UIC to provide energy-saving kits with $3M from ComEd

Latino groups to host forum on immigration detention centers

Men’s basketball keeps winning streak alive

RESEARCHERS OF THE YEAR
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The 2018 midterm elections provide an excellent opportunity for voters to express either their satisfaction or dissatisfaction with the current political landscape and its effects on our daily lives.

Students have rallied enough support to prevent the elimination of tax benefits such as student loan interest deductions, tax-free graduate student tuition waivers, and employer tuition reimbursements. This is partly because students are a powerful constituency. Young adults are a voting bloc nearly as large as the baby boomer generation. Now is the time to ensure that elected officials understand that students are watching and are ready to vote.

As a member of the Student Advocacy Coalition at UIC, I have seen the need for empowering students and the importance of relaying our hopes and aspirations to our elected officials before they are in office. The stigma associated with being a millennial college student is often misplaced. I’ve grown up hearing that students could work a part-time job and leave school debt free. Unfortunately, this is no longer the case.

Students want higher education to be prioritized once again. The Student Advocacy Coalition is doing something about this. We are hosting a Gubernatorial Candidate Forum to offer an opportunity for conversations to be held that can aid in the revitalization of the importance of higher ed. It’s not enough to talk about the hopes and dreams for the future, we want a society re-focused on investment in the future, and that investment begins with the opportunity for every person regardless of socioeconomic status to receive a quality education. Join us on February 12; RSVP at bit.ly/studentsdecide and demonstrate that students are paying attention to the midterm elections.

Marvin Slaughter
Student Advocacy Coalition
President
Junior in political science and economics at UIC

A Gubernatorial Candidate Forum on Feb. 12 will “offer an opportunity for conversations to be held that can aid in the revitalization of the importance of higher ed.”

Want to contribute a story? E-mail Christy Levy at christyb@uic.edu
UIC to provide energy-saving kits with $3.1M in funding from ComEd

By Sharon Parmet — sparmet@uic.edu

UIC’s Chicago’s Energy Resources Center has received funding from ComEd to provide energy-efficient LED light bulbs, advanced power strips, and educational material to income-qualified participants in northern Illinois.

As part of a $3.1 million year-long investment, the utility company will fund the Low Income Kit Energy (LIKE) program, allowing engineers at UIC’s Energy Resources Center to provide energy-saving kits to 35,000 eligible individuals and/or families.

The kits include four LED bulbs to replace 60-watt incandescent light bulbs, two LED lights to replace 100-watt incandescent bulbs and an advanced power strip. LED bulbs use approximately 85 percent less energy than incandescent bulbs. Advanced power strips help save energy by preventing power from being drawn by appliances that users think are off, but are really in standby mode, which uses a small amount of energy. The strips also provide a way to turn off energy to multiple devices at once.

To qualify for the kits, families must have incomes below 80 percent of the Area Median Income for their ZIP code. If each item in the kit is fully installed, families can expect to save approximately $44 per year on their energy bills. In addition to the energy-saving devices, each kit contains educational material developed by the Energy Resources Center that provides no-cost and low-cost energy-saving tips.

“About 10 years ago, when energy-efficiency programs in Illinois were mandated by the Illinois Commerce Commission, the ERC began offering analytics, energy assessments and program implementation to the public,” said Stefano Galiasso, manager of energy efficiency programs in the UIC Energy Resources Center, which is based in the College of Engineering. “The challenge was to offer our services to hard-to-reach communities, and the LIKE Program is an effective way to increase awareness and participation in the energy efficiency initiatives available to Illinois residents.”

Many families and individuals will be offered the kits through their participation in a variety of other programs offered by utilities and nonprofit agencies.

“People who seek relief from their utility bill payments through established programs, such as the Low Income Home Energy Assistance Program, will be offered a kit if they meet the income criteria level,” said Oscar Mora-Diaz, an energy engineer with the UIC Energy Resources Center. “Through the LIKE program, our plan is to increase participation in other available energy-saving programs that benefit income-qualified customers, such as the Illinois Home Weatherization Assistance Program, which is sponsored by the U.S. Department of Energy, and other relevant cost-reduction programs offered by ComEd.”

This is the program’s third year under the direction of the UIC Energy Resources Center. In 2016 and 2017, the energy-savings kits reached a total of 26,000 participants that reside in the ComEd service territory. The LIKE program, along with other ComEd Energy Efficiency Program activities, supports the State of Illinois’ goal of reducing energy consumption by 2 percent this year.

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Nominate faculty for advisory committee

The Faculty Advisory Committee seeks nominations for faculty willing to serve in shared governance at UIC.

The committee is elected by the campus tenured and tenure-track faculty by a ballot election. In addition to hearing and making recommendations on faculty grievances and adding a voice in communicating the concerns of the faculty to the administration, the committee has been specified by the UIC Senate to provide hearings for and make recommendations on cases involving severe sanctions short of dismissal.

