After-school exercise program enhances cognition in children

By Diana Yates
Life Sciences Editor

A nine-month-long, randomized controlled trial involving 221 prepubescent children found that those who engaged in moderate-to-vigorous physical activity for at least 60 minutes a day after school showed substantial improvement in their ability to pay attention, avoid distraction and switch between cognitive tasks, researchers report in the journal Pediatrics.

Half of the study subjects were randomly assigned to the after-school program and the rest were placed on a wait list. All participants underwent cognitive testing and brain imaging before and after the intervention.

"Those in the exercise group received a structured intervention that was designed for the way kids like to move," said U. of I. kinesiology and community health professor Charles Hillman, who led the study. "They performed short bouts of exercise interspersed with rest over a two-hour period." The intervention, called FITKids, was based on the CATCH exercise program, a research-based health promotion initiative that was initially funded by the National Institutes of Health and now is used by schools and health departments across the U.S.

The children in the FITKids exercise group went heart-rate monitors and pedometers during the intervention. "On average, kids' heart rates corresponded with a moderate-to-vigorous level of exercise intensity, and they averaged about 4,500 steps during the two-hour intervention," Hillman said. The children were active about 70 minutes per day.

As expected, fitness increased most in the intervention group over the course of the study. We saw about a six percent increase in fitness in children in the FITKids intervention group, "while fitness improved less than one percent in the wait-list control group," he said.

"Children in the exercise group also demonstrated substantial increases in "attentional inhibition," a measure of their ability to block out distraction and focus on the task at hand. And they improved in "cognitive flexibility," which is the ability to switch between intellectual tasks while maintaining speed and accuracy. Children in the wait-list control group saw minimal improvements in these measures, in line with what would be expected as a result of normal maturation over the nine months, Hillman said.

"Kids in the intervention group improved two-fold compared to the wait-list kids in terms of their accuracy on cognitive tasks," he said. "And we found widespread changes in brain function, which relate to the allocation of attention during cognitive tasks and cognitive processing speed. These changes were significantly greater than those exhibited by the wait-list kids."

"Interestingly, the improvements observed in the FITKids intervention were correlated with their attendance rate, such that greater attendance was related to greater change in brain function and cognitive performance," Hillman said.

The study did not distinguish improvements that were the result of increased fitness from those that might stem from the social interactions, stimulation and engagement the children in the intervention group experienced, Hillman said.

"Other research at Georgia Regents University led by Catherine Davis has actually used social and game-playing as their control group, and showed that the cognitive effects of their physical activity intervention are above-and-beyond those that are gained just through social interactions," he said.

The FITKids program is designed to get children socially engaged in exercise, which is part of what makes it an effective intervention, Hillman said.

"The fact is that kids are social beings; they perform physical activity in a social environment," he said. "A big reason why kids participate in a structured sports environment is because they find it fun and they make new friends. And this intervention was designed to meet those needs as well."

The Eunice Kennedy Shriver National Institute of Child Health and Human Development at the National Institutes of Health funded this research.

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Teens like health lessons from interactive media better

By Sharita Forrest
Education Editor

Encouraging teens to eat their vegetables and get more exercise may not motivate them to adopt healthier habits, as many parents know. But will members of the Facebook generation learn to eat their broccoli and take more walks if the messages come from electronic games and peers in videos instead?

Researchers at the University of Illinois explored that possibility in a recent study that included more than 200 middle-school youth who were at risk for diabetes or already had the disease. The study compared the effectiveness of interactive online media with that of a passive-learning website at helping young people improve their eating and exercise habits.

Called the Healthy Outcomes for Teens Project, the intervention was adapted from an existing diabetes education website for adults called Your Guide to Diet and Diabetes, also developed at Illinois.

"Research indicates that more than 93 percent of adolescents use the Internet on a daily basis and more than 50 percent are online more than two hours a day," said the study’s lead author, Henna Muzaffar, a registered dietitian and postdoctoral research associate in the Division of Nutritional Sciences.

"That led us to thinking about using an online format for delivering the intervention for our target population."

Sixth- and eighth-grade students from three schools participated in five learning sessions, each about 35 minutes in length, during health or physical education class or after school. One group of students used an interactive website, while their counterparts used a passive, text-based website that contained the same information. Both versions taught skills and concepts such as judging healthy portion sizes and strategies for increasing one’s physical activity levels and intake of fruits and vegetables.

During pretesting, most of the students could not identify appropriate portion sizes of different foods, but participants in the active online learning group showed significant improvements after the intervention.

"Kids in motion Children in the exercise group wore heart-rate monitors and pedometers during the intervention. They took an average of 3,500 steps each day during the program.

Eat your veggies From left, postdoctoral research associate Henna Muzaffar, extension specialist Jane Scherer and professor Karen Chapman-Novakofski compared the efficacy of interactive and passive online media at helping teens with diabetes lead healthier lives.

ON THE WEB urbannext.illinois.edu/HOT

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Senate endorses preliminary college of medicine plan

By Mike Heinenthal

The Urbana-Champaign Senate was unable to get through its full agenda Sept. 22 after discussion of the Steven Salaita issue ran longer than anticipated.

Senators voted on two items: one giving Chancellor Phyllis M. Wise a preliminary campus endorsement for the proposed college of medicine and the other endorsing the university’s guidelines and making recommendations if needed.

“Nobody is prejudging what that task force might include,” he said. “Nobody wants to find our campus in this situation ever again.”

As for the discussion leading to the preliminary approval of the campus-based college of medicine, senators were mostly supportive, but said many questions need to be answered before it could become a reality.

The new college would parlay the national prominence of the university’s engineering program and the highly ranked clinical enterprise within the Carle Health System into new medical discoveries and devices, and do so with a focus on caring for patients’ standpoint.

Wise’s administration is currently working on a more-detailed college of medicine plan that will include funding mechanisms and more-specific recommendations.

Gender, social orientation affect reactions to bullying

By Sharrta Forrest

A new study of nearly 600 third-graders may explain why some children who experience peer victimization develop depression while others do not.

Children’s gender, social orientation — whether they strive toward attaining positive experiences in social situations or try to avoid negative ones — and their sensitivity to social rewards and punishments may determine how victims will be affected by bullying.

In the study, boys who had been bullied as third-graders, but who were strongly motivated to avoid social disapproval or social punishments, were especially sensitive to peer victimization and showed heightened aggression as fourth graders. However, other boys also who had experienced peer victimization and were less sensitive to social rewards did not.

Conversely, girls who were bullied during third grade and were highly motivated to avoid negative judgments from others, were highly sensitive to peer victimization, but they responded to it in opposite ways, said the researchers, Nicole Llewellyn, a doctoral candidate in psychology, and Karen Rudolph, a faculty member, both in the department of psychology.

Llewellyn and Rudolph aren’t the only researchers who have found that some children, particularly those who are highly sensitive to peer victimization, are more likely than others to develop symptoms of depression.

“New research by Nicole Llewellyn, left, and Karen Rudolph suggests that children’s gender, social orientation and sensitivity to social rewards and punishments may determine their responses to peer victimization,” Llewellyn said. “We found that the girls who were high in avoidance motivation but had the fewest victimization experiences also had the lowest levels of depression,” Llewellyn said. “They were actually functioning better than less-sensitive children. This may mean that very sensitive kids could be especially open to different kinds of interventions that teachers and parents can provide. They’re not doomed to depression or aggression because they are highly sensitive. Under the right circumstances, being highly sensitive may help them thrive as well.”

