

# LAS

# NEWS

COLLEGE OF LIBERAL ARTS & SCIENCES | FALL 2016

## Gravitational Waves

Illinois astronomers help confirm Einstein's general theory of relativity

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*On the cover: Illustration showing ripples in the fabric of spacetime called gravitational waves.*



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## GREETINGS FROM THE College of Liberal Arts & Sciences



There continues to be a national debate over the value of a degree in the liberal arts. As the flagship university for the state of Illinois, and one of the top research universities in the world, we welcome this discussion. It encourages us to continually evaluate our programs to ensure that we are meeting student needs.

At the same time, we remain fierce advocates of the value of a liberal arts degree and the value of our college. The broad perspective and critical thinking skills inherent in the combination of a liberal arts and sciences education remain vital in our society. We continue fulfilling our mission of teaching not just our majors, but also students across our campus. Did you know that 99.6 percent of U of I students take at least one course in our college?

Thanks to a new campus-wide effort, we now have more information than ever before about our students and their post-graduation plans. Results of the first Illini Success survey were released earlier this year. They shed light on the prospects for our LAS graduates and provide useful information to accreditors, federal and state government, and others gauging the value of our education, including—perhaps most importantly—prospective students and their families.

Illini Success was a full-scale effort that garnered a remarkable 71 percent response rate from graduating undergraduates. The results are good. As you can see on page 24, some 77 percent of LAS alumni in the class of 2014-15 had secured a “first destination” (employment, continuing education, military service, or volunteer work) within six months of graduation. Our students are in demand and are following their dreams!

Another good indicator that liberal arts and sciences degrees are in demand is applications for incoming students. For Fall 2016, our freshmen applications topped 11,000, marking a 10-year high. Students and their parents continue to recognize the value of an LAS degree.

The debate over the importance of a liberal arts degree no doubt will continue, but we are encouraged by what we're seeing at Illinois. We remain committed to providing an outstanding educational experience that prepares our students well for their first jobs—and for rich and successful lives.

Best Regards,

*Barbara J. Wilson*

**Barbara J. Wilson**, Interim Chancellor  
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### A better way to issue tax credits



The Earned Income Tax Credit lifts many Americans out of poverty—but a study suggests that spacing out the credit in multiple payments could significantly reduce recipients' dependence on payday loans and borrowing from family and friends. "We talk a lot in America about what we can do about poverty," said **Ruby Mendenhall**, professor of sociology and African American studies. "These findings show there are policy levers that we can use that can help these families make ends meet." ■



**#ILoveLAS:** Students described their affection for the college in hearts that were posted around Lincoln Hall during I Love LAS week in January. ■

### Steven L. Miller Investiture



**Huimin Zhao** was invested as the Steven L. Miller Chair in Chemical Engineering in an April ceremony at the Spurlock Museum. Zhao is also a professor of chemistry, biochemistry, biophysics, and bioengineering. He develops and applies synthetic biology tools to address challenges in human health and energy. He also examines the fundamental aspects of enzyme catalysis, cell metabolism, and gene regulation. ■

### Revising theories on Yellowstone



A new study from the University of Illinois using an advanced computer model casts doubt on previously held theories about the Yellowstone supervolcano's origins. **Lijun Liu**, geology professor at Illinois, created a computer model that accounted for the last 40 million years, prior to even the earliest signs of Yellowstone's volcanism. ■



**Quad in blue:** Perfect weather greeted graduates and their loved ones on the Main Quad during commencement in May. ■

### Voice of authority



A new study shows that you can influence people by lowering the pitch of your voice in the first moments of a conversation. Another report based on the same data found that those judged to be admirable—but not dominant—also excelled at influencing others. "What excites me about this research is that we now know a little bit more about how humans use their voices to signal status," said psychology professor **Joey Cheng**, who led the research with colleagues. ■



**That chime of day:** Altgeld Hall at dawn in March. See more about the upcoming renovation of Altgeld Hall, and how you can help, at [altgeldillini.illinois.edu](http://altgeldillini.illinois.edu). ■

### New possibilities for math



**Richard Laugesen**, co-director of the Program for Interdisciplinary and Industrial Internships at Illinois, and **Meghan Galiardi**, a doctoral student. Thanks to a new, successful internship program, graduate students in the **Department of Mathematics** are finding real-life applications for their skills more easily. The Program for Interdisciplinary and Industrial Internships at Illinois is a training program for graduate students. The number of math graduate students who've landed an internship preparing them for their career has grown from six in 2013—the year before the program launched—to 27 in 2015. ■



**Innovation for a cause:** Aadeel Akhtar, second from left, was named winner of this year's Illinois Innovation Prize for his work on affordable prosthetic limbs. Akhtar is a PhD candidate in neuroscience. (Photo courtesy of Technology Entrepreneur Center.) ■

### Alumni inducted into National Inventors Hall of Fame



*Images are courtesy of the National Inventors Hall of Fame.* Two LAS alumni responsible for momentous breakthroughs in science were inducted into the National Inventors Hall of Fame. The late **William Sparks** (PhD, chemistry, '36) and the late **Welton Taylor** (BA, '41, MS, '47, and PhD, '48, bacteriology) were admitted during a ceremony in Alexandria, Virginia, in April. Taylor (1919-2012) is remembered for his lifesaving advances in microbiology, particularly related to food poisoning. Sparks (1905-1976) had 145 patents to his name, but he's best known for co-inventing poly-isobutylene-co-isoprene, known as butyl rubber. ■



**Top Marine:** Sophomore Jordan Meadows, third from left, received the U.S. Marine Corps Commandant's Trophy for being the top graduate of the U.S. Marine Corps Officer Candidate School. Also pictured is Barbara Wilson, interim chancellor and Harry E. Preble Dean of the College of Liberal Arts & Sciences, during halftime of a men's basketball game. (Photo courtesy of the U.S. Marine Corps.) ■

### LAS center helps community college invigorate study program

**The Center for East Asian and Pacific Studies** recently collaborated to bolster Lincoln Land Community College's East Asia and global studies programming. The partnership included grant support and help with a film series promoting a "Cultural Values in the Eastern World" course in danger of being dropped. "The partnership between the Center for East Asian and Pacific Studies has been a true blessing for our Humanities Department as well as our community, said Tim Humphrey, LLCC's dean of arts and humanities. ■



**"Life is full of surprise,"** wrote @yingzijiayou, after taking this spectacular photo in the wake of a sudden rain on campus. ■



**What wood you preserve:** Amid the din of renovating the 124-year-old Natural History Building to modern standards, workers are taking care to preserve certain historical features such as original wooden stair railings. The building is scheduled to reopen for class in January 2017.

See more about the renovation and how you can help at [go.las.illinois.edu/NHB](http://go.las.illinois.edu/NHB). ■

### Finding where biofuels fare best

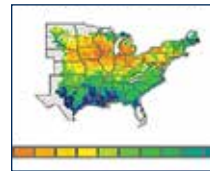


Image courtesy of Atul Jain.

New research has identified regions in the United States where bioenergy crops would grow best while minimizing effects on water quantity and quality. “We expect the outcome of this study to support scientifically sound national policy decisions on bioenergy crops development especially with regards to cellulosic grasses,” wrote **Atul Jain**, professor of atmospheric sciences regarding a paper published by the journal *Environmental Science & Technology*. ■

### Humanities initiative receives Mellon grant



The Illinois Program for Research in the Humanities has been awarded a \$4.2 million grant renewal from the Andrew W. Mellon Foundation to foster collaborative research and advance other programs through its **Humanities Without Walls** initiative. The 15-member consortium is based at the University of Illinois, and it began two years ago with a \$3 million grant from the Mellon Foundation. ■



(From left) Bill Nye the Science Guy, President Obama, and astronomer Neil de Grasse Tyson take a selfie at the White House. Communication professor **Cara Finnegan** received a year-long fellowship from the National Endowment for the Humanities to work on her new book, “American Presidents and the History of Photography from Daguerreotype to the Digital Age.” The book will focus on photographic advancements throughout history and how different presidencies (including Obama’s) affected technological progress. It will also include a study of the rise of social media photography during Obama’s presidency. ■

### Pitchapalooza comes to Illinois

Aspiring novelists pitched their book ideas to an esteemed panel of writers during Illinois’ inaugural Pitchapalooza event in Lincoln Hall. Pitchapalooza is a traveling nationwide event that challenges authors to wow judges with their book ideas in one minute. **Sophie Rodgers**, a sophomore in English and creative writing, won a meeting with a publisher using her children’s book idea: catching the tooth fairy. ■



**Pioneer in plant pathology:** This year marks the 100th anniversary of the death of Professor Thomas Burrill, who first discovered bacterial causes for plant disease. He was also a wise university president, quelling student unrest and improving faculty as he served from 1891-1894. In total, he served Illinois for more than 50 years. ■



**A large tornado** churns north of Solomon, Kansas, as witnessed by students enrolled in a course entitled Field Studies of Convection, led by atmospheric sciences professor Jeff Frame. The class witnessed nine in one day last spring. (Photo courtesy of Jeff Frame.) ■

### Remembering two popular economics professors



Werner Baer, top (photo by Ryan Fang/Daily Illini), and Fred M. Gottheil.

