Chancellor's Report 2015





Sparks become a flame.

Rays of light become illumination. The University



Chancellor Bernadette Gray-Little

of Kansas — where learning becomes a legacy.

Here are some of our stories.



KNOWLEDGE BECOMES ACCOMPLISHMENT

A Native ally

ALUMNA'S 'GENIUS GRANT' FURTHERS HER ACTIVISM

When Sarah Deer talks about her time as an underwomen's studies in 1995 and a juris doctorate in 1999. graduate and a law student at the University of Kansas, As a student, she volunteered for a rape crisis censhe makes one point clear: Those years were the founter, where she provided direct advocacy for victims, dation for all she stands for today. including students at KU and Haskell Indian Nations University. She is a citizen of the Muscogee (Creek) Nation of Oklahoma, but it wasn't until she worked with Haskell students that she began to understand the need to better protect Native women.

Deer received a 2014 MacArthur Fellowship, the "genius grant," for her efforts to protect victims of physical and sexual assault in Native American tribal lands.

Deer spearheaded a 2007 report, Maze of Injustice, for "Something started to emerge, something I didn't really Amnesty International, which detailed a long history understand as a Native woman myself," she says. "The of abuse and a lack of jurisdiction on tribal lands. The level of trauma that these women experienced, not just report ultimately helped spur the Tribal Law and Order on campus, but as children and as young women back Act of 2010 and the Violence Against Women Act in in their home communities, really started to affect me 2013, laws that grant greater power to tribal courts in in ways that I didn't expect it to." criminal cases and the ability to prosecute non-Native Americans involved in cases within tribal communities. "From the minute that I started at KU Law," she says, "I

'Something started to emerge'

Deer earned a bachelor of arts in philosophy and



Educating Leaders

had those women in mind." But it wasn't until she was already enrolled in law school that she discovered how KU's Indian law program could help her create change. \longrightarrow

The MacArthur Foundation awards \$625.000 stipends to individuals who have shown extraordinary originality and dedication in their creative pursuits. Although the awards carry no stipulations the fellowships are intended to allow the recipients to advance their expertise, engage in bold new work, or even alter the direction of their careers.

About 900 MacArthur Fellows have been recognized since the program began in 1981.

Deer at the Tribal Law and Policy Institute in St. Paul.

Deer continued

"I don't think I knew enough about Indian law to know that there was a huge intersection between my interests and the Federal Indian law academic world."

'A synergy of experiences'

After graduation from KU Law, Deer worked for the Tribal Law and Policy Institute, a small nonprofit dedicated to addressing violence in Indian communities. She now teaches at William Mitchell College of Law in St. Paul, Minnesota, where she is re-establishing an Indian law program.

Deer credits her background at KU with leading her to help bring justice to women in need.

"The work I did at KU — in the classroom, in activism, and even in extracurricular activities at law school that synergy of all of those experiences is present in my life today," she says. "Whether it's how I approach the subjects I teach, my activism, helping students with their own transitions — all of those things I learned while a student at the University of Kansas."

For more, report.ku.edu/advocacy



Deer with a portrait of Rosalie Wahl, the first woman to serve on the Minnesota Supreme Court, and a 1946 graduate of the University of Kansas.

Seven KU alumni have been named MacArthur Fellows since the program began in 1981.

- Paul Ehrlich, 1990 Environmental scientist and author of "The Population Bomb"
- Kent Whealy, 1990 Founder of Seed Savers Exchange
- Wes Jackson, 1992 Founder of the Land Institute
- Ann Hamilton, 1993 Sculptor and installation artist
- David Hillis, 1999 Professor of integrative biology at the University of Texas
- Marla Spivak, 2010 Honeybee researcher and distinguished professor at the University of Minnesota
- Sarah Deer, 2014 Native American advocate and professor at William Mitchell College of Law



Old school, new school

TAKING LESSONS ON HOW TO TEACH, SUPPORT STUDENTS

The effect of the Bold Aspirations strategic plan — now in its fourth year — is evident across campus: in the classroom, in the admissions office, even on a student's first day on the Hill.

First alert

A student does poorly on a class assignment and his professor raises an early warning flag in the MySuccess program.

His advisor gets an email on the advising computer dashboard, immediately contacts the student, and gets to the bottom of the problem.

Another student fails to register for next term's classes. The

KU has the highest graduation rate among Kansas Regents institutions.

The university's new 90/70 plan sets a goal of 90 percent first-year retention rate and 70 percent six-year graduation rate by 2022.



Limbocker credits his success to KU's commitment to undergraduate research and his excellent mentors. "As a result of earning the Goldwater, I am able to consider

the top labs in the world to study neurodegeneration."

Cognitive improvements

Ryan Limbocker has set his sights on a big goal: easing the suffering caused by neurodegenerative diseases.

His ambition, honed in both the classroom and the lab, earned him the Barry M. Goldwater Scholarship, the prestigious award given to undergraduate students in science, technology, engineering, and mathematics.

Limbocker, a senior chemistry major from Overland Park, Kansas, was one of 283 students in the nation to receive the scholarship, which covers up to \$7,500 annually in graduate school expenses.

After earning his undergraduate degree, Limbocker will pursue a doctorate degree to continue studying neurodegeneration, focusing on post-chemotherapy cognitive impairment, Huntington's disease, and Alzheimer's disease.

For more, report.ku.edu/goldwater



advising dashboard alerts her advisor — who immediately gives her a call. Did she just forget, or are academic or personal reasons making her rethink her plans?

If the advising dashboard indicates a student's low class attendance, the advisor asks a peer advisor to contact him — a Housing staff

member will even knock on his door if necessary — and find out how they can help.

"We are using all the information at our disposal to reach out to students,"

says Randall Brumfield, director of the Undergraduate Advising Center.

The new data visualization software, Tableau, gathers data from MySuccess, Housing, Enroll & Pay, and other programs across campus and immediately displays the first signs that a student needs additional assistance. With this information at their fingertips, advisors and peer advisors can reach out, identify the problem, and find the resources the student needs.

Finding their place

Entering KU as an undecided major is not unusual — and it