But Rudolph noted that these sensitive kids need to be toughened up, or that parents try to change children’s temperaments.

“Both parents and teachers can shift children’s social goals and redirect them in constructive ways. For example, if children are really responsive to their friends’ needs, they may be able to make friends easily and keep them. Teachers, as arbiters of the classroom, can be really effective in changing their students’ perspectives on what’s important and teaching them what to value in the peer group.

“The ultimate goal is to prevent bullying from occurring, encouraging children to strive toward social goals other than attaining popularity and status, and encouraging them to be overly concerned with what other people think of them,” Rudolph said.

Social studies

New research by Nicole Llewellyn, left, and Karen Rudolph suggests that children’s gender, social orientation and sensitivity to social rewards and punishments may determine their responses to peer victimization.

Llewellyn is a doctoral candidate and Rudolph is a faculty member, both in the department of psychology.

InsideIllinois

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Antifreeze proteins in Antarctic fishes prevent freezing, melting

By Diana Yates

Life Sciences Editor

Antarctic fishes that manufacture their own “antifreeze” proteins to survive in the icy Southern Ocean also suffer an unfortunate side effect, researchers report. The protein-bound ice crystals that accumulate inside their bodies resist melting even when temperatures warm. The finding is reported in the Proceedings of the National Academy of Sciences.

“We discovered what appears to be an undesirable consequence of the evolution of antifreeze proteins in Antarctic notothenioid fishes,” said University of Oregon doctoral student Paul Cziko, who led the research with U. of I. animal biology professors Chi-Hing “Christina” Cheng and Arthur DeVries.

“What we found is that the antifreeze proteins also stop internal ice crystals from melting. That is, they are antimelt-proteins as well.”

Five families of notothenioid fishes inhabit the Southern Ocean, the frigid sea that encircles Antarctica. Their ability to live in the icy seawater is so extraordinary that they make up more than 90 percent of the fish biomass of the region.

DeVries discovered antifreeze proteins in Antarctic notothenioid fishes in the late 1960s, and was the first to describe how the proteins bind to ice crystals in the blood to prevent the fishes from freezing.

In the new study, the team investigated whether the antifreeze protein-bound ice crystals inside these fishes would melt as expected when temperatures warmed.

When researchers warmed the fishes to temperatures above the expected melting point, some in the internal ice crystals failed to melt. Ice that doesn’t melt at its normal melting point is referred to as “superheated.”

The researchers also found ice crystals in wild notothenioid fish swimming in relatively warmer Antarctic summer waters, at temperatures where they would be expected to be free of ice. By testing the antifreeze proteins in the lab, the team found that these proteins also were responsible for preventing the internal ice crystals from melting.

“Our discovery may be the first example of ice superheating in nature,” Cheng said.

A diver himself, Cziko worked with other divers to place and maintain a temperature-logging device in McMurdo Sound, Antarctica, one of the coldest marine environments on the planet. The device recorded ocean temperatures there for 11 years, a substantial portion of notothenioids’ lifespan. Not only in that time did temperatures increase enough to overcome the antifreeze proteins’ anti-melting effect to completely rid the fishes of their internal ice, the researchers report.

The researchers suspect that the accumulation of ice inside the fishes could have adverse physiological consequences, but none have yet been discovered.

If the fishes are destined to carry ice crystals around all their lives, Cheng said, it is conceivable that ice particles could obstruct small capillaries or trigger unwanted inflammatory responses.

Cziko likens the potential threat to dangers posed by asbestos in the lungs or blood clots in the brain. “Since much of the ice accumulates in the fishes’ spines, we think there may be a mechanism to clear the ice from the circulation,” he said.

“This is just one more piece in the puzzle of how notothenioids came to dominate the ocean around Antarctica,” he said. “It also tells us something about evolution. That is, adaptation is a story of trade-offs and compromise. Every evolutionary innovation probably comes with some bad, unintended effects.”

The long-term temperature record of McMurdo Sound produced in the study also “will prove to be of great importance and utility to the polar research community that is addressing organismal responses to climate change in this coldest of all marine environments,” Cheng said.

Clive W. Evans, a professor of molecular genetics and developmental biology supported this research.

Cold discovery

University of Oregon doctoral student Paul Cziko (right, seen here prepping for a dive) and his colleagues measured seawater temperatures for more than a decade off one of the world’s coldest Antarctic fish habitats, and discovered that the ice crystals inside the fishes never melted.
Search for better biofuels microbes leads to the human gut

By Diana Yates

Life Sciences Editor

Scientists have scoured cow rumens and termite guts for microbes that efficiently break down plant cell walls for the production of next-generation biofuels, but some of the best microbial candidates actually may reside in the human lower intestine, researchers report.

Their study, reported in the Proceedings of the National Academy of Sciences, is the first to use biochemical approaches to confirm the hypothesis that microbes in the human gut can efficiently break down (the plant fiber) hemicellulose for biofuels production.

Alexander E. Lipka

assistant professor of biometry in the department of crop sciences in the College of Agricultural, Consumer and Environmental Sciences

Education: Ph.D. (statistics) and M.S. (applied statistics), Purdue University; B.S. (statistics and music), University of Florida.

Courses teaching: CPSC 440 (Applied Statistical Methods I)

Research Interests: He identifies challenges with current statistical approaches to address and develops or applies new statistical approaches to address them. In addition, he conducts interdisciplinary collaborations to address a range of biological questions relevant to improving the quality and quantity of crops and other agronomically important species.

Why Illinois? “I chose the U. of I. because of the friendly collegiate environment it offers,” Lipka said. “There are many well-known excellent research projects being conducted at the U. of I., and I am very excited about the possibility of getting involved in them.”

Enzyme search

U. of I. microbiology professor Jane Cann and his colleagues found bacterial enzymes in the human gut that can rival those of the cow rumen in their ability to break down the plant fiber hemicellulose for biofuels production.

“We expressed the human gut bacterial enzymes and found that for some related enzymes, the human ones actually were more active (in breaking down hemicellulose) than the enzymes from the cow.”

—Isaac Cann

Among the newcomers to the Urbana campus are faculty members whose appointments began this summer or fall. Inside Illinois continues its tradition of introducing some of the new faculty members on campus and will feature at least two new colleagues in each fall issue.

Faye V. Harrison

professor, department of African American studies in the College of Liberal Arts and Sciences, with a courtesy appointment in anthropology

Education: Ph.D. (anthropology) and M.A. (anthropology), Stanford University; B.A. (anthropology), Brown University

Courses teaching: AFRO 415 (African Feminisms) and AFRO 560 (African Diasporas Seminar) for the spring 2015 semester. She also will play a pivotal role in discussions regarding graduate studies in the department of African American studies.

Research Interests: She is a social/political anthropologist who specializes in the study of social inequalities and the politics that emerge from them. “Other experts in the fields of anthropology and African American studies have described professor Harrison as ‘the pre-eminent black anthropologist and anthropologist of the African Diaspora in this country,’” said Ronald Bailey, the head of African American studies. “In much of her work, the topics involve issues of social and economic disparities related to race, gender and class, and their manifestations in everyday life. Her current research examines modes of political action, power, and resistance to these disparities, focusing on race, gender, and class.”