Two beloved economics professors—**Werner Baer** and **Fred M. Gottheil**—died in April.



Baer specialized in Brazilian developmental economics. He devoted his scholarship to understanding challenges of industrialization, infrastructure, and public policy in the development process. Through his life-long friendship with Jorge Paulo Lemann, the Lemann Institute for Brazilian Studies was endowed at Illinois in 2009.

Gottheil researched comparative economic systems, Marxian economics, the economics of oil, the economy of Israel, and health care economics. He was a White House consultant on the Middle East during the Carter administration and advocated against the expansion of gambling in Illinois.

Memorial funds have been created in honor of Baer and Gottheil. For more information or to contribute, please visit [economics.illinois.edu/giving](http://economics.illinois.edu/giving). ■

### LAS faculty and students receive awards

Many students and faculty in LAS received prestigious awards during the spring semester. Here are just a few from around the college:

#### FACULTY

- **Early Career Research Program grants.** U.S. Department of Energy: **Alison Fout**, chemistry. Humboldt Research Award: **Harry Liebersohn**, history.
- **Guggenheim fellows:** **Dennis Baron**, English; **Craig Koslofsky**, history and Germanic languages and literatures; **Mei-Po Kwan**, geography and geographic information; **Ralph W. Mathisen**, history, classics, and medieval studies; **Rebecca Stumpf**, anthropology.
- **Sloan Research fellows:** **Elena Fuchs**, mathematics; **Kami Hull**, chemistry; **Joaquín Rodríguez-López**, chemistry; **Yue Shen**, astronomy.
- **American Geophysical Union Class of Fellows:** **Jim Best**, geology.

#### STUDENTS

- **Bronze Tablet winners, 2016:** For complete list please see [go.las.illinois.edu/bronzetablet16](http://go.las.illinois.edu/bronzetablet16)
- **Goldwater Scholars:** **Elijah Karvelis**, chemical and biomolecular engineering, Pecatonica, Illinois.; **Boris Xu**, algebraic geometry and algebraic number theory, Hartsburg, Missouri. **Pariyamon Thaprawat**, molecular and cellular biology, Des Plaines, Illinois. (honorable mention).
- **Pre-Doctoral Fellows,** Humanities Without Walls Consortium: **John Moore**, English. ■



**Rise and shine:** An early morning sunbeam brightens the Quad side of Lincoln Hall. ■

# OUTSIDE THE PROGRAM

## ALUMNA BECAME A COMPUTER PROGRAMMING TEACHER BY WAY OF THE LIBERAL ARTS

Lives can't be programmed. **Rebecca Younker** (BA, '67, teaching of English), whose liberal arts education proved invaluable as she developed a career teaching computer programming, learned this pretty early.

The St. Charles, Missouri, resident always liked math and science. In high school, Younker received a National Science Foundation scholarship, and she enrolled in the U of I's College of Engineering in 1963.

Engineering at that time, however, was a particularly tough field for women, and she felt isolated and overwhelmed. She transferred out of the college, and soon she discovered a new interest. Younker majored in English, minored in French, and graduated in 1967. In 1985, after nearly 20 years of substitute teaching, part-time positions, and, mostly, being a stay-at-home mom, she landed a job at a Catholic all-girls high school in the St. Louis area. She taught English and French there and at another all-girls school for 29 years.

But she always had a way with numbers, and at her husband's encouragement she tried a computer class. She was hooked; by 1990 she earned a degree at Fontbonne University's Computers in Education master's program. At work, she taught girls programming classes in addition to English and French.

Younker regularly took students to a Microsoft program called DigiGirlz, where corporate women in the sciences would speak to girls.

She told her students, "You need to be taking programming classes. You need

to be taking science classes—because all of your male colleagues will have had them when you get to college." Many of Younker's former students have found success in the sciences.

Now in her early 70s, Younker can program in Basic, Pascal, Javascript, C, C+, C++, html, and more. That's enough to get her an interview for just about any programming position, but she retired two years ago. She still performs desktop publishing for her parish, previous school, and her family.

Younker hasn't forgotten her path through the liberal arts and how it complemented her second career in computers. Studying English and French, she said, helped her learn programming code.

"Most of the (programming) languages I know I've had to teach myself," she said. "I was able to do that and see how they fit together, see how they were similar and see how they were different than other languages. I believe that thinking has emerged from my liberal arts education. It's not so much that we were taught that, but it grew out of it." ■

By Jason Peterson



## Float like a butterfly, sting like a ... trap-jaw ant?

By Liz Ahlberg, Illinois News Bureau

### Ants are the fastest boxers ever, researchers find

Late boxer Muhammad Ali famously declared his intent to "float like a butterfly and sting like a bee," but perhaps boxers should look to another insect for inspiration: the trap-jaw ant.

In a new study, entomologists at the University of Illinois and North Carolina Museum of Natural Sciences measured the speed at which different species of trap-jaw ants strike one another during antenna-boxing bouts. Understanding such fights for dominance within ant colonies can shed light on ant behavior and sociology.

"All social animals exhibit dominance behaviors of one kind or another," said **Andrew Suarez**, University of Illinois entomology professor and animal biology department head. "In the case of social insects, we often focus on their chemical communication system, but in these ants the antennal boxing was too remarkable to ignore."

Suarez, undergraduate researcher Sean O'Fallon, and former postdoctoral researcher Adrian Smith, now a professor at North Carolina State University and North Carolina Museum of Natural Sciences, published their findings in the journal *Insectes Sociaux*.

Like bees, ants have a hierarchy of roles within the colony. Trap-jaw ant species engage in antennal "boxing," a quick fight involving striking one another with their antennae, to determine which of the worker ants stay in the nest and which go out to forage, O'Fallon said.

To better understand this behavior, the researchers used high-speed cameras to record antenna-boxing matches in four species of trap-

jaw ants. They then counted how rapidly each species pummeled their opponents.

The speeds ranged from 19.5 strikes per second for *Odontomachus rixosus*, hailing from Cambodia, to a blazing-fast combination of 41.5 strikes per second for *Odontomachus brunneus*, native to Florida, the researchers found.

"Trap-jaw ants are the fastest boxers ever recorded," Smith said. "Describing how fast multiple species box each other helps us understand how this behavior evolves. For instance, we found that when one species uses boxing as a form of aggression, the behavior is indistinguishable from boxing as a social dominance interaction between colony members."

Future work will explore how and why social organisms like trap-jaw ants use antennal boxing and other aggressive behaviors to organize their societies. ■



Watch trap-jaw ants pummel each other in slow motion at: [go.las.illinois.edu/boxingants](http://go.las.illinois.edu/boxingants)

# BEATING THE ODDS

## LAS CHEMISTS TEAM UP FOR DRUG DISCOVERY BREAKTHROUGHS

By Doug Peterson



Timothy Fan, Paul Hergenrother, and Hoover, the research dog.



Steven Zimmerman



Eric Oldfield

### Researchers call it the Valley of Death—

“the place where drugs go to die,” according to **Paul Hergenrother**, a University of Illinois chemistry professor.

“Getting through the Valley of Death means you have gone from a drug’s discovery to actually treating the first patient,” he explained. “It’s experimentally challenging, time consuming, and expensive—all of those things.”

Despite the insurmountable odds, after more than 10 years of research, a promising new brain cancer drug from the Hergenrother Lab has made it through this Valley of Death, reaching Phase 1 human clinical trials at the University of Illinois Cancer Center in Chicago and Johns Hopkins Hospital in Baltimore.

What’s more, Hergenrother’s lab was recently awarded an additional \$7 million from an “angel investor” (an anonymous donor), on top of an earlier \$4 million to fund the research. This award will support

the second part of the Phase 1 human trials, as scientists try to gauge tolerable levels of the drug, which is known as PAC-1.

FDA approval is a long and winding road that begins with preclinical testing and moves through three phases of human clinical trials before the new drug application can be filed—a process that can take, on average, eight to 12 years. Hergenrother’s work has reached further than most drug development ideas, but his research is only one of the Department of Chemistry’s many success stories.

Several chemistry professors are working on innovative drug ideas, and the few highlighted here represent three different stages of development. One drug is at an early stage of testing with fruit flies, another is an existing drug found to have clinical use for a different disease, and the third is Hergenrother’s drug, which has moved deeply through the FDA approval process.

### MUSCULAR DYSTROPHY AND MOLECULAR SCISSORS

Just one floor above Hergenrother in Roger Adams Laboratory, fellow chemistry professor **Steven Zimmerman** has set his sights on a disease with few options—myotonic dystrophy Type 1 (DM1), the most common form of adult onset muscular dystrophy.

“There is no drug on the market for DM1,” Zimmerman said. “A few drugs treat the symptoms but don’t treat the disease itself.” DM1 is a “trinucleotide repeat expansion” disease, meaning that the three repeating nucleotides making up a DNA strand keep repeating themselves, expanding the DNA strand. Expanded DNA creates expanded RNA, which attaches to the muscleblind-like (MBNL) proteins in cells and triggers the symptoms of this form of muscular dystrophy.