The committee is composed of nine tenured faculty members. To be eligible, faculty may not hold an administrative position and must have at least a 75 percent appointment. Terms are for three years, and three members are elected each year. University Statutes permit only two faculty members from a college to serve at one time.

Seven faculty members of the faculty will be elected this year. The three nominees who receive the highest number of votes will fill three-year terms; two nominees will serve two-year terms; and two nominees will be seated to a one-year term.

The continuing members of the committee include Maarten Bos-land, Barbara Risman and Alina Carmen Cojoacu. Nominate faculty members through March 16 at https://uofi.box.com/v/FACPetition

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CAMPUS CONVERSATION

Students, faculty, and staff are invited to a series of Campus Conversations about the issues of our day. The topic for February is:

WHAT’S GOING ON AND WHY? What is Tax Reform and Why Does it Matter?

FEATURING:
Professor David Merriman
College of Urban Planning and Public Affairs, UIC
Dean Michael Pagan
College of Urban Planning and Public Affairs, UIC
Professor Robert Chirinko
College of Business Administration, UIC
Professor Erik Hembre
College of Liberal Arts and Sciences, UIC
Professor Kathryn Kennedy
Director, Center for Tax Law and Employee Benefits, John Marshall Law School

Wednesday, February 7, 2018
12:00-1:30 p.m.
Student Center East Illinois Room

This Campus Conversation is sponsored by the Office of the Provost.
UIC Latino groups to host forum on immigration detention centers

By Carlos Sadovi — csadovi@uic.edu

The UIC Latino Cultural Center and the Latin American and Latino studies program will host a forum today to discuss policies involving family detention for undocumented immigrants.

“We call them Baby Jails,” takes place from 3 to 4:30 p.m. in the Latino Cultural Center, Lecture Center B2.

The forum will feature Virginia Martinez, an attorney and community activist with the CARA Pro Bono Project, a pro bono legal services project to help the families detained in Dilley and Karnes in Texas. She will discuss the federal government’s opening of the largest immigrant family detention center in the country — the South Texas Family Residential Center in Dilley, Texas. The center has 480 beds and can hold 2,400 women and children seeking asylum, most from Honduras, El Salvador and Guatemala. Many of these people, who are fleeing poverty and violence, become victims of crime and are detained without the ability to receive proper legal protection.

Martinez, who has spent most of her career working with nonprofit organizations, also has served as legislative staff attorney in the Midwest office of the Mexican American Legal Defense and Educational Fund and is on the Illinois Prison Review Board. Martinez, one of the first Latinas to practice law in Illinois, was also former director of the International Center for Health Leadership Development at UIC. Volunteers from the Catholic Legal Immigration Network, American Immigration Council, Refugee and Immigrant Center for Education and Legal Services, and American Immigration Lawyers Association make up the CARA Pro Bono Project.

Additional sponsors of the forum include the UIC Institute for the Humanities Global Migration Working Group and the UIC Heritage Garden.

The event is free and open to the public. For information, call 312-996-3095.

Contest lets students submit plans for campus improvement

By Farooq Chaudhry — mchaud23@uic.edu

The Office of the Campus Architect is encouraging students to ask not what your campus can do for you, but what can you do for your campus?

In the spirit of this question, the Office of the Campus Architect is hosting the Campus Grounds Student Design Contest, in which they plan to actively engage current UIC students in improving campus grounds.

The contest allows students to develop proposals of projects that fall within a $75,000 budget and will impact the quality of student life. Project proposals can include improvements to campus landscape, exterior furniture, lighting and more.

Jonathan Fair, assistant director of campus architecture, believes the initiative can make a tremendous impact on campus.

“From our experience, our students are super ambitious here on campus. I really feel like the sky is the limit in terms of the things we’re going to get back. Maybe some more of a mural or art piece, or something as simple as an outdoor sheltered space to hang out with friends,” Fair said.

Michael Landek, vice chancellor for administrative services, is excited to launch the initiative.

“By leveraging the input of students, we anticipate ideas that will further energize the campus and its community, while forging a new dialogue between students, administration and their ability to affect change on campus,” Landek said.

All students can enter the contest, which runs through April 6, at architect.uic.edu/contest

A panel of staff, faculty and students will judge submissions on criteria such as campus impact, cost, how feasible the project is and how it can be maintained. Once the winner is picked, construction will begin over the summer, with the goal of unveiling the new addition this fall.

“I’m really hoping students get together across various disciplines. That’s where some of our most creative and complex solutions come from,” Fair said. “We want it to be as accessible to design students as it is from the school of business.”
Researchers of the Year

Changing how doctors think about HIV transmission, care

Richard Novak
Distinguished Researcher

Richard Novak has been working to identify therapies and vaccines for HIV since the 1980s, when the infection first started making the news as it spread among the gay community.

Novak was a young assistant professor of infectious disease at UIC when he pushed for the hospital to open a dedicated HIV clinic because the general infectious disease department wasn’t able to handle the influx of HIV patients. That clinic opened in 1989, and just a few years later, Novak received funding to open UIC’s first dedicated HIV treatment and prevention clinics in the community in 1992.

