INSIDE THIS ISSUE

ABE is #1 – again!
ExplorACES attracts over 2,000
Spinach, snakes, kittens, algae, and more
Study abroad down under
Extension blogs, urban teens, livestock, farmdoc

Summer 2013
Greetings,

We are pleased to welcome a new class of top-achieving freshmen and transfer students to the College of ACES for the fall. The past few years have seen a growing number of students applying to ACES and taking advantage of our quality courses and degree programs. This trend reflects the increased demand for our grads both in the job market and in top-ranked graduate programs.

In March, prospective students and their families visited campus during ExplorACES to talk to current students, faculty, and staff about the exceptional learning opportunities available in the College of ACES. There will be another chance for students and their families and other friends of agriculture to learn about the college during this year’s Farm Progress Show, to be held August 27 to 29 in Decatur, Illinois.

I am pleased to announce that two new department heads are joining the leadership of the college. Dr. Sharon M. (Shelly) Nickols-Richardson assumed her position with the Department of Food Science and Human Nutrition (FSHN) on July 1. Dr. Susan Silverberg Koerner will begin her tenure with the Department of Human and Community Development (HCD) on August 16. These talented new administrators are stepping into the shoes of the best—Faye Dong, who led FSHN for 10 years, and Bob Hughes, who spent 10 years as head of HCD. We thank them for their tireless and exceptional commitment and dedication to the college and their departments.

Lastly, I encourage you to visit our new blog. “Voices of ACES” (aces.illinois.edu/about/voices-of-aces) features posts from ACES faculty, staff, and students on what’s happening around the college. For example, you can read about a student’s summer intern experience, action-packed study abroad trips, the ACES Alumni Association’s activities and events, and much, much more.

Please visit us soon, whether it’s through our new website or during a trip to campus!

Best wishes,

Robert Hauser
Dean of ACES

Look who’s blogging!

Scan here or visit aces.illinois.edu/about/voices-of-aces to read the latest blog posts from ACES students, faculty, and other representatives.

And look for this symbol inside this issue of ACES@Illinois to learn more from University of Illinois Extension, which hosts more than 25 blogs on a wide variety of topics.
ABE@Illinois cultivates a history of excellence

The undergraduate and graduate programs in the Department of Agricultural and Biological Engineering (ABE) at Illinois have been consistently ranked among the best in the nation by U.S. News and World Report’s annual “Best Colleges” publication. The undergraduate program has been in one of the top two spots for the last seven years, including five years as #1. The graduate program has been ranked #1 for two of the last four years.

K.C. Ting, professor and department head of ABE since 2004, acknowledges that this “says something” about the department. “In the last six years, we have doubled our enrollment in both our undergraduate and graduate programs,” he said. “We have put in place two concentrations—in agricultural engineering and biological engineering—and we recently began a new master’s program in technical systems management [TSM]. We are currently conducting a search for two new faculty hires, one a TSM-focused teaching and research position and the other an extension and research position.”

The department has also developed a professional science master’s concentration in the TSM graduate program, designed to let students pursue advanced training in science or mathematics while simultaneously developing highly valued workplace skills. Four TSM students were the first graduates in the history of the department to receive the professional science master’s degree in December 2012.

ABE research continues to be extensive and impactful, said Ting. “When the energy company BP announced they were funding a $500-million program to study bioenergy, Illinois joined with the University of California at Berkeley and the Lawrence Berkeley National Laboratory to establish the Energy Biosciences Institute,” he said. “Our department is part of that initiative, and in our program we’ve done more than $4.5 million in research on biomass production/provision engineering and produced dozens of journal articles and conference papers.”

In addition, after Archer Daniels Midland Company founded the ADM Institute for the Prevention of Postharvest Loss with a $10-million gift to Illinois, ABE received more than $1 million of that funding over two years. Several ABE faculty have conducted significant research in postharvest loss, particularly in an ongoing collaboration with Brazil and India.

“Every research group has their signature project,” Ting said. “Soil and water works in drainage, in hydrology, and in water quality and its impact on the environment. Food and bioprocess engineering continues to address the challenges of ethanol and alternative biofuel production. Bioenvironmental engineering is developing a process that will use biowaste such as swine manure to grow algal biomass and produce biofuels. They have also established a strong program in animal welfare and livestock production engineering. The biological engineering group has exciting activities in synthetic biology, biosystems engineering, and bioinstrumentation. The list goes on.”

Ting emphasized the considerable contribution the small department makes to extension and outreach. “We have several extension faculty and specialists who work with farmers on livestock waste management, air quality control in livestock facilities, farm safety, drainage, and chemical applications. They are doing many good things.”

The department is part of two colleges on the Urbana-Champaign campus, the College of ACES and the College of Engineering. “Their strengths are a tremendous asset to our department,” said Ting. “It helps significantly to be a part of two top colleges on our campus.

“We have a clear vision of what we want to do, and we deliver,” he concluded. “If the ranking follows, we’re happy, but our real goal is simply to be a great department.”
ExplorACES, a two-day event organized and run by students every year in March, showcases the college to high school students who are interested in attending the U of I. Here are a few photos from the 15 mini classes and over 100 exhibits offered this year.

**Clockwise from right:**
ACES teaching associate in horticulture Dianne Noland demonstrates how to hand-tie a floral arrangement, to the musical inspiration of “I’m a Wildflower” by the JaneDear girls.

Cathryn Ayers, a 2013 graduate in agricultural and consumer economics, talks about her spring break trip experiences in one of the 15 mini classes offered during ExplorACES.

Christina Lyvers, a Ph.D student in agricultural and biological engineering, checks how much carbon dioxide is being exhaled by Tri-Valley High School student Bethany Myszka while she sits inside a head box as part of the “Feeling Gassy” exhibit. Tri-Valley was one of 34 school groups that attended the 2013 ExplorACES.
**Clockwise from left:**

ACES student Liz Blissett shows an ornamental citrus plant in one of the Turner Hall greenhouses to visitors Rod Fritz (front); his son, Casey Fritz; and their friend and pilot, Jerry Hose. The three flew to Champaign from Carroll County early Saturday morning so Casey, a high school senior, could be among the 2,000 attenders at the two-day event.

Wearing her “chicken cap,” Lea Sohrabi holds a baby chick at an exhibit in the Stock Pavilion. Sohrabi, an undergraduate in animal sciences, was one of over 50 student volunteers at this year’s ExplorACES.

Visiting high schoolers Savannah Bolen and Kennedy Roberts examine a large pellet of ground Miscanthus grass that was compressed by Zewei Miao, a visiting researcher in the Institute for Genomic Biology. Miao said that grinding and compressing the plant into a smaller package makes transporting this potential energy crop much more feasible.
Crop sciences professor Rick Weinzierl believes it is crucial to get new people into farming. “Otherwise, we’ll have a greater and greater consolidation of farmland into huge operations,” he said. “I don’t think that’s how we want the rural landscape to look in the future.”

Weinzierl is using a grant from the USDA’s Beginning Farmer-Rancher Development Program to address this problem. He and a team of researchers and extension educators, in partnership with the Illinois Migrant Council, the Illinois Organic Growers Association, and the Land Connection, offer a year-long classroom and in-field educational program to aspiring Illinois farmers.

Taught in English and Spanish, the program starts with 3 to 4 months of classroom training in the winter followed by 8 to 9 months of outdoor hands-on demonstrations. Participants use land at the ACES agricultural stations at Dixon Springs, Urbana, and St. Charles to see if they can make their farming plans work.