Zimmerman’s team is attacking the disease with drug molecules that do three things. First, the molecules prevent expanded DNA from making expanded RNA. Second, they prevent the expanded RNA from binding to the MBNL protein. Finally, “molecular scissors” chop up the expanded RNA, preventing it from doing damage.

“We’re at the stage where the drug is working with fruit flies,” he said. “We’ve seen a significant amount of interest from patients, pharmaceutical companies, start-ups, and venture capital firms, but they all want to see efficacy in mice first.”

Zimmerman and his team discovered this drug possibility purely by chance while they were trying to make DNA bases that bind to other bases more strongly.

“It’s like anything in science,” he said. “Sometimes you set off to do one thing, and you stumble onto something else.”

### SAND FLIES, KISSING BUGS, AND TROPICAL DISEASE

Teamwork and connections are essential to drug research, as was the case for fellow chemistry professor **Eric Oldfield**, whose career veered in a new direction after chance encounters with a former M.I.T. classmate, Julio Urbina, researching in Venezuela.

Oldfield had been studying cell membranes, but 15 years ago, after the pair had yet another chance encounter with each other (it was the third time), they finally decided to team up and explore drug ideas for parasitic diseases.

“It got us interested in infectious diseases,” Oldfield said.

They began by working on treatment ideas for leishmaniasis, which is spread in tropical regions by bites from infected sand flies. Leishmaniasis can leave horrific lesions on a person’s body, and a more deadly version of the disease attacks internal organs, such as the spleen or liver.

They discovered that an existing heart drug, amiodarone, kills the parasitic protozoa that causes leishmaniasis. In South America, amiodarone is now being used clinically for patients with the skin disease. In addition, it is the only drug available for patients

suffering from both leishmaniasis and Chagas disease, an ailment that affects the heart. Chagas disease is transmitted by “kissing bugs” that live in the crevices of walls, coming out at night to bite sleeping people on the face. It sounds like something out of a horror movie, but amiodarone has eased some of the fear.

Drug discovery is very much a team effort, which is why Oldfield collaborates with so many researchers—most recently with the Salk Institute—in an effort to develop a drug targeting lung cancer cells. In addition, his lab is exploring a new drug against tuberculosis. It’s a massive team effort as seen in a recent scientific paper with 26 co-authors.

### THE CANINE AND CAT CONNECTION

For Hergenrother, teamwork was also the key to their success. It took a one-of-a-kind collaboration with the U of I College of Veterinary Medicine to bring the lab’s PAC-1 drug so far along in the testing process. Ten years ago, after Hergenrother released the first results on PAC-1, Illinois veterinary oncologist Timothy Fan approached him and suggested they test the drug on dogs that came into the U of I veterinary clinic with various forms of cancer. The dogs contracted cancer naturally and have no other options. Without the PAC-1 treatment, they would have been euthanized.

“These dogs are real cancer patients,” Hergenrother said. “They have been exposed to all the same toxins that you and I are, and in many cases they come down with cancers that are very similar to the human disease. We believe that compounds that show efficacy in these veterinary cancer patients will have a much better chance of working in human clinical trials.”

The drug offers new hope for human cancer patients who have no other options left. PAC-1 has the ability to penetrate the brain to get at the tumor, which not many drugs can do. TMZ is the current drug used for a deadly form of brain cancer known as glioblastoma meningioma, but it gives patients only months of additional survival. (The median survival rate for this disease is 14 months.) The hope is that PAC-1, alone or in combination with TMZ, will boost that rate significantly.

Building on the research using PAC-1 on canine cancer patients, Hergenrother, Fan, and two other U of I professors—Jun Song and Pablo Perez-Pinera in bioengineering—have teamed up to form the Anticancer Discovery from Pets to People group in the Institute for Genomic Biology. Hoping to duplicate the success in dogs, this group has expanded the work to include cats.

Hergenrother and his colleagues developed a promising new drug, DNQ, that treats an oral cancer in cats similar to head and neck cancer in humans. It has a way to go before getting through the Valley of Death.

Even when a drug candidate makes it through the valley, there remains a long road ahead. As Hergenrother said, “We’re through the Valley of Death with PAC-1, but that doesn’t mean we’re out of the woods.” ■



## BUILDING CULTURAL UNDERSTANDING, ONE BUILDING AT A TIME



Through Spanish, alumnus improves communication, safety, and productivity in the construction industry

**Bradley Hartmann** (BA, '00, Spanish) grew up around lumber yards and construction sites. Now founder and “El Presidente” of Red Angle, Inc., he’s still in the construction business—and putting his degree to use helping builders and suppliers adapt to an industry that communicates increasingly in Spanish.

**Occupation:** Founder and president of Red Angle, Inc.

**Place of residence:** Dallas, Texas

**Degree:** BA, '00, Spanish

**Family:** Wife, Melissa (BS, '00, psychology), and two sons, Brayden, 9, and Redding, 4.

**What does your company do?:** Red Angle delivers construction-specific leadership training to improve cultural knowledge on the jobsite and provide language training for English and Spanish speakers that requires only 10 minutes per day.

**How did you pick your company name?:** For better or worse, there are not many tall, redheaded Spanish speakers, so I played the ginger card and included “red” in the name of my company. The “angle” comes from looking at language and leadership barriers on the job from a different perspective, or a different “angle”... Red Angle.

**What is a typical workday like?:** Owning a small business is fun because of all the hats you wear. As Red Angle grows, I’m focusing on delegating to my team, including two Illini LAS interns this summer. I travel weekly to consult with clients and lead Cultural IQ and Construction Spanish workshops. We’re always creating new audio and video content, so there’s always something new.

**How did your major prepare you for your career?:** Majoring in Spanish at U of I prepared me in numerous ways. Aside from fluency in the language, I studied and lived with a family in Guadalajara, Mexico. Experiencing culture at that level provided a new context for how different cultures think—how they raise their children, how they teach in schools, and how they interact in business settings. This knowledge was put to use immediately on my first job site in Chicago as more than half the workforce was Hispanic. In time I learned these skills, while somewhat rare, were critical to ensure safety, productivity, and profitability—and most importantly, they could be learned. That led to the founding of Red Angle. ■

# Rethinking Kaskaskia



Robert Morrissey

HISTORIAN SAYS THE MIDWEST WAS  
MORE SIGNIFICANT TO EARLY AMERICAN  
HISTORY THAN PREVIOUSLY BELIEVED

By Craig Chamberlain, Illinois News Bureau

Most historical accounts describe the Illinois Indians of the late 1600s as a weak and beleaguered people, shattered by war. Their Grand Village of the Kaskaskia, near present-day Starved Rock State Park, 80 miles southwest of Chicago, was depicted as little more than a refugee center propped up by a French outpost.

The reality, however, is quite different, argues University of Illinois history professor **Robert Morrissey**.

The Grand Village and surrounding settlements were then likely the largest population center north of Mexico City, and the Illinois were making “perhaps the most remarkable bid for power in 17th century native North America,” according to Morrissey.

The story of the Illinois and the Grand Village holds importance because it shows native people acting on their own motivations in a bid for power, separate from European influence, Morrissey said.

“Historians of early America often still tell their narratives in terms of Indian reaction to Europeans, as if Europeans were the most important thing happening in Indian worlds,” Morrissey said.

“My agenda here is to suggest that there are a lot of other factors playing into what native people were doing, and why they were doing it,” he said. “Many of the logics of their actions have probably nothing to do with Europeans, or only partially to do with Europeans. To understand them, we need to recontextualize the story from an indigenous perspective.”

The Illinois Indians were exploiting a unique ecological and social borderland at the center of the continent—between tallgrass prairie to the west and woodlands to the east, and between distinctly different peoples of the Great Plains and the Great Lakes, he said.



At the Grand Village of the Kaskaskia, the Illinois exploited a border area, or “ecotone,” hunting bison and trading slaves. (Graphic by Julie McMahon.)

They hunted plentiful bison and raided Indian villages in the west for slaves to tribes in the east, where slaves were sought as “replacement kin” for those lost to war and European disease.

“In that particular moment, and in that particular space, these people rose to quite considerable power, and yet they’re not part of the narrative of early American history,” Morrissey said.

Much of the reason can be traced back to accounts by the French who established an outpost and mission near the Grand Village in the 1670s. “I don’t think they understood what they were looking at when they arrived in the Illinois country,” Morrissey said. ■



Read Morrissey’s article in  
the *Journal of American History*:  
[go.las.illinois.edu/morrisseyarticle](http://go.las.illinois.edu/morrisseyarticle)

# Waves of proof

Years of research at Illinois were vital to the detection of **GRAVITATIONAL WAVES** and confirmation of one of the world's most important theories

## Thirty years ago, the National Center for Supercomputing Applications was founded at Illinois

by Larry Smarr on the premise that high-performance computing was required to understand certain scientific phenomena, such as the collision of black holes.

Smarr, a physicist, formed a numerical group, led by current NCSA director and astronomy professor **Edward Seidel**, that quickly became a leader in applying supercomputers to black hole and gravitational wave problems.