Soon, there were seven such clinics around the city, including some that operated out of the School of Public Health’s Community Outreach Intervention Projects (COIP) clinics. Together, the clinics serve more than 1,200 people each year.

Novak was also a site principal investigator on several landmark national trials that changed the way physicians thought about HIV transmission and care. The SMART trial, which looked at giving HIV therapy continuously versus periodically interrupting treatment to prevent the development of resistance, found that continual treatment was more effective at keeping viral counts low. The START trial found that starting antiretroviral treatment right away was better at preventing the development of both HIV-related disease as well as non-AIDS complications, such as heart disease and cancer.

“Without these important studies, we would not have realized the importance of early, consistent treatment in preventing worsening of disease,” said Novak.

He was site lead investigator on another study that highlighted the importance of testing newly diagnosed patients for drug resistance before starting them on antivirals.

“Newly diagnosed people could have picked up the virus from someone who has been in treatment and had developed resistance to certain drugs, so it’s crucial that people get tested so that we can prescribe the most effective therapies,” Novak said. “Before these trials, medication was prescribed without consideration of resistance, but these practices could actually worsen outcomes. Screening for resistance remains the standard of care today. With more and more treatment options coming onto the market, resistance has become less of a problem.”

Novak continues to focus on preventing the spread of HIV and has recently begun recruiting participants for a clinical trial to compare the efficacy of a newly developed injectable drug to prevent new infections of the HIV virus versus Truvada, the only FDA-approved drug currently available to prevent the spread of HIV.

He’s also begun to focus on another sexually-transmitted infection: syphilis. "We’re seeing an explosion in the number of syphilis cases, in part because men are more comfortable having unprotected sex now that they are taking medications to prevent HIV infection, so other diseases that we haven’t seen in a long time are making a comeback."

Maria Argos
Rising Star

What are the health effects of arsenic from drinking water and other sources? That’s a question that Maria Argos aims to answer in her research studies.

Argos examines the levels of arsenic in drinking water primarily in Bangladesh, and the associated health effects for people who live there.

“There are naturally occurring elevated levels of arsenic in drinking water in many areas of Bangladesh,” said Argos, associate professor of epidemiology and biostatistics. “Much of my work has focused on the health effects in adults — cancer, cardiovascular and respiratory outcomes related to various levels of arsenic.”

To look at patterns with blood pressure, diabetes-related markers, growth and other measures,” she said.

Another of Argos’s studies on toxic metals found that people who eat a gluten-free diet may be at risk for increased exposure to arsenic and mercury, which can lead to cardiovascular disease, cancer and neurological effects. Gluten-free diets often substitute rice flour for wheat, rye and barley flours, and arsenic bioaccumulates in rice.

“These results indicate that there could be unintended consequenc-es of eating a gluten-free diet,” Argos said. “But until we perform the studies to determine if there are corresponding health consequences that could be related to higher levels of exposure to arsenic and mercury by eating gluten-free, more research is needed before we can determine whether this diet poses a significant health risk.”

Argos is also co-investigator and program director for UIC and UI Health’s role in the All of Us Research Program, a historic national effort to advance the use of precision medicine by gathering data from at least 1 million people in the United States. Any adult who has received care at UI Health’s hospital or clinics can participate in the study and so far, more than 300 patients have enrolled at the site, Argos said.

“We have a very diverse patient population that has been engaged and interested in participating, which very much aligns with the national goals of the program to make sure underrepresented populations have the opportunity to participate in the study,” she said.

Argos joined the UIC School of Public Health in 2014 after working as a research assistant professor at the University of Chicago.

Argos teaches genetic epidemiology to master’s and doctoral students and advises Honors College undergraduates for their capstone projects.

Students who are considering research careers should get involved as early as possible, she said.

“Start meeting with faculty members and work with different faculty to get as much exposure as possible to different research areas and projects,” Argos said.

Exercising health effects of toxic metals in drinking water

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“Start meeting with faculty members and work with different faculty to get as much exposure as possible to different research areas and projects,” Argos said.
People take to improve cognitive function and mood may not provide the benefits promised. The main active ingredient in fish oil capsules is omega-3 fatty acids, which can take two different forms, one of which is docosahexaenoic acid, or DHA. DHA is present in the brain and acts as a powerful anti-inflammatory agent, but over time its function wanes. This deterioration in function is believed to play a significant role in the development of Alzheimer’s disease and other neuroinflammatory disorders.

Fish oil capsules are marketed based on the idea that supplementing DHA by taking the capsules will replace DHA lost or degraded in the brain. But Subbaiah has found that the form of DHA in these supplements does not cross the blood-brain barrier. “DHA in fish oil can be absorbed by other organs of the body where it is beneficial, such as the heart and liver, but it can’t get into the brain to have any neurological or neurocognitive effects,” Subbaiah said. “There is another form of DHA called lyso-PC that can cross the blood-brain barrier, and we have shown in mice that we can increase DHA in the brain by about 100 percent when we feed mice lyso-PC for one month at low tolerable doses.”

