New finding about drug could lead to better treatments

By Liz Ahlberg
Physical Sciences Editor

With one simple experiment, UI chemists have debunked a widely held misconception about an often-prescribed drug.

Led by chemistry professor and Howard Hughes Medical Institute early career scientist Martin Burke, the researchers demonstrated that the top drug for treating systemic fungal infections works by simply binding to a lipid molecule essential to yeast’s physiology, a finding that could change the direction of drug development efforts and could lead to better treatment not only for microbial infections but also for diseases caused by ion channel deficiencies.

“Dr. Burke’s elegant approach to synthesizing amphotericin B, which has been used extensively as an antifungal for more than 50 years, has now allowed him to expose its elusive mode of action,” said Miles Fabian, who oversees medicinal chemistry research grants at the National Institute of General Medical Sciences. The institute is part of the National Institutes of Health, which supported the work. “This work opens up avenues for improving upon current antifungal drugs and developing novel approaches for the discovery of new agents.”

Systemic fungal infections are a problem worldwide and affect patients whose immune systems have been compromised, such as the elderly, patients treated with chemotherapy or dialysis, and those with HIV or other immune disorders. A drug called amphotericin has been medicine’s best defense against fungal infections since its discovery in the 1950s. It effectively kills a broad spectrum of pathogenic fungi and yeast, and has eluded the resistance that has dogged other antibiotics despite its long history of use. The downside? Amphotericin is highly toxic.

“When I was in my medical rotations, we called it ‘ampho-terrible,’ because it’s an awful medicine for patients,” said Burke, who has an M.D. in addition to a Ph.D. “But its capacity to form ion channels is fascinating. So my group asked, could we make it a better drug by making a derivative that’s less toxic but still powerful? And what could it teach us about avoiding resistance in clinical medicine and possibly even replacing missing ion channels with small molecules? All of this depends upon understanding how it works, but up until now, it’s been very enigmatic.”

While amphotericin’s efficacy is clear, the reasons for its remarkable infection-fighting ability remain uncertain. Doctors and researchers do know that amphotericin creates ion channels that permeate the cell membrane. Physicists have long assumed that this was the mechanism that killed the work. “This work opens up avenues for improving upon current antifungal drugs and developing novel approaches for the discovery of new agents.”

Fungal fighter Illinois chemists discovered that a powerful treatment for fungal infections doesn’t work the way doctors have assumed, setting a new course for drug development. The researchers, led by chemistry professor Martin Burke, right, are, from left, graduate students Matthew Endo, Ian Duling, Brice Uno, Brandon Wilcock and, not pictured, Kaitlyn Gray and Dassiel Palacios.

Harsh medicine A model of amphotericin, the most relied-upon drug for treating fungal infections despite its toxicity.

By Diana Yates
Life Sciences Editor

Research into biofuel crops such as switchgrass and Miscanthus has focused mainly on how to grow these crops and convert them into fuels. But many steps lead from the farm to the biorefinery, and each could help or hinder the growth of this new industry.

A new computer model developed at the UI can simplify this transition, researchers say. The model can run millions of simulations, optimizing operations to bring down costs, reduce greenhouse gas emissions or achieve other goals.

“Biomass from the field will not just show up magically at the biorefinery, and each could help or hinder the growth of this new industry,” said Miles Fabian, who oversees medicinal chemistry research grants at the National Institute of General Medical Sciences. The institute is part of the National Institutes of Health, which supported the work. “This work opens up avenues for improving upon current antifungal drugs and developing novel approaches for the discovery of new agents.”

A model of amphotericin, the most relied-upon drug for treating fungal infections despite its toxicity.

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Inside Illinois
Vol. 31, No. 13
For Faculty and Staff, University of Illinois at Urbana-Champaign • http://news.illinois.edu/ii

In this issue

Heal thyself
A new self-healing system developed at the UI restores electrical conductivity to a cracked circuit in less time than it takes to blink.

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Controlled growth
Researchers have developed a bandage that stimulates and directs blood vessel growth on the surface of a wound.

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INSIDE ILLINOIS ONLINE: news.illinois.edu/ii/ • TO SUBSCRIBE: go.illinois.edu/iisubscribe
Investigation into anonymous emails completed

“Anonymous communication is a powerful tool for reporting wrongdoing in public places,” said Professor Troyer. “We encourage all members of the community to use the anonymous form to foster a culture of accountability and transparency.”

The research team plans to continue collecting and analyzing the data to better understand the patterns and implications of anonymous communication in academic settings.

For more information, please contact Professor John Troyer at john.troyer@illinois.edu.
Molecular ‘culprit’ in rise of planetary oxygen identified

By Diana Yates

A turning point in the history of life occurred 2.1 billion to 2.3 billion years ago with the unprecedented appearance and dramatic rise of molecular oxygen. Now researchers report they have identified an enzyme that was the first – or among the first – to generate molecular oxygen on Earth.

The findings are reported in the journal Structure, build on more than a dozen previous studies that aim to track the molecular evolution of life by looking for evidence of that history in present-day protein structures. These studies, led by UI crop sciences and Institute for Genomic Biology professor Gustavo Caetano-Anollés, focus on structurally and functionally distinct regions of proteins – called folds – that are part of the universal tool kit of living cells.

Protein folds are more stable than the sequences of amino acids that compose them, Caetano-Anollés said. Other changes in sequence often occur without disrupting fold structure or function. This makes folds more stable and more reliable of long-term evolutionary patterns, he said.

In the new study, Caetano-Anollés, working with colleagues in China and Korea, tackled an ancient mystery: Why did some of the earliest organisms begin to generate oxygen, and why?

“There is a consensus from earth scientists that about 2.4 billion years ago there was a big spike in oxygen on Earth,” Caetano-Anollés said. “They generally agree that this rise in oxygen, called the Great Oxygenation Event, was tied to the emergence of photosynthetic organisms.”

“But the problem now comes with the following question,” he said. “Oxygen is toxic, so why would a living organism generate it? Something must have triggered this.”

The researchers looked for answers in the “molecular fossils” that still reside in the earth. They analyzed protein sequences from nearly a thousand organisms representing every domain of life to assemble a timeline of protein evolution. The study showed it was limited to single-fold proteins (which the researchers believe are the most ancient), and was calibrated using microbial fossils that appeared in the geologic record at specific dates.

The analysis revealed that the most ancient reaction of aerobic metabolism, the one that led to the aerobic form of vitamin B6 (which is essential to the activity of many protein enzymes) and the activity of oxygen-generating enzyme, manganese catalase, appeared at the same time.

Recent studies also suggest that aerobic (oxygen-based) respiration began and that would be gradually exposing the sequences of amino acids that compose part of the universal tool kit of living cells. They analyzed protein folds in present-day protein structures in more than a dozen ancient, and was calibrated using microbial fossils that appeared in the geologic record at specific dates.

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Focal Point projects promote interdisciplinary research

By Mike Helenthal
Assistant Editor

A ll groundbreaking, earth-shaking, multidisciplinary research has something in common: a starting point.

And so, the University of Illinois College of Agriculture, Forestry and Life Sciences’ Focal Point grant program has been providing that starting point for the past three years.

According to Debasish Dutta, the dean of the Graduate College, the program is designed to team faculty members, internal and graduate students from sometimes far-flung disciplines with the hopes that together they’ll find a spark leading to the next paradigm-shifting discovery.