Why Illinois? “I welcome the opportunity to become a part of the vibrant academic community that the U. of I. has long been committed to building and sustaining,” Harrison said. “A number of colleagues whose work I deeply admire have either worked or been trained here as students. I was a Ford Postdoctoral Fellow here, so I have firsthand experience of the rich intellectual vitality and resources available here. I moved here because I think Illinois will be a great place for someone like me whose teaching and scholarship relate to the interplay of race, gender, class and struggles over national and transnational belonging.”

F. Alexander E. Lipka

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—Isaac Cann

The Energy Biosciences Institute (EBI) and the U.S. Department of Agriculture funded this research. The EBI is a public-private collaboration funded with $500 million for 10 years from the energy company BP and includes researchers from Illinois, the University of California at Berkeley and the Lawrence Berkeley National Laboratory.
Eighty private gifts totaling more than $11 million earmarked for the U. of I. Urbana campus were announced during the three-day weekend event held on the campus of more than 150 friends and alumns of the university and friends of the university attended. The eight gifts highlighted at the Chancellor’s Dinner Oct. 2, 2014.

A $2 million gift from Jerry L. “Jer- ry” Fiddler of Berkeley, California, in support of students and faculty interdisciplinary research initiatives through the Illinois Emerging Digital Research Enterprise (I-Dee) Institute at the transdisciplinary National Center for Supercomputing Applications (NCSA) on campus, with several campus organizations, and connects science, art, the humanities and engineering to advance education, research and creative expression. The Fiddler/Alden gift also provides annual undergraduate and graduate fellowships. Jerry Fiddler earned two degrees at Illinois—a bachelor’s in individual plans of study in 1974 and a master’s in computer science in 1977. He is principal of 360-450 corporations (21 percent), angel venture capital fund that invests early in innovative technology enterprises, and is a hands-on business advisory firm. The William T. Pascoe III, for scholarships in engineering and an MBA at Illinois, and his sons Paul and David, as well as daughter-in-law Jenni, hold degrees from the U. of I. and its three campuses. Oct. 2, 2014

The HOT Project is available on the U. of I. Extension website. The lessons align with Illinois’ Common Core Standards, and is available state-wide as a free resource.

A study about the HOT Project was published recently in the journal Diabetes Technology and Therapeutics.

The research was supported by the American Dietetic Association Foundation, Illinois Arts through Krannert Center for the Performing Arts, and support from the Bequest of Edward F. “Rick” and Maisie Heiken of Scottsdale, Arizona, for scholarships in the College of Business. The Edward F. and Maisie Heiken Scholars in Business support high-achieving students pursuing a degree in accounting, entrepreneurship. Tom Scott earned a bache- lor’s degree in accounting at the U. of I. in 1983. He founded and serves as CEO of CED, a multistate, multi-service business advisory firm in Chicago. Julia Scott is a 1985 Illi- nois accounting graduate and is founder, president and CEO of CED Holdings Inc., a hands-on business advisory firm. The Scotts have supported the College of Busi- ness since 1989, and have also contributed more than $700,000 to the U. of I. Division of Intercollegiate Athletics.

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Benefits of telecommuting greater for some workers

By Phil Ciciora
Business and Law Editor

Even in a hyperconnected world where laptops, phones, tablets and now even wristwatches are tethered to the Internet 24/7, employers are still wary about the performance and social costs imposed by employees who work remotely.

But a new study by a U. of I. business professor says telecommuting yields positive effects for two important measures of employee performance, and it can even produce very strong positive effects under certain circumstances for some employees.

According to Ravi S. Gajendran, a professor of business administration at Illinois, telecommuting is positively associated with improvements in task-and context-based performance, which refers to an employee’s organizational citizenship behavior, including their contributions toward creating a positive, cooperative and friendly work environment.

“It seems like a no-brainer that supervising remotely is good for performance,” said Gajendran. “At the time, there was a lot of debate about it, but there was very little evidence available. Well, now we have some evidence that says telecommuters are good performers as well as good co-workers on the job.”

To perform the study, Gajendran and co-authors David A. Harrison of the University of Texas at Austin and Kelly Delaney-Klinger of the University of Wisconsin at Whitewater developed a theoretical framework linking telecommuting to employee performance. They analyzed field data from 323 employees and 143 matched supervisors across a variety of organizations.

Their findings should quell any concerns from upper-level management about the covenanted work arrangement, Gajendran said.

“Although we found that telecommuting’s positive effect was modest, even a small positive effect is a big deal, because a lot of employers assume the worst with working remotely,” Gajendran said. “Even if there were no effect at all – if the study found that telecommuting essentially did no harm, that it’s no different than being in the office – that in and of itself would be a finding.”

According to the study, telecommuters want to be seen as “good citizens” of the company in order to justify their flexible work arrangements.

“They feel compelled to go above and beyond to make their work presence more visible, to make themselves known as assets,” Gajendran said. “In fact, they almost overcompensate by being extra helpful, because they know in the back of their minds that their special arrangement could easily go away. So they give a little extra back to the organization.”

The extra effort could also be a genuine show of appreciation, Gajendran said.

“Their thinking could be, ‘My boss is giving me something special, I’ve got to reciprocate and give a little back,’” he said. “Our data doesn’t tease that apart, but I imagine it’s possible. If you’re working remotely, you don’t want your co-workers to resent that arrangement. You want them to continue to think you’re helpful. You don’t want to be ‘out of sight, out of mind.’”

The study also found that allowing a worker who has a good relationship with their boss to telecommute doesn’t necessarily move the needle much in job performance.

“It doesn’t hurt performance; it remains the same,” Gajendran said. “It’s essentially flat. For those workers, it’s status quo.”

But if a worker doesn’t have a great relationship with their boss, it turns out that telecommuting actually works to improve their performance.

“When the employee-employer relationship is strained, and then the boss says, ‘OK, I’m going to allow you to work from home,’ it improves the employee’s performance, possibly because they feel more beholden toward their boss,” he said.

By contrast, if an employee has a great relationship with their boss, and their boss then gives them the option to telecommute, “it’s just one more perquisite for a star employee,” Gajendran said.

“But for someone who doesn’t have the greatest relationship with their supervisor, getting this special work arrangement is significant,” he said. “The employee is motivated to give back and work harder to ensure that arrangement doesn’t get taken away. So their performance actually gets better.”

Gajendran has previously studied the employer-employee relationship through the lens of “leader-member exchange,” which involves cultivating trust, loyalty, developmental feedback and support between a team leader and a team member.

Although it is more likely that managers would extend telecommuting privileges only to subordinates who rank high on the “leader-member exchange” (LMX) scale, telecommuting is likely to enhance the task and contextual performance of subordinates who rank low on the scale.

“It seems like a no-brainer that supervisors should grant telecommuting privileges to high LMX employees, whereas those who managers and supervisors trust and believe worthy of receiving special privileges,” he said. “But in light of evidence from our study, which suggests that telecommuting has an even greater positive effect on employees who...
China’s rapidly growing middle class is expected to swell to about 25 percent of its population, is expected to grow about 7 percent of the country’s middle class is expected to travel to the U.S., and hotels’ branding strategies must satisfy this need if they want to appeal to these consumers, say researchers Joy Huang and Liping Cai.