Subbaiah’s mice fed lyso-PC also performed better on tests of memory. He hopes to determine the effects of lyso-PC in a mouse model of Alzheimer’s disease. “This isn’t a drug,” said Subbaiah. “It’s a dietary fat that represents a novel way to get DHA into the brain, and it could have a big impact on preventing or treating Alzheimer’s and other brain disorders.”

“Proteins interact over large surface areas, usually much larger than the interactions of proteins and small molecules, like statins or corticosteroids,” said Moore, assistant professor of medicinal chemistry in the UIC College of Pharmacy. “This makes these protein-protein interactions more difficult to target.”

While protein-protein interactions may be more challenging drug targets, they are ubiquitous throughout the cell, and targeting them may be more impactful if we can develop ways to manipulate their activity,” Moore said, “especially when it comes to conditions that lack adequate pharmaceutical treatment options or for conditions that are known to become resistant to small molecule drug therapies.”

For example, Moore’s lab is investigating a protein-protein interaction to treat estrogen receptor-positive breast cancer. “Estrogen receptor-positive breast cancer is known to become resistant to the endocrine therapy drugs currently used, like tamoxifen,” Moore said. “When that happens, physicians have very few treatment options left to offer patients.”

“Our approach targets a different surface of the estrogen receptor with a novel design strategy,” said Moore, whose lab has created a series of new “stapled peptides.” The stapled molecular structure causes these peptides to degrade at slower rates, not unlike many small molecules, and more easily permeate the cell to affect the function of the estrogen receptor. “Because the mechanism we’re investigating works differently than the small molecule mechanism, they may be successful when treatments with small molecule drugs have failed,” Moore said.

Already, the stapled peptides have worked in biochemical models. Moore and his collaborators are now studying inhibition of estrogen receptor-positive breast cancer growth using stapled peptides in vitro — in petri dish cells.

Moore and his collaborators are also studying another protein in vivo — in living organisms. This protein, called Nrf2, controls expression of protective enzymes of cells and is an important drug target for many different conditions; Moore is investigating ways to activate Nrf2 for chronic wound healing. “Chronic, non-healing wounds of the skin are serious medical complications that affect over 6.5 million Americans,” Moore said. “While there are surgical and topical treatments for these wounds, which include pressure sores and diabetic foot ulcers, there are almost no pharmaceutical therapies, and the high number of lower-limb amputations each year arising from these wounds provides undeniable evidence that new treatments are needed.”

Moore hopes that, by studying protein-protein interactions and developing the tools needed to harness their therapeutic potential, his lab will pave the way for the development of a new class of drugs. “We want to create something new,” Moore said. “Something that may help people.”

Moore’s research has been published in nearly 30 peer-reviewed journals, including the high impact factor journal, Angewandte Chemie International Edition.

In addition to his appointment in the UIC College of Pharmacy, Moore is also a member of the UIC Collaborative Engagement in Novel Therapeutic Research and Enterprise (UIC Centre) and the University of Illinois Cancer Center.

Moore received his bachelor’s degree in biochemistry from Abilene Christian University and his Ph.D. in chemistry from the University of Illinois at Urbana-Champaign. He was a post-doctoral researcher at the University of Illinois and Emory University before joining the faculty at UIC.
Incorporating pharmacies, essential medicine in policy

SOCIAL SCIENCES

Dima Qato
Rising Star

For more than 10 years, Dima Qato worked as a retail pharmacist and witnessed countless examples of the vital role pharmacies play in the public health system, particularly when it comes to access to and safe use of medications.

However, while many like Qato consider pharmacies to be an essential part of our health care system, the independent and chain retailers are not regulated by or held accountable to any of the groups that provide checks and balances for other essential health services, like care in hospitals and clinics.

Through research, Qato wants to draw attention to the significant public health risks associated with unchecked retail pharmacy practices and the potential for pharmacies to help provide solutions.

“This is not a criticism of pharmacies,” said Qato, assistant professor of pharmacy systems, outcomes and policy in the UIC College of Pharmacy. “This is about advocating for accountability that reduces health disparities and prevents harm to the public.”

For example, Qato’s research has found that people living on the South and West Sides of Chicago are more likely than others in Chicago to live in a pharmacy desert, which she defines as living more than one mile away from a pharmacy or, in cases where there is no access to public or other means of transportation, a half-mile from a pharmacy.

“For many people, medication is essential to maintain health — both physical and mental — and the ability to go about daily life,” Qato said. “But in many communities, people simply cannot get the medication they need, not only because of money, which is, and has always been, the focus of most policy efforts to make prescription drugs affordable, but because their local pharmacy has closed or there is no local pharmacy.”

Qato said that despite the growing number of pharmacy deserts in Chicago, the number of pharmacies has not changed in recent years.

“There are plenty of pharmacies in Chicago, they are just not equitably distributed,” Qato said, noting that pharmacy deserts exist primarily in poor, minority communities.