The result has been a profound and pervasive change in the way the University, with its combined $1.2 billion in annual research expenditures, is doing business.

“Many projects are led by a collection of graduate students,” Dutta said. “Future knowledge produces new courses or grants, and that has really paid off.”

IGERT

The resulting project, “Water for Life: Addressing a 21st Century Crisis,” featured a fall 2010 weekly speaker series designed to inspire the agricultural/bioenvironmental engineering program to start thinking collaboratively and more expansively.

To maximize the experience, Plewa and Miller secured matching funds from the participating colleges. To make the funding go farther, students stayed at Plewa’s house.

The earthy approach paid further dividends as graduate students who were given ample opportunity to mingle with the roster of revolving speakers – all within the cozy confines of the host’s house.

“We always talk about bringing in people from diverse areas, but we enhanced the experience for the graduate students,” he said.

“That was the goal here and I think the metrics for success for Focal Point have been very good.”

Project principal investigator Michael Plewa noted how his experience was similar. He said the time that students and speakers had together would continue to pay dividends.

“The exposure they got to a variety of issues was immense,” he said. “It was good for us as faculty because we got to talk to and meet people who were doing things we didn’t even know about. With engineering, they’re on the north side of campus and we’re on the south side; we’re literally in two different worlds. He said he could see changes in the way students started approaching some of the problems being faced.

“I think it was the first time they had thought about the importance of the diversity in the science and how it would be used,” he said. “I think the students have realized the importance of teamwork. It was a small investment that has really paid off.”

Seven projects were funded the first year (academic year 2009-10); seven were funded the next year and last year the list expanded to eight.

Grants can be as high as $15,000 and are expected to culminate with a campus workshop, presentation or new course offering.

According to Rayvon Fouché, the associate dean in the Graduate College who oversees the initiative, “Focal Point has created a vibrant intellectual space where cultural diversity is championed and international collaboration is nourished. The work of the Focal Point awardees provides cogent evidence that in challenging economic times universities still are well positioned to examine, explore and demand the needs and addressing of our ever-evolving world.”

Fouché said many of the projects have led to new courses or discplinary Environmental Toxicology Program.

A n example of that momentum is the 2010-11 Focal Point project led by Michael J. Plewa, a professor of genetics in the department of crop sciences, food science and human nutrition, and the interdisciplinary Environmental Toxicology Program.

The result has led beyond the campus. The Graduate College is hoping other universities to supply such funding, as much as $125,000 annually, for arts and humanities cross-disciplinary funding is not as prevalent as science funding. Deadline for this year’s INTERSECT proposals is Jan. 30.

Dutta said the UI is one of the first universities to supply such funding, as much as $125,000 annually, for arts and humanities cross-disciplinary work. Though the first proposal process has yet to be completed, he said the interest among faculty has been high.

RegISTRATION deadline for the Jan. 30 INTERSECT informational meeting is Jan. 25.

The Campus deadline for IGERT pre-proposals is April 2.

INTERSECT:

www.grad.illinois.edu/intersect

IGERT:

www.grad.illinois.edu/igert

Register for IGERT meeting:

https://illinois.edu/Itc/8483866

ON THE WEB

Debasish Dutta

Professor

Michael J. Plewa, right, a professor of genetics in the department of crop sciences, food science and human nutrition, is the 2010-11 Focal Point project partner. Dutta said the project’s Integrative Graduate Education and Research Training program is designed to provide the information needed to traverse familiar institutional boundaries, Focal Point contributes to this larger societal project.

More information on Focal Point, including past projects or how to submit an online proposal, is online.

More interdisciplinary opportunities

By Mike Helenthal
Assistant Editor

The UI hopes to build on its recent success in the National Science Foundation’s Integrative Graduate Education and Research Training grant program and is hosting a Jan. 30 informational meeting about the selection process.

“We have turned the corner and the momentum is building,” said Debasish Dutta, the dean of the Graduate College, noting that UI faculty members have for the past three years secured IGERT grants, which average $3.2 million each and focus directly on in-vehicle graduate students in interdisciplinary scientific research.

IGERT was started by NSF in 1997, but the UI didn’t earn an IGERT grant for nearly 12 years.

In 2009 UI won its first IGERT in neuroengineering, led by electrical and computer engineering professors Doug Jones and Todd Coleman. A second IGERT was earned in 2010 by Professor Rashid Bashir and his group in cellular and molecular mechanics and biomaterials. Last year UI received its third IGERT when Professors Andy Suarez and Gene Robinson were successful in vertically integrated training with humanistic expertise as much as it needs scientific and technical skill. By providing an opportunity to traverse familiar institutional barriers, Focal Point contributes to this larger societal project.

More information on Focal Point, including past projects or how to submit an online proposal, is online.

Debasish Dutta

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The Graduate College is hoping other university departments use the groundswell of success to further tap into NSF funding. The Jan. 30 informational meeting, to be held from 9:30-10 a.m. in Room 304 Coble Hall, is designed to provide the information needed to submit a successful proposal.

“It’s a very important and it’s something we want to build on,” Dutta said. “IGERTs not only catalyze new models in graduate education, but also collaboration across disciplines. This creates an environment that supports innovation and preparation of the transees with skills needed for becoming successful scientists.”

Andrea Golato, an associate dean in the Graduate College, said the IGERT program is important for graduate education because it challenges the status quo and creates new training environments for graduate students.

IGERT students are educated to recognize how their research might be utilized for societal questions of our current historical moment, everyone needs to participate, contribute and think,” he said. “Future knowledge production needs both social and
Our final two new faculty members for this year’s New Faces feature, which includes a short introduction of some of the campus’s new faculty members.

**Kenworthey Bilz**

*a professor of law*

**Education:** Ph.D. and M.A. (experimental social psychology), Princeton University; J.D., University of Chicago; A.B. (government), Harvard College.

**Research Interests:** How social psychological processes can inform the study of law.

“Kenworthey is one of the nation’s most innovative scholars working on how social psychological processes can inform the study of law,” said Bruce Smith, the dean of the College of Law. “She advances the college’s prominence in the area of law and social science and strengthens our cross-disciplinary bridge to the campus’s world-class department of psychology. With her arrival, the University of Illinois College of Law has become one of the top law schools in the nation for the study of law and psychology.”

**Courses:** Criminal Law.

**Why Illinois?** “I chose Illinois because its law school and its psychology department are world class,” Bilz said. “I’m continually impressed by the caliber of my colleagues and my students. Everyone here is open to new ideas and learning — it’s an incredibly functional and productive atmosphere, and I feel very lucky to be here.”

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**Jana Diesner**

*an assistant professor in the Graduate School of Library and Information Science*

**Education:** Ph.D. (ABD) and M.S. (computation, organizations and society), Carnegie Mellon University, Pittsburgh; M.A. (magister atrium) in communication science, Dresden University of Technology, Germany.

**Research Interests:** Computational analysis of the interplay and co-evolution of information and the functioning of socio-technical networks. Her research focuses on networks from the business, science and geopolitical domains. She is particularly interested in factors that impede the sustainable development of networks and their wider context, especially conflicts and crime, and in covert information and covert networks. “Those who met Jana during the hiring process were uniformly impressed with her energy, her intelligence and her creativity,” said John Unsworth, the dean of the school. “The work she is doing is a great fit for GSLIS, and it will provide added depth to our social, community and organizational informatics research. I’m also pleased to say that Jana is a dedicated and effective teacher.”