Huang is a U. of I. professor of hospitality and tourism management. Cai is a faculty member in Purdue University’s School of Hospitality and Tourism Management. Their study has been accepted for publication in the Journal of Tourism Management and is available online.

China’s middle class, currently about 7 percent of the country’s population, is expected to grow to about 25 percent of its population by 2020. Domestic travel by this rapidly growing demographic group has generated a flurry of hotel construction in China, and demand for hotel rooms in China is expected to increase at least 10 percent annually through 2042, according to a report by the Boston Consulting Group.

Rising numbers of Chinese citizens are traveling internationally as well. In 2013, more than 1.8 million Chinese tourists visited the United States. That figure is expected to surpass 2.1 million this year — and increase about 20 percent annually thereafter through 2018, according to the U.S. Department of Commerce estimates.

The research team interviewed more than 600 Chinese consumers at shopping malls in Shanghai about their motivations for traveling to the U.S. and their perceptions of three multinational hotel brands — Hilton, Holiday Inn and Super 8. All three chains have properties in China and in the U.S. and websites in both Chinese and English.

Participants ranged from 20 to 60 years old, with slightly more women than men. More than 70 percent had college or advanced degrees, and all respondents had annual earnings in the $10,000 to $60,000 (U.S.) range, placing them among China’s middle class, according to Forbes’ 2010 demographic data.

Based on the hotel companies’ branding literature and websites, the researchers identified themes and developed questionnaires for each hotel brand. Only 10 percent of the participants had previously stayed at any of the three brands studied, although participants were aware of them and the number of completed questionnaires were distributed almost equally across the three brands.

When traveling domestically, Chinese tourists said it was very important to show face by staying at Hilton or Holiday Inn hotels rather than Super 8. In China, Hilton and Holiday Inn hotels are rated as four- and five-star luxury hotels while Super 8 markets itself as the budget brand.

Likewise, if tourists’ primary objective for visiting the U.S. was to show face, the intangible features of a hotel, such as its prestige and luxury, influenced their selection process, and consumers were less likely to choose Super 8.

“Middle-class Chinese citizens’ affluence and improved standard of living, coupled with Confucius-centered cultural values such as having face, drive these consumers to seek more symbolic value in their consumption of goods and services,” Huang said. “Chinese consumers tend to establish attachments to multinational hotel brands that are able to satisfy their needs for belonging and esteem from society. They love the hotel brand, would choose it even if it costs more, and spread favorable impressions of the brand to others because it provides them with a sense of being special and prestigious, which conveys social status and face.”

U.S. hotels need to better understand Chinese travelers

By Sharita Forrest

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By Sharita Forrest

Education Editor

Insidellinois

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Oct. 2, 2014

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Chinese culture: Hotels in the U.S. that want to attract greater numbers of tourists from China may need to re-evaluate their branding strategies, suggests a new study that was led by Joy Huang, a professor in the department of recreation, sport and tourism.

Multinational hotel brands, including the three in the study, may vary their marketing strategies and services from one country to another, which can be confusing for customers who travel internationally. Promoting a uniform brand identity and corporate values that reassure travelers they will experience consistent service and quality at all locations may be especially important for companies that want to attract Chinese tourists to their hotels in the U.S., the researchers say. •
Six Urbana campus faculty members have been named University Scholars. The program recognizes excellence in teaching, scholarship and service. The faculty members were honored at a campus reception Sept. 29 in the ballroom of the Alice Campbell Alumni Center.

Begun in 1985, the scholars program recognizes faculty excellence on the three U. of I. campuses and provides $15,000 to each scholar for each of three years to enhance his or her academic career. The money may be used for travel, equipment, research assistants, books or other purposes.

"Recognition of the achievements of our stellar faculty is crucial," said Christophe Pierre, the vice president for academic affairs. "It is an apt tribute to their outstanding scholarship, an investment in their productivity and a key to our ability to retain extraordinary faculty."

The Urbana campus recipients:

Peter Abbamonte, a professor of physics, is a condensed-matter experimentalist and a leader in the Frederick Seitz Materials Research Laboratory. His research interests include electron self-organization in condensed matter, stripe phases and topological order, edge and interface effects in oxide devices, quantum phase transitions, and collective excitations in interacting electron systems. His pioneering techniques are used at the major synchrotron facilities around the world.

Christopher C. Fennell, a professor of anthropology, is an archaeologist with specializations in historical archaeology and the archaeology of the African Diaspora. He has produced an award-winning book, and is a widely sought-after speaker, lawyer and legal scholar. His work brings meticulous analysis of the material culture of enslaved African-descendant peoples in the New World to bear on the historical and ethnographic record.

Brian D. Fields, a professor of astronomy, is a theorist who works on nuclear and particle astrophysics. He uses the high-energy universe as a laboratory to probe fundamental physics in regimes inaccessible to terrestrial experiments. His work crosses the disciplinary boundaries between astronomy, nuclear physics and geology. One of his many research areas includes cosmological nucleosynthesis, the creation of the elements by nuclear reactions in the aftermath of the Big Bang.

Paul J. Hergenrother, a professor of chemistry, is an expert in the molecular basis of disease and has distinguished himself by translating his most promising discoveries into real world applications. He has made significant advances in the way new medicines are discovered and developed, using readily available natural products as the starting point for complex molecule synthesis. His discoveries impact not only basic scientific research but also the lives of cancer patients.

Faranak Miraftab, a professor of urban and regional planning, is a scholar of urban processes in a global context. Her research examines the intersections of global and local processes in both shaping communities and the efforts of citizens who are disadvantaged by race, gender, ethnicity and class to establish livelihoods. She investigates the role of citizens through the formal and informal channels of citizenship that shape urban processes and development.

Sandra Rodriguez-Zas, a professor of animal sciences, has established a research program in statistical genomics and bioinformatics, with the goal of improving health, production and well-being in humans, livestock and model organisms. Her research provides insights into the molecular processes responsible for cancer and the molecular interplay between mother and embryo during pregnancy.
In stickleback, dads influence behavior and gene expression

By Diana Yates
Life Sciences Editor

Researchers report that some stickleback fish fathers can have long-term effects on the behavior of their offspring. The most attentive fish dads cause their offspring to behave in a way that makes them less susceptible to predators. These behavioral changes are accompanied by changes in gene expression, the researchers report.

The findings appear in the Proceedings of the Royal Society B: Biological Sciences.

“There is lots of evidence that moms are very important for their offspring,” said U. of I. animal biology professor Alison Bell, who led the study with researcher Katie McGhee. “But we know much less about fathers.”

Studies in mice, monkeys and voles, for example, show that maternal care and attentiveness to newborns can influence the future behavior of the young — even when these moms care for young that are not genetically related to them, Bell said. The behavioral changes are often linked to changes in gene expression via “methylation,” a chemical process that reduces the rate at which specific genes are translated into proteins, she said.

Stickleback fathers are entirely responsible for the care of their young, making them ideal organisms for the study of fatherly influence, Bell said.

The stickleback dad’s job is a challenge, she said.

