biogas to establish a co-digester next to the 1,850-cow dairy. Digester technology processes dairy manure and food waste from local processing plants, turning it into biogas that powers a 1.4-megawatt generator.

The digester currently operates at about 80 percent capacity. Noble said he hopes the facility will receive enough waste material by the end of 2013 to run at full capacity.

At that time, the digester will produce enough electricity to power 1,000 homes and displace 7,000 tons of carbon dioxide a year.

Not only does the facility produce electricity from renewable fuels, the process also separates the waste into a dry component that is recycled as bedding for the cows and a nutrient-rich liquid component that the farm uses to fertilize its fields, reducing the amount of commercial fertilizer the farm must purchase.

Plus, the neighbors appreciate that the digested waste has no odor when it’s spread on the fields.

“In the bigger scheme, we are destroying carbon, which is a positive for the environment,” Noble said.

His Cornell education and continued relationship with the university has encouraged him to challenge himself and to engage with solutions that improve environmental stewardship in the dairy industry, Noble said.

“Cornell has been integral in helping farmers think through the economics, design and engineering and how does it fit with the environment and interact with the community,” he said.

During his more than 30 years in the dairy industry, Noble, a member of the Cornell College of Agriculture and Life Sciences Advisory Council, has carried lessons he learned as a student with him. “Cornell is always trying to help us think outside the box,” he said.
MIKI & RADHA AGRAWAL ’01

Miki and Radha Agrawal are changing the world—one taste bud at a time.

After each receiving B.S. degrees in business and communication, the Agrawals moved to New York City to start their careers. But after working several years in investment banking, television production, and even a stint in professional soccer, the sisters refocused on entrepreneurship and nutrition.

In 2005 they launched SLICE, a Manhattan pizzeria that uses only local and organic ingredients, which has now expanded into wholesale and retail.

At SLICE, Radha’s creative children’s menu successfully encouraged kids to try healthier pizza toppings. After extensive research, Radha built on this success in 2011 by launching Super Sprowtz, an education and entertainment company she describes as “Sesame Street for nutrition and wellness education.”

“My mission is to reconnect children and families to their food in a creative and engaging way,” Radha said. “Until now, there hasn’t been a comprehensive program that speaks to children about nutrition and gives parents and teachers tools to engage their kids around this subject.”

The Super Sprowtz are ten vegetable characters with super powers derived from each vegetable’s nutritive value. For example, Colby Carrot’s beta carotene gives him super sight, while Brian Broccoli is super strong because he contains calcium and vitamin A.

The Super Sprowtz brand now includes DVDs, live shows in schools, a television series, picture books penned by Radha, a permanent exhibit in the Children’s Museum of Manhattan, and a new 200-page educational curriculum for teachers and parents.

The sisters will soon make an even wider impact with Miki’s new book deal to write a girl’s guide to entrepreneurship.

“This book will provide a road-map for entrepreneurship,” Miki said. “Girls and all young people need to know that this is an option, maybe even before they spend a day in the workforce.”

MARK & BRIAN NICHOLSON ’94

Mark and Brian Nicholson are the third generation managing Red Jacket Orchards, their family’s 50-year-old business selling frozen specialty Indian foods in the United States. Food science degree in hand, Amin joined his mother, father, and older brother at Deep Foods right after graduation.

“I groomed myself for the business,” Amin said. “The science I learned at Cornell, combined with my parents’ passion, has contributed to our continued success.”

Amin jumped into the business with a controversial first project: Building a USDA facility to add meat and chicken dishes to the product line. Customer demand for meat dishes was skyrocketing, but the Amin family was vegetarian. In the name of research, Amin started eating meat.

“People called me a hypocrite, but we put our personal beliefs aside in order to improve the business and our employees’ long-term welfare,” Amin said.

The plant Amin started is now the core of Deep Foods’ business. The company’s brands are carried in 1,800 different stores, and in 2011, their Tandoor Chef brand became the mainstream leader in the Indian market.

As he head of research and development for Deep Foods, Amin’s current focus is on two major trends: Americans’ desire for spicier foods, especially Indian, and for fresh packaged foods and meals. A new 40,000-square-foot-production space will facilitate the company’s move from frozen to fresh.

But regardless of expansion on the horizon, Amin said that Deep Foods will continue to be a family affair, rooted in authenticity and accountability to future generations.

DEEPAK AMIN ’88

Deepak Amin is part of the second generation managing Deep Foods, Inc., his family’s 35-year-old business selling frozen specialty Indian foods in the United States. Food science degree in hand, Amin joined his mother, father, and older brother at Deep Foods right after graduation.