**Courses:** Co-teaching LIS 590, Information Networks, with Les Gasser.

**Why Illinois?** “I’m excited to come to Illinois because of the great scholarship that is happening here,” Diesner said. “I think GSLIS offers an exceptional depth and breadth of expertise and research activities that is not found elsewhere.”
Keep consumer protection agency free of ‘regulatory capture’

By Phil Cicliora
Business and Law Editor

With many Americans now spending most of their adult lives owing debts to financial institutions, the need for a consumer financial agency free of “regulatory capture” is now more acute than ever, according to a UI expert in consumer credit.

Robert M. Lawless, a professor of law, says the demise of the subprime lending market has exposed the need for an effective Consumer Financial Protection Bureau that will not be “diluted” by the people it is supposed to regulate.

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What do you foresee happening with Illinois politics this year? More gridlock and partisan bickering because of election-year politics, or a concerted effort to tackle the state’s many problems?

Election years are dominated by a candidate’s fear of 30-second commercials that often distort or magnify an official’s vote on a controversial issue, so expect state legislative leaders to keep such votes to a minimum.

Actually, the Democrats and Republicans in the House have begun cooperating on a number of issues, including the budget, which will be the overriding challenge of the spring session.

As now required, Gov. Pat Quinn has released a three-year budget projection, which is an exercise in creative writing. The projection shows, for example, that health care spending will be flat — meaning, essentially, no change — over the three-year span, which is not at all practicable.

And even after a 67 percent increase in the state income tax this past year, even the most optimistic budget projection foresees deficits this year as well as in the future. The deficits are driven primarily by sharp increases in the spending for pensions, required by present state law to begin to shore up the underfunded state pension systems.

What does the future hold for the state’s five pension systems? Is there a compromise solution out there that will pass constitutional muster and avoid a lengthy court battle?

Pension benefits for new state employees were reduced a year ago. Business groups feel that pension benefits must also be reduced for current employees, and maybe in the health care benefits for employees and retirees as well. As unfair as it is to present employees, I also believe that further changes are required. Otherwise, the costs of pensions will crowd out spending for education and human services.

But don’t expect the Legislature to move on any further changes until after the November elections, as too many voters would be affected.

Then there is the state constitutional issue. The state charter declares, “Membership in any pension or retirement system of the state (and its local governments) shall be an enforceable contractual relationship, the benefits of which shall not be diminished or impaired.”

Does this apply to future benefits or just those already earned? There is disagreement on this point. I believe the Legislature will ultimately enact a law that does affect future benefits of current employees, which will then be challenged and resolved by the state Supreme Court.

Will redistricting help or hurt Democrats in their efforts to retain the U.S. House of Representatives in 2012? Democrats drew the Illinois congressional districts in 2011. As a result, that party may regain two or three of the five seats Republicans captured from the Dems in 2010.

This will not, however, be much help to Democrats in whittling down the 242-192 margin the Republicans hold in Congress, which would require a shift of 26 seats to regain control.

State legislatures also redistricted last year, and 26 of the bodies are controlled by Republicans versus only 15 by Democrats, with the rest split between the parties, so there was a GOP edge in the process nationally. I think 26 seats represent a mountain too high to surmount for Democrats.

What does the future hold for the state’s five pension systems? Is there a compromise solution out there that will pass constitutional muster and avoid a lengthy court battle?

This past year, Gov. Pat Quinn vetoed a bill that would have added five more casinos plus slot machines at tracks, calling it too high to surmount for Democrats. Otherwise, I think 26 seats would be an insurmountable task for Democrats for many years.

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Do you expect Illinois lawmakers to pursue gambling expansion in the spring session?

This past year, Gov. Pat Quinn vetoed a bill that would have added five more casinos plus slot machines at tracks, calling it top-heavy. Legislators were unable to override the veto.

Chicago Mayor Rahm Emanuel is determined to get a casino for Chicago, which he thinks would generate $300 million or so each year for the cash-strapped city.

After World War II, Chicago alone represented 50 percent of the state’s population. That share has shrunk to just 20 percent, so city legislators alone cannot come close to bringing a casino to Chicago. Emanuel is persuasive, but I don’t think he can find enough support from suburbanites and downstaters to achieve his goal this spring.

In other words, don’t expect many lawmakers to write profiles in courage during this spring session of the Legislature.
Self-healing electronics could work longer and reduce waste

By Liz Albinberg
Physical Sciences Editor

When one tiny circuit within an integrated chip cracks or fails, the whole chip—or even the whole device—is a loss. But what if it could fix itself, literally, itself so fast that the user never knew there was a problem?

A team of UI engineers has developed a self-healing system that restores electrical conductivity to a cracked circuit in less than five minutes without removing the chip. “It simplifies the system,” said chemistry professor Jeffrey Sottos, the researchers published their results in the journal Advanced Materials.

“As electronic devices are evolving to perform more sophisticated tasks, manufacturers are packing as much density on a chip as possible. However, this density compounds reliability problems, such as failure stemming from fluctuating temperature cycles as the device operates or fatsigues. A failure at any point in the circuit can shut down the whole device.”

“In general there’s not much advantage for manual repair,” Sottos said. “Sometimes you just can’t get to the inside. In a multilayer integrated circuit, there’s no opening up. Normally you just replace the whole chip. It’s true for a battery too. You can’t pull a battery apart and try to find the source of the failure.”

Most consumer devices are meant to be replaced with some frequency, adding to electronic waste issues, but in many important applications—such as instruments or vehicles for space or military functions—electrical failures cannot be replaced or repaired.

“The Illinois team previously developed a system for self-healing polymers,” Sottos said. “They decided to adapt their technique for conductive systems. They dispersed tiny microcapsules as small as 10 microns in diameter, on top of a gold line functioning as a circuit. As a crack propagates, the microcapsules break open and release solid metal containing inside. The liquid metal fills in the gap in the circuit, restoring electrical flow.”

“What’s really cool about this paper is it’s the first example of taking the microcapsule-based healing approach and applying it to a new function,” White said. “Everything prior to this has been on structural repair. This is on electronic repair. It shows the concept translates to other things as well.”

The self-healing system also takes into consideration the circuit’s condition. “As an aircraft or spacecraft, the self-healing system could extend the longevity of electronic devices and batteries.”

Bail-ins: exacerbat muscle markets

By Phil Ciciora
Business and Law Editor

The rise and fall of financial crises, governments that wish to assist crisis victims must choose between publicly financed bailouts and “bail-ins,” which use the law to retrospectively modify agreements in favor of those private resources that support the victims. While bail-ins are politically appealing and may seem fair, a UI business and law expert argues that they amplify the highs and lows of future business cycles and undermine the policy gains of those who believe free markets allocate investments optimally, as well as those who prefer government guidance in allocating investments.

“Bail-ins” are a case in point. According to the article, published in the UI Law Review, investments decline as a result of both cognitive biases and rational incentives of business executives.