“The reason for using the stations is that you have somebody around who can help,” Weinzierl explained. “You’ve got irrigation infrastructure and equipment for land preparation, tillage, and pesticide application. You don’t have to buy all that.”

Weinzierl expects over 400 people to participate in the program, which will cover topics from getting land to business planning to legal, insurance, and labor issues. The aspiring farmers will have a chance to network with working producers.

The program’s main goal, to increase the number of people growing fruit and vegetables, ties in with Illinois legislative initiatives that would require public institutions to buy a certain amount of their food from local sources. Having new farmers would help meet the growing demand for more farmers’ markets and more locally grown food in grocery stores.

Additional goals are to train educators and develop online resources to support future educational needs.

Preparing a new generation of Illinois fruit and vegetable farmers

Illinois teens in Cahokia and Madison recently participated in an innovative new national 4-H demonstration project. Teens Teaching Youth Biotechnology, presented in 10 urban areas of Delaware, Indiana, Illinois, Missouri, and Ohio, was funded by the United Soybean Board and is conducted in partnership with the National 4-H Council.

Steve Wagoner, a U of I Extension metro youth development educator serving Madison, Monroe, and St. Clair counties, is the project director for Illinois. “The project was developed to train teens to teach agriscience and biotechnology to younger students,” he said. “We already had a 4-H after-school program [ExCEL: Extension Cares for all Learners] in the elementary and junior high schools in both districts, so the corresponding high school administrators recruited students with a strong foundation in science to teach the biotechnology content to the younger students in ExCEL.”

Nine teens, four from Cahokia and five from Madison, attended a training weekend at the Donald Danforth Plant Science Center, where Dr. Terry Woodford-Thomas was their industry partner and mentor. “Terry provided them biotechnology training, they saw a lot of the research projects going on there, and she gave our teens a good feel of what biotech is like as a career,” Wagoner said.

The teens prepared lesson plans for 20 hours of biotechnology education. Topics included studying cell structures, extracting DNA, and making bioplastic and other soy-based products. Each teen was paid an hourly wage, which “helped them treat the project as a job and understand that teaching can be a real career,” Wagoner said.

Wagoner hopes the Teens Teaching Youth concept can be expanded to many other subject areas. He encourages ACES alumni to “open the doors to your workplace. Help us help urban teens better understand the broader world and expand their horizons.”
Does 4-H matter?

A survey of Illinois 4-H members conducted by the University of Illinois Extension State 4-H Office and Survey Research Lab found that what 4-H does indeed matters.

- **4-H fosters a greater sense of belonging.**
  95% of 4-H members feel included in their 4-H program.
  95% say adult leaders listen to what they say.

- **4-H enhances independence.**
  83% say they help make the decisions about what happens in 4-H.
  83% say they do activities that help them study potential careers.

- **4-H inspires generosity.**
  95% work on service projects that help their community.
  91% can identify ways to make a difference in their community.

- **4-H encourages mastery of skills.**
  93% share what they learned with others through 4-H.
  90% know how to set goals and are encouraged to achieve them.

- **4-H offers the influence of caring adults.**
  65% say 4-H leaders or staff take an active interest in their studies.
  65% say 4-H leaders or staff help high school seniors identify their strengths and weaknesses.

- **Members overwhelmingly agree about the influence of the 4-H experience.**
  4-H helps develop leadership skills.
  4-H instills a solid work ethic and sense of responsibility.
  4-H helps members grow and increases their self-confidence.
  4-H helps teach skills needed in a career.

Impressive results from one of the strongest youth development programs in the country!

Marion County 4-H livestock judging team takes national championship

The Marion County 4-H livestock judging team was named National Champion in the 4-H Division at the 107th National Western Stock Show in Denver, Colorado.

Team members Caitlyn Bowyer, Dylan Sigrist, Rhiannon Branch, and Tyler Pokojski competed against 23 teams, 22 from across the United States and one from Canada. The team placed first in swine, first in cattle, fifth in sheep, and second in reasons.

In individual competitions, Bowyer placed first in goats, first in beef, second in swine, and third in reasons, earning her the title of Reserve Champion Individual Overall. Sigrist placed fourth in beef, 14th in sheep, 12th in swine, 14th in reasons, and in fifth place as Individual Overall. Branch placed eighth in beef, 15th in swine, 11th in reasons, and as 18th Individual Overall. Pokojski placed 21st in swine and was 30th Individual Overall. The team was coached by Steve Austin and Kane Austin, of Mt. Vernon.

The year’s theme, “A Whole New World,” challenged participants to create unique experiences and thrive in a “new world” through 4-H and FFA. Workshops offered throughout the week exposed youth to topics ranging from communication and team building to leadership development.

“We’re grateful to all those who have supported and encouraged us over the years,” said Steve Austin. “This was a community win, and we look forward to continuing our representation of Marion County,” located in south-central Illinois.

Royalty in the ACES family

ACES undergraduate Amelia Martens is this year’s Miss Illinois County Fair queen. A senior in agricultural communications graduating after just three years, Martens has been competing in pageants since she was 13.

“I entered them because I enjoyed public speaking and interviews,” she said. “And what girl doesn’t like to dress up?”

She represented the Rock Island County Fair at the state pageant in January. “State was an experience of a lifetime,” Martens said. “I enjoyed spending the weekend with so many qualified contestants. I’m very excited about this summer and looking forward to representing our state this year.”

As Miss Illinois County Fair, Martens will serve as the hostess of the Illinois State Fair from August 8 to 18 and of Du Quoin State Fair from August 23 to September 2. She will also visit many county fair queen pageants this summer and promote agriculture throughout the state.

Martens is also the 2013 recipient of the Warren K. Wessels Achievement Award, the Outstanding Senior in the College of ACES.
Urban agriculture is promoted as a strategy for dealing with food insecurity, stimulating economic development, and combating diet-related health problems in cities. However, estimates of how much of it is taking place vary widely.

John Taylor, a doctoral candidate working with Sarah Taylor Lovell, an assistant professor of crop sciences, said that various lists of community gardens in Chicago were circulating, but on closer inspection, many “gardens” turned out to be planter boxes or landscaping. At the same time, he suspected that there were unnoticed gardens in backyards or on vacant lots.

Taylor used a set of reference images of different garden types to determine visual indicators for food-producing sites; then he looked at the documented sites using Google Earth software. He found that only 13 percent were actually producing food.

Next he examined Google Earth images of Chicago to find undocumented food production sites and visited a representative sample to confirm that they were really producing food. His final estimate was that Chicago has 4,648 urban agriculture sites with a production area of 264,181 square meters, three-quarters of which are residential gardens and single-plot gardens on vacant lots.

Garden concentration was especially high in neighborhoods with large Chinese-origin populations or with large numbers of immigrants from Poland and eastern and southern Europe.

Home food gardens are concentrated in the city’s northwest, where people tend to live in detached houses. Vacant lot gardens and community gardens are concentrated in the economically disadvantaged neighborhoods in the south and west, where apartment living is more the norm.

The results of this study suggest that urban gardens contribute to Chicago’s total food production.

“Home gardens actually contribute to food security,” Taylor said. “They’re underappreciated and unsupported.” He noted that people grow for their neighbors as well as for themselves, which is particularly important in food deserts, where fresh produce is in short supply.

As the invasive Asian carp population grows and the threat of its entering Lake Michigan through one of the Chicago canals is monitored, researcher Cory Suski believes two barrier methods are better than one.