“The government targets and funds the development of federally qualified health centers in medically underserved areas, but there are no rules or incentives in place to ensure that all communities have access to pharmacies,” Qato said. “Pharmacies open and close largely based on business profitability, not local needs and, until there is public accountability, such business decisions should not be surprising.”

Pharmacies also play a significant role in helping patients to manage their medication and use it safely — or at least they should, Qato said.

“I also study national population-based medication data,” she said, “to identify common medication combinations, or medication-supplement combinations, that might put patients at risk of experiencing an adverse event due to the interaction of drugs.”

Findings from Qato’s research, which has received significant national news media and hospital emergency room attention, provides evidence that older adults are not only increasingly using prescription drugs, but that many are also using them in potentially deadly combinations.

Perhaps in the future, she said, pharmacies can improve dispensing practices and help mitigate the use of these dangerous combinations.

“Prescriptions often come from more than one physician,” Qato said. “Therefore, the prescribing doctor, when making a treatment decision, may not be aware of all the medications or supplements a patient is taking.”

As pharmacists, identifying adverse medication combinations is an important part of our job. The challenge is that this is not a regulated practice,” she said.

Qato hopes her research provides the evidence needed for the creation and evaluation of potential public policies at local, state or federal levels.
Researchers of the Year

Finding patterns to make sense of complex data

Isabel Cruz — Distinguished Researcher

Isabel Cruz makes sense of complex data.

“One of the aspects I work on is heterogeneous data — for example, how to make sense of data that is collected with different spatial and temporal granularities,” said Cruz, professor of computer science.

The U.S. Census, for example, collects data every 10 years, but other population data within a city may be taken every month or year.

“So if you want to tell the story of what’s happening in a city, you cannot put apples and oranges together,” she said.

Her job is to use semantics so that data make sense when put together.

“This is a huge challenge,” she said.

Through her research, Cruz extracts patterns from big data to perform predictive analytics.

“If you understand patterns, then you may be able to predict what is going to happen next,” she said. “What makes this possible is having a lot of data.”

Cruz is collaborating with the Chicago Department of Information Technology to help implement the “OpenGrid” initiative. She’s helping to integrate large datasets published on the city’s online portal.

“Chicago has been a leader in making data public and publishing it online — and that’s no minor achievement,” she said. “The next step is how to put together different datasets.”

The city publishes, for example, data on health inspections at establishments that serve food — restaurants, day cares, and other businesses.

“They will revisit businesses that have failed previous inspections so it is very important to put the data together so that we can see if the businesses have had other registered names, how long have they been there,” she said. “There are thousands of businesses in the city and there are all kinds of aliases for businesses. Putting all this together helps inspectors know where to go next.”

Last summer, Cruz was named a Grand Challenges Explorations winner, an initiative funded by the Bill & Melinda Gates Foundation, one of 28 winners among 1,500 applicants — less than a 2 percent acceptance rate. She is developing a data integration platform to monitor and predict the location of cases of malaria over time with her $100,000 award. The data will be used to drive targeted mosquito elimination efforts.

“In order to eliminate malaria, we need to be able to accurately monitor the changing patterns of infection across an entire region,” Cruz said. “Infection rates may be affected by multiple factors including the location of health centers, temperature, rainfall, type of landscape and population distribution.”

She developed her interest in databases while in graduate school at the University of Toronto, where she received her Ph.D. in 1994.

“I was fascinated by data modeling,” she said. “What brought me to big data was that it involved a lot of practical research — real projects like working with the city. While in graduate school, I developed the first graph query languages, a subject that is of great importance now because of social networks. That work still gets many citations.”

She joined UIC as an associate professor in 2001. She became a full professor in 2009.

What has kept her at UIC for 17 years?

Enhancing public knowledge of disability studies

Lennard Davis — Distinguished Researcher

Lennard Davis began his career 40 years ago, studying the history and origin of the novel, but later transitioned to an underdeveloped area of work called disability studies.

Since then, his renowned research, books and essays have elevated the field, enhanced public knowledge and made society reconsider its assumptions about normalcy, including issues of race, class, gender and sexuality.

Today the Guggenheim and Fulbright award-winner is widely considered one of the founders and leaders of disability studies.

“I have been able to watch it grow into something that now is not only nationwide, but getting to be international,” said Davis, professor of English, disability and human development, and medical education. “It is one of those fields where activism and intellectual work go hand-in-hand.”

His 2015 book, Enabling Acts: The Hidden Story of How the Americans with Disability Act Gave the Largest US Minority Its Rights, which detailed the landmark legislation’s history and far-reaching influence, was nominated for the Pulitzer Prize and the National Book Award.

His contributions to the field were also recognized when Davis was among a select group of scholars, activists and legislators invited to join former President Barack Obama at the White House’s 25th anniversary celebration of the act’s passage.

Overall, his impressive scholarly production includes six books, seven edited collections, two memoirs, a novel and a monograph on 18th-century literature.

His editorship of The Disability Studies Reader, now in its fifth edition, has established the advanced collection of essays by scholars from multiple disciplines as an essential classroom text.