Amitai Aviram, a professor of law and the Lynn H. Murray Faculty Scholar in the College of Law, says that while traditional analysis of bail-ins assumes that they permanently reduce future investment, their effect on investment, in fact, likely fluctuates over time as a result of both cognitive biases and rational incentives of business executives.

“Bail-ins are essentially ‘using the law to force a private bailout’,” Aviram says. “It is a common response to a financial crisis. In the wake of such crises, public authorities often use the law to modify private contracts, transferring value from those who fare better in the crisis to those who fare worse. From the perspective of the crisis victim, this is a ‘bail-in’ because a bailout implies using public funds.”

“The concept translates to other things well,” Aviram says. “The market skeptical argument for bail-ins is that the market tends to go in manic depressive phases, and in the mania phase, there is too much investment, for example, too many mortgages going to people who can’t repay,” he said. “To the market-skeptical, the fact that offsetting the effect of the bail-in is a good thing because it prevents the excesses of the next boom.”

On the other side of the ideological spectrum, market-trusters do not like that bail-ins deter investment, since they believe the harm bail-ins cause is easily corrected with a corresponding subsidy to encourage investment. “They say, ‘For example, if banks expect that once the housing market turns sour, government will make it difficult to foreclose, they might lend less. But if government offers a tax deduction for the interest paid on mortgagees, that would lower the cost of a mortgage and encourage more lending, potentially offsetting the effect of the bail-in.’”

But because the effect of bail-ins on investment diminishes over time, Aviram contends that such a subsidy sows the seeds of the next bubble.

“The market-skeptical argument for bail-ins is that the market tends to go in manic depressive phases, and in the mania phase, there is too much investment, for example, too many mortgages going to people who can’t repay,” he said. “To the market-skeptical, the fact that offsetting the effect of the bail-in is a good thing because it prevents the excesses of the next boom.”

On the other side of the ideological spectrum, market-trusters do not like that bail-ins deter investment, since they believe the harm bail-ins cause is easily corrected with a corresponding subsidy to encourage investment. “They say, ‘For example, if banks expect that once the housing market turns sour, government will make it difficult to foreclose, they might lend less. But if government offers a tax deduction for the interest paid on mortgagees, that would lower the cost of a mortgage and encourage more lending, potentially offsetting the effect of the bail-in.’”

But because the effect of bail-ins on investment diminishes over time, Aviram contends that such a subsidy sows the seeds of the next bubble.
gene delivery agents

Let’s twist: Spiral proteins are efficient gene delivery agents

By Liz Ahlberg

Clinical gene therapy may be one step closer, thanks to a new twist on an old class of molecules.

A group of UI researchers, led by professors Junjun Cheng and Fei Wang, have demonstrated that short spiral-shaped proteins can efficiently deliver DNA segments to cells. The team published its work in the journal Angewandte Chemie.

The main idea is that new materials that could potentially be used for clinical gene therapy, said Cheng, a professor of materials science and engineering, of chemistry and of bioengineering.

Researchers have been exploring two main pathways for gene delivery: modified viruses and cellular agents such as synthetic polymers or lipids. The challenge has been to address both toxicity and efficiency. Polypeptides, or short protein chains, are attractive materials because they are biocompatible, fine-tunable and small.

“There are very good in vivo transfection agents available, but we cannot use them in vivo because of their toxicity or because some of the complexes are too large,” Cheng said. “Using our polypeptides, we can control the size down to the 200 nanometer range, which makes it a very interesting delivery system for in vivo applications.”

A polypeptide called poly-L-lysine (PLL) was an early contender in gene delivery, but it required positively charged side chains – molecular structures that stem from each amino acid link in the polypeptide chain – so it is soluble in the watery cellular environment.

However, PLL gradually fell into disuse because of its limited ability to deliver genes into cells, a process called transfection, and its high toxicity. Cheng postulated that PLL’s low efficiency could be a function of its globular shape, as polypeptides with charged side chains tend to adopt a random coil structure, instead of a more orderly spiral helix.

“We never studied the connections of transfection efficiency, because we were never able to synthetically make materials containing both a cationic charge and a high percentage of helical structures,” Cheng said. “This paper demonstrated for the first time that helicity has a huge impact on transfection efficiencies.”

Earlier this year, Cheng’s group developed a method of making helical polypeptides with positively charged side chains. To test whether a helical polypeptide could be an efficient gene delivery agent, the group assembled a library of 31 helical polypeptides that are stable over a broad pH range and can bond to DNA for delivery. Most of them outperformed PLL, and a few outstripped a leading commercial agent called polyethyleneimine (PEI), notorious for its toxicity although it is highly efficient. The helical molecules even worked on some of the hardest cells to transfect: stem cells and fibroblast cells.

People kind of gave up on polypeptide-based gene therapy in the Top 100 was IRIS, because PLL had low efficiency and high toxicity,” Cheng said. “The polypeptide that we designed, synthesized and used in this study has very high efficiency and also well-controlled toxicities. With a modified helical polypeptide, we demonstrated that we can overcome these toxicities."

The polypeptides Cheng and his co-workers developed can adopt helical shapes because the side chains are longer, so that the positive charges do not interfere with the protein’s winding. The polypeptides can control sequence and structure, especially their cell-penetrating abilities.

They hope to control sequence and structure with precision for specific applications, including gene delivery, drug delivery, cell membrane penetration and antimicrobial action.

The National Science Foundation and the National Institutes of Health supported this work. Wang is a professor of cell and development biology and of bioengineering. Postdoctoral researchers Nathan Gabrielson, Lichen Yin and Dong Li and graduate student Hua Lu were co-authors of the paper.

UI rises to 27 in Kiplinger’s ‘Best Values’ rankings

By Mike Helenthal

University officials received a pleasant January surprise when the editors of Kiplinger’s Personal Finance magazine announced the UI’s Urbana campus had jumped 18 spots in its annual report ranking the “Best Values in Public Colleges.”

Improved test scores and graduation rates, as well as new Kiplinger ranking criteria, brought the UI to the 27th spot overall for in-state students for 2011-12, a marked improvement from last year’s rank of 45.

For out-of-state students, the UI was ranked 25th nationally.

The only other Illinois school to be included in the Top 100 was Chicago, which was ranked 85 for in-state students and 71 for out-of-staters. It was the first time UI was even included in the list.

The Urbana campus’s in-state rank trailed only two other Big 10 universities – University of Wisconsin (13) and the University of Michigan (16). Its out-of-state rank trailed Wisconsin, Michigan and the University of Minnesota. The University of North Carolina at Chapel Hill was ranked the top-ranked “value” school in America.

Kiplinger senior editor Jane Bennett Clark said the magazine starts the ranking process with data from 120 public universities nationally, which includes information on academic success, tuition, costs and fees, available financial aid, and a host of other statistics.

“Our rankings focus on traditional four-year schools with broad-based curricula,” she said. “As a result, schools that offer greater value but focus on special or narrow academic programs, such as the military service academies, are excluded. Academic quality carries more weight than costs.”

A third of the ranking is based on cost and available student aid.

“We consider lower sticker prices, generous need-based aid, and percentage of need met – the extent to which financial aid bridges the gap between the family’s expected contribution and the cost of attendance,” she said.

UI Chancellor and Vice President Phyllis M. Wise said the Kiplinger announcement was good for university public relations – but that efforts are already being made to further improve.