Suski, assistant professor in the Department of Natural Resources and Environmental Sciences, bubbled carbon dioxide (CO2) into the water to work in tandem with the electrified fence that has been used to divert Asian carp from entering the canal. Suski found that carbon dioxide is quick and effective in repelling fish from an area.

“In one experiment using tanks, we could actually chase the fish with the gas,” Suski said. “Once carbon dioxide reached a threshold, fish would ‘choose’ to leave the area of the tank that had CO2. The fish initially showed signs of being irritated or agitated after exposure, and eventually they lost equilibrium. If fish cannot leave or are slow to leave, the carbon dioxide accumulates to a point where it will act like an anesthetic gas used for patients who are undergoing surgery.”

Because carp are known to jump, Suski was prepared for the possibility that the carp would try to jump out of the shuttle box to escape the carbon dioxide. “We covered the tanks to keep them contained, but they didn’t jump,” he said.

Suski knew that CO2 had already been proven to be effective at fish hatcheries. The gas was used to move fish from one area to another, making it easier to harvest them. He wanted to see if the technique could be applied to the Chicago River canals and at other vulnerable entry points into the Great Lakes.

Tests were performed on bighead carp and silver carp as well as bluegill and largemouth bass so the effects on native species of fish could be confirmed. CO2 had the same results with all four species.

“The CO2 barrier isn’t intended to replace the electric fence. It’s another tool, a redundant barrier that further increases the likelihood of stopping fish from getting through,” he said.

Suski said Asian carp are already in the Mississippi River all the way up to Minnesota as well as in South Dakota.
Global warming beneficial to ratsnakes

Speculation about how animals will respond to climate change due to global warming led ACES researcher Patrick Weatherhead and his students to conduct a study of ratsnakes at three different latitudes, in Ontario, Illinois, and Texas. The findings suggest that ratsnakes will be able to adapt to higher temperatures by becoming more active at night.

“Ratsnakes are a species with a broad geographic range, so we could use latitude as a surrogate for climate change,” Weatherhead said. “What are ratsnakes in Illinois going to be dealing with given the projections for how much warmer it will be 50 years from now? Well, go to Texas and find out. That’s what they are dealing with now. Snakes are ectotherms, that is, they use the environment to regulate their body temperature. We were able to compare ratsnakes’ ability to regulate their temperature in Texas as compared to Illinois and Canada.”

The research showed that ratsnakes in Canada, Illinois, and Texas would all benefit from global warming. “It would actually make the environment thermally better for them,” Weatherhead said. “Texas is already too hot for much of the day, so warming temperatures may cause ratsnakes to shift to even more nocturnal foraging there and stay active at night for more of the season.”

As the higher temperatures associated with climate change begin to be more challenging for snakes in Illinois, will they be able to switch to nocturnal foraging? “We think that won’t be a problem for them,” Weatherhead said. “We already know that Illinois snakes show some limited amount of nocturnal activity because there is anecdotal evidence for nocturnal nest predation by snakes.”

Weatherhead said the environmental domino effect could mean a reduction in some native bird populations because the snakes he studies are important predators of birds’ nests.

Kitten diets for healthier cats

Diet affects the gut microbiome, or microbial colonies. The composition of the microbiome affects immune system development and is linked to metabolic diseases such as obesity.

For cats, common wisdom is that they need to eat a lot of protein. “There are a lot of diets now that have high protein and fat and not much dietary fiber or carbohydrates,” said Kelly Swanson, associate professor in animal sciences. He examined the effect of the ratio of dietary protein to carbohydrate ratio on microbiomes in the kitten gut.

One month before mating, eight female cats were assigned to either a high-protein, low-carbohydrate (HPLC) diet or a moderate-protein, moderate-carbohydrate (MPMC) diet. After the kittens were born, they were housed with their mothers, weaned, and then fed the same diets as their mothers.

The researchers took fecal samples from the kittens at weaning and 4 and 8 weeks after weaning and used bioinformatics techniques to estimate total bacterial diversity.

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“This was one of the first studies in cats to use sequencing to lay out what is in the gut and apply it to nutrition,” Swanson said.

They found that levels of bacteria that break down protein were higher for HPLC kittens and levels of bacteria that break down carbohydrates were higher for MPMC kittens.

They also found that the MPMC kittens had high levels of bifidobacteria and blood ghrelin. Ghrelin stimulates the appetite and may promote weight gain. However, bifidobacteria may promote gastrointestinal health.

Other bacteria found at higher levels in the MPMC kittens are also linked to gut health. The researchers found a positive relationship between lactobacilli, blood cholesterol, and blood leptin levels. Leptin is the signal that tells the body to stop eating, so it may be linked to cholesterol metabolism, appetite, and body weight regulation.

HPLC kittens had lower levels of some health-promoting bacteria, but all the animals were healthy throughout the study.
Switching to an energy crop: Break even or make a profit?

Along with the growing interest in biomass energy crops as renewable alternatives to fossil fuels comes a growing list of questions from corn and soybean farmers about what it would cost them to switch. U of I agricultural economist Madhu Khanna developed a customizable online calculator to eliminate some of the guesswork and help farmers with their decisions.

“We’ve been doing calculations for quite some time on what it would cost to produce energy crops in Illinois and other states, and we realized that it could be useful to people who want to figure out what these costs would be on their own farms,” Khanna said. “We wanted to create a calculator so farmers could make their own assessments.”

The feedstock cost and profitability calculator can be found at miscanthus.ebi.berkeley.edu/Biofuel.

“The calculator allows farmers to put in their own parameters,” Khanna said. “They can customize the costs based on what their current farming operation looks like, what their current returns are on the land that they are thinking about converting, and what it would cost to grow an energy crop there instead.”

After selecting a baseline crop currently being grown, the user provides specific information about expenses, yields, and inputs. “Unlike corn and soybeans, where we’ve had years of experience and people have developed standardized recommended application rates and planting techniques, these bioenergy crops are still very experimental,” Khanna said. “We’re still figuring out what the optimum rate of nitrogen application should be, the timing for harvest, and so on. The calculator is based on a representative set of assumptions using our best knowledge to date.”

Khanna hopes to receive feedback from farmers about how the site functions.

One reason that biofuels are expensive to make is that the organisms used to ferment the biomass cannot break down the sugars in hemicellulose, after cellulose the most abundant cell wall component. Microbiologists Isaac Cann and Rod Mackie are studying an organism that might be able to solve this problem.

Mackie and his high school-aged son isolated a bacterium, *Caldanaerobius polysaccharolyticus* from a sample he took from the garbage dump of a canning plant. It contains all the proteins and enzymes needed to break down and metabolize xylan, the most common hemicellulose. This microbe can degrade xylan because it has evolved an enzyme that removes its side chains, which hinder degradation. Once the side chains are removed, another enzyme breaks the sugar chain into single sugars, or xylose. Then other enzymes metabolize it.

The genes are located in a single cluster on the microbe’s genome, which is convenient. “Instead of taking pieces from here and there and stitching them together, we can take this part of the gene and put it into a microbe that normally degrades only cellulose,” Cann said.

Moreover, he explained, “You have a set of enzymes that have co-evolved over millions of years, so they have been fine-tuned to work together.”

Another advantage of *Caldanaerobius polysaccharolyticus* is that its enzymes are heat resistant, allowing fermentation at high temperatures. Biofuels are usually fermented at 37 degrees Celsius, a temperature at which most microbes can survive, making the vats susceptible to contamination.