That's why, when scientists recently announced that they observed ripples in the fabric of spacetime called gravitational waves, thus confirming a major prediction in Albert Einstein's 1915 general theory of relativity, astronomers and physicists at Illinois were electrified with excitement—and not just because a new window was opened into the universe. Illinois also had much to do with the discovery.

The gravitational waves were detected on Sept. 14, 2015, and Dec. 26, 2015, by both of the twin Laser Interferometer Gravitational-wave Observatory detectors, located in Livingston, Louisiana, and Hanford, Washington. While the LIGO observatories were conceived, built, and operated by Caltech and Massachusetts Institute of Technology (with support from National Science Foundation), NCSA—now with 22 affiliated faculty in the College of LAS—worked with several groups addressing models of gravitational waves sources seen in this discovery.

NCSA officially joined the LIGO consortium in March.

Gravitational waves carry invaluable information about their dramatic origins and about the nature of gravity. In the recent discoveries, physicists concluded that the detected gravitational waves were produced during the final fraction of a second of the merger of two black holes to produce a single, more massive spinning black hole. This collision of two black holes had been predicted but never observed.

“Detecting gravitational waves will soon become a common occurrence,” said Seidel, who is also Founder Professor of Physics. “NCSA is at the forefront of the most ambitious projects in multi-messenger astronomy that are already revolutionizing our understanding of the universe. With NCSA now officially a member of the LIGO consortium, we expect to be having these types of announcements on a routine basis.”

NCSA has also helped develop tools needed for simulating relativistic systems. The work of Seidel's NCSA group led to the collaborative Cactus Framework, which has supported numerical relativists and others who develop applications to run on supercomputers at NCSA and elsewhere.

Built on the Cactus Framework, the NSF-supported Einstein Toolkit developed at Georgia Tech, Rochester Institute of Technology, Louisiana State University, American Enterprise Institute, Perimeter Institute, and elsewhere now supports many numerical relativity groups modeling sources important for LIGO on the NCSA Blue Waters supercomputer.

“This historic announcement is very special for me,” said Seidel. “My career has centered on understanding the nature of black hole systems, from my research work in numerical relativity, to building collaborative teams and technologies for scientific research, and then also having the honor to be involved in LIGO during my role as NSF assistant director of mathematics and physical sciences. I could not be more excited that the field is advancing to a new phase.”



**Gabrielle Allen**, professor of astronomy at Illinois and NCSA associate director, previously led the development of the Cactus Framework and the Einstein Toolkit.

“NCSA was a critical part of inspiring and supporting the development of Cactus for astrophysics. We held our first Cactus workshop at NCSA, and

the staff's involvement in our projects was fundamental to being able to demonstrate not just new science but new computing technologies and approaches,” said Allen.



**Stuart Shapiro**, a professor of physics and astronomy at Illinois, is a leading expert in the theory that underpinned the search for gravitational waves. Calling the recent discovery “the most significant confirmation of the general theory of relativity since its inception,” he has developed software tools that can simulate on NCSA supercomputers (such as Blue Waters) the very binary black hole merger and gravitational waves now detected by LIGO.

“This presents the strongest confirmation yet of Einstein's theory of general relativity and the cleanest evidence to date of the existence of black holes,” Shapiro said. “The gravitational waves that LIGO measures can only be generated by merging black holes—exotic relativistic objects from which nothing, including light, can escape from their interior.”

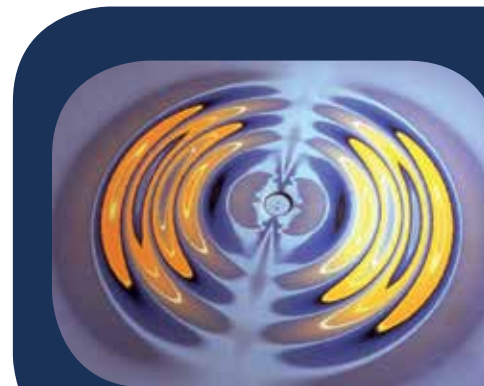
**Brian Fields**, chair of the Department of Astronomy, where black holes are the main focus of several faculty members, called Shapiro a “world leader” in general relativity whose simulations of binary black holes are the most sophisticated and realistic in the field.



**Eliu Huerta**, who leads the Relativity Group at NCSA, has been a member of the LIGO Scientific Collaboration, a group of more than 1,000 scientists from universities around the world which made the recent discovery, since 2011. He is a co-author of the paper documenting the original discovery that was published in Physical Review Letters.

Huerta specializes in the development of modeled waveforms for the detection and interpretation of gravitational wave signals.

*continued on next page*



**Years of thought and simulations:** Published in Physical Review Letters in 1993, this image, created by a team led by current National Center for Supercomputing Applications (NCSA) director and astronomy professor Edward Seidel, shows gravitational waves emitted from the head-on collision of two black holes. Simulated on NCSA's Cray-2 supercomputer, the blue and yellow colors represent the gravitational waves emitted, traveling away from the collision at the speed of light. The two original black holes, visible at the center, have just collided, forming a bigger black hole shown by the black ring surrounding them. Mark Bajuk at NCSA created the image. Watch a historical video describing the simulations, along with former NCSA director Larry Smarr and Seidel discussing their work on colliding black holes, at <http://go.las.illinois.edu/ncsasimulation>. ■



### Waves of proof continued

Huerta uses these models to infer the astrophysical properties of compact binary systems, and shed light on the environments in which they form and coalesce.

He said the observation of gravitation waves “inaugurates” an entire field of research.

“There can be no better way to celebrate the first centenary of Einstein’s prediction of gravitational waves,” Huerta said. “We can gladly say that Einstein is right, and that the beautiful mathematical framework he developed to describe gravity is valid even in the most extreme environments. A new era has begun, and we will be glad to discover astrophysical objects we have never dreamt of.”



Professor emeritus of astronomy **Ron Webbink** was Kalogera’s doctoral advisor. He is an expert on the evolution of binary stars, which sometimes leads to the pairs of neutron stars and black holes that are the main targets of LIGO, Fields said. Webbink has written important papers on the detectability of gravity waves in our galaxy and beyond from collisions of these objects.

**Peter Schiffer**, vice chancellor for research at Illinois, said work at NCSA and campus has helped “open windows into the universe.”

“This is a wonderful fundamental discovery, and it’s exciting that the high performance computing capabilities that we developed to address challenges like this one are also being used to solve other significant societal problems,” Schiffer said. ■

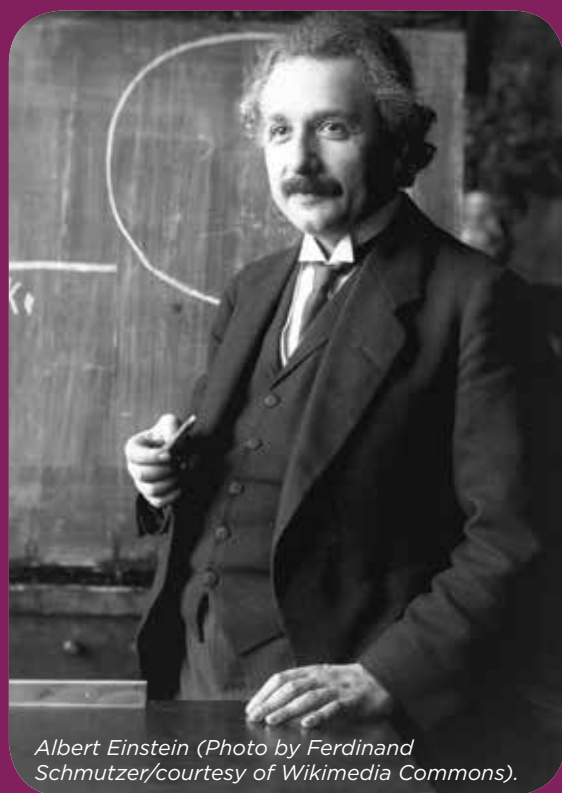
*Story by National Center for Supercomputing Applications and Dave Evensen*



Other contributors to the discovery include Illinois alumna **Vicky Kalogera** (PhD, ’97, astronomy), Erastus O. Haven Professor of astronomy and physics at Northwestern University, who is one of LIGO’s most senior astrophysicists and was mentioned during the press conference announcing the historic observation.