“We are pleased that Kiplinger’s recognizes that an education at Illinois remains one of the best values in higher education,” she said. “We continue to provide financial support to students who do not have the ability to pay the full cost of tuition and fees so that the best and brightest students have access to a University of Illinois education.”

Gene therapy

Illinois researchers developed spiral polypeptides that can deliver DNA segments to cells with high efficiency and relatively low toxicity, a step toward clinical gene therapy. The team includes, from left, postdoctoral researchers Lichen Yin and Dong Li; Fei Wang, a professor of cell and development biology; Junjun Cheng, a professor of materials science and engineering; and Nathan Gabrielson, a postdoctoral researcher.
More infrastructure needed for Latino mental health

By Sharita Forrest

News Editor

By an ongoing shortage of trained interpreters and uninsured – navigate America’s English dominant and institutionally marginalized by linguistic, structural and organizational barriers in the health care system, Piedra said.

However, the number of bilingual service providers has not kept pace, and Latinos with limited or no English proficiency frequently are marginalized by linguistic, structural and organizational barriers in mental health care, Buki and Piedra wrote.

With Latinos expected to account for more than 20 percent of America’s workforce by 2050, developing infrastructures that ensure the health and well-being of this growing minority population will become critical in the years ahead, particularly as baby boomers begin retiring, further strain ing the already shaky Social Security system.

“Because Latino populations play a critical role in labor markets, we must examine the ways things are being done,” particularly helping people with limited English proficiency – who are often low income and uninsured – navigate America’s English-language dominant and institutionally complex health care system, Piedra said.

Title VI of the Civil Rights Act of 1964 mandates that health care organizations that receive federal funds provide language services to clients who have limited English proficiency. However, the mandate is unfunded, and the problem is compounded by an ongoing shortage of trained interpret ers, and a wide variation in language proficiency of office staff members called upon to act as translators, resulting in treatment delays, miscommunication and medication errors with potential clinical consequences.

“The influence of language barriers on access to mental health and health care, and the resultant needs for linguistically accessible services and a bilingual workforce that can communicate competently are explored in one chapter by Piedra and her co-authors Flavia C.D. Andrade, a professor of kinesiology and community health, and Christopher R. Larrison, a professor of social work, both at Illinois. Buki, who studies cancer detection and survivorship in Latina women with breast cancer, predicts that the surge in cancers and mental health disorders that will occur among Latinos as their population soars in coming years will put additional strain on a health care system that does not meet their needs.

“This is an important part of the population whose needs are being ignored, which creates more symptomatology,” resulting in unfort运, sometimes tragic, consequences for individuals, their families and communities, Buki said.

The unmet psychological needs of breast cancer survivors and Latina women in particular are examined in one chapter by Buki and her co-author Jennifer Mayfield, a doctoral student in counseling psychology at Illinois. As a model of culturally competent support services, the authors highlight the work of the nonprofit organization Nueva Vida, meaning “new life,” which provides culturally tailored breast cancer support services in Spanish for Latina women living in Washington, D.C.

The unmet health care needs of Latinos in the U.S. are addressed in a chapter by Lydia Buki, left, a professor of kinesiology and community health, and Lissette Piedra, a professor of social work.

Mental health needs

The unmet health care needs of Latinos in the U.S. and strategies for addressing language and other barriers that impede them are examined by a panel of experts in a new book, "Creating Infrastructures for Latino Mental Health," co-edited by Lydia Buki, left, a professor of kinesiology and community health, and Lissette Piedra, a professor of social work.
By Sherita Forrest
News Editor

Health care reform law holds hope for mental health services

U

ninsured adults with serious men-
tal illnesses may have a harder
time finding care because state
budgetary cutbacks are dramati-
cally affecting services and staffing levels
at community mental health agencies in Il-
inois and other states. But full implemen-
tation of the federal health care reform law
could help alleviate that, according to schol-
ars in the School of Social Work at the UI.

Since fiscal year 2008, CMHAs have lost a substantial portion of the state gen-
eral revenue funds used to provide services
for uninsured and underinsured adults with
serious mental illness. With further cuts ex-
pected during 2012, people in need of men-
tal health care -- especially those who don’t
have insurance or who live in rural areas –
may have a difficult time getting it.

“There’s already a shortage of resources,
especially in rural areas, that’s occurring
without there being a crisis,” said Christo-
pher R. Larrison, a professor of social work
who has professional and research experi-
ence with CMHAs. “The CMHAs are poor
agencies that are stretched to their limits
and have been for a long time.”

CMHAs receive nearly all their funding
from the state or the federal government --
about 70 percent of it from Medicaid. Lar-
rison said.

In Illinois, Gov. Pat Quinn initially pro-
posed cutting general revenue funding for
behavioral health by $90 million, or 39
percent, in 2011. Although $54 million
earmarked for supportive housing services
was restored, the remaining cutbacks were
achieved by reducing services for the unin-
sured.

Illinois’ behavioral health services bud-
get for FY12 was down $114.2 million –
about 20 percent -- from the FY11 budget of
$143.6 million. However, there are reports
that the decrease was a mistake and that the
funding may be restored, Larrison said.

In a recent telephone poll conducted by
the School of Social Work, the executive
directors of CMHAs that serve 24 of the 33
counties in Region 5 -- the southern-most
quarter of Illinois -- said that a third con-
secutive year of state funding reductions is
forcing them to restrict services for unin-
sured clients to crisis intervention and two
hours of assessment. In particular, services
such as group and individual therapy, medi-
cation administration, and employment and
housing assistance services have been lim-
ited because of budgetary constraints.

“You’ll be able to get a diagnosis and
they’ll work with you whenever you have
a crisis, but that’s about it,” Larrison said.
“My fear is that these multiyear cuts are re-
ducing core services that keep people pro-
ductive members of the community.”

All of the CMHA executive directors
polled said that their agencies were no lon-
ger accepting new patients and 55 percent
were reducing services to current patients.
Nearly all -- 91 percent -- had plans for
further service reductions, 87 percent had
implemented firing freezes, and 46 percent
had undergone staff layoffs.

Region 5 has a population of 1.2 mil-
lion -- about 15 percent of the state’s popu-
lation outside of Cook County. The agency
directors who were polled estimated that
between 10 and 35 percent of their clients
were affected by the service restrictions.

The majority of states -- especially those
struggling with multibillion budgetary defi-
cits such as Illinois and California -- have
slashed funding for mental health services
by millions of dollars over the past three
decades. Nationwide, the aggregate decrease
in funding is expected to reach $2.2 billion
in 2012. Despite the decline in state support, 56
percent of mental health agencies in the U.S. reported an increased demand for
community-based services, Larrison said,
citing a report by the National Association
of State Mental Health Program Directors
Research Institute.

However, CMHAs’ dependence on state
general revenue funds for providing ser-
ices for uninsured patients could be miti-
gated by full implementation of the fed-
eral Patient Protection and Affordable Care
Act, in particular the planned expansion of
Medicaid in 2014 to include adults without
children and people with incomes up to 133
percent of the federal poverty level. To help
fund the expansion, the federal government
will match 100 percent of states’ funding
for medical services provided to newly eli-
gible Medicaid recipients, with the match
decreasing gradually to a permanent level
of 90 percent in 2020.