To make the subject more accessible, he recently published Beginning with Disability: A Primer, an introductory book for first-year and high school students studying disability studies.

Davis, a distinguished professor in LAS, says most people grow up thinking of disability as a problem other people have, rather than as part of the life cycle.

“It’s a word they want to stay as far away from as possible and the experience of disability,” he said. “Most people are not that familiar with it and yet it doesn’t take long to get people up to speed.”

Inspired by the interaction between disability and poverty, he has been working on a project about the representation of poverty in literature, film and culture.

“In general, of all the identity groups, poor people really don’t have an opportunity to represent themselves,” he said. “Almost everything we have is written by people who are not poor. Some disabilities are still kind of like that, too.”

Whether it’s at the British Library, the Wellcome Library or Newberry Library, Davis enjoys conducting archival research and calls it a crucial part of humanities work.

“It’s important for us to remember our history and delve into it because it’s so easy in this era to forget about facts and just go with whatever you are thinking or feeling,” he said.
Sandeep Jain
Inventor of the Year

By Sharon Parmet — sparmet@uic.edu

Sandeep Jain is amongst the few clinical scientists in the field who have taken their research discovery from laboratory to the clinic and converted them to new therapies.

His research and clinical practice have both focused on very severe cases of dry eye disease caused by autoimmune disorders, in particular by a condition known as ocular graft versus host disease, which is a serious complication that occurs in patients with blood cancers who have undergone stem cell or bone marrow transplants.

“We have established a virtually unique translational research ecosystem that makes feasible the discovery and development of novel therapeutics,” said Jain, an associate professor of ophthalmology and visual sciences in the UIC College of Medicine. “This ecosystem comprises of a highly specialized patient care clinic, an advanced cell and molecular biology laboratory, dedicated clinical trial center lanes, a UIC-based startup entity to enable commercialization and a core team of personnel that seamlessly connect these components.”

Jain intertwines basic science investigations with clinical care of patients that suffer from severe ocular surface diseases — thus positioning his efforts at the interface between medicine and science.

Jain and colleagues determined that extracellular DNA — bits of DNA that escape their cells and sit on the surface of the eye — is one of the main causes of inflammation of the eye in patients affected with severe dry eye disease. In people without dry eye disease, enzymes present in tears break up these stray pieces of DNA, but in people with severe dry eye, the enzyme, called DNase, is lacking. From this discovery, Jain developed a replacement enzyme eye drop that contains DNase. He received a patent for the enzyme and has funding from the National Institutes of Health for phase I/II clinical trials using his enzyme eye drops to treat patients with ocular graft versus host disease.

Another treatment Jain and colleagues have developed is actually a repurposed drug used as an anticoagulant in high doses — but at very low doses, it helps reduce inflammation of the eye. The drug, called ADV100, has led to the development of a UIC startup company headed by Jain called ADVAITE, which is housed in Health, Technology, and Innovation (HTI) on Harrison Street, UIC’s startup company incubator facility. Jain has submitted an application to the National Institutes of Health to continue the development of ADV100.

Another drug, brimonidine, a treatment for ocular graft versus host disease, has been licensed to Ocugen, an early stage biopharmaceutical company. As a science consultant, Jain is spearheading the development of brimonidine eye drops through clinical trials.

Sandeep Jain
(Photo: Jenny Fontaine)

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Designer nanoparticles destroy a broad array of viruses

By Jackie Carey — jmcarey@uic.edu

Viral infections kill millions of people worldwide every year, but currently available antiviral drugs are limited in that they mostly act against one or a small handful of related viruses.

A few broad-spectrum drugs that prevent viral entry into healthy cells exist, but they usually need to be taken continuously to prevent infection, and resistance through viral mutation is a serious risk.

Now, an international group of researchers including UIC professor of chemistry Petr Kral, have designed new anti-viral nanoparticles that bind to a range of viruses, including herpes simplex virus, human papillomavirus, respiratory syncytial virus and Dengue and Lentiviruses. Unlike other broad-spectrum antivirals, which simply prevent viruses from infecting cells, the new nanoparticles destroy viruses.

The team’s findings are reported in the journal *Nature Materials*.

The new nanoparticles mimic a cell surface protein called heparin sulfate proteoglycan (HSPG). A significant portion of viruses, including HIV, enter and infect healthy cells by first binding to HSPGs on the cell surface. Existing drugs that mimic HSPG bind to the virus and prevent it from binding to cells, but the strength of the bond is relatively weak. These drugs also can’t destroy viruses, and the viruses can become reactivated when the drug concentration is decreased.

Kral and his colleagues, including Lela Vukovic, assistant professor of chemistry at the University of Texas at El Paso and an author on the paper, sought to design a new anti-viral nanoparticle based on HSPG, but one that would bind more tightly to viral particles and destroy them at the same time.

In order to custom-design the anti-viral nanoparticles, Kral and Vukovic’s groups worked hand-in-hand with experimentalists, virus experts and biochemists from Switzerland, Italy, France and the Czech Republic.