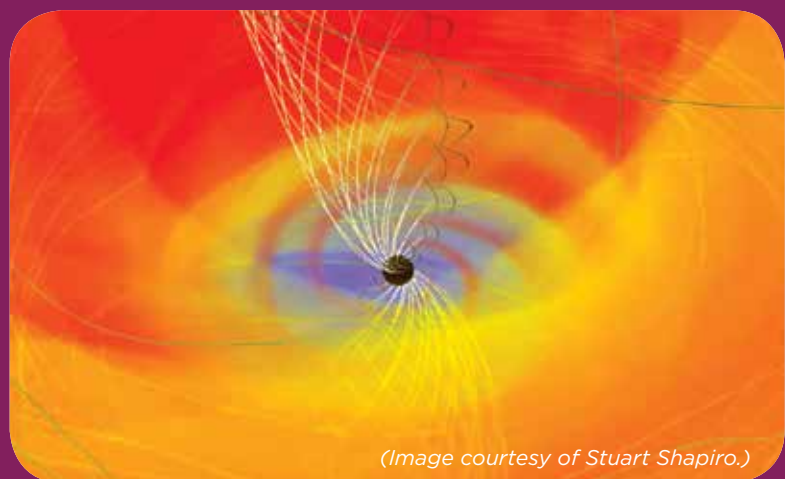
*Photo by Steven E. Gross/courtesy of Northwestern University.*

## PIONEERS IN IMAGERY:



*Albert Einstein (Photo by Ferdinand Schmutzer/courtesy of Wikimedia Commons).*

**Stuart Shapiro**, a professor of physics and astronomy at Illinois, recently presented the first simulated collision of two supermassive black holes using Einstein’s general theory of relativity, which describes the radiation from these mergers more accurately than earlier, more simplified approximations. View the simulations at <http://go.las.illinois.edu/blackhole> ■



*(Image courtesy of Stuart Shapiro.)*

# LAS OFFERING MORE ONLINE COURSES

## Online course programs are growing at Illinois

*By Meg Dickinson*

*Images courtesy of Center for Innovation in Teaching & Learning (top) and National Center for Supercomputing Applications.*

### AN ILLINOIS EDUCATION IS BECOMING MORE ACCESSIBLE, THANKS TO NEW OFFERINGS VIA MASSIVELY OPEN ONLINE COURSES.

Units within the College of Liberal Arts & Sciences are offering or contributing to these courses, which are known as MOOCs.

These include the Department of Statistics, a partner in Illinois’ new Master of Computer Science in Data Science degree offered through online education company Coursera. And **Cary Nelson**, Jubilee Professor of Liberal Arts & Sciences and emeritus professor of English, is teaching the campus’ first lecture-based MOOC in American Poetry on Coursera.

The new data science degree program is a collaboration among Statistics, the Department of Computer Science in the College of Engineering, and the School of Information Sciences. It promises to open a quickly growing field to potential data scientists unable to take a traditional education path.

**Doug Simpson**, chair of the Department of Statistics, called the cross-campus collaboration “an exciting opportunity,” as he’s seen growing numbers of statistics students taking positions as data scientists. Employment website Glassdoor rated this profession as the best in the U.S.

for 2016 when considering the number of job openings, average salaries, and career opportunities.

Students can try out the MCS-DS degree with a shorter non-degree program, then go on to earn a full degree. Tuition is \$19,200.

Nelson’s four-week course, Modern American Poetry, highlights major modern poets and influential movements. It’s ideal for faculty, students, high-school teachers, and individuals around the world who have an interest in the topic. It opened last spring and is available on a rolling basis.

Using unique stylized presentations supplemented with photos, images, and readings, the course takes an in-depth look at individual poets, from the famous to nearly unknown, as well as poetic movements and subjects from the 1900s to the 1950s.

“American poetry is recognized collectively throughout the world as one of the most remarkable and influential bodies of literary work in human history,” said Nelson, who also designed the course.

Illinois is the first in the country to produce a comprehensive and current series of video lectures regarding the literary movements that shaped this body of work. A second Illinois course, launching in 2017, will focus on contemporary American poetry from the 1950s through today. ■



## MORE ONLINE OFFERINGS

Interested in online degree programs? Here are two more LAS options:

### Health Communication Online Master of Science

Application deadline: Nov. 1 for Spring 2017

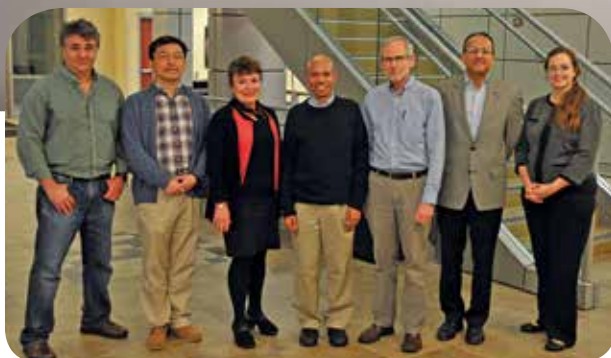
### Online MA in Translation and Interpreting

Applications for Fall 2017 considered until March 15, 2017, or until class is full

[lasonline.illinois.edu](http://lasonline.illinois.edu)

# Building a living machine

Researchers at Illinois study how to create biological machines to help us live healthier lives



Above: Light-stimulated biological machines are one of the ideas under development as part of the multi-institutional Emergent Behaviors of Integrated Cellular Systems initiative. (Illustration by Janet Sinn-Hanlon/courtesy of the Department of Bioengineering.)

Pictured here, left to right: Gabriel Popescu, Hyunjoon Kong, Martha Gillette, Taher Saif, EBICS Director Roger Kamm of MIT, Rashid Bashir, and Program Coordinator Carrie Kouadio. Photo by Gregory Pluta.

When you think about ways to take medicine, you might imagine pills, bottles, nasal sprays, or—take a breath—needles. Researchers at Illinois, however, are working on what they say is a more effective way to deliver drugs: tiny, swimming biological machines in your bloodstream.

Illinois researchers are exploring the idea as part of a multi-institutional initiative called Emergent Behaviors of Integrated Cellular Systems, which recently received \$25 million in National Science Foundation renewal funding.

By studying the behavior of living cells and combining them with synthetic tissue, researchers at Illinois from the colleges of LAS and Engineering are creating biological machines to deliver drugs more effectively, function as internal diagnostic tools, or serve as contaminant sensors. These biological machines are swimming bots that can be propelled by heart muscles.

Two LAS professors, **Martha Gillette**

and **Hyunjoon Kong**, of cell and developmental biology and chemical and biomolecular engineering, respectively, are members of the EBICS team at Illinois. Gillette's group is developing neuronal circuits to provide sensing and processing. Kong is developing new biomaterials to house the cells and the machines.

They're working with **Rashid Bashir**, EBICS co-principal investigator and head of the Department of Bioengineering at Illinois, as well as **Taher Saif** of Mechanical Science and Engineering.

Bashir and Saif are assembling the biology machinery, and Gillette and Kong are creating the biological modules crucial to making those machines work.

"We're working to better understand how to develop a higher-order tissue and organ-like structure throughout this biological machinery assembly," Kong said.

So far, the researchers have developed swimming bots. These millimeter-scale

swimmers can propel themselves in one direction using the force generated by heart muscle cells.

They've also randomly placed rat heart muscle cells on a layer of soft plastic hydrogel they designed and printed with a 3-D printer. The natural contracting and relaxing of the cells allowed the bot to pull itself along or "walk" in culture medium.

Most recently, the team has been working with muscle cells that can be controlled remotely by blue light and could be the key to developing new remotely controlled tissues and systems.

Gillette said the project is a good example of the strength found in interdisciplinary work.

"It reflects the contributions of both LAS- and Engineering-based creativity," she said. ■

By Meg Dickinson and Anna Barnes and Susan McKenna, Department of Bioengineering

# CATCHING UP WITH KETCHUP KELLY



Oscar Mayer Wienermobile on the Illinois campus.

## LAS ALUMNA IS U OF I'S FIRST WIENERMOBILE DRIVER

To those who her know her best, **Kelly Burger** is a recent Illinois grad who double majored in English and psychology.

But to the thousands of people she has interacted with over the past year, Burger is known as Ketchup Kelly, the driver of the Oscar Mayer Wienermobile.

Out of the thousands of college graduates who apply for the unique position of Wienermobile driver, or Hot Dogger, Burger was one of just a dozen people chosen annually for the job—a job she knew she wanted to have since she was a 7-year-old.

"I've been a Burger my whole life," she wrote on her application, "and I'm ready for a change."

Starting in June 2015, Burger, along with her co-pilot, Mustard Molly, traveled the nation for a year in the iconic and eye-catching 27-foot-long Wienermobile. She relished every wave and hot dog pun along the way.

"You can't have a bad day when you see the Wienermobile," Burger said, during a spring visit to the Illinois campus. "There's very few jobs where everyone you interact with is happy, and that's just the way the Wienermobile is. It's really magical."

Burger drove one of six Wienermobiles that roam various regions of the U.S. Burger's assigned region was the Northwest, so she has been everywhere from Portland, Oregon, to Wichita Falls, Texas.

As a Hot Dogger, Burger serves as a brand ambassador for Oscar Mayer as she travels to a new city every week and visits different events daily. These include retail events, parades, festivals, sporting and charity events, and much more.

"Every event has its own quirky nature to it, but the charity events are probably my favorite—the ones where I feel like I'm giving back to the community," Burger said. "I'm making people happy every day, but to add a layer of charity to that is really neat."



Kelly Burger, Hot Dogger for the Oscar Mayer Wienermobile.

The position is a year-long opportunity, so Burger's stint ended in June 2016. As the first-ever Illinois graduate to be a Hot Dogger, Burger said she will always be proud to have once helmed the Wienermobile.