The Medicaid expansion, if not ruled un-
constitutional by the U.S. Supreme Court,
is likely to have a very positive effect on
CMHAs’ abilities to provide services. Lar-
rison said.

While the health care act also includes
provisions aimed at increasing the number
of mental health professionals, which could
help offset some of the workforce erosion
at CMHAs created by reductions in state
funding, it’s likely that demand for care
will exceed the number of providers in the
years to come, particularly in rural areas.

Co-authors of the report included, at Il-
inois, social work professors Barry J. Ack-
erson and Wynne S. Korr, who also is the
dean of the School of Social Work; doctoral
candidate Samantha Hack-Ritzo; and alumnus
Benjamin D. Koerner; as well as Su-
san S. Schoppelrey, of the Waldron College
of Health and Human Services at Radford
University in Virginia.

Ads removed for online version
Dr. Edmund George Andracki, 83, died Dec. 17 at his home in Westview, Ill. Andracki was an associate professor in the College of Medicine for 18 years. Memorials: Donations for Carle Hospice, Boy Scouts of America or the Vermilion County Women’s Shelter may be sent to Robinson Chapel, 103 Douglas St., PO Box 79, Catlin, IL 61817.


Kristine Juhl Campbell, 60, died Dec. 22 at her Champaign home. Campbell worked at the UI for more than 20 years, including the department of food science and human nutrition; and the offices of the Chancellor, Public Affairs, and Public Engagement. She was a cook for the Housing Division, retiring in 1986 with 22 years of service. Memorials: Chicago Women’s Resource Center, 1501 Interstate Drive, Suite C, Champaign, IL 61822; or First Baptist Church at Savoy, 100 W. Chestnut St., Bondville, IL 61815.

Berendina Van Kramer, 87, died Dec. 8 at Carle Foundation Hospital, Urbana. She was a cook for the Housing Division, retiring in 1986 with 5 years of service. Memorials: Provena Home Care, 1501 Interstate Drive, Suite C, Champaign, IL 61822; or First Baptist Church at Savoy, 1602 Prospect, Savoy, IL 61874.

Ray Pribble, 85, died Jan. 9 at his Savoy home. Pribble worked at the UI for 31 years, retiring in 1982 as a natural science laboratory assistant III for the department of veterinary pathology and hygiene. Memorials: Provena Home Care, 1501 Interstate Drive, Suite C, Champaign, IL 61822; or First Baptist Church at Savoy, 1602 Prospect, Savoy, IL 61874.

Harry Elden Kobel, 81, died Dec. 22 at his Champaign home. Kobel was a professor of civil engineering and of theoretical and applied mechanics at the UI for 33 years. He earned emeritus status upon his retirement in 1982.

Richard Schmall, 83, died Jan. 2 at his Mahomet home. Schmall was a storekeeper II for the Housing Division, retiring in 1988 with 22 years of service. Memorials: Stratford Park Bible Chapel, 2001 W. Kirby Ave., Champaign, IL 61821.


William E. Dunn, 61, died Dec. 31 at Carle Foundation Hospital, Urbana. Dunn was a professor of mechanical engineering, retiring in 2006 after 34 years. Memorials: Salvation Army, www.donate.salvationarmymysm.org/; Clydie E. Kepler, 89, died Dec. 30. Kepler was a professor of civil engineering and of theoretical and applied mechanics at the UI for 33 years. He earned emeritus status upon his retirement in 1982.

Linda Nelson Graham, 87, died Nov. 24 at her home in Bedford, Texas. Graham worked at the UI for 16 years, retiring in 1986 as an admissions and records officer for the Office of Admissions and Records. Memorials: any and the head of military science and tactics

Hiram Paley, 73, died Dec. 8 at Carle Foundation Hospital, Urbana. She was a cook for the Housing Division, retiring in 1986 with 5 years of service. Memorials: Provena Home Care, 1501 Interstate Drive, Suite C, Champaign, IL 61822; or First Baptist Church at Savoy, 1602 Prospect, Savoy, IL 61874.

Nancy Heins, 81, died Dec. 29 at Champaign-Urbana Regional Rehab Center, Savoy. Heins worked at the UI for 15 years. She was a staff nurse I at McKinley Health Service, retiring in 1990. She also worked as an Extra Help employee. Memorials: UI Foundation for general academic and athletic purposes, www.uifoundation.com.

Betty Lou Hembrugh, 82, died Jan. 9 at the Champaign County Nursing Home, Urbana. Hembrugh was the director of the Office of Women’s Resources and Services. She retired in 1991 after 30 years of service. Memorials: Gift Processing Department, University of Wisconsin Foundation, www.supportuw.org/.

Spice Box
Themed meals begin Feb. 3
Guest chefs from as far away as Florida will share their talents at a array of the month’s themed meals overseen and prepared by hospitality management majors at the UI. Many local and Chicago-area professionals also will provide guidance to the students throughout the semester.
The first dinner of the 2012 Spice Box season will be Feb. 3. The meal will have a Greek theme. It is the first of 19 dinners planned for the semester. The guest chef, Paul Guerrero, comes from Wildfire Restaurants in the Chicago area.
“The opportunity to work closely with industry professionals gives our students a realistic, hands-on experience in managing a restaurateur and the team of individuals that composes a successful staff,” said Jill Craft, the instructor of the Spice Box course.
A longstanding fixture on the UI campus, the Spice Box, located on the second floor of Bevier Hall, is a working laboratory for students majoring in hospitality management in the Department of Tourism, Hospitality and Leisure Sciences.

Additional meals feature an array of themes, including “Arabian Nights” (Feb. 10), “Brewery-inspired Cuisine” (Feb. 17), “Bee’s Deer” (Feb. 24), “Unlocking the Door: A Culinary Tour of Door County” (Feb. 29), and “Early 1900s Speakeasy” (March 7). More meals will follow on Wednesday and Friday evenings throughout the semester.

“The students are offering a broad spectrum of themes and menus that provide diners with a variety of opportunities otherwise not found in this area,” Craft said.
A complete list of the dates of the month’s themed meals and guest chefs is available on the Spice Box website at www.spicebox.illinois.edu. Full menus will be posted online as they become available. Interested persons also can email Craft (porthill@illinois.edu) to sign up to receive periodic emails about upcoming offerings.

Each dining event offers either a four-course meal, including salad, appetizer, featured entrée and dessert, or a two-course salad and entree combination. A specialty alcoholic beverage and a regular wine list also are offered. Price varies according to menu. The meals are available by reservation only. Reservations are available at 5, 5:30, 6, 6:30, 7 and 7:30 p.m.
To reserve seating, call 217-333-6529.

Wellness Center
Healthy Weigh program adds training
If your New Year’s resolution involves losing weight, join “The Healthy Weigh,” a weight-management support group specifically designed for UI employees. The meetings, led by a health educator and a certified wellness coach, supply reliable information, teach life-management skills and provide group support to help participants attain their weight goals and increase self-confidence.
New members also may receive training on the basics of weight management the first five weeks of the program.
The basic training class meets prior to the support-group meetings. The training covers such essentials as how to select a weight-management training that works for you, how to lose weight healthfully and effectively, portion control, overcoming barriers to weight loss and more. Members may then join the support group in progress.
The Healthy Weigh program will meet for 12 weeks on Tuesdays, starting Jan. 31. The weight-management training is from 5:15-5:45 p.m. The support group meets 5:30 – 6:15 p.m. Confidential, private weigh-ins are available from 5:50-5:30 p.m.
All sessions meet at the UI Wellness Center in the Activities and Recreation Center. Parking is free after 5 p.m.
Employees may attend individual sessions or sign up for the entire series. The cost is $7 per single meeting or $60 for the series.
For more information or to register, contact the Wellness Center at 217-265-9355 or ui-wellness@illinois.edu, or visit the UI Wellness Center online at http://go.illinois.edu/healthyweight.