“Everybody loves to eat fish eggs; cavies love to eat fish eggs, too, so you can imagine how in the wild everybody and their mother is trying to eat the stickleback’s clutch of eggs,” she said. “So males are very aggressive towards intruders, and they spend a lot of time just hanging out at their nest and defending it.”

Fathers differ, however, in the kinds of care they provide to the young, Bell said. Some dads more aggressively chase away intruders and barely interact with their offspring, while others hover over the nest, fanning it with their fins to boost oxygen and retrieving youngsters (called fry) that wander off.

“The dad is actually handling the fry in his mouth,” she said. “He’ll chase them down, suck them up into his mouth and then spit them back into his nest.”

Early studies in sticklebacks suggested that fry are learning about predators by having their dad chase after them.

In the new study, Bell and McGhee evaluated fatherly influence on fry behavior by separating half of the fry from their dads before they hatched.

“This allowed us to compare these offspring that were orphans with their siblings, who were raised by their father,” Bell said.

McGhee tracked the sticklebacks’ behavior in and around the nest and in the presence of a predator. She found that the orphaned offspring of very attentive fathers had a tendency to be much more active, particularly in the presence of a predator. When a predator fish (in this case, a pike) was near, the young sticklebacks swam around, pecking at the sides of the tank as if trying to escape, a behavior that makes them more susceptible to being spotted and eaten by a hungry pike.

Having been reared by attentive fathers, however, reduced this frantic fry behavior. The father-reared offspring were much less active than their siblings that had been orphaned, the team reports.

“The less-attentive fathers had no discernible influence on their offspring, however. The orphaned fry and the father-reared fry of these dads behaved similarly in the presence of a predator,” Bell said.

These findings suggest that fish families differ in their responses to stress, and that fathers can help to compensate for inherent vulnerabilities by changing their behavior in ways that affect offspring behavior, Bell said.

The team also looked at gene expression in their study fish, and found that the variation in parental care was associated with changes in an enzyme that promotes DNA methylation in the young.

“Our study is important because, one, we show that dads can be like moms in that their care can influence their offspring; two, we show that dads can be like moms in that it looks like it could be mediated by gene expression changes due to differences in methylation; and three, we find this funky thing where the amount of methylation and the amount of care seems to vary among families,” Bell said.

Bell also is an affiliate of the Institute for Genomic Biology at Illinois.
Spirituality, not religion, critical to black women’s well-being

By Sharita Forrest
Education Editor

A number of studies have suggested that religion plays a critical role in black Americans’ mental health and life satisfaction, aiding their ability to cope with personal and societal stressors. However, a new study indicates that spirituality, rather than religiosity, may be the component that essential to black women’s psychological well-being.

Tamilia D. Reed and Helen A. Neville conducted the study, which appeared recently in the Journal of Black Psychology. Reed is a doctoral student in counseling psychology in the College of Education and a graduate assistant counselor with the Faculty/Staff Assistance Program on the Urbana campus. Neville is the chair of the counseling psychology division and holds appointments in educational psychology and African-American studies.

While religiosity and spirituality are related, prior research has shown that black women perceive them to be distinct concepts.

Religiosity is typically defined in terms of an individual’s participation in religious institutions and adherence to prescribed beliefs. Spirituality, on the other hand, involves meaning-making and relational dimensions, such as having a relationship with a higher power that transcends people and the universe, Reed said.

“For black women, interpreting the significance of life experiences via one’s relationships may be more critical to mental health and life satisfaction than adherence to religious doctrine or engagement in religious activities,” she said.

More than 160 black women participated in an internet survey that explored their religious and spiritual values and practices. Participants ranged in age from 20 to 75 years. More than half of participants held graduate or professional degrees and identified themselves as middle class.

Participants were assessed on their psychological well-being, their overall contentment with their lives and their religiosity – as evidenced by their participation in religious activities and their commitment to common religious values. The survey also assessed the relationship with a higher power/universal intelligence, their beliefs regarding nature and their sense of purpose in life.

More than three-fourths – 79 percent – of participants reported that they were “fairly to very spiritual.” Less than one percent said they were “not at all spiritual.”

In terms of religiosity, all of the women were “Christian (mostly Baptist),” while 70 percent reported no religious affiliation and 7 percent were Christian (Buddhist, Neo-Pagan), Kemetic, Ifa or Muslim).

The researchers found that spirituality fully mediated the relationships between religiosity, mental health and life satisfaction – women who possessed higher degrees of spirituality had better mental health and were more satisfied with their lives.

“Spirituality’s full mediation of the relationship between religiosity and life satisfaction suggests that participants’ relationships to other people and to divine beings, along with meaning-making processes, may be the underlying mechanism that connects religion to mental health and life satisfaction,” Reed said. “Based on our findings in the current sample, positive psychological well-being for black women may be better accounted for directly by spirituality than by religiosity.”

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—Tamilia D. Reed

For the full story, please see the Oct. 2, 2014, issue of InsideIllinois.
A new role for estrogen in pathology of breast cancer found

By Diana Yates
Life Sciences Editor

Scientists have discovered a previously unknown mechanism by which estrogen prepares cells to divide, grow and, in the case of estrogen-positive breast cancers, resist cancer drugs. The researchers say the work reveals new targets for breast cancer therapy and will help doctors predict which patients need the most aggressive treatment.

The U. of I. team reports its findings in the journal Oncogene.

Estrogen pre-activates the unfolded-protein response (UPR), a pathway that normally protects cells from stress, the researchers report. The UPR spurs the production of molecular chaperones that prepare cells to divide and grow. Without chaperone proteins to do the work of folding and packaging other proteins, cells – including cancer cells – cannot divide. For this reason, chaperones are a popular target for new cancer therapies.

Activation of the UPR is known as a normal response to stress – when a cell lacks adequate oxygen or nutrients, for example, or is exposed to cancer-killing drugs. UPR activation prepares the cell for major changes associated with cell growth, division and survival under stress.

It wasn’t known before this study, however, that estrogen initiates this pathway before such stresses appear, said U. of I. biochemistry professor David Shapiro, who led the new analysis with lead author, M.D.-Ph.D.-student Neal Andruska.

“This is a new role for estrogen in the pathology of cancer,” Shapiro said. “Others have shown that stress activates this pathway, helping to protect some tumors. What is new is our finding that estrogen can pre-activate this pathway to protect tumors.”

When estrogen binds to its receptor it sparks a cascade of molecular events in the cell. A key event occurs when a channel opens in the membrane of a compartment that stockpiles calcium, and calcium floods into the cell.

“That’s a signal to activate the UPR pathway, the stress pathway,” Shapiro said. “It’s also a signal that many researchers think has something to do with cell proliferation. The calcium itself may be a proliferation signal.”

The stress-response pathway induces the production of chaperone proteins.

“I like to think of this pathway as an assembly line,” Shapiro said. “In order for cells to divide, you’re going to have to produce a lot more proteins. The chaperones help you to package, fold up and ship all these proteins.”

The UPR also is a mediator of cell death. If a normal cell is exposed to too much stress, the stress response spurs apoptosis, a kind of cellular suicide. In cancer, however, mild activation of the UPR by estrogen blunts this cell-death pathway, allowing cancer cells to survive and even resist drugs, the researchers found.