"There's just such a long-standing tradition," Burger said. "They've been driving since 1936, so it's just really neat to be a part of a happy and really fun program. I'm a lucky dog." ■

By Joey Figueroa

# Fast-forwarding to the future of plants

Innovation and collaboration at **SoyFACE** makes Illinois a leader in understanding crops

By Joey Figueroa

**Donald Ort** was on sabbatical at Essex University in England when he had an idea that has made Illinois a leader in plant and crop research.

Ort, who is Robert Emerson Professor of Plant Biology, wanted to recruit his colleague, **Stephen Long**, to join him at Illinois. Long, now Gutzell Endowed Professor of Crop Sciences and Plant Biology at Illinois, eventually agreed, but only under one condition: Ort had to help him carry out his vision of creating a one-of-a-kind global change crop research facility at Illinois.

In 2001, Long's vision came to fruition as the Soybean Free Air Concentration Enrichment facility, located a few miles south of campus. While the rest is history, researchers at the facility continue to look toward the future.

SoyFACE is an innovative crop research facility—an open-air research lab—that specializes in growing crops under simulated conditions of higher atmospheric levels of carbon dioxide and ozone, higher temperature, and altered soil water levels. Researchers adjust these conditions based on predictions about Earth's atmosphere and climate in 2050.

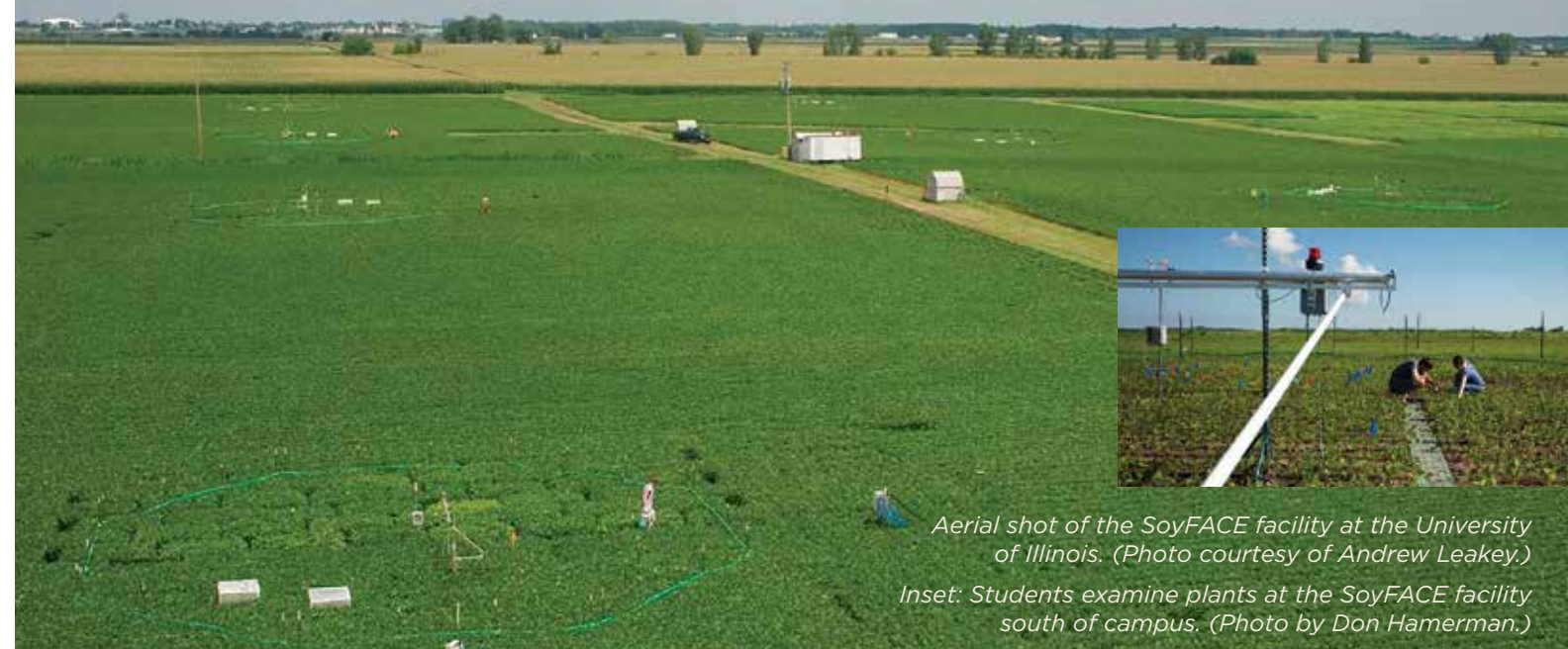
Illinois' SoyFACE facility has become a global leader in tackling issues of sustainability and food production efficiency. It's the only of its kind in North America. Media outlets worldwide have noted the facility and the research it generates, as SoyFACE has made possible important insights on crop production and climate.

According to **Andrew Leakey**, associate professor of plant biology and (along with Ort and Long) a faculty member of the Carl R. Woese Institute for Genomic Biology, Illinois is the ideal location for this research because it sits in the heart of the world's most important crop producing region.

"The SoyFACE facility means we can do experiments that no other university in the U.S. can do," Leakey said. "We're taking crops and seeing how they will perform if we could magically fast forward 50 years—we can simulate that with this field site."

SoyFACE is a collaborative effort between the colleges of LAS and Agricultural, Consumer and Environmental Sciences, as well as the U.S. Department of Agriculture's Agricultural Research Service. To date, 15 to 20 different research groups on campus have used the facility, generating nearly 150 publications supported by funding from numerous sources, including the USDA, National Science Foundation, and the U.S. Department of Energy.

Now in its 16th growing season, SoyFACE is located on 80 acres containing 52 different subplots of various experimental crops, mostly consisting of soybean and corn.



Aerial shot of the SoyFACE facility at the University of Illinois. (Photo courtesy of Andrew Leakey.)

Inset: Students examine plants at the SoyFACE facility south of campus. (Photo by Don Hamerman.)

In order to simulate future conditions of heightened carbon dioxide and ozone, the experimental plots are surrounded by rings of pipes capable of fumigating 100 square meters of crop with both gases over entire growing seasons.

For nearly 25 million years, carbon dioxide levels remained relatively constant, said Ort, the facility's director. During the Industrial Revolution in the early 1800s, however, rising energy emissions caused the carbon dioxide levels in the atmosphere to nearly double. The gas currently constitutes about 0.04 percent of the atmosphere.

As the main substrate for photosynthesis, heightened carbon dioxide is good for plants in that there's plenty of it. However, excess levels of carbon dioxide also cause imbalances within the various reactions of photosynthesis. Some reactions occur too quickly for others to keep pace. Extra carbon dioxide in the air also causes warming and altered rainfall patterns that cause crop yield loss.

Carbon dioxide levels have spiked so sharply over the past few centuries that the natural rate of mutation and evolution of plants simply hasn't been able to adapt plants to new and changing conditions. Ultimately, these atmospheric conditions can greatly affect future crop yields.

Research at SoyFACE is largely focused on locating the suites of genes in crops that make them either sensitive or resistant to the climate change caused by heightened drought, ozone, and carbon dioxide levels. From there, experimenters will try to kick start efforts to develop crops that are more resilient to climate change.

"There has been a history of these kinds of FACE experiments, but the first one was a bit more than 20 years ago," Ort said. "So the technology has evolved. SoyFACE is certainly the most advanced, with the most treatments of any facility that has ever existed."

While the initial focus was on rising carbon dioxide and ozone, research at the facility has expanded to investigate the combined effects of changes in atmospheric composition with accompanying factors such as drought, temperature, and resilience to pests and pathogens.

One of the most recent projects at SoyFACE is a \$5 million grant from the Department of Energy to find ways to improve the water-use efficiency of sorghum. The goal is to decrease the amount of water sorghum needs to grow by about 40 percent, which would make available an additional roughly 10 million acres of land that is currently too dry to raise sorghum.

Leakey is excited by the interdisciplinary cooperation that allows for successful research at facilities like SoyFACE.

"Being at a campus that has expertise in computer science and engineering and plant biology—and having a new generation of plant biologists who have enough skill to glue those things together and lead interdisciplinary team of that type is what makes me want to be here," Leakey said. "That is a powerful asset that we have, which sets Illinois apart from other leading institutions."

Cooperation across various fields of study promises efficiency and innovation. The facility is in the early stages of working with engineers at Illinois to develop robots that can take measurements that are usually done by hand, as well as drone flights that can use thermal cameras to capture images from above the plots.

Leakey has led the development of plans for a retractable greenhouse roof, which will further expand the capabilities of SoyFACE by allowing researchers to control water availability for drought experiments.

Fellow plant biologist faculty member and SoyFACE researcher, **Lisa Ainsworth** (PhD, '03, plant biology) was one of the first graduate students to conduct research at the facility.