NCSA
Free space available in Washington, D.C.
Free office space and meeting facilities in Washington, D.C., are available to UI faculty members during the 2012 calendar year.
Located at the Ballston Metro stop and next door to the National Science Foundation, the NCSA ACCESS Center (www.accesscendr.org) is just minutes from downtown Washington, D.C. The facility provides高级 Vũ and audio/videoconferencing capability as well as high-speed networking and wireless connectivity. The ACCESS Center can be used by visiting Illinois faculty and staff members as local office space and for small meetings at no cost. The facility also can be reserved, for a fee, for larger events.
To schedule use of the NCSA ACCESS Center, email access-dc@ncsa.illinois.edu. More information is online at www.accesscendr.org.

IACAT Fellowships
Program enables NCSA collaboration
The Institute for Advanced Computing Applications and Technologies is seeking applicants for its Faculty Fellows Program, which provides resources and support to enable UI faculty and staff members to pursue collaborative projects with the researchers and computer technology experts at the National Center for Supercomputing Applications.
Since 1999, these fellowships have allowed more than 100 researchers to access and benefit from NCSA’s high-performance computing and storage environment, cutting-edge visualization and virtual reality technologies, data-mining capabilities, and opportunities for multidisciplinary collaboration. Because of these fellowships, researchers can combine their vision with NCSA’s capabilities to tackle research problems and projects that would otherwise be out of reach.

A primary goal of the IACAT Fellowships is that they lead to long-term, sustained collaborations, enabling new and joint funding opportunities for both fellows and NCSA staff.
Fellowship proposals must be written jointly with an NCSA collaborator. Proposals will be reviewed by a panel of experts and be based on review criteria similar to those used by the National Science Foundation.
Proposals are due Feb. 29. Awards will be announced April 30 with a project start date of May 16. Any questions about the fellowship or the application process can be directed to Jay Roloff, jay@illinois.edu. For more information about the fellowship and how to apply, go to http://go.illinois.edu/IACATfellowships.

Wellness Center
Program helps make lifestyle changes
The UI Wellness Center wants to help employees make their resolutions a reality. Its new monthly series, “Building Blocks for Better Living,” will provide the necessary tools to make lasting lifestyle changes, leading to greater health and wellness.
This series of lunchtime sessions focuses on lifestyle management skills that have been shown to ensure long-lasting success. The class schedule:
Feb. 1: “Your Wellness Road Map” uses goal setting and rewards to reach wellness goals.
March 7: “Who’s On Your Team?” helps participants build a social support network to enhance wellness.
April 4: “Getting Unstuck” uses problem-solving techniques to overcome barriers to wellness.
May 2: “Keeping Track” uses the power of self-monitoring for long-lasting behavior change.
June 6: “I Think I Can!” builds self-confidence to support reaching wellness goals.
Classes meet from 12:10 to 12:50 p.m. in the UI Wellness Center in the Activities and Recreation Center. Metered parking is available.
Participants may attend one session or the entire series. The free program is open to all employees – you do not need to be a Campus Recreation member to attend – however, registration is required. To register, call 217-265-9355 or email ui-wellness@illinois.edu.

See BRIEFS, PAGE 14
By Dusty Rhodes
Arts and Humanities Editor

F rancesca Zambello has directed stage productions everywhere from New York’s Metropolitain Opera and Broadway to the Paris Opera, the Bolshoi, Covent Garden and Disneyworld. On Jan. 19, she will speak at the Spurlock Museum on “What is American Opera Today?”

Zambello’s talk marks the beginning of the MillerComm spring lecture series, presented by the UI Center for Advanced Study. The annual series, begun in 1973, is supported by the George A. Miller Endowment along with other donations.

Zambello is directing the Lyric Opera of Chicago’s upcoming production of Puccini’s “Turandot.” Among her recent assignments were director Nathan Gunn in the role of Gaylord Ravenal. She is the artistic and general director of New York’s Glimmerglass Festival, and artistic advisor to the Washington National Opera.

On Jan. 26, author Erza Vogel will speak on the status of Asian nations in a lecture titled “China as Number One? Managing the End of Rapid Growth in Japan and China.” Vogel, a professor emeritus in social sciences at Harvard University, recently discussed his latest book, “Deng Xiaoping and the Transformation of China.” On “The Charlie Rose Show,” The Washington Post described the book as “a masterful new history of China’s new reform era.” Vogel’s previous books include “Japan as Number One. Lessons for America” and “Is Japan Still Number One?”

On Feb. 9, in a joint presentation with the W.E.B. DuBois Lecture, Horace Camp- bell will speak on “U.S. Foreign Policy in Africa: Is Obama’s Policy a Continuation or a Break?” Campbell, a professor of African American studies and political science at Syracuse University, has written several books, including “Rasta and Resistance: From Marcus Garvey to Walter Rodney” and “21st Century Poli- ti ces: A Revolutionary Moment in the USA.”

On March 1, Eric Swanegood, a geog- rapher and professor in the University of Man- chester’s School of Environment and De- velopment, will discuss the umnularity similarities among recent protests in the Middle East and urban centers across Europe. His talk is titled “Every Revolution Has Its Square: Re-Politicizing the Unequal City.”

On March 2, former UI professor Law- rence Grossberg – now the Morris Davis Distinguished Professor of Communication Studies and Cultural Studies at the Univer- sity of North Carolina at Chapel Hill – will talk about re-imagining counter-cultural unities in a lecture titled “How Can We Sing … in a Strange Land? In Search of Political Possibility.” Grossberg is the author of six books, most recently “Cultural Studies in the Future Tense.”

Archival records from the federal hos- pital for the mentally ill form the basis for the March 8 MillerComm lecture by Re- gina Kunzel, a professor of history, gender, and sexuality studies at the University of Minnesota. Kunzel, whose lat- est book is “Criminal Intimacy: Prison and the Uneven History of Modern American Sexuality,” will focus on what the archives reveal about the encounters of sexual- and gender-variant people with mental health professionals.

“Whither Syria?” is the title of Joshua Landis’ March 29 lecture. Landis lived in the Middle East for 14 years, and now teach- es courses in modern Middle East history and politics at the University of Oklahoma, where he directs the Center for Middle East Studies. His daily online newsletter, “Syria Comment,” attracts about 3,000 readers per day. Landis is a favorite analyst on radio and TV programs on CNN, FOX, NPR, PBS and the BBC.

On April 3, self-described musicarchae- ologist Bin Lewawregen will lecture on “The Eurasian Angular Harp: Crossing Cultures Ancient to Modern.” Lewawregen, a professor emeritus of physics at Hunt- er College, will be joined by harpist Tomoko Sugawara, who will demon- strate an instrument that first appeared in Mesopotamia 1,900 years ago.