The team also looked at the expression of UPR-related genes in publicly available data from samples of breast tumors obtained from women who had been diagnosed up to 15 years prior.

“Andruska, who spearheaded the research and carried out the computer analysis of the breast cancer data, found that UPR activation is a very powerful prognostic marker of the course of a woman’s disease,” Shapiro said.

The analysis revealed that among women with estrogen-receptor-positive breast cancer who underwent tamoxifen therapy, breast cancer was 3.7 times more likely to recur in those over-expressing the UPR. Ten years after a breast cancer diagnosis, only 15 percent of those with the highest level of UPR-gene expression were disease-free, compared with 80 percent of women with minimal UPR expression.

“Protecting tumors

Biochemistry professor David Shapiro, center, M.D.-Ph.D. student Neal Andruska, left, graduate student Xiaobin Zheng and their colleagues discovered a new mechanism by which estrogen contributes to the pathology of breast cancer.

“Our marker helps identify breast cancers that are likely to be highly aggressive and therefore require intensive therapy,” Shapiro said.

U. of I. graduate student Xiaobin Zheng, postdoctoral researcher Xujian Yang and food science and human nutrition professor William Helferich contributed to the research.

The National Institute of Diabetes and Digestive and Kidney Diseases at the National Institutes of Health funded the research.

ON THE WEB

go.illinois.edu/nature_estrogen

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Academic journals should adopt nonprofit publishing model

By Phil Ciciora
Business and Law Editor

Sifting the publication of academic journals away from a private, for-profit model could save universities big bucks in the long term while also keeping the market-place of ideas fully stocked, says a U. of I. economist.

According to Don Fullerton, a finance professor and former deputy assistant secretary of the U.S. Treasury Department, academic research associations should consider switching from commercial publishers, who typically charge university libraries hefty subscription fees, to a nonprofit publisher that charges a lower rate or even create a nonprofit journal owned by the association, which could then undercut the commercial publishers.

"By publishing their work in for-profit journals that charge libraries nearly 10 times what nonprofit journals do, academics and other researchers are essentially donating their labor and intellectual capital to ensure a high rate of return for a commercial enterprise," said Fullerton, a Gutgsell Professor of Finance and associate director of the U. of I. Institute of Government and Public Affairs.

Academics want their work to be disseminated as widely as possible so everyone can benefit from it, Fullerton said. But private, for-profit publishers don’t help that cause by charging university libraries “an arm and a leg” for both the dead-tree version and electronic access, he said.

"Essentially, publishers are extracting rents on our work," said Fullerton, who also is a faculty associate with the Center for Business and Public Policy in the College of Business. "It’s not illegal. They had a right to do that, but we also have the right not to play by their rules. We certainly don’t have to help them generate those large profit margins."

With minimal overhead costs and the ability to charge libraries almost 10 times as much as its competitors do for subscriptions, for-profit journals make plenty of money, Fullerton said. "After working on it for 10 years, we found this trend 10 years ago and broached the idea with the Association of Environmental and Resource Economists. He later served as vice president of the association from 2012-14.

"After working on it for 10 years, we have finally published the first issue of the Journal of the Association of Environmental and Resource Economists," said Fullerton, who was the transition editor in 2013 and also is a member of the journal’s editorial board.

"Because this journal is backed by the association, most environmental economists already regard it as the top journal in the field."

Nonprofit model: Academic research associations should found their own nonprofit journals to avoid the substantially higher subscription rates of commercial publishers, says U. of I. finance professor Don Fullerton. earn some positive cash flow for the association," he said.

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**Human Resources**

All Employee Expo is Oct. 21

Do you have a work-related question that doesn’t have a simple answer? Are you unsure of which office to contact? The answer is waiting for you at the All Employee Expo on Oct. 21. Representatives from campus, community and affiliated organizations will provide information about benefits, services, programs and other related topics. Employees must bring their i-card to be admitted to the free event, which will take up to one hour to attend, operations permitting, with prior supervisor approval.

More information, including a list of vendors, is online at http://www.ilu.edu/AllEmployee_Expo.html.

**Survey Research Lab**

Webinars offered on survey research

The Survey Research Laboratory is offering four introductory webinars on survey research methodology this fall. The series is free to U. of I. faculty and staff members, and students. A basic understanding of survey research methods is recommended. Advance registration is required and can be done at www.srl.uiuc.edu/SEMINARS/SRALL4Seminars.htm.

The courses:
- Introduction to Survey Sampling (noon-1 p.m., Oct. 8) will cover the basics of sampling methodology, the importance of using proper sampling techniques, determining the appropriate sampling methodology and calculating necessary sample sizes. The discussion will also include simple random sampling, cluster sampling, stratified sampling and multisample stages.
- Instructor: Karen Retzer
- Introduction to Web Surveys (noon-1 p.m., Oct. 15) will present the current Web-based survey data collection systems, and review the major sources of survey error associated with Web surveys and current approaches to addressing these problems. Instructor: Timothy Johnson
- Introduction to Questionnaire Design (noon-1 p.m., Oct. 22). Designing a good questionnaire is a complicated process that includes decisions ranging from questionnaire format and question order to question wording and response categories. The design should aid respondent understanding of questions, recall and judgment formation, and minimize response editing because of social desirability. This webinar will review basic strategies for achieving these goals. Instructor: Allyn Holbrook
- Center for South Asian and Middle Eastern Studies Teachers’ workshop to be Oct. 17-18


The conference, “The Indian Ocean: History, Networks and Spaces of Imagination,” will bring together 15 special-ists, the Sultan Qaboos Cultural Center and a Hewlett Foundation grant, online curricular materials and children’s literature and curriculum and instruction, in addition to external members and graduate students in the departments of history courses. The workshop will feature Illinois faculty members and graduate students in the departments of history and curriculum and instruction, in addition to external specialists. Educators will learn about Indian Ocean history, online curricular materials and children’s literature on the Indian Ocean, and will receive a copy of a recently published, accessible and brief introduction to the Indian Ocean by UCLA professor emeritus Edward Alpers, one of the workshop speakers. The workshop also will include a demonstration of the Indian Ocean in World History website, developed by Susan Douglass through funds from the Sultan Qaboos Cultural Center. Participating teachers can receive up to 6.5 continuing education credits (CPUs).

Registration for both the conference and workshop are free. To register, visit indianoceancent ers.illinois.edu. For more information, email csmed@illinois.edu.

The conference was made possible with support from the Sultan Qaboos Cultural Center and a Hewlett Foundation grant through International Programs and Studies at the U. of I.

Beckman Institute

SmithGroup lecture will be Oct. 16

Chad Mirkin, a George B. Rathmann Professor of Chemistry and the director of the International Institute for Nanotechnology at Northwestern University, will present “The Nature of the DNA Bond” as part of the Beckman Institute SmithGroup Distinguished Lecture Series at 2 p.m. Oct. 16 in the Beckman Institute auditorium. The talk is free and open to the public.

The talk will explore the use of rigid inorganic nanopar-ticles functionalized with DNA that act to orient oligonucleotides perpendicular to their surfaces to dictate DNA bonding interactions. More details are online at beckman.illinois.edu/events/smithgroup-lectures.