"One of the most rewarding aspects of being at Illinois is that it's a wonderful place for collaboration, and SoyFACE is just a tremendous example of that," Ainsworth said. "We've added additional treatments and changed the nature of the questions over time. Hopefully, some of the genes and mechanisms we identify will help breeders increase yields in the future. That's really the ultimate aim." ■



Donald Ort Stephen Long Andrew Leakey Lisa Ainsworth

# STUDIES OF STRUGGLE

## Professor's work shines light on the history of black women, Garveyism, and Malcolm X



Erik McDuffie

When Louise Little opened the front door of her home in Omaha, Nebraska, one night in 1925, she found her house surrounded by mounted members of the Ku Klux Klan, wielding shotguns and rifles. The KKK demanded Louise's husband, Earl, come out of the house.

Louise told the men she was home alone with her three children, and that her husband was out of town. As she spoke, she positioned her body so they could clearly see she was pregnant—although pregnancy did not necessarily mean they would leave her alone.

"Surely she knew that pregnant black women had been lynched before," said **Erik S. McDuffie**, a University of Illinois professor of African American studies and history.

That night, the KKK left without harming her, but this incident is evidence of the courage of this remarkable woman, who was not afraid to confront racism head-on, McDuffie said. Equally remarkable, the child she was carrying on the night of this attack would go on to become an icon of the black protest movement.

That child was Malcolm X.

Louise Little is one of the main subjects in McDuffie's latest book in progress. The book focuses on the Midwest's impact on black protests led by Jamaican Marcus Garvey in the early 20th century.

This past April, McDuffie brought to campus Deborah Jones, Louise Little's granddaughter and Malcolm X's niece, along with Terance Wilson, the third cousin of Malcolm X. It was the first time these relatives had met. Jones spoke at the Malcolm X lecture on campus, also arranged by McDuffie.

McDuffie, inspired in part by his own family history, has been garnering considerable attention for his work on black women and their political impact, and Louise Little is just one of them. His book, "Sojourning for Freedom: Black Women, American Communism and the Making of Black Left Feminism," won the 2012 Wesley-Logan Prize from the American Historical Association and the Association for the Study of African American Life and History. It also won the 2011 Letitia Woods Brown Book Prize from the Association of Black Women Historians.

In 2014, McDuffie was named a Richard and Margaret Romano Professorial Scholar for his achievements in research and campus leadership.

McDuffie said that "with no Louise, there would have been no Malcolm, and I don't mean simply because he was her child." He says Malcolm X would not have been the protestor he became without the "black radical sensibilities" his mother nurtured.

The KKK targeted Louise and Earl Little's house in Omaha because of their work for the Universal Negro Improvement

Association, founded in 1914 by Marcus Garvey and Amy Ashwood Garvey. The UNIA was "the largest black protest movement in world history," he said. During the early 1920s, the Garvey movement claimed to have 6 million members worldwide in the United States, Canada, the Caribbean, Central America, Africa, Europe, and even Australia.

"This Pan-African movement was committed to racial uplift, black pride, self-determination of black people, and the redemption of Africa from European colonial rule," McDuffie said. Always a controversial figure, Marcus Garvey saw himself as the "provisional president of Africa," while the UNIA was his "government in exile."

The United States deported Garvey in 1927 because of trumped-up mail fraud charges, McDuffie said. But Garveyism lived on through the UNIA, which still exists today in a diminished form, as well as in other black movements and institutions.

"Garveyism was foundational to 20th century black freedom movements around the world," he said. It played a role in the decolonization of many African and Caribbean nations, and it had a major influence on the Black Power movement of the 1960s in the United States and around the world. Garveyism even led to the formation of the Nation of Islam, which Malcolm X helped to lead until he broke from it in 1964.



Marcus Garvey (1887-1940). (Photo courtesy of Wikimedia Commons.)

Louise and Earl Little were both heavily involved with Garveyism, McDuffie said, and they had gone to Omaha with the goal of establishing a UNIA outpost.

Louise came from the Caribbean island of Grenada, where she was the child of a rape. Her mother was 11 years old when a prominent white settler on the island raped her. With a white man as her biological father, Louise was fair-skinned and might have been able to pass as white, but she was proud of being black, McDuffie said.

"Louise came from a family of struggle," he added. "She came from a family with the principles of self-reliance, pride, and self-determination."

Louise left Grenada in 1917, traveling to Montreal, where her uncle had already moved. She was first exposed to Garveyism through this uncle, and she met her future husband, Earl, at a UNIA meeting in Montreal.

After marrying, the Littles pulled up stakes and moved throughout the Midwest, a diaspora trek that took them to Philadelphia, Omaha (where Malcolm X was born), Milwaukee, Indiana Harbor, and eventually Lansing, Michigan. One day in Lansing in 1931, Louise had a premonition, and she told her husband to stay home. Earl waved goodbye anyway, and that evening he was murdered when someone threw him under a streetcar. Some blamed the murder for Louise's

emotional breakdown several years later, in 1938, but McDuffie disagrees. He said her collapse was most likely set off by the overwhelming struggles of trying to raise eight children by herself, while being harassed for her beliefs.

In wake of her breakdown, she lost her children to foster care, she lost her land, and she was hospitalized in a psychiatric hospital in Kalamazoo, Michigan.

Louise's story has particular meaning for McDuffie because he sees his own family reflected in her travails. McDuffie's great-grandmother was also from the Caribbean—St. Kitts—and she left the island two years before Louise left Grenada. Like Louise, his great-grandmother traveled to Canada—in this case, Toronto. And like Louise's mother, his great grandmother was raped by a white man. His grandmother, born from that rape, had a tremendous impact on McDuffie's life.

McDuffie said his family history drew him to writing about black women's activism. "I learned from an early age that many of my ancestors were actively involved in struggles of racial justice and black freedom (since as long ago as the early 18th century)," he said. "Many were women."

His mother, along with her sisters and brother, even participated in the civil rights struggles in Detroit in the 1960s, marching in the Walk to Freedom, which was led by Martin Luther King Jr., and drew 125,000 people on June 23, 1963.

As for Louise Little, her family eventually got her released from the institution

in 1963, and she lived almost another 30 years before dying in 1991.

"She never became involved in public protest again, but she was lucid, and she enjoyed the company of her family," McDuffie said. "She never forgot who she was. She wasn't some crazy old lady, as is commonly believed."

In recent years, historians like McDuffie have been rediscovering the forgotten story of Louise Little. But he stresses that Louise was not just a "tag along" while her husband worked for Marcus Garvey and the UNIA. She threw herself into the Pan-African cause.

"Her life speaks to the importance of black women in the making, leading, and sustaining of the Garvey movement," he said. "Women haven't always received the credit, but they have been critical to the building of many black movements. Louise was a brilliant organizer. What a life." ■

By Doug Peterson



(From left) Terance Wilson, third cousin of Malcolm X; Deborah Jones, granddaughter of Louise Little and niece of Malcolm X; and Shahara Brown, great-granddaughter of Louise Little, at the Department of African American Studies in April. They attended a Malcolm X lecture organized by Erik McDuffie. (Photo by Erik McDuffie.)

# THE EDUCATION OF RED GRANGE

By Dave Evensen

## The football great's decision to leave Illinois more than 90 years ago stirred a debate bigger than the game

Here's some **Harold "Red" Grange** trivia that might stump even the most devout football fan: What did he study at the University of Illinois?

The answer: history. He transferred to the College of Liberal Arts & Sciences from the College of Commerce with stated intentions to major in the subject. As time revealed, however, a history degree was not meant to be.

Grange never graduated from Illinois. He played his last game for Illinois on Nov. 21, 1925, a 14-9 Illini victory over Ohio State. It was also his last act as an Illinois student. The next day he signed a lucrative player's contract with Chicago Bears owner (and former Illinois player) George Halas.

By many accounts Grange went on to save professional football, but his early departure from college—he carried a 3.14 grade point average but was 44.5 credits short of graduating—also triggered a national debate that went to the heart of sports and the meaning of higher education.

"No more football, no more college," the Cleveland Plain Dealer wrote two days after Grange's last game. "Indeed, it is even now Harold's own business. But in making the decision to quit he has undoubtedly harmed college football, and has done a disservice to the institution which he has represented on the athletic field."

A few months later, an article by former Illinois student Frazier Hunt appeared in *Cosmopolitan*. Hunt, clearly dismayed by Grange's decision, asked Illinois students how they felt about the star's early departure from college.

"We come to college to learn how to make money, don't we?" one student told him. "Well, Red has learned how. Why shouldn't he practice his profession of football?"

Grange's coach at Illinois, the legendary Robert Zuppke (for whom the field at Memorial Stadium is named), voiced concern about the implications of Grange's decision on higher education itself.

"There are still dreamers," Zuppke told Hunt. "But they are deadened by the thought embodied in the phrase, 'What is there in it for me?'—which is the great American slogan now. The technical and commercial colleges are sponging up the ideals that were fostered by the colleges interested in the humanities—the fine and gentle things."

At that point, the dust from Grange's departure was still settling. Then-Illinois President David Kinley encouraged Grange to stay in school, according to Winton Solberg, professor emeritus of history who's written extensively about the university. Kinley, perhaps dismayed by Grange's decision, later rejected a proposal for a Red Grange statue by Memorial Stadium. His decision stood until 2009, when a 12-foot bronze statue of Grange was placed prominently outside as part of the stadium's renovation.