The research was done at the Energy Biosciences Institute, a collaboration of the U of I, the University of California at Berkeley, Lawrence Berkeley National Laboratory, and BP, which funds the work. The institute is dedicated to applying biological sciences to the challenges of producing sustainable, renewable energy.

Above: Isaac Cann extracting DNA from a bacterial cell.

Garbage bug may lower the cost of biofuel

Straight Stalk offers current crop information and research highlights. Scan here or visit webs.extension.uiuc.edu/csrec/eb260.
Clearer contracts for CSAs

U of I professor of agricultural law A. Bryan Endres and his wife are both attorneys, so between the two of them they’ve read a lot of legal documents. But when they became members in a local CSA (community supported agriculture program), even they struggled to understand the agreement they were asked to sign. Endres’s experience as a CSA consumer spurred him to develop simple contracts that can clarify expectations, avoid misunderstandings, and protect CSA farmers and their customers.

CSAs create partnerships between local farmers and consumers, who become members or subscribers in support of a farm by purchasing “shares.” A share provides, depending on the agreement, a quantity of vegetables, eggs, flowers, or other produce to the consumer each week.

“Some CSAs are highly organized, very professional,” Endres said. “In my own CSA, the member agreement we signed had elements of legality, but it was very unclear—and an unclear membership agreement can create a barrier to people joining CSAs. It’s actually a contract between the farmer and the CSA member who wants to get the vegetables every week, so a well-written and clear contract is much better for everyone.”

Endres and postdoctoral legal researcher Rachel Armstrong obtained copies of membership agreements from existing CSAs and used them to develop easy-to-understand contracts for CSA owners to use.

“The TIAA-CREF Center for Farmland Research will help us broaden and deepen our research in farmland economics and extend our reach to new audiences,” said Paul Ellinger, head of ACE. “The center will allow us to build on historical excellence in the area to be the preeminent center for research in farmland economics.”

The center will also support farmdoc, the university’s widely read website. “Through farmdoc we deliver timely, unbiased economic analysis, tools, and information to agricultural producers, businesses, investors, and policy makers,” said Ellinger.

“Farmers, educators, and investors rely on the U of I for leading-edge agricultural research,” said Robert Hauser, dean of the College of ACES. “The TIAA-CREF Center for Farmland Research will help us create the tools needed to promote sustainable and innovative agriculture practices and maintain our status as the premier source for farmland research.”

TIAA-CREF is a national financial services organization with $502 billion in assets under management and the leading provider of retirement services in the academic, research, medical, and cultural fields. The company owns or manages approximately $4 billion in high-quality farmland—more than 600 properties totaling more than 1 million acres—in major grain-producing regions, including the United States, Australia, South America, and Eastern Europe.
ACES scientists have found a way to boost current industry capabilities when it comes to reducing the number of *E. coli* 0157:H7 cells that may live undetected on spinach leaves.

“By combining continuous ultrasound treatment with chlorine washing, we can reduce the total number of foodborne pathogenic bacteria by up to 99.99 percent,” said Hao Feng, a professor of food science and human nutrition.

According to Feng, the USDA is looking for proposed technologies that can achieve a 4- to 6-log reduction in pathogen cells (a 6-log reduction would achieve a million-fold reduction in bacteria). The food processing industry can now achieve a 1-log, or tenfold, reduction; the U of I technique yields a 4-log reduction.

Combining technologies is the key to bridging the gap between our current capacity and what USDA would like to see, significantly enhancing food safety,” he said.

Feng’s pilot-scale system uses three pairs of large-area ultrasonic transducer boxes to form a channel through which ultrasound is provided to spinach leaves that are undergoing a continuous-flow chlorine wash. Spatial uniformity of ultrasound distribution was confirmed by tests using metallic foil.

The scientist said that continuous flow and uniformity of the ultrasound field are key elements in the success of the process.

System design is important for another reason, Feng said. “Placement of the produce as it makes its way through the channel turns out to be very important. We had to find ways to make sure that leaves received similar exposure to ultrasound, taking care to minimize the chance that one leaf would block a nearby leaf’s exposure to the sound waves.”

If even part of a leaf escaped the full ultrasonic treatment, it could contaminate the rest of the produce, he said.

Nutrition News You Can Use offers nutrition tips that lead to a lifetime of healthy choices. Scan here or visit webs.extension.uiuc.edu/bda/eb283.

A recent study suggests avoiding cooking methods that produce the crusty bits you’d find on a grilled hamburger, especially if you have diabetes and know you’re at increased risk for cardiovascular disease because of your diagnosis.

“Cooking methods that create a crust—think the edge of a brownie or the crispy borders of meat prepared at very high temperatures—produce advanced glycation end products [AGEs]. And AGEs are associated with plaque formation, the kind we see in cardiovascular disease,” said Karen Chapman-Novakofski, a professor of nutrition in ACES.

Experts have long advised people with diabetes to bake, broil, or grill instead of frying, she said.

“That’s still true, but if you have diabetes, you should know that AGEs—byproducts of cooking methods that feature very high, intense, dry heat—tend to end up on other body tissues, causing long-term damage,” she added.

If you’re fighting plaque buildup anyway, consuming AGEs could worsen the cardiovascular complications of diabetes.

The scientists compared the 10-day food intake of 65 persons in two ethnic groups: Mexicans (who have higher rates of diabetes) and non-Hispanic whites.

“For each unit increase in AGEs intake, a study participant was 3.7 times more likely to have moderate to high risk for cardiovascular disease,” Chapman-Novakofski said.

Non-Hispanic whites consumed more AGEs and more saturated fats.

Chapman-Novakofski noted that eating less saturated fat and more fruits, vegetables, and fiber is important for people with diabetes, but that food preparation may be important, too.

“AGEs are especially high in ground meat. If you put a hamburger on the grill, you’ll likely consume more AGEs than if you choose round steak or chicken.”

Boiling or stewing meat reduces AGEs intake further. And scrambling an egg with cooking spray instead of frying it leads to a significant reduction in AGEs, she added.

Safer spinach? New technique will reduce *E. coli* numbers

Crusty foods may worsen heart problems associated with diabetes
In the 10 years since he earned his degree in food science from the College of ACES, “Architect of Flavor” Judson Todd Allen has been on an exciting ride to places he once only dreamed about going.

Allen has hosted his own live Internet cooking show, competed on television’s “The Next Food Network Star,” started catering and consulting company Healthy Infused Cuisine, and formulated and sold a healthful hot sauce—making his dreams come true and then some.

“Today I’m in Orlando with entertainer Steve Harvey at the Disney Dreamers Academy,” he said. “Now I’m motivating youth to achieve their dreams, just as ACES assistant dean Jesse Thompson, Jr. once encouraged me.”

As a student at the Chicago High School for Agricultural Sciences, Allen met Thompson, director of ACES diversity programs, on the school’s Career Day. Thompson described scholarships and other opportunities that could empower Allen to realize his dream of attending the U of I and majoring in food science.

“He encouraged me to take part in ACES’ Young Scholars Program, where I amped up my math, chemistry, and writing skills the summer before I started college,” Allen said. “His efforts were all about giving me the tools I needed to succeed.”

One of those tools was learning to relate to students from other cultures and economic backgrounds, which came in handy when Allen shared a house with 14 other contestants for “The Next Food Network Star.” Skills he developed while in ACES also enabled him to remain poised and confident in meetings with network executives.

“An emphasis on diversity is important for minority students. Most want to come to college and be able to identify with persons from their own culture and background, but a diverse student body and faculty also gives students a chance to truly expand their horizons in working, networking, meeting, and interacting with people,” Allen said.