WILL-TV

October ‘pioneers’ announced

An interview with Fred Kummerow, a researcher who sounded early warnings about the dangers of trans fats, begins the month for WILL-TV’s “Illinois Pioneers” on Oct. 2. Other interviews with host David Inge at 7:30 p.m. Thursdays this month are entomologist May Berenbaum on Oct. 9, Busey Bank vice chairman Ed Scharlau on Oct. 23, and artist Preston Jackson on Oct. 30.

Kummerow got interested in trans fats in the late 1950s when he examined arteries of people who had died from heart attacks and found them clogged with trans fat. “His concerns were dismissed because he was a chemist and not a cardiologist,” Inge said. The U. of I. emeritus professor who’s been researching the relationship between diet and heart disease for more than 60 years talks about his life-style, which includes eating an egg every day, and gives some hints about his current research interest – Alzheimer’s disease.

May Berenbaum, a U. of I. professor who has received many honors from fellow scientists, also has numerous fans among the general public who have been caught up in her infectious love of insects. Inge said Berenbaum put aside her childhood fear of insects to become an entomologist. Inge talks to her about why people find insects so creepy and about some of the connections between insects and people, including the importance of insects as pollinators. She also talks about how the world-famous Insect Fear Film Festival got started and about how she came to inspire a character on the sci-fi television show “The X-Files.”

Scharlau, who started in banking as a part-time janitor and teller and now is vice chairman of Busey Bank, has been in the banking business in Champaign-Urbana for a decade.

**Inside Illinois**

Oct. 2, 2014

**State’s only veterinary college opens its doors Oct. 5**

From 10 a.m. to 4 p.m. on Oct. 5, more than 350 veterinary students will provide a behind-the-scenes look at the state’s only veterinary college. From prospective veterinarians to anyone fascinated by animals, everyone will find something of interest at the U. of I. College of Veterinary Medicine Open House.

The event will offer more than 40 fun and educational exhibits and hands-on demonstrations. Visitors will find answers to questions ranging from “Why do horses wear shoes?” to “How do dogs regain mobility after surgery?” There also will be information about veterinary education and careers, and lots of animals and animal-related activities for young and old.

Returning this year is “Teddy Bear Repair,” where children can get their slightly injured stuffed animal toys patched up by veterinary students – free of charge.

Prospective veterinarians are encouraged to attend the open house. Career talks will demystify the path to becoming a veterinarian and offer details about the unique Illinois veterinary medicine degree program.

The event is free; registration is not required. Free parking is available in Lot F-27 at 2001 S. Lincoln Ave., Urbana. For a list of exhibits and directions, see vetmed.illinois.edu/openhouse. The event is for people only; do not bring companion animals.

**ON THE WEB**

vetmed.illinois.edu/openhouse/

**Free fun** Vet Med is hosting its free annual open house from 10 a.m. to 4 p.m. Oct. 5. It offers something for everyone – from prospective veterinarians to young animal lovers.

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half century. “So in a little over 10 years, he literally went from sweeping the floors to being president of the bank,” Inge said.

Preston Jackson is well known in Illinois and beyond as a sculptor and painter. “He also likes to think of himself as a storyteller, and the story is often a personal one,” Inge said. “As he says, ‘I create who I am.’” Jackson is the co-founder of the Contemporary Art Center in Peoria, where he also has a studio and gallery. He earned his master of fine arts degree from the U. of I. and has taught for many years at the Art Institute of Chicago.

Krahnert Art Museum

Global Africa Community Forum is Oct. 9

Krahnert Art Museum will host its second Global Africa Community Forum at 5:30 p.m. Oct. 9. The event, titled “What Does Black Masculinity Look Like? Blackness, Gender and Contemporary African Dance,” will be a dynamic and participatory public forum for engaging issues related to the hermeneutic and interpretative practice of the African Diaspora. This year’s forum explores experiences of blackness, gender and coming of age.

Robert A. Bjork, Distinguished Research Professor in the department of psychology’s 2014 Lyle Lanier Lecture, “Forgetting As a Friend of Learning: How We Learn Versus How We Think We Learn,” will conclude with a conversation between the audience and forum contributors. Organized by an interdisciplinary team of scholars at the U. of I., the event is the culmination of efforts by Nance; Stafford Berry Jr., a professor of dance and Black Studies at Denison University; Nyama McCarthy-Brown, a professor of contemporary dance in the department of the-}

Center for Advanced Study

Annual lecture features Baillargeon

The Center for Advanced Study’s 24th annual lecture will feature Renée Baillargeon, CAS Professor of Psychol-}{

Graduate College

Mentoring workshop is Oct. 28

Mentoring graduate students is a new and important role for many faculty members who are just starting their careers. Join new faculty members from across campus at this lunchtime workshop to learn from experienced faculty members and gain strategies for successful mentoring.

Graduate College

Standing watch Nokoxis, a great horned owl, is a resident bird of prey used for educational purposes at the Wildlife Medical Clinic, which cares for more than 1,500 injured animals each year.

Ongoing, certain conditions that impair perfor-}{

ON THE WEB

www.harvestmoondrivein.com

for a special screening of “Homeward Bound: The Incredible Jour-}


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more information, visit www.grad.illinois.edu/events/ mentoring/Fall2014 or email grad@illinois.edu. Advance registration is required and can be done at the above web-}{

ON THE WEB

vetmed.illinois.edu/wmc

www.marinebiology.illinois.edu/whalewatch

As described by Allyson Purpura, curator of African Art}{

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www.hesstn.com

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For more information contact 217-333-3429 or}{

ON THE WEB

www.barbourillinois.com

For more information on the Wildlife Medical}{

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www.baillargeonlab.org

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BRIEFS, CONTINUED FROM PAGE 14

lated to innovative, online and blended learning. Present-
ners include Susan Cole, social work; William Cope, educa-
tion; Duncan Ferguson, comparative biosciences/veterinary
medicine; Denice Hood and Adam Busch, education; Grace
Oh and Wen-Hao (David) Huang, education; Dawn Owens-
Nicholson and Maryalice Wu, College of Liberal Arts and
Sciences; Jonathan Tomkin, School of Earth, Society, and
Environment; and Jose Vazquez, economics.

Registration is free and open to all faculty and staff
members, and students. Attendees may come for only one
presentation or stay for the whole event. For those who
cannot attend, the proceedings will be streamed live as well as
recorded and posted on the Summit website (citl.illinois.
edu/summit).

The summit is sponsored by the Center for Innovation
in Teaching and Learning and the Office of the Provost. It is
co-organized by the College of Education, the College
of Liberal Arts and Sciences, and the Graduate School of
Library and Information Science.

For more information or to register, go to citl.illinois.
edu/summit, email onlinesummit@illinois.edu, or call 217-
244-8174.

Council of Academic Professionals
Chancellor to attend Oct. 2 meeting

Chancellor Phyllis Wise will attend the Oct. 2 Council
of Academic Professionals meeting, where she will make
remarks and address questions that have been submitted in
advance of the meeting.

The meeting will begin at 1:15 p.m. in Room104 Illini
Union.

NCSA Career Pathways Lecture Series
P&G’s Tom Lange to kick off series

Illinois undergraduate and graduate students considering
careers in computational science and engineering can learn
more about opportunities with companies like Procter &
Gamble, Alcatel and ADM when top executives visit cam-
pus for a series of lectures this fall.