The lectures begin at 4 p.m. in Knight Auditorium at Spurlock Mu- seum. The final lecture of the Miller- Comm series will begin at 5:30 p.m. on April 19 and will be given by David Stork, Distinguished Research Scien- tist and research director at Rambus Labs in Sunnyvale, Calif. A physicist with 37 patents, Stork creates digi- tal three-dimensional renderings of passing light, brush strokes and staging. His lecture, designed for non-scientists, is titled “When Computers Look at Art: Image Analysis in Humanistic Stud- ies of the Visual Arts.” His illustrated talk will take place in Room 62 of Kramer Art Museum.

All MillerComm lectures are free and open to the public.

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Famed stage director kicks off MillerComm lecture series

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BRIEFS, CONTINUED FROM PAGE 13

No matter what your resolution – lose weight, stop smoking, manage your time, get fit, cope with stress – this series will help participants succeed.

Student Employee of the Year

Nominate your student by Feb. 17

Each year, the Office of Student Financial Aid coordi- nates the UI Student Employee of the Year Contest and Recognition Event. The contest and event are designed to recognize outstanding contributions made by the more than 10,000 undergraduate student employees on campus.

At the event, the UI Student Employee of the Year, a runner-up, and two honorable-mention winners will be an- nounced along with the Champaign and Urbana American Reads/America Counts Tutors of the Year. The winning Student Employee of the Year receives a scholarship and is awarded a gold medal on state, regional and national levels.

For the second time since the university began declaring recognition events, the Student Employee Recognition Event will take place during National Student Employment Week, April 8-14. All nominators and nominees are encouraged to attend the event to celebrate and support the undergraduate stu- dents that work on campus. In addition to the campus Recognition Event, the Office of Student Financial Aid en- courages all departments to organize activities during Na- tional Student Employee Week to recognize and thank student employees for their many contributions.

Pet U

Pet first aid and CPR training available

A new offering from Pet U teaches pet owners how to prepare for emergencies that involve their cat or dog. “Red Cross First Aid and CPR” will be offered 8 a.m. to noon Feb 13 in Room 2271 of the Veterinary Medicine Basic Sciences Building. The class will also show pet own- ers how to protect themselves and their pet from further harm during emergencies with the use of prompt, effective first-aid actions and care.

Taught by Dr. Kandice Norrell, the primary-care veterin- arian at the Veterinary Teaching Hospital, this session will focus on providing immediate and temporary care until the pet can be taken to a veterinarian for attention.

Participants will receive their choice of a cat or dog first- aid book and DVD set, along with a course certificate, partic- ipant packet, and information about pets and disasters.

Registration deadline is Jan. 30. Space is limited and registration must be completed before Jan. 30.

Regier also is the author of a full-color, 24-page booklet accompanying the exhibition. A special online version of the exhibition also will be available at the Rare Book & Manuscript Library website at www.library.illinois.edu/rbu.

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Ads removed for online version
Spirit of hope

The Spirit of Uganda bears with the essence of East African children who see a world full of possibilities. Booming rhythms from drums pounded with glee, jangling anklets from high-stepping dancers, brilliant costumes and glowing hearts convey the colors and sounds of their country. These children are just a handful of Uganda’s 24 million orphans from AIDS and civil war. Most of the performers have lost parents to the dual crises gripping these regions and although they can never forget what they’ve experienced, they envision a future born from their own strength and potential. When they bring their stories of hardship and triumph to the world, they raise money to help children like themselves back home. As part of Empower African Children, a foundation begun by Alexis Hutjens in 2006, Spirit of Uganda lets these 22 young performers shine with the electrifying light of tomorrow.

A reception to honor Choldin will take place during the midwinter meeting of the American Library Association in Dallas. The award is one of several established by History Today Ltd. and the book publisher Longman Pearson Education to promote the study, publication and accessibility of history to a wide audience. Three faculty members in the department of psychology have been elected fellows of the Association for Psychological Science: Kara D. Federmeier, John E. Hummel and Daniel J. Simms.

Fellow status is awarded to APS members who have made sustained outstanding contributions to the science of psychology in the areas of research, teaching, service and/or application. The Conference on College Composition and Communication, an association within the National Council of Teachers of English, has awarded a 2011-2012 CCCCC Writing Program Certificate of Excellence to the UI’s Undergraduate Rhetoric Program. Established in 2004, this award honors up to 20 writing programs a year. The Conference on College Composition and Communication, an association within the National Council of Teachers of English, has awarded a 2011-2012 CCCCC Writing Program Certificate of Excellence to the UI’s Undergraduate Rhetoric Program. Established in 2004, this award honors up to 20 writing programs a year. The Conference on College Composition and Communication, an association within the National Council of Teachers of English, has awarded a 2011-2012 CCCCC Writing Program Certificate of Excellence to the UI’s Undergraduate Rhetoric Program. Established in 2004, this award honors up to 20 writing programs a year. The Conference on College Composition and Communication, an association within the National Council of Teachers of English, has awarded a 2011-2012 CCCCC Writing Program Certificate of Excellence to the UI’s Undergraduate Rhetoric Program. Established in 2004, this award honors up to 20 writing programs a year.
Researchers have developed a bandage that stimulates and directs blood vessel growth on the surface of a wound. The bandage, called a “microvascular stamp,” contains living cells that deliver growth factors to damaged tissues in a defined pattern. After a week, the pattern of the stamp “is written in blood vessels,” the researchers report.

A paper describing the new approach appeared as the January 2012 cover article of the journal Advanced Materials.

“Any kind of tissue you want to rebuild, including bone, muscle or skin, is highly vascularized,” said UI chemical and biomolecular engineering professor Hyunjoon Kong, a co-principal investigator on the study with electrical and computer engineering professor Rashid Bashir. “But one of the big challenges in recreating vascular networks is how we can control the growth and spacing of new blood vessels.”

“The ability to pattern functional blood vessels at this scale in living tissue has not been demonstrated before,” Bashir said. “We can now write features in blood vessels.”

Other laboratories have embedded growth factors in materials applied to wounds in an effort to direct blood vessel growth. The new approach is the first to incorporate live cells in a stamp. These cells release growth factors in a more sustained, targeted manner than other methods, Kong said.

The stamp is nearly 1 centimeter across and is built of layers of a hydrogel made of polyethylene glycol (an FDA-approved polymer used in laxatives and pharmaceuticals) and methacrylic alginate (an edible, Jell-O-like material).

The stamp is porous, allowing small molecules to leak through, and contains channels of various sizes to direct the flow of larger molecules, such as growth factors.

The researchers tested the stamp on the surface of a chicken embryo. After a week the stamp was removed, revealing a network of new blood vessels that mirrored the pattern of the channels in the stamp. “This is a first demonstration that the blood vessels are controlled by the biomaterials,” Kong said.

The researchers see many potential applications for the new stamp, from directing the growth of blood vessels around a blocked artery, to increasing the vascularization of tissues with poor blood flow, to “normalizing” blood vessels that feed a tumor to improve the delivery of anti-cancer drugs. Enhancing the growth of new blood vessels in a coordinated pattern after surgery may also reduce recovery time and lessen the amount of scar tissue, the researchers said.

In another study published earlier this year, the team developed a biodegradable material that supports living cells. Future research will test whether the new material also can be used as a stamp.

Researchers on the study team