Each time he has taken on a more challenging role, Allen has found that his ability to relate easily to all kinds of people has been extraordinarily valuable.

He has several projects on the front burner these days. The first is promoting his habanero hot sauce, which “highlights the pepper’s flavor profile instead of the heat. It’s a healthier, low-sodium, all-natural product. Ricki Lake has named it ‘one of her favorite things.’ I really want people to try it,” Allen said.

A food contributor to the “Steve Harvey” daytime television show, Allen was recently asked by renowned chef Art Smith to participate in Common Threads, which teaches children living in underserved communities how to cook wholesome, healthy meals.

In the past few years, Allen has lost “about 135 pounds” by creating and consuming nutritious recipes that feature flavorful cuisine. “When people hear that they have to start eating healthy, they often fear that they’re going to miss out on their favorite foods. I know from experience that you can enjoy eating healthy.”

As medical ambassador for the American Cancer Society, Allen sometimes uses his expertise to sneak power foods and ingredients into delectable creations “so the good-for-you part isn’t in a person’s face.”

His mission is to destroy the myth that healthy food has to be lifeless and bland. “In ACES, I learned about food chemistry, flavor profiling, and sensory analysis, all the things I need to know to create healthy, delicious foods,” he said.

Almost as important as that base of knowledge are the ease and charisma with which Allen delivers his message. Those traits blossomed, he said, as a byproduct of the ACES culture, which values diversity and teaches tools for personal success.

To learn more about Allen’s career and his recipes or to purchase his hot sauce, visit www.judsontoddallen.com.
Snappy the snapping turtle lives in an aquarium near the cafeteria of Champaign’s Booker T. Washington Elementary School. As the school’s pet, Snappy became the hook that 12 U of I students needed in an eight-week after-school program that they designed for a new environmental field experience class in the Department of Natural Resources and Environmental Sciences (NRES). Each week had an environmental lesson that included something about Snappy.

“There are a lot of career paths that involve environmental education,” said Piper Hodson, NRES student services coordinator and class facilitator. “This experience gives our students a feel for the preplanning and thought processes that go into providing environmental education.” Even students not going into education as a career will use the skills they learn as they communicate with many different audiences, Hodson emphasized.

The NRES students spent the first few weeks of class hearing from local environmental educators who work with kids. Caitie McCoy, an NRES alum who is the social scientist for Illinois-Indiana Sea Grant in Chicago, also shared about her educational outreach with adults.

Hodson said that while there are lots of environmental education curriculums already written, she chose for students to create their own using a resource from the North American Association for Environmental Education, *Non-formal Environmental Education Programs: Guidelines for Excellence*. The class developed their own theme, curriculum, lesson plans, and activities.

The students were paired off to lead one of the 8-week sessions for the group of third-through fifth-graders. To provide a different kind of experience, Hodson also required the U of I students to create either a mini class or a display for ExplorACES.

“I’ve been really pleased with how well the students planned and executed the after-school sessions,” Hodson said. “It has given some of them an opportunity to shine at something that’s not part of a more traditional college class, too. Preparing lesson plans and leading a session are very different ways to demonstrate what you know from the typical multiple-choice test or written paper.”

The weekly session topics included water and ground pollution, the food web, ecosystems, and recycling. Each elementary school student kept a journal made from scrap paper and used file folders, hole-punched and tied with yarn. “Whenever there’s downtime,” said NRES student Alexandra Wright, “such as if an activity ends sooner than expected, we pull out markers and the journals and have the kids draw and write about what we did that day.”

Booker T. Washington is unusual in that the cafeteria serves vegetables from the school’s own garden. The NRES students taught one session on composting, and they hope to encourage the school to incorporate a compost bin. Using the school’s organic garbage in the garden would bring the vegetables full circle, extending what the elementary students were taught into real-life practice that can make a difference.

The Ag Literacy Lines blog features fun information for youth and adults. Scan here or visit webs/extension.uiuc.edu/cfiv/eb166.

Above: NRES student Alexandra Wright (center) teaches grade school children at Booker T. Washington Elementary School about recycling by reusing found items for craft projects.
When service members return from active duty, they may struggle to reintegrate with their families’ responsibilities, schedules, and expectations. U of I students are helping to renew these relationships in an agricultural education collaborative leadership course.

The course partners with Illinois Operation: Military Kids, a coalition of organizations that support family reintegration, to deliver “family packs” that foster military families’ reintegration.

“Collaborative partnerships raise awareness of and support for military families,” said Linda Kupferschmid, an Operation: Military Kids project coordinator. “Family packs containing letters of appreciation, gift cards, family games, and more provide realistic encouragement to our sometimes-overlooked military families.”

Student Zachary Reid’s group is collaborating with two organizations to host a 3-on-3-basketball tournament in support of Operation: Military Kids.

“As the capstone to achieving a leadership studies minor, this class offers a unique experience to incorporate and apply all we’ve learned from previous ag ed classes,” Reid said. “It requires students to put into practice project development, implementation, and management, while raising awareness in Champaign-Urbana of the difficulties veterans face when returning home.”

Caroline Hoff and her group decided to include activities that require parental help, such as tie-dye kits, pottery kits, and model-building kits, as well as sports equipment, playing cards, board games, and scrapbooking supplies.

“Collaborative Leadership is a unique class because our grade is dependent on our ability to work together with multiple organizations toward a common goal,” Hoff said. “My group is working to compile boxes so military families will have easy and fun ideas about how to spend time together.”

Instructor Richard Clark said the project lets students apply in the real world what they have learned in previous courses about personal leadership, organizational leadership, and community leadership.

“Our students have gained an appreciation for the sacrifice that soldiers and their families experience during deployment and return,” Clark said. “Through this project, they take that message to the broader community, get involved, and say thank you for the soldier’s service in a tangible way.”

Kari Keating, who also teaches a section of the course, said that in addition to students, the community and military families benefit from this collaboration. The community benefits through the opportunity to build stronger families, gain a stronger sense of gratitude, and create community partnerships. And, most important, military families benefit in knowing that students and the community appreciate their efforts and care enough to reach out and provide support.

Clark said the course ties together the three major functions of a land-grant university, integrating education, research on family resilience, and outreach to the community to make a lasting difference.

If you are interested in providing support to Illinois Operation: Military Kids, contact Kupferschmid (lkupfers@illinois.edu, 217-265-8209).

Farmdoc Daily

Farmdoc Daily is the winner of the College of ACES Paul A. Funk Team Award for Excellence for 2013, which is made possible through support from the Paul A. Funk Foundation. Scott Irwin, a professor in the Department of Agricultural and Consumer Economics, is the team leader.

“We are a public university charged with providing unbiased, research-based analysis and information,” said Irwin, “so we focus on a flow of daily online posts that address immediate and important topics and problems in agriculture.”

The Farmdoc Daily team: (from left, front row) Scott Irwin, Darrel Good, Bruce Sherrick, Gary Hoff; (back row) Paul Peterson, Gary Schnitkey, Mark Althouse, Bryan Endres, Nicholas Paulson, Dwight Raab, Ryan Batts. (Not pictured: Paul Ellinger, Chris Hurt, Carl Zulauf.)
Hughes advises Sesame Street on new divorce materials

When Sesame Street decided to take on the sensitive issue of divorce, they identified four experts, including ACES professor Robert Hughes, Jr., to advise them as they developed their new resources on the topic.