“We knew the general composition of the HSPG-binding viral domains the nanoparticles should bind to, and the structures of the nanoparticles, but we did not understand why different nanoparticles behave so differently in terms of both binding strength and preventing viral entry into cells,” Kral said.

Through elaborate simulations, Kral and colleagues helped solve these issues and guided the experimentalists in tweaking the nanoparticle design so that it worked better.

The researchers used advanced computational modeling techniques to generate precise structures of various target viruses and nanoparticles down to the location of each atom. A deep understanding of the interactions between individual groups of atoms within the viruses and nanoparticles allowed the researchers to estimate the strength and permanence of potential bonds that could form between the two entities, and helped them to predict how the bond could change over time and eventually destroy the virus.

The team’s final “draft” of the anti-viral nanoparticle could bind irreversibly to a range of viruses, and caused lethal deformations to the viruses, but had no effect on healthy tissues or cells. In vitro experiments with the nanoparticles showed that they bound irreversibly to the herpes simplex virus, human papillomavirus, syncytial virus, Dengue virus and Lentivirus.

“We were able to provide the data needed to the design team so that they could develop a prototype of what we hope will be a very effective and safe broad-spectrum anti-viral that can be used to save lives,” Kral said.

Researchers examine link between blood pressure, age, race

By Jackie Carey — jmcarey@uic.edu

Black men and women have a higher prevalence of high blood pressure, compared with whites. Researchers believe this may be a result of high levels of oxidative stress, which leads to vascular dysfunction. However, no one really understands how aging impacts oxidative stress or vascular function in a racially diverse population.

To learn more about this, researchers from UIC studied nearly 100 black and white individuals. The voluntary study participants reported to the UIC Integrative Physiology Lab on two occasions. During the first visit, they underwent baseline testing and received either a concentrated dose of antioxidants or a placebo. The antioxidant was used because it has been shown to decrease levels of oxidative stress in the body.

Two days later, during a second visit, researchers noted biometric information — height, weight, BMI and body composition — and conducted various blood pressure tests and a blood draw to measure blood vessel function, exercise blood flow, and biomarkers of oxidative stress and antioxidant activity.

They found black and white participants responded differently to the antioxidant, and that those differences amplified further when analyzed by age.

The antioxidant supplement decreased microvascular function in whites, but increased function in blacks.

“This study demonstrates differential responses to [antioxidant] supplementation between African Americans and whites within both young and older age groups, as well as different responses to aging between races,” the researchers report in the *Journal of Hypertension*.

The small blood vessels of older blacks did not respond to the antioxidant, while young blacks showed increased function. Researchers believe this suggests that older black men and women acquire further risk factors for cardiovascular disease, said Shane Phillips, one of the authors of the study.

“After a certain age, the capacity to respond to treatment seems to be reduced,” said Phillips, professor and associate head of physical therapy in the UIC College of Applied Health Sciences.

“This may provide further evidence that health care providers account for the physiological differences that contribute to CV risk in preventive care and in treatment strategies, particularly in young black men and women.”
THROUGH MARCH 3 EXHIBIT

FÉLIX CANDELA’S CONCRETE SHELLS: AN ENGINEERED ARCHITECTURE FOR MÉXICO AND CHICAGO

Gallery 400 exhibit curated by Alexander Eisen-schmidt, associate professor of architecture. Originated by Juan Ignacio Del Cueto with contributions by Lorelei Stewart, the exhibit highlights the work of Félix Candela, one of the most prolific architects of the 20th century.

Gallery400.uic.edu

FEB. 9 SPECIAL EVENT

PLANNING THROUGH FRICTION: FINDING COMMON GROUND IN CONTESTED SPACES

Urban Innovation Symposium responds to the current atmosphere of protest and political unrest. Free and open to the public. Sponsored by the Urban Planning and Policy Student Association.

Day session – noon, UIC Student Center East
Evening session – 5:30 p.m. National Museum of Mexican Art, 1852 W. 19th St.

FEB. 10 SPECIAL EVENT

LOL @ UIC

Free comedy show for UIC students and employees, featuring Hasan Minhaj, senior correspondent on “The Daily Show.” Bring i-card. Sponsored by the Student Activities Board and Center for Student Involvement.

7 p.m. UIC Forum
RSVP, go.uic.edu/LOLUIC18

FEB. 14 WEBINAR

INTRODUCTION TO SURVEY SAMPLING

Webinar presented by the Survey Research Lab.
Noon-1 p.m.
srl.uic.edu

FEB. 16 SPECIAL EVENT

BLACK PANTHER PREMIERE

Movie night sponsored by African Student Council & Center for Student Involvement.

Showplace Icon Theater, 1011 S. Delano Court
Showings at 4 p.m. and 5:30 p.m.
Tickets $7.33 for UIC students
goo.gl/FdhT6G

FEB. 19 SPECIAL EVENT

A CONVERSATION WITH YARA SHAHIDI

Keynote for Black History Month, sponsored by the UIC Center for Student Involvement. Featuring Shahidi, an actress who plays Zoey Johnson on ABC’s “Black-ish.”