The Computational Science and Engineering Career
Pathways Lecture Series will kick off in the auditorium of
the NCSA Building at 4 p.m. Oct. 7 with Thomas J.
Lange, Procter & Gamble director of modeling and simula-
tion. Lange will discuss both his own career path and the
skills and attitudes that P&G looks for when hiring. Both
undergraduate and graduate students in diverse disciplines
will find his perspective valuable as they consider their own
career paths.

Lange, who earned a B.S. in chemical engineering from
the University of Missouri at Columbia in 1978, joined
Procter & Gamble in May 1978 as a product technical en-
geineer. He has spent his 36-year career modeling and simu-
lating formulations, products and production systems, from
how hot air roasts peanuts and coffee, to how baby sizes
affect urine leaks in a diaper. He currently leads P&G’s
modeling and simulation efforts, spanning the scales from
atoms to the store shelf. This includes the disciplines of
consumer modeling, computational chemistry and biology,
computer-aided engineering (structures, fluids, controls,
chemical engineering and empirical), and production sys-

tem throughput and reliability.

Other speakers scheduled for fall 2014:

- Paul Ranierez, vice president with Alcatel Lacent. 4
p.m. Oct 28, NCSA Building

- Bryan Hibbs, director, Business Transformation –
Commercial at Archer Daniels Midland, 4 p.m. Nov. 18.
NCSA Building

- All members of the campus community are invited to
to these free lectures.

The Career Pathways lecture series is sponsored by the
National Center for Supercomputing Applications and the
Computational Science and Engineering program at the
U. of I.

WILL-TV and Radio
Gubernatorial debate to air Oct. 9

Illinois Public Media will host the Illinois Gubernatorial
Debate at Peoria with three other Illinois public
broadcasters and the League of Women Voters of Il-

linois.

WILL-TV, WILL-AM and WILL-FM will broadcast the
debate at 8 p.m. Oct. 9, with Republican Bruce Rauner and
Democratic incumbent Pat Quinn. It will take place at
WTVP (Peoria), which is sponsoring and broadcasting the
debate along with WILL, WSUI-FM-TV (Carbondale) and
WUIS-FM (Springfield).

A debate from WSUI, host of “Illinois Lawmakers,”
will moderate, with questioning by Amanda Vinicky, state-
house bureau chief of Illinois Issues magazine.

Illinois Public Media will stream the debate live on
the station website, will.illinois.edu.

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WUIS-FM (Springfield).

A debate from WSUI, host of “Illinois Lawmakers,”
will moderate, with questioning by Amanda Vinicky, state-
house bureau chief from WSUI; H. Wayne Wilson, host/producer of WTVP’s “At Issue”, and Jamey Dunn, state-
house bureau chief of Illinois Issues magazine.

Illinois Public Media will stream the debate live on
the station website, will.illinois.edu.

Deaths

Judith A. Becker, 75, died Sept. 19 at Century As-
nisted Living in Carbondale, Illinois. She was a sec-
retary for U. of I. Extension for 15 years, retiring in
2008. Memorials: Champaign Public Library, cham-
paign.org.

Wanda R. Dyson, 96, died Sept. 27 at the Cham-
paign-Urbana Regional Rehab Center of Savoy. Dys-
on worked at the U. of I. for 10 years, retiring in 1985
as a secretary IV for the Office of Admissions and
Records. Memorials: Grace Lutheran Church, 313 S.
Prospect Ave., Champaign, IL 61820.

Willie Lee McDonald Sr., 72, died Sept. 20 at Pres-
ence Covenant Medical Center, Urbana. He worked at
the U. of I. for 17 years, retiring in 2004 as a build-
ing service worker for the Illini Union.

Paul “Butch” Nixson, 69, died Sept. 20 in Wash-
ington, Utah. He worked at the U. of I. for 19 years,
retiring in 2007 as an ironworker for Facilities and
Services.

Robert L. “Bulldog” Wright, 90, died Sept. 17 at
Carle Foundation Hospital, Urbana. He retired from
the U. of I. in 1988 as superintendent of Memorial
Stadium.

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staff members know about your unit’s next event, deadline or service.
Ethnicity doesn’t appear to affect annexation decisions

By Dusty Rhodes
Arts and Humanities Editor

In the American South, race has been shown in numerous studies to play a role in municipal annexation decisions: predominantly white municipalities were less likely to extend the city limits to include adjacent areas with a higher percentage of African-American residents, according to prior studies. But how are annexation decisions made in the Midwest, where an increase in immigration has resulted in an uptick in the Hispanic population? That’s the question two U. of I. researchers set out to answer.

Bev Wilson and Mary M. Edwards, professors in urban and regional planning, studied 192 incorporated towns across 10 states to determine whether the ethnicity of the population affected an area’s chances of being annexed. They found that ethnicity – cultural heritage – appeared to be a minor factor relative to other demographic characteristics.

“There’s lots of different theoretical explanations for what drives these cities and towns to annex territory,” Wilson said. “And what we found was that some of these alternate explanations or theories were more strongly corroborated by the data.”

Annexation can be a mutually beneficial maneuver. Municipalities use annexation to capture existing property taxes, or to put dibs on land that seems ripe for development. For property owners, annexation into a municipality typically entitles them to more public goods and services, such as water and sewer infrastructure, fire and police protection, access to libraries and recreation centers, and snow removal.

“That’s one of the reasons that this process of selective annexation, which also is called underbounding, is problematic from a social justice or equity perspective,” Wilson said, “because in those cases, if you’re not annexed, then you’re not able to make use of the benefits from those public goods and services.”

Annexation laws vary from state to state. Only a few states permit involuntary annexation; most require a referendum proving that the majority of residents agree to join the municipality. Property owners outside a municipality also can initiate a petition requesting annexation. Studies dating back to the 1980s have shown that race can be a factor in whether such requests are approved.

“The earliest study I know of is from the Mississippi Delta,” Wilson said, “and it found evidence of selective annexation, where you had incorporated areas that would extend their boundaries outward, but somehow avoid the low-income African-American areas.”

The boom in Hispanic population in the Midwest over the past decade prompted Wilson and Edwards to use U.S. Census data to study whether ethnicity was a factor in annexation decisions. Their findings, published in a recent issue of Urban Affairs Review, revealed that while ethnicity may have played a small role, other demographic characteristics had more impact. The two that seemed most influential were the rates of home ownership and the ratio of working-age adults to children and senior citizens.

“The age-dependency ratio is often used as a proxy for measuring demand for public services,” Wilson said. “So if you have a high age-dependency ratio, you might expect to spend more of your budget on services for senior citizens, public schools and perhaps even social services.” A city or town considering annexing a nearby community typically takes that information into account.

Outside of metropolitan areas, another factor in a community’s annexation chances is highway access – the closer the better.

“This makes sense and certainly fits with the notion of land speculation as one of the drivers of annexation, and with the theory of annexation as a tool for shoring up revenue streams and recapturing tax base,” Wilson said.

Wilson and Edwards plan to continue their focus on annexation, and are in the early stages of examining voter registration and property value as factors in municipal underbounding.

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Driving decisions Bev Wilson, a professor in urban and regional planning, has studied whether ethnicity affects annexation decisions.

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