Hughes, head of the Department of Human and Community Development, has studied and written about the effects of divorce on families for years.

"Some 40 percent of families experience divorce, so the experience is widespread, but our individual lives and crises are always uniquely our own. Children need to know they're not alone in this experience and can bring their feelings to their parents and caregivers," Hughes said.

Children of divorcing parents will take comfort in knowing that a familiar Sesame Street character, Abby Cadabby, is negotiating some of the same rocky terrain they're dealing with, he said.

The expert applauds Sesame Street for creating the "Little Children, Big Challenges: Divorce" toolkit, opening frank conversations about these feelings on the program, and making the kits available to parents, caregivers, child-care providers, military families, and the court system.

The free multimedia tools developed with the input of Hughes and other experts include these items:
• A resource kit with a DVD, caregiver guide, and storybook
• A free mobile app for parents with resources and interactive tools, available through Google Play and Apple's App Store
• A playlist of YouTube videos (youtube.com/sesamestreet)
• An online toolkit with exclusive downloadables and videos (sesamestreet.org/divorce)

Tried-and-true strategies to strengthen couples’ relationships

What are you doing to keep your relationship alive? A U of I study highlights five strategies that couples can use to improve the quality of an intimate relationship.

"Relationships are like cars—you have to do certain things to keep them running, especially when your goal is to strengthen your bond with your partner," said Brian Ogolsky, a professor of human and community development.

Openness, positivity, assurances, shared tasks, and a shared social network are strategies that couples can use to make their relationship better, he said.

The researcher encouraged not only talking about your feelings but getting your partner to talk about what she or he is feeling, too. Positivity means being a “fun” person and acting upbeat as you interact with each other.

"Make sure your partner knows you’re in the relationship for the long haul, share in household tasks, and spend time with mutual friends and family,” Ogolsky said.

Persons who use any of these strategies will not only be more satisfied with their relationship, they are also likely to continue to love—and, yes, even like—each other throughout its duration, he said.

Relationship quality is at risk not only when couples don’t employ these strategies, but also when one partner believes the other is not making an effort or doesn’t recognize the other’s efforts.

Sometimes a person’s thoughts don’t transfer into actions, he explained. “Say your intention all day has been to buy some flowers for your partner and surprise her with dinner. Then you get wrapped up in a business phone call and your good intentions fall by the wayside. You may feel as if you’ve put considerable effort into your relationship, but your partner didn’t see it, so it does you no good.”

The fact that couples get busy, become enmeshed in routines, and take one other for granted is all the more reason to consciously adopt these relationship strategies, Ogolsky said.

“Even a small effort, such as asking how your partner’s day was, sending a text to make him laugh, or picking up the phone and calling your mother- or father-in-law, can have a positive impact on your relationship and make you happier.”

Lance Schideman and Yuanhui Zhang, both professors in the Department of Agricultural and Biological Engineering, have combined their research efforts to develop an innovative system that uses swine manure to produce biocrude oils, grow algal biomass, purify wastewater, and recycle nutrients.

“We first convert swine manure into crude oil in a hydrothermal liquefaction reactor,” Schideman said. “The resultant wastewater contains nutrients that can be used to grow algae. We’ve added biological and adsorptive treatment steps to the water to do two things: clean it, so it’s suitable for discharge to the environment, and provide new biomass that we can recycle back into the bioenergy conversion process.”

Schideman said research has shown that the nutrients can be used multiple times. “If we start with a particular waste stream that has one ton of volatile solids, we might be able to produce three, five, or 10 tons of algal and bacterial biomass.”

Schideman said they are also focusing on finding markets for the downstream products of the biocrude oil. “Right now, your fuel has a certain amount of ethanol mixed in,” he said. “We are looking at a blending arrangement where light fractions of this oil could go into an existing fuel matrix.”

Schideman said the heavy fraction can be used in an asphalt-like product. “Innoventor, an engineering and design firm near St. Louis, licensed some of Professor Zhang’s earlier work to use in a process of converting animal waste into a bio-oil used in asphalt binder. They used the lower-grade asphalt binder to pave a 500-foot stretch of road to Six Flags St. Louis. Now they’re monitoring wear and tear on the road to see if it performs as well as conventional pavement.”

Right: Lance Schideman talks to graduate research assistant Yan Zhou about their algae research.

Recent ACES biofuels research includes studies on converting cellulosic biomass into biofuels. One study addressed the effect of enzymatic hydrolysis on pretreatment of Miscanthus, and a second analyzed the influence of feedstock particle size on lignocellulose conversion. In other words, how fine do we have to grind this material in order to maximize ethanol yields?

In anticipation of the new facility, Singh is working to develop industry relationships and provide connectivity between industry and other institutions and units interested in pilot-scale proof-of-concept activities.

“We are offering an annual industrial affiliate membership,” said Singh, “which includes access to the pilot plant, faculty expertise, working with master’s students through internships, bioenergy class presentations, an online class, and an invitation to an annual networking conference expressly for industrial members.”

DuPont and Novozymes have become affiliate members, and Singh said that in the last six months, six multinational companies have completed projects at the current facility. Groundbreaking for the new facility should take place this fall, with completion expected in 18 months.
Study abroad adventures in New Zealand

Ellen Reeder, an ACES junior, is majoring in agricultural communications with a concentration in advertising and a minor in food and environmental systems. She is also an intern in the ACES Communications and Marketing office. This past year, she was the director of ExplorACES, president of Illini Agricultural Communicators of Tomorrow, and vice president of communications for Student Alumni Ambassadors. Ellen kept a blog about her experiences in a study abroad trip to New Zealand last fall; these are a few of her posts.

Passport in hand, excitement in the air, and a suitcase that weighs exactly 50 pounds; New Zealand, here I come! This trip will be a fun adventure to say the least. After almost 24 hours of traveling, our group will arrive in New Zealand ready for two action-packed weeks of agriculture, tourism, and culture. I am so excited to learn about agriculture in another country. Previously I’ve visited China and the Dominican Republic but I expect New Zealand will be like nothing I’ve seen before!

I’ve been in New Zealand for three days now and I have absolutely fallen in love with the country. Eating peaches right off the tree, hiking around the Southern Alps, and getting to know some of the most genuine farmers I’ve ever met—this opportunity to study abroad is amazing.

I think that one of the family orchard owners, Simon, said it best when he told us, “You’ve got to get out of your square, mates.” He said that he frequently takes his orchard employees to neighboring farms to learn new practices because it’s important to learn from others. I think this is just what studying abroad feels like.

I’ll admit, I was a bit nervous when I left Illinois for the long flight to sunny New Zealand. But this opportunity has been everything I hoped for, plus more. Sometimes stepping out of your square, or box, can be difficult, but it’s one of the most important lessons to learn. If you never step out of your comfort zone and try new things you’ll never learn about other countries or experience a new culture.

My last day in New Zealand and I’m feeling as though I never want to leave this beautiful place. Tonight we had dinner on a sailboat and it was definitely one of my favorite parts of the trip.

Tonight we had wind in our sails as we watched the sunset and laughed about the good times we’ve had together in the last two weeks. It’s hard to believe that just two weeks ago most of the people in this group were strangers to me. Sure we had the common ACES bond, but that was it. It’s amazing to know that these are people who I’ll call some of the best friends I have made in college. They’ve been the wind in my sail for the past two weeks. They’ve made this trip the experience of a lifetime and I owe them for helping me try new things while experiencing a new country.