Free for UIC students, RSVP at https://orgsync.com/63688/forms/304148
Tickets $25 for employees and general public: http://go.uic.edu/Yara

FEB. 20 SPECIAL EVENT

“RACE FOR THE FUTURE: SCIENTIFIC VISIONS OF MODERN RUSSIAN JEWISHNESS”

Marina Mogilner, Edward and Marianna Thaden Chair in Russian and East European Intellectual History, associate professor of history and 2017-2018 Institute for Humanities Faculty Fellow.

4-5:30 p.m.
Institute for the Humanities, lower level, Stevenson Hall

FEB. 25 SPECIAL EVENT

PACK THE PAV

UIC family day at the men’s basketball game. Featuring activities for kids, raffles and more.

Tickets free for students with i-card. UIC employees and the general public can buy $5 tickets at http://bit.ly/UICPtPTix using code PACK
5 p.m. basketball game
UIC Pavilion

Send information about campus events at today.uic.edu/submit-an-event
SPORTS

Men’s basketball keeps winning streak alive

By Dan Yopchick — yopchick@uic.edu

UIC overcame a sluggish start to collect its sixth consecutive win — and the sixth in a row away from home — as it blitzed the Detroit Mercy Titans, 78-69.

The Flames, after falling behind 7-0, shot 61.5 percent in the first half, while the offense sputtered in the second half, shooting 32.4 percent. UIC held the Titans to nine field goals and a mark of 27.3 percent from the field over the final 20 minutes.

Dikembe Dixson carried the load offensively Sunday, scoring 23 points on 7-of-11 from the floor. He added eight points from the free throw line to go along with a season-high eight rebounds and four steals. UIC’s Tarkus Ferguson added his second double-double of the campaign with 15 points and a game-high 11 rebounds.

Detroit Mercy opened the game with seven unanswered points from guard Josh McFolley. Godwin Boahen came off the bench for UIC and scored five quick points to get the visitors back on track. The Flames steadied the ship and eventually tied the game at 11 on a jumper from Dixson with 14:23 remaining in the half.

UIC earned its first lead of the ballgame when Dixson converted a 3-pointer from the right wing that put the Flames in front, 22-21, with just over eight minutes left in the stanza. Dixson’s 3-pointer sparked a 12-1 run for the Flames that put the visiting team in front, 31-22, with 5:20 to go in the frame. The lead later ballooned to 11 points for the first time when Ferguson made 3-pointers on back-to-back possessions for UIC.

The Titans scored 11 of the final 17 points of the first half to climb back within six at the break, 43-37. It was a four-point game in the final minute before UIC’s Jacob Wiley knifed inside for a layup off a feed from Boahen.

The Flames built the lead back up to 10 points after Jordan Blount scored in the paint to put UIC in front, 49-39. The Titans made it a one-possession game with 14:08 left in the game after a Cole Long layup.

With the Titans within three, the Flames ripped off a 13-3 run that was capped on emphatic Michael Diggins bucket that made the score 67-54 with a shade under six minutes remaining.

Detroit Mercy continued to scrap and claw its way through the closing minutes, eventually pulling back to within four points after DeShawndre Black was fouled on a 3-point attempt and made all three shots from the stripe.

UIC led, 71-67, with 1:13 left, but UIC scored five unanswered points. Marcus Ottey made two more from the line in the closing seconds to help the Flames score a 78-69 triumph.

The Flames will return to the UIC Pavilion at 7 p.m. Thursday, when they host the Youngstown State Penguins.

Swim team receives academic honors

By Tim Hurley — thurley@uic.edu

The men’s and women’s swimming and diving teams were awarded Scholar All-America honors by the College Swimming & Diving Coaches Association of America.

The recognition was based on a cumulative team GPA of at least 3.0 for the fall semester. The women’s team had a 3.27 GPA, and the men’s team posted a 3.12.

“I am always proud to see our program excel in the classroom,” head coach Tim Loeffler said. “We always talk about why we are called student-athletes and not the other way around. This is just another step they are taking to ensure they are champions for life.”

Loeffler noted that 40 Flames swimmers and divers achieved higher than a 3.0 GPA last fall, and five of them had a perfect 4.0.

Earlier this year, 14 Flames were named to the Horizon League Honor Roll for achieving a cumulative GPA of at least 3.2.

THURSDAY, FEBRUARY 8

Women’s basketball vs. Cleveland State
4 p.m. / UIC Pavilion

Men’s basketball vs. Youngstown State
7 p.m. / UIC Pavilion

SATURDAY, FEBRUARY 10

Women’s basketball vs. Youngstown State
2 p.m. / UIC Pavilion

Men’s basketball vs. Cleveland State
7 p.m. / UIC Pavilion

SUNDAY, FEBRUARY 11

Women’s gymnastics vs. Northern Illinois
2 p.m. / UIC Pavilion