Zuppke and Grange had a falling out. Grange recounted in his autobiography how his coach pleaded with him to stay away from professional football.

"You get paid for coaching, Zup, why should it be wrong for me to get paid for playing?" Grange told him.

A few weeks after Grange's decision, the pair attended an Elks Club banquet during which Zuppke publicly questioned Grange's decision to join the professional ranks. Grange was so upset by Zuppke's comments that he left the speaker's table while his former coach was still talking.

Despite the uproar, Grange expressed few regrets about his decision. Within a few months, he had earned a reported \$100,000 (albeit during a particularly grueling football tour) and, according to newspaper accounts, bought his father a new house back in Wheaton, Illinois.

"I haven't any apologies to make. I'm not ashamed of a thing I've done," Grange told the Newspaper Enterprise Association in early 1926. He added: "I am inclined to think the real reason many football coaches object to professional football is because they fear it will detract from the college game. They need have no such fears. The big attraction in football will always be the university, college and school game, and spirit."

His attitude appeared to change little later in life, even after a knee injury in 1927 robbed him of some of his famed ball-carrying ability. He starred in films (*One Minute to Play* (1926), *Racing Romeo* (1927), and a serial series, *The Galloping Ghost* (1931), and his fame rivaled that of Babe Ruth. Grange later worked as a sports announcer, and he enjoyed success in real estate and



Harold "Red" Grange's exploits on the football field were extraordinary. (Photo courtesy of University of Illinois Athletics.)

insurance. He moved to Florida, where he bought an orange grove and ultimately retired (Grange died in 1991).

Grange also reconciled with the University of Illinois. He served on the university's board of trustees in the 1950s, and, in 1974, a half a century after he played, he drew thousands of people for Red Grange Day, on the 50th anniversary of the dedication of Memorial Stadium.

By then, Grange had long since made peace with his former Illinois coach. The artistically-inclined

Zuppke was so moved by coaching the player that in the 1940s he painted a portrait of Grange.

"Grange was a genius of motion. I once made a trip to Kaibab Forest on the north rim of the Grand Canyon, and as a deer ran out of the grass plains, I said, 'There goes Red Grange,'" Zuppke told *Esquire* magazine in 1936. "The freedom of movement of the deer was so similar to Red's."

Grange later gave the portrait to Patrick Hayes, former senior director of the U of I Alumni Association and former senior director of development at the College of LAS. Hayes befriended Grange and his wife, Margaret ("Muggs"), later in their lives. Hayes detected no regret from Grange regarding his decision to leave Illinois.

"I think Red was content with his own circumstances," Hayes told *LAS News*. "Still, he fully understood and valued the doors which can be opened through education."

That's evident in Grange's own words. In 1938, according to an Associated Press report, Grange attended a dinner for a celebrated football star, Chicago's 19-year-old Bill De Correvont, who was headed to play for Northwestern University. During the proceedings, Grange, his football career by then complete, took the young man aside for a private moment.

He told him this: "Graduate." ■



Legendary Illinois football coach Robert Zuppke painted this portrait of Grange in the 1940s. It is on display at the Alice Campbell Alumni Center through mid-December. (Photo courtesy of Patrick Hayes and University of Illinois Alumni Association.)



Harold "Red" Grange examines his jersey after his last game for Illinois. (Photo courtesy of University of Illinois Athletics.)

## H. E. "RED" GRANGE

Harold "Red" Grange carries a stack of books sometime before his departure from Illinois. He studied in the College of LAS. (Photo: 1926 Illio)

# Illini Success results released

UNIVERSITY AND LAS GAIN VALUABLE INSIGHTS INTO POST-GRADUATION



Thanks to a major campus undertaking, the University of Illinois and College of Liberal Arts & Sciences know a little more about one of its most important groups—its new graduates.

The university this year released results of its Illini Success initiative, which surveys new bachelor's degree recipients on their post-graduation plans.

The Career Center, with the help of all undergraduate colleges and numerous other units across campus, drove the effort. Through a combination of surveys, employer and college reports, and LinkedIn data, the center collected verifiable information on the early career track of thousands of degree recipients in the class of 2014-15. We gathered information for 2,185 bachelor's degree recipients, or 71 percent of the college total.

Full results of the study can be found at [illinisuccess.illinois.edu](http://illinisuccess.illinois.edu)

## \$49,675

THE AVERAGE ANNUAL SALARY OF FULL-TIME NEWLY EMPLOYED LAS GRADUATES



**LAS graduates** are contributing to the Illinois economy.

**74 percent** indicate they are working in Illinois after graduation.

(the campus average is 70 percent)

THE DEPARTMENT OF COMMUNICATION HAD THE

HIGHEST PERCENTAGE OF ITS GRADUATES SECURING EMPLOYMENT AFTER GRADUATION (78 PERCENT)

## 77 percent

OF LAS GRADUATES INDICATED HAVING SECURED A FIRST DESTINATION

(employment, continuing education, or volunteer/service)

GRADUATES OF THE CHEMICAL SCIENCES REPORTED THE HIGHEST AVERAGE ANNUAL SALARY OF ANY LAS DISCIPLINE (\$66,923)



## 15 percent

OF LAS GRADUATES REPORTED RECEIVING A SIGNING BONUS. THE AVERAGE: \$4,901

**69 percent** of LAS graduates reporting a first destination were employed

**77 PERCENT** of College of LAS graduates

participated in one or more hands-on learning opportunities, including internships, service learning, studying abroad, field work, or other experiences. All ranked the experiences "very helpful" or "helpful."

**43 percent** OF GRADUATES IN ASTRONOMY AND PHYSICS ARE CONTINUING THEIR EDUCATION, THE HIGHEST RATE IN THE COLLEGE

# LAS Alumni Association Events

Our 2016-17 events provide an excellent opportunity for College of LAS alumni to catch up with with friends, have fun, and expand cultural understanding. They're also an opportunity to learn about LAS initiatives that make our college a leader in higher education.

Join us for a variety of experiences, from science to history, sports, and fine dining. For event and registration information, visit [las.illinois.edu/alumni/events](http://las.illinois.edu/alumni/events), email us at [las-alum@illinois.edu](mailto:las-alum@illinois.edu), or call (217) 333-7108.

### A Culinary Experience with Tony Mantuano at River Roast

Saturday, Sept. 24 • 6 - 10 p.m.  
River Roast Restaurant, Chicago

### Homecoming 2016

Friday and Saturday, Oct. 28 and 29  
Visit [go.las.illinois.edu/homecoming16](http://go.las.illinois.edu/homecoming16) for a complete listing of LAS Homecoming events.

### LAS Leaders Reunion: Celebrating 15 Years

Friday and Saturday, Oct. 28 and 29  
Join us at Homecoming 2016! Complete details on our LAS Homecoming web page.

### Politics & Power Brokers: Past and Present

Program by the Department of Political Science  
Saturday, Feb. 25, 2017 • 11:30 a.m. - 2:30 p.m.  
Walnut Room in Hotel Allegro, Chicago

### Lunch at Sunda, a New Asian Restaurant

Program by the Department of Asian American Studies  
Saturday, April 29, 2017 • Noon - 3 p.m.  
Sunda, Chicago

# APPLY

to the College of LAS

### Applying to college for the fall 2017 semester?

Freshmen application at Illinois is now open. In the College of LAS at Illinois, students benefit from:

- **A wealth of programs:** 70 majors and 40 minors, too
- **Diversity:** A diverse student body and endless opportunities to gain a global perspective
- **Hands-on learning:** Study abroad, participate in undergraduate research, and take advantage of unique classes to get out of the classroom and into the world
- **Support:** LAS builds in student support from day one. Students benefit from strong honors programs, advising services, and leadership opportunities

The early application deadline is Nov. 1 and final application deadline is Dec. 1. Explore our majors or apply today. Visit [go.las.illinois.edu/apply](http://go.las.illinois.edu/apply).

# CONNECT WITH LAS

See news and photos from around the college—and share your own—by connecting with us on social media.

Our new LinkedIn Group especially encourages networking among our thousands of alumni.

[go.las.illinois.edu/LinkedIn](http://go.las.illinois.edu/LinkedIn)



[facebook.com/lasillinois](http://facebook.com/lasillinois)

[twitter.com/lasillinois](http://twitter.com/lasillinois)

[instagram.com/lasillinois](http://instagram.com/lasillinois)

“Because of the **Lincoln Scholars Initiative**, I was able to devote a lot of time to the laboratory. It allowed me to add my second major in chemistry and brought me where I am.”

— **Shannon Miller**, Class of 2016, double-majored in integrative biology honors and chemistry



Four years ago, the Lincoln Scholars Initiative launched with the reopening of a renovated Lincoln Hall. In May, the first class of eight Lincoln Scholars graduated, thanks to alumni and friends who gave generously. The Lincoln Scholars initiative allows bright students to experience an Illinois education.

A gift to the Lincoln Scholars Initiative is an investment in students like Shannon. Your support opens a world of opportunities for our Lincoln Scholars, both within the College of Liberal Arts & Sciences and beyond.

For more information or to make a gift, please visit [go.las.illinois.edu/LS](http://go.las.illinois.edu/LS)