It’s hard to believe that soon I’ll be back on campus on the other side of the world. After this experience, I’m ready to hit the books, work hard, and be the wind in someone else’s sail.

Hogging the spotlight: South Farms pig gets international attention

A detailed annotation of the genome of T.J. Tabasco, a pig from the University of Illinois South Farms, is the outcome of over 10 years of work by an international consortium. The annotation is expected to speed progress in both biomedical and agricultural research. Lawrence Schook, the university’s vice president for research, said that the College of ACES played a crucial role in getting the work started.

In 2001, Schook told Robert Easter, then the dean of the college, that the USDA was getting well positioned to do this kind of research.

Initially, however, the USDA was unenthusiastic, saying that they did not want to fund a series of individual efforts. Funding from ACES allowed Schook and others to put together the Swine Genome Sequencing Consortium, an alliance of university, industry, and government laboratories in the U.S., Europe, and Asia. The USDA was impressed and committed $10 million to the project.

Thanks to efforts by Easter and Richard Vogen, ACES’ director of planning and research development, the U of I received further funding through a federal earmark.

“It supported building some of the basic components like the maps and things that allowed the University of Illinois to partner with international labs,” Schook said. “It was touted as the exemplar of earmarks because we weren’t using it to support our own day-to-day work, we were using it to support foundational research and development.”

The initial consortium included labs in Korea, Japan, Illinois, and Iowa. Today the project includes scientists from more than 50 research groups.

Schook said that the project aims to create a blueprint for understanding evolution and domestication, to advance research on animal production and health, and to explore ways to use the pig in biomedical applications.

The first publication from this work, which appeared in Nature, focuses on the pig’s evolution.
Juan Andrade of the Department of Food Science and Human Nutrition received a B.S. in agriculture and food technology from Zamorano University in Honduras and a Ph.D. in human nutrition from Purdue University. He teaches Principles of Nutrition, Nutrition for Food Scientists, and Topics in International Agriculture, Food Science and Human Nutrition.

Areas of interest: developing sustainable technologies and strategies to provide adequate nutrition, especially among vulnerable groups, in low-income countries, thereby helping to promote human health and economic development; developing low-cost technologies to identify those suffering from micronutrient malnutrition; applying stealth fortification strategies to deliver nutrients within custom diets; evaluating better models for the internationalization of education programs.

Felipe “Phil” Cardoso, Department of Animal Sciences, received a D.V.M. in 2001 and an M.S. in 2007 from the Universidade Federal do Rio Grande do Sul, Porto Alegre (Brazil). He received his Ph.D. in animal sciences in 2012 from the University of Illinois. He teaches Introduction to Animal Sciences, Principles of Dairy Production, Dairy Herd Management, Ruminant Nutrition, and Animal Sciences Leaders and Entrepreneurs.

Areas of interest: dairy nutrition and reproductive biology.

Brenna Ellison, Department of Agricultural and Consumer Economics, received a B.S. from Abilene Christian University and an M.S. and Ph.D. from Oklahoma State University. She teaches courses in agri-food strategic management and food marketing and behavior.

Areas of interest: food and nutrition policy, consumer food preference/behaviors, value of information, field experiments and survey design.

Anna Kukekova received a B.S. and an M.S. in zoology from St. Petersburg State University, St. Petersburg, Russia, and a Ph.D. in cell biology from the Russian Academy of Sciences, St. Petersburg. She will teach Applied Animal Genetics and Behavior of Domestic Animals in the Department of Animal Sciences.

Areas of interest: genetic architecture of complex traits, evolution of social behaviors, animal genetics, behavior genetics, comparative genomics, domestication.

Jeffrey Matthews received a B.A. and a B.S from Miami University, an M.A. from Indiana University, and a Ph.D. from the University of Illinois. He teaches courses in wetland delineation and classification and in environment and plant ecosystems.

Areas of interest: wetland plant ecology, restoration ecology, wetland delineation and mitigation, invasive plant ecology.

Brian Ogolsky received a Ph.D. in family studies and human development from the University of Arizona. He teaches courses in research methods, advanced statistics, and family theories for the Department of Human and Community Development.

Areas of interest: how intimate relationships change over time and the developmental processes underlying the changes; the cognitive and behavioral mechanisms that explain maintenance of close relationships; the impact of relationships on health; the changes in relationship functioning across life transitions.

David Rosch of the agricultural education program received a Ph.D. in higher postsecondary education from Syracuse University. He teaches several courses in agricultural education and the undergraduate minor in leadership studies.

Areas of interest: college student leadership development processes, measurement of leadership growth.

Michael Ward received a B.S. from Truman State University and an M.S. and a Ph.D. from the University of Illinois. He teaches Fish and Wildlife Ecology, Introduction to Wildlife Ecology and Conservation, and Wildlife Ecology and Ag Policy in the Department of Natural Resources and Environmental Sciences.

Areas of interest: wildlife ecology, animal behavior, avian migration, avian conservation.

Yilan Xu received a B.A. from Zhejiang University and a Ph.D. from the University of Pittsburgh. She teaches personal financial planning and retirement and benefit planning.

Areas of interest: consumer economics, financial economics, urban and regional economics, law and economics.
Alum helps pave the way for Turner Hall update

Mary Creasey-Brookhart and Jerry Brookhart

Brookhart has spent most of his adult life working with computers, an interest cultivated during a 1962 summer internship with the U.S. Department of Agriculture’s Crop Reporting Service in Washington, D.C. “I came back to campus and told my advisor that there is something magical about this computer business.” Brookhart’s career has included 15 years at IBM and fascinating personal meetings with such individuals as Larry Ellison of Oracle and Bill Gates of Microsoft while working with technology start-ups and Fortune 100 companies.

After many years working on the West Coast, Brookhart came back to his western Illinois roots in 2000, taking over management of the family farm. He and his wife, Mary Creasey-Brookhart, bought a house on land that had belonged to Brookhart’s grandfather.

To help preserve family history, they recycled materials from other buildings on the family property, including more than 5,000 bricks that pave the sidewalks of their home. “When I was 15 years old, I helped my grandfather lay those bricks,” Brookhart said. “I spent a whole summer laying them when I was 15 years old, and 50 years later I dug them up and relaid them at our home.”

As co-chair of the campaign to update Turner Hall, Brookhart is likewise honoring his past and paving the way for the future. His gift, along with major contributions from other generous donors, brings the total raised for the renovation to more than $2 million.

“I would not be where I am today without the start I got right here at the University of Illinois,” Brookhart said. “I’m pleased to be able to renovate one of the Turner Hall classrooms into a high-tech space to facilitate collaboration between students and faculty across the globe.”

When asked about his passion for the Turner Hall project, his answer was categorical: drastic measures are needed. “I see this as critical to the future of the crop sciences program at Illinois.” He noted that there is no doubt that the College of ACES has the science, but it needs the facilities as well.

What, then, are the pieces that need to be brought together to ensure the success of the renovation? “There’s a whole communication piece to this project,” Brookhart said. “We want to let people know that we need their gifts, too. It will take support from a broad swath of alumni to get this done. Every gift matters, no matter how large or small.”

For more information about how you can get involved and help ensure that the tradition of excellence continues, contact Barry Dickerson, ACES senior director of development (bdickers@illinois.edu), or Marise Robbins-Forbes, ACES director of development (mrfrobes@illinois.edu). Or visit advancement.aces.illinois.edu/turner.