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MARK & BRIAN NICHOLSON ’94

Mark and Brian Nicholson are the third generation managing Red Jacket Orchards, their family’s 50-year-old fresh fruit and juice company in Geneva, N.Y. When the brothers entered the business, with B.S. degrees in pomology and agriculture business management and marketing, respectively, the family had just begun making apple and fruit juice blends to supplement their seasonal cider making.

“We started out as a niche market,” said Brian, company president. “Now we are in the process of bringing fresh back to the juice shelf.”

Sales of their fresh-pressed juices and fruit nectars have increased 25 to 50 percent annually for the past several years. And a new 22,000-square-foot kosher and LEED-certified juice processing facility symbolizes their vision to build Red Jacket juices into a national brand, a strategy built on years of experience with direct-to-consumer sales at the New York City Greenmarket and the Geneva farm store.

“Years of feedback from customers helped us prioritize the freshness and flavor of the juices over more commercial attributes,” said Mark, company executive vice president.

The juices get their freshness from a traditional “rack and cloth” pressing process, no added sugar or concentrates, no heat pasteurization, and minimal filtering. It sounds simple, but Mark and Brian have fine-tuned the process by working extensively with the Cornell community.
generations innovations

“The Cornell network is a big part of our success,” Brian said. “We’ve benefited from being near the New York State Agricultural Experiment Station, both through education and ongoing collaboration with scientists on product development. The New York State Food Venture Center helped us perfect this product—we wouldn’t be where we are without their expertise.”

This fall, Red Jacket will reach out to its newest generation of customers through a student ambassador program on six New York state college campuses, including Cornell. Ambassadors will give away free samples and promotional items, creating awareness of Red Jacket’s all-natural juices.

KELLY COUGHLIN ’93

In 2008, Kelly Coughlin and her husband Greg Woodworth, a 1994 graduate of the Hotel School, were visited by their neighbors at Cornell’s New York State Food Venture Center with the seeds of a new business idea: Butternut squash seed oil.

A year later, Woodworth and Coughlin partnered with John B. Martin and Sons Farms to launch Stony Brook Wholehearted Foods. The company produces natural, minimally filtered squash seed oils from the roasted and pressed seeds of butternut, acorn, delicata, and buttercup squash, as well as pumpkins. Their newest product, brined and roasted pumpkin snack seeds, was released this summer.

“My Cornell education gave me the skills and tools to run a competitive and innovative farm,” Harbes said. “It’s been a very exciting and rewarding experience.”

As vineyard manager, Ed tends the vines and chooses which wine styles to make based on a given year’s harvest. He is also securing his family’s heritage by working closely with Cornell Cooperative Extension to implement farming strategies that preserve soil quality but use fewer inputs to grow excellent products.

“It’s important to always be innovating,” Harbes said. “The future of our farm is in successfully marketing value-added farm products directly to the public while continuously improving our farming practices.”

ED HARBES IV ’05

When Ed Harbes IV graduated with a B.S. degree in applied economics and management, he went back to his family’s farm. But he did not return to a traditional commodity farm; after 12 generations of farming on Long Island, N.Y., the Harbes had become innovators in retail agriculture.

Started as a roadside farm stand in 1989, Harbes Family Farms & Vineyard today encompasses three locations, a farm market, a barnyard petting farm, a cafe and bakery, family-oriented activities, u-pick crops, and a winery. Their latest expansion, a dwarf apple orchard, was planted in 2010.

innovations

This issue’s featured entrepreneurial alumni are turning local vegetables into gourmet ingredients, bringing fresh juice back to the grocery store, making convenience food that is fresh and spicy, diversifying the family farm, and teaching kids about the ‘superpowers’ of vegetables.

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Alan Kligerman ’52
Outstanding Alumni Award

Alan E. Kligerman is a leader in developing products that have changed the way people process and enjoy food. Now a seasoned entrepreneur, he began in 1962 with SugarLo Company, which produced and marketed low-sugar frozen desserts and other food products. In 1974, he established the business that evolved into Lactaid Inc., which marketed over-the-counter lactase enzyme tablets and dairy products for people with lactose-intolerance.

In 1991, Kligerman founded AkPharma Inc. to market a new invention: An enzyme supplement (alpha galactosidase) to make beans, legumes, and a wide variety of similar vegetables more digestible, which was commercialized under the brand name Beano®. Today, Kligerman and AkPharma are focused on Prelief® brand calcium glycerophosphate, a food acid neutralizer that stops discomfort from acidic foods. The company continues to engage in extensive clinical studies, research, and product development on other internal, respiratory, and dermatological uses of calcium glycerophosphate.

Outside of his work at AkPharma, Kligerman has authored numerous articles and has received awards from the Institute of Food Technologists, the Moscow Institute of Food Processing, and the MIT Journal of Irreproducible Results. He has also participated in local, national, and international politics and advocacy groups. He has served on the Calorie Control Council and Cornell’s Advisory Council to the Institute of Food Science, testified before congressional subcommittees on matters involving food regulation and USDA funding, and was appointed by Governor Christine Todd Whitman to the New Jersey-Israel Advisory Commission.

Kligerman’s family has lived in the Atlantic City, N.J., area for more than 100 years and operated a dairy from 1918 to 1964. He currently lives in Pleasantville, N.J., with his wife Peggy Suttle Kligerman and has five children and nine grandchildren.

Kimberly Wagner ’85
Outstanding Alumni Award

Kimberly Wagner has an eye for business opportunities and demonstrated commitment to the College of Agriculture and Life Sciences. She is a senior partner and managing director at The Boston Consulting Group (BCG), an international strategy and general management consulting firm whose mission is to help corporations create and sustain a competitive advantage. Wagner is a senior member of BCG’s Operations, Global Advantage and Healthcare practices and primarily serves clients in the pharmaceutical, specialty chemical, agribusiness, and food/nutrition sectors.

Wagner and her husband, Stephen Osborn ’84, also own and operate Stoutridge Vineyard LLC, a vineyard, farm winery, and distillery in Marlboro, N.Y. Their “slow wine” approach results in wines with a natural haze and sensory complexity, and they minimize the winery’s environmental impact with a solar array that produces enough electricity to meet the winery’s needs.

Wagner has dedicated many hours serving as a volunteer and valued adviser for Cornell and CALS. She currently serves on the Cornell University Council and the Executive Committee of the Council’s Committee on Sustainability. She is a former member of the Life Sciences Advisory Board and the CALS Dean’s Advisory Council. Additionally, Wagner has served on the board of directors and as president of Cornell Cooperative Extension of Ulster County. She is a frequent campus visitor and has served on panels for both Entrepreneurship@Cornell and the Trustee Council Annual Meeting. Wagner and Osborn have hosted numerous Cornell related groups at Stoutridge.

Wagner also serves on several not-for-profit organizations with educational and/or agricultural missions, including the New York State Wine and Grape Foundation Board of Directors and the New York Farm Bureau.

Wagner earned a B.S. in biology from Cornell University in 1985, an M.S. in the physiology of reproduction and growth from Texas A&M University in 1987, and a Ph.D. in biological chemistry and molecular pharmacology from Harvard University in 1994. She and Osborn live in Marlboro, N.Y.

Lubna Olayan ’77
Outstanding Alumni Award

Lubna Olayan is an influential businesswoman and philanthropist. She is the CEO and Deputy Chairperson of Olayan Financing Company (OFC), the holding entity for The Olayan Group’s operations in the Kingdom of Saudi Arabia and the Middle East. Based in Riyadh, Saudi Arabia, OFC holds and oversees all of the Olayan Group’s investments and
Mitchell Kornet ’76, DVM ’79  
*Outstanding Alumni Award*

Mitchell Kornet is an esteemed veterinarian, a passionate Cornellian, and a respected community leader. Kornet is the owner and director of Mid Island Animal Hospital, where he has worked since 1981. Mid Island Animal Hospital is a five-doctor companion animal practice in Hicksville, N.Y., certified by the American Animal Hospital Association.

Kornet knew he wanted to become a veterinarian at 13 and spent his summers working on dairy farms and leading his local chapter of the Future Farmers of America (FFA). At Cornell, Kornet was a founding member of Cornell’s FFA chapter and, after three years of undergraduate work, he was admitted to the College of Veterinary Medicine with dual enrollment in the College of Agriculture and Life Sciences. Since graduating from Cornell’s College of Veterinary Medicine, Kornet has remained an active volunteer for the college, CALS, and Cornell. Kornet has been Chairman of the College of Veterinary Medicine’s Dean’s Leadership Committee, serves on the CALS Dean’s Advisory Council, and is a member of the Cornell University Council. Kornet has held nearly every leadership role in the CALS Alumni Association.

Kornet continues to serve as a mentor for many of Cornell’s students and future students. He has hosted hundreds of students during class trips to his practice and has allowed students of all ages to shadow him during his daily activities at work. He also participates in the CALS Alumni Career Link and Cornell’s Extern Programs.

Kornet has received awards from the Long Island Cat Fanciers and Long Island Veterinary Medical Association. The latter was in recognition for his work with the Disaster Preparedness Committee and scheduling 24-hour veterinary care for search dogs at the World Trade Center.

Kornet and his wife, Renee, have two children, Allison ’04 and Robin ’08, who both graduated from the CALS Department of Communication. They are proud to welcome another Cornellian into the family when Allison marries Matthew White ’04 in December. Commercial businesses, including 40 affiliated companies, in Saudi Arabia and the Middle East.

Olayan has been recognized as a “Global Power 50 Women” by Fortune, one of the “World’s Most Powerful Women” by Forbes, and one of the “Top 100 Most Influential People in the World” by Time. In May 2012, she was awarded the Insignia of Member First Class of the Royal Order of the Polar Star by His Majesty the King of Sweden, Carl Gustav XVI, for her contributions to good relations between Sweden and Saudi Arabia.

Olayan has served on the boards of INSEAD, an international graduate business school; KAUST (King Abdullah University of Science and Technology); Al Fanar, a non-governmental, non-profit venture that supports grassroots organizations in the Arab world; and the Asia Business Council. In addition, she sits on the Board of the Down Syndrome Charitable Association in Saudi Arabia and is a trustee of the Children’s Cancer Center of Lebanon.

Olayan was elected to the Cornell University Board of Trustees in 2007 and delivered the keynote address at the 2008 Trustee and Council Annual Meeting. She was selected as the 2010 Cornell Entrepreneur of the Year. Olayan met her husband John E. Xefos AB ’77 while a student at Cornell. They have three daughters, Sarah, Serene, and Talia, and live in Riyadh.
Joshua Wolfe ’99
Young Alumni Achievement Award

Joshua Wolfe is a dedicated Cornellian and successful entrepreneur in the niche markets where business and science intersect. He is the co-founder and managing partner of Lux Capital and focuses on emerging technologies in the physical and life sciences. Wolfe manages Lux’s investments in Nanosys, Cambrios, and Siluria, and he serves on the boards of directors of Kurion, Silicon Clocks, Crystal IS, and Lux Research.

Science and business were interests Wolfe nurtured at Cornell, and prior to venturing into the financial world, he conducted AIDS-immunopathology research. He then worked at Salomon Smith Barney, Merrill Lynch, and Prudential Securities before forming Lux Capital.

An active member of the Cornell community, Wolfe is a frequent guest lecturer in business, entrepreneurship, and engineering classes. He has underwritten and run an intern program for Cornell students and advises Cornell faculty on turning research into marketable technologies.

Wolfe is passionate about science, inner-city education, and kids’ deep desire to learn. He serves as co-founder and chairman of the Board of Trustees of Coney Island Prep and has been actively involved with the East Harlem School at Exodus House for more than a decade.

Wolfe is a columnist with Forbes, editor for the “Forbes/Wolfe Emerging Tech Report,” and host of a show on the Forbes Video Network. He has been invited to the White House and Capitol Hill to advise the White House and Capitol Hill to advise the Department of Health and Human Services on nanotechnology and emerging research. Wolfe is a frequent guest lecturer in business, entrepreneurship, and engineering classes.

Wolfe graduated from Cornell with a B.S. in agricultural business management and marketing. He resides in New York City, N.Y., with his wife Lauren, CALS ’00.

Susan Brown
Outstanding Faculty Award

Susan Brown is an outstanding scientist with a passion for breeding apples. She oversees the apple breeding program at Cornell—one of the largest fruit breeding programs in the world—and serves as the Herman M. Cohn Professor of Agriculture and Life Sciences and associate chair of the Department of Horticulture. Based at the New York State Agricultural Experiment Station in Geneva, N.Y., her breeding program targets unique flavors, exceptional crispness, enhanced storage and shelf life, and resistance to disease and insect pests.

Brown works extensively with growers throughout the state to test promising new selections that show the potential for commercialization. She has released four apples (Fortune, Autumncrisp, New York 1 and New York 2) and was the co-inventor of ten sweet cherries and one tart cherry. A recent hybrid was only 12 years from cross to commercialization, a breakneck pace for a perennial fruit crop. In 2010, Brown ushered through the first licensing agreement between Cornell and a newly formed grower cooperative, the New York State Apple Growers (NYAG) LLC, which will streamline the commercialization process and increase CALS’s return on investment.

Brown has received the Club Horticulture Commendation from the Garden Club of America, the Massachusetts Horticulture Society’s Jackson Dawson Award, and the New York Farm Award. Brown received a B.S. from the University of Connecticut in 1978, an M.S. from Rutgers University in 1980, and a Ph.D. from the University of California-Davis in 1984. Brown resides in Geneva, N.Y., with her husband, Marty, and their son, Michael. Their daughter, Lauren ’14, is currently studying biological and environmental engineering at Cornell.

Marvin Pritts
Outstanding Faculty Award

Marvin Pritts is a world expert in small fruits and berries, known for his engagement with the community and enthusiasm for teaching. As a professor in the Department of Horticulture, Pritts works primarily with strawberry and raspberry production, including ways to extend the harvest season, use cultural practices to reduce pest damage, and manage weeds without herbicides. His more fundamental research has focused on developing ways to improve plant growth and productivity by studying the physiological responses of berry crops to the environment.

Since 2002, Pritts has served as chair of the Department of Horticulture, where he oversees more than 40 faculty programs. A dedicated educator, he teaches Career Explorations in the Plant Sciences, Hands-On Horticulture, Berry Crop Production and Management, and a course in Leadership Development for Life Scientists.

Pritts is active in his community and is a frequent guest lecturer in the local schools. He also serves on the board of directors of the Cayuga Nature Center and is an adviser to the Ithaca Children’s Garden. Every other year, Pritts takes a group of high school students to work for a week at an orphanage in Guatemala.

Pritts obtained a B.S. in biology from Bucknell University in 1978, an M.S. in biology from the University of South Carolina, and a Ph.D. in horticulture at Michigan State University. Pritts lives in Trumansburg, N.Y., with his wife Allison, who is a nurse. Their daughter, Alyssa, is a sophomore in CALS, and their son, Kevin, is a high school junior with aspirations to study entomology.
BENEFIT TURNS SANDAL SALES INTO SCHOLARSHIPS

By Stacey Shackford

It was the ultimate in country couture—strappy $800 sandals on sale near a barn full of $100,000 designer cows.

Hundreds of fashionistas flocked to a farm in Litchfield, Conn., on July 28 for a chance to purchase some cut-price Manolo Blahniks, the shoes made famous by the TV show Sex and the City.

The sale also represented opportunities for Cornell University undergraduates, who will benefit from more than $120,000 of its proceeds through a scholarship fund set up by Arethusa Farm owners George Malkemus and Tony Yurgaitis. The two are at the farm every Thursday through Sunday, with their non-farming days spent in Manhattan running Manolo Blahnik USA as president and vice president.

There are reminders of the fashion world all over Arethusa: the resident bull is named Valentino, and a sign over the milking barn reads, “Every cow in this barn is a lady, please treat her as such.” But Malkemus and Yurgaitis are just as passionate about farming, and they are committed to grooming the next generation of America’s dairy farmers.

The Cornell connection was made a few years ago at the World Dairy Expo in Madison, Wis., where Malkemus and Yurgaitis ran into Cornell Dairy Fellows and were so impressed with the students’ training and professionalism that they decided they wanted to support the program by establishing a scholarship fund.

Dairy Fellows is an educational and exploration program for juniors and seniors that began in 1984 with 60 students. Since that time, hundreds of students have taken advantage of this partnership between dairy producers, agribusiness professionals, and the College of Agriculture and Life Sciences to educate future dairy industry leaders.

Sharon Detzer ’88, senior director of alumni affairs and development at CALS, said Malkemus and Yurgaitis’ philanthropic commitment to the program is inspiring.

“Theyir generous commitment to scholarship speaks to one of the highest priorities of the college,” Detzer said. “Scholarships help keep Cornell within reach of talented students from all backgrounds and support two of the university’s enduring principles: access and opportunity.”

Faculty Renewal Gifts: Shaping the Future of CALS

Because of the unprecedented number of impending faculty retirements across the university, faculty renewal gifts are defining the future of Cornell. Five new CALS faculty fellowships reflect the donors’ commitment to education in bird conservation, farm business management, environmental engineering, accounting, and dairy herd management.

ROBERT F. SCHUMANN SESQUICENTENNIAL FACULTY FELLOWSHIP

The late Robert Ford Schumann, a lifelong birder, established a faculty fellowship which embodies his passion for environmental conservation and birds. Schumann was a member of the Cornell Lab of Ornithology’s administrative board for 12 years, where he was instrumental in providing leadership support for flagship collaborative programs in bird research and conservation. The fellowship has enabled the Lab to hire Amanda Rodewald, who will begin her joint appointment as director of the Lab’s conservation science program and as professor in the Department of Natural Resources in January.

MUeller FAMILY SESQUICENTENNIAL FACULTY FELLOWSHIP IN FARM BUSINESS MANAGEMENT

The gift from George Mueller ’54, owner with wife Mary Lue of Willow Bend Farm in Clifton Springs, N.Y., is a personal effort to ensure that future students will be shaped by inspirational teachers—as he was—as they tackle major challenges in sustainable food production. Their gift will support the hiring of a faculty member in Farm Business Management.

ST. JOHN FAMILY SESQUICENTENNIAL FACULTY FELLOWSHIP IN DAIRY CATTLE MANAGEMENT

Ron St. John ’68 built his father’s Oakfield, N.Y., dairy farm into one of the state’s largest before moving to Florida in 1986. He now owns about 17,000 milk cows, while farming 11,820 acres on five farms in Florida and Georgia. The gift from Ron and Marcia St. John is providing essential support for recently recruited assistant professor and dairy cattle management expert Julio Giordano in the Department of Animal Science.

NORMAN R. SCOTT SESQUICENTENNIAL FACULTY FELLOWSHIP IN ACCOUNTING

Martin Y. Tang ’70 established a faculty fellowship in honor of Professor Emeritus Norman Scott in the Department of Biological and Environmental Engineering (BEE). Tang, who retired as Chairman, Asia, of Spencer Stuart & Associates in 2008, made the gift to recognize Professor Scott’s long-standing friendship with and leadership of the Tang Cornell-China Scholars Program. The fellowship enabled BEE to hire assistant professor C. Lindsay Anderson to establish a program in sustainable energy systems engineering.

PETER B. ORTHEWIN SESQUICENTENNIAL FACULTY FELLOWSHIP IN FARM BUSINESS MANAGEMENT

Peter Orthwein ’68, MBA ’69, established a joint faculty fellowship in Cornell’s Johnson Graduate School of Management and the undergraduate business program at the Dyson School of Applied Economics and Management in the College of Agriculture and Life Sciences. Orthwein is president and CEO of Thor Industries, the world’s largest manufacturer of recreation vehicles and a major builder of commercial buses and ambulances, and his gift reflects a personal commitment to the continued recruitment of top research and teaching faculty.
NASA FOOD SCIENTIST PUTS VARIETY ON THE MENU FOR MISSIONS TO MARS  
By Holly McIntyre

Even on Mars, an astronaut’s got to eat. Michele Perchonok, Advanced Food Technology Project scientist at NASA, is working to ensure that the astronauts of the future eat a healthy diet that’s tasty yet efficient in its preparation and storage.

Perchonok, who graduated from Cornell with an M.S. in food science in 1980 and a Ph.D. in 1983, has worked for NASA for 12 years, designing food systems for shuttle and exploration missions.

Today, much of the concentration is long-duration space exploration in the future, namely missions to Mars in the 2030s, which present the new challenge of providing food systems to support years-long journeys.

“We’re looking at how much of the food for a Mars surface mission should be processed packaged food systems versus a bio-regenerative food system, which is growing fresh fruits and vegetables,” she said.

On a mission to Mars, astronauts may be able to grow their own food as well as bring along raw ingredients that they can make into tofu, bread, pasta, and flour.

“They may make a meal with fresh pasta with a pasta sauce made from a tomato and green onions and bell peppers in the garden and then maybe make bread from the flour also. Maybe even have cookies at the end of the meal,” Perchonok said.

However, there are several challenges to feeding a hungry crew in space. The food needs a five-year shelf life and enough variety to stay interesting.

“It’s not as if the crew can go to a restaurant if they get tired of our food,” she said.

Research under way at Cornell is helping to address these challenges. Perchonok has collaborated with Jean Hunter, associate professor of biological and environmental engineering, to research why astronauts lose their sense of taste in space. “We’ve gotten anecdotal reports in orbit that food doesn’t taste the same,” Perchonok said. “Some of that is likely due to the fact that they’re not smelling the food.”

In low gravity more body fluids shift to the head, affecting the sense of smell. Early in a mission, astronauts often develop round “Charlie Brown” faces because of the fluid, and they feel like they have a cold, Perchonok said.

Hunter’s research is testing whether this affects the amount astronauts can taste.

Volunteers will spend several weeks in a bed with their heads lower than their feet. The Cornell team will measure how fluid buildup in the head affects their sense of smell and how long that effect lasts.

“We’ll get a better understanding of how much of sensory loss of flavor is due to the fluid shift and how much might be due to other pieces,” Perchonok said.

Ties to Cornell have been a continued asset, Perchonok said.

“I got an excellent education at Cornell,” she said. “In addition, the faculty at Cornell are super. They’re very well respected in the food science community. To know them and be able to turn to them if I have question or in a networking capacity is so useful.”

SHEFFIELD GIFT PROMOTES ECONOMIC SUSTAINABILITY  
By Stacey Shackford

When Holly Sheffield ‘92 first considered committing $20,000 to commemorate her 20th reunion, she didn’t imagine she’d be able to fulfill multiple philanthropic goals in a single gift.

But the banker discovered there are plenty of creative ways to support each of the college’s objectives—teaching, research, and outreach—while also leveraging its land grant mission to make tangible impacts on the world.

Economic sustainability, especially in developing nations, is a top priority for Sheffield, who is managing director at UBS Investment Bank. During a visit to Africa with a charitable organization, she saw first hand how work done at Cornell could benefit a region.

From helping indigo dyers in rural Thailand find new markets to assisting a small cheese maker in Kenya diversify its product list, the Student Multidisciplinary Applied Research Team (SMART) Program was exactly the type of initiative Sheffield was eager to support. Organized through the Cornell International Institute for Food, Agriculture, and Development (CIIFAD), the program brings together teams of students and faculty from diverse disciplines and pairs them with organizations and businesses in developing countries to find innovative approaches to problems surrounding markets, food, agriculture, and development.

“Not only does it benefit students, but the program helps strengthen businesses and create local jobs, which has a resonating impact throughout the region,” Sheffield said.

“I would challenge anyone who feels they have a couple of charitable passions to think about Cornell.”

Holly’s contribution was the first significant gift to CIIFAD’s newly created SMART program, and we are delighted that Cornellians are becoming excited about this educational initiative that gives real meaning to the global land grant status of our university,” said CIIFAD director Ralph Christy.

Sheffield said she was impressed with how well CALS and Cornell were able to align her gift with her individual interests.

“It’s amazing how diverse the school is, and that it can achieve so many outcomes. In one check to Cornell, I was able to achieve so many goals and felt like I was really making an impact,” she said.

“I would challenge anyone who feels they have a couple of charitable passions to think about Cornell.”
A team of five landscape architecture graduate students were finalists in the Parks for the People student design competition, sponsored by the Van Alen Institute, to re-imagine America’s national parks as natural, recreational, social, and cultural destinations. Rebecca Montross, MLA ’12, Bryan Harrison, Chelsea Miller, Christina Twomey, and Erik Jones worked with their thesis advisors and lecturer Marc Miller, MLA ’05, to develop plans for the Chattahoochee River National Recreation Area of Georgia and were among the nine finalists selected from 50 submissions.

“Despite the need for an expanded role of public space in the United States, the significance of the national parks for the contemporary American public is in jeopardy of being lost,” Miller said. “The students had to consider what the national parks are today, using the Chattahoochee National Recreation Area as a site to test their ideas. Most importantly, we were curious as to how parks and national recreation areas located in urban areas need to serve the public.”

The students collaborated in the Design Thesis Studio, sharing the Chattahoochee site but developing concepts for different niches within the recreation area as individual thesis topics. Their designs considered not only the existing features of the park, including wetlands, dams, creeks, and historical artifacts, but also a diversity of user groups, from snowbirds and hipsters to athletes and hunters.

**Fluid Relics:**
Chelsea Miller’s design blends passive historic preservation of the ruins of a paper mill with cultural use by park visitors, creating opportunities for social interaction and interpretation of the cultural landscape.

**Lodge, Camp, Park:**
Erik Jones’ design imagines new forms of lodging for hunters and nature lovers, including tree-house cabins and aerial tents. The project would expand commercial vendor services into the park to increase revenue, create opportunities for local businesses and draw different user groups into the park.

As we celebrate the 150th anniversary of the Morrill Act, I realize the extent to which my journey has been influenced by CALS and by its commitment to uphold the land grant mission. I entered Cornell in 2005 as a communication major, with a tentative plan to study journalism and pursue a career in broadcasting. Today, at age 25, I am mayor of the City of Ithaca. Although I would have never guessed this to be the direction my life would take, I am truly grateful that it is, and I credit CALS for instilling the public service mindedness that guided me to where I am today.

I was raised in Earlville, a small town in Upstate New York with a population of 800 people. As a senior in high school, I didn’t know what I wanted to study in college, let alone what I wanted to pursue in terms of a career. One aspect of Cornell that I loved and that appealed to me as a wavering college applicant, therefore, was the scope of its choices. I was confident that, at some point in my four years there, I would discover the path that I was meant to be on.

I was extremely overwhelmed when I first entered Cornell. I struggled to find a sense of purpose and belonging, and I quickly started to withdraw myself. Then one day in October I joined a friend—albeit reluctantly—at an information session for the Raising Education Awareness Challenge (REACH) program. A student-run program within the Cornell Public Service Center, REACH works toward closing the achievement gap by pairing student tutors and mentors with local, underserved youths. I immediately felt at home at REACH, and for the first time in my life I realized that I was capable of making a tremendous difference in the lives of others.

My newfound passion for community engagement and public service propelled me into a variety of other activities, completely turning my Cornell experience around. In addition to remaining active in REACH, where I tutored for four years and was a board member for three, I wrote for The Cornell Daily Sun, worked as an apprenticeship coordinator with the Learning Web, and at age 20 successfully ran for a seat on the City of Ithaca’s Common Council, becoming one of the youngest elected black officials in U.S. history.

It wasn’t simply by coincidence that I became so inspired by and committed to public service; it was due in large part to my being a member of the CALS community. In keeping with its tradition as a land-grant college, one of the core values at CALS is knowledge with a public purpose. After I was elected to Common Council, my class attendance dropped considerably. While some professors didn’t take notice (given my preexisting attendance issues), those who did were both understanding and supportive. They believed that serving the community was just as important as my classroom education.

This isn’t to say, however, that coursework was not extremely influential as well. For one, I probably wouldn’t have been elected as mayor had I not taken Katherine McComas’ course Planning Communication Campaigns. Running as a 24-year-old, I knew that it would be a challenge to garner local support and convince voters that I was a legitimate and deserving candidate. However, Professor McComas taught me how to properly target my audience and how to effectively construct and deliver my message.

Another course I took, which continues to prove invaluable, was Group Communication and Decision Making, taught by Poppy McLeod. It gave me the tools necessary to be able to effectively participate in public meetings and now, as chair of Common Council, to run them. So much of what I do as mayor happens in small group settings, and because of Professor McLeod I have a greater understanding not only of how the process works but also how to make the process work better.

I am a true believer in the importance of learning by doing, and I am very grateful for the fact that most of the courses I took in CALS were hands-on and geared toward real-world issues. We didn’t just learn about communication, we developed actual communication plans; we didn’t just study group decision making, we got into groups and made decision, after decision, after decision; we didn’t just learn about service, we served. Were it not for CALS being a land grant college with such a deep belief in and dedication to public service, I honestly don’t know if I would be serving as the mayor of Ithaca today.

...for the first time in my life I realized that I was capable of making a tremendous difference in the lives of others."
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Move-in day on August 17 brought over 900 new CALS students to campus. Within their ranks are an accomplished mathematician, a beekeeper, a young woman who was the first from her country to cross the Greenland Ice Cap, as well as a host of researchers, entrepreneurs, and athletes.

Languages spoken at home:
- Akan, Albanian, Amharic, Arabic, Azerbaijani, Bengali, Chinese, Dutch, English, Filipino, French, German, Greek, Gujarati, Haitian, Haryanvi, Hausa, Hindi, Hungarian, Igbo, Indonesian, Italian, Jamaican Creole, Japanese, Kazakh, Kiswahili, Korean, Navajo, Nepali, Norwegian, Panjabi, Polish, Portuguese, Romanian, Russian, Serbo-Croatian, Somali, Spanish, Tagalog, Tamil, Telugu, Turkish, Ukrainian, Urdu, Vietnamese, and Yoruba

Researchers of:
- sea urchins, millipedes, marine grasses, meteorology, Hudson River eels, orthopedics, Colony Collapse Disorder in honeybees, zebra finch neurology, yeast, and the Galapagos Islands

Entrepreneurs whose businesses sell:
- coffee, custom invitations, food for hermit crabs, fruit and vegetable garden design, certified organic hay, and web design

Interns for:
- Vogue Magazine, the mayor of Binghamton, the National Audubon Society, Disney World, the Centers for Disease Control, the U.S. Department of Agriculture, the Natural Resource Defense Council, the Shanghai Agriculture Commission, and a Spanish vineyard

Members of national teams in:
- basketball, fencing, gymnastics, and squash