Jerry Brookhart, a 1963 agricultural sciences graduate and co-chair of the Turner Hall Renovation Committee, has spent his life solving problems, often in ways that others find surprising. He started life on the family farm in Macomb, Illinois, attending a one-room schoolhouse through grade 5. From an early age, his heart was set on attending the University of Illinois.

As a U of I undergraduate, Brookhart participated in many campuswide activities. He was Field and Furrow president, Agriculture Council president, a national Tomahawk officer, an Alpha Zeta agriculture scholarship honorary, and Illini Student Union vice-president.

Dow gift benefits Turner Hall renovation

Dow Chemical Company Foundation has pledged $2.5 million for improvements to the University of Illinois, with $1 million going to renovations at Turner Hall.

As a land-grant university, education in the sciences and agriculture are among our top priorities,” said Chancellor Phyllis Wise. “Competitive facilities and technology will help our faculty prepare our students to answer the most critical questions of today and tomorrow.

“We are an established university, and we love our historic buildings. However, some of them must be brought up to date to better accommodate our outstanding faculty and students. Dow’s gift addresses one of our greatest needs.”
Many benefit from single donation

With cuts in state budget support continuing year after year, Faye Dong, the recently retired head of the Department of Food Science and Human Nutrition (FSHN), felt that creating endowed and privately supported teaching assistantships is vital to the ongoing success of the department and its students.

“Teaching assistants are a very important part of our instructional teams,” Dong said. “With budget reductions taking place almost on an annual basis in the last decade, I felt that we needed to have some kind of support for teaching assistants that would be sustainable and independent of state support.”

John Budin of the executive committee of the Chicago Section Institute for Food Technologists said the organization’s members chose to support a teaching assistantship because they know that their dollars are benefiting many other students as well.

“While there was an obvious benefit to the recipient of the assistantship, it was also thought that the quality of course instruction would improve, which would be a benefit to students enrolled in the course,” Budin said. “The executive committee felt there was a lot of value and goodwill to providing this financial support.”

FSHN teaching associate Dawn Bohn said that without a TA, she would be unable to provide experiential learning activities for her students. TAs extend the capabilities of faculty and enhance students’ learning opportunities by setting up labs, holding office hours, assisting with grading, and more.

Tony Cutaia, a FSHN graduate, decided to sponsor a TA because he appreciated how his own teaching assistantship allowed him to support his wife and child when he was a graduate student.

“It’s the kind of payback that we all owe to ACES for the education and training that provided the foundation for our professional success,” he said. “It should be our responsibility and privilege to assure opportunities to those who otherwise might not have such benefits.”

Today several private donors support FSHN teaching assistantships, including Dong’s family, who recently endowed the Beatriz and Francis Mar Graduate Teaching Assistantship Fund.

Greg and Luan Olson made their first gift to ACES in 1971, just one year after Greg graduated with a degree in agricultural science. Today they support a Jonathan Baldwin Turner (JBT) scholarship recipient each year to provide the same financial advantage Greg received from private scholarships.

“We would strongly recommend that anyone associated with agriculture look into becoming a JBT donor,” said Ann Behnken. “It is very satisfying to associate with these outstanding students and be a small part of their development into future agriculture leaders.”

Associate director of development Stacey Cole stressed that annual gifts from donors like the Olsons and Behnkens support “every corner” of the college.

“These unwavering and impactful contributions are the lifeline that allows us to remain a strong and competitive institution,” she said.

Laurie Kramer, associate dean of academic programs, noted that “we greatly appreciate—and depend on—support from our most generous alums, corporate partners, and friends to enable future generations of students to reap the benefits of the life-changing JBT program.”

For more information about how to support JBT scholarships and other programs, contact the ACES Office of Advancement (217-244-3980, acesadvancement@illinois.edu).
A 5-year, $25-million grant from the Bill & Melinda Gates Foundation will help improve the photosynthetic properties of key food crops, including rice and cassava. The goal of the project, “RIPE—Realizing Increased Photosynthetic Efficiency,” is to increase the productivity of staple food crops. Illinois research will take place at the Institute for Genomic Biology.

“This grant will be game changing,” said project director Stephen Long (at right above with associate director Don Ort). “The project represents a huge effort to determine and apply the mechanisms of photosynthesis that can contribute to meeting the challenge of this century: food security for all.”

Increasing photosynthetic efficiency has the potential to increase yields and reduce the use of water and nitrogen. Team members will apply recent advances in photosynthesis research and crop bioengineering. Computer simulation models of the highly complex photosynthetic system combined with practical engineering will identify the best targets for improving photosynthesis efficiency.

The U of I will lead the study through an international collaboration with other leading research institutions, which will initially include the Australian National University, Rothamsted Research and the University of Essex in the UK, and USDA–ARS.

New global effort to improve crop yield through photosynthesis

Studying ozone resistance in corn

ACES plant science researchers have received a 5-year, $5.7-million grant from the National Science Foundation to develop strains of ozone-resistant corn. Such strains have the potential to combat losses to crop yield caused by climate change and air pollutants. A team in the Genomic Ecology of Global Change (GEGC) research theme at the Institute for Genomic Biology will lead the work.

“Ozone can cause major damage and yield reduction in crops,” said Lisa Ainsworth, associate professor of plant biology and principal investigator on the grant. “Our estimates are that ozone costs roughly $700 million in losses in U.S. corn production.” Ainsworth is also a research scientist in the U.S. Department of Agriculture’s Agricultural Research Service and an affiliate of the GEGC theme.

The team includes U of I co-investigators Andrew Leakey, assistant professor of plant biology, and Pat Brown, assistant professor of crop sciences, along with Lauren McIntyre, associate professor of molecular genetics and microbiology at the University of Florida.

Another component of the grant will focus on outreach, including a camp for middle school and high school girls to investigate pollen’s impact on climate change and a website aimed at middle school students called Plants iView, which will offer interactive lessons on plant science topics.

Unique event benefits academic programs

“An Evening with the Voices of Illinois Agriculture” was conceived by ACES farm broadcaster Todd Gleason after he and three others purchased a meat package featuring the 2012 Illinois State Fair grand champion barrow, sold during the ACES Salute to Agriculture tailgate last fall.

The event, held in January in The Spice Box, a student-run restaurant in Bevier Hall, paired a fine-dining meal with a personal book signing by Orion Samuelson, legendary WGN radio farm broadcaster, and a panel of agriculture economists. Over $8 thousand was raised, which will benefit the hospitality management program and the Dr. James F. Evans Endowed Chair in Agricultural Communications (agcomm.aces.illinois.edu).

To learn more about ACES’ student-run restaurant, visit www.spicebox.illinois.edu.

Right: Matt Blume, a senior in hospitality management, serves dessert at the event.
What will your legacy be? What will you leave behind that represents your values and priorities?

It’s no secret that the University of Illinois and the College of ACES have played important roles in the lives of many. It’s a great testament to the university that many friends and alumni choose to give back in the form of a legacy gift.

The U of I has made major strides toward fiscal health through these legacy gifts, which are destined to become even more critical in light of reduced public funding. Will you join us in this important endeavor?

It’s as simple as using the following language on IRA, insurance policy, or other beneficiary designation forms, or providing it to your attorney for inclusion in your will or living trust:

“I leave [e.g., a percentage of your estate, a dollar amount, residue] to the University of Illinois Foundation, a not-for-profit corporation (37-6006007) located in the State of Illinois, to support the University of Illinois College of Agricultural, Consumer and Environmental Sciences.”

For more information on how you can give the gift of education through a legacy gift, contact the ACES Office of Advancement at 217-333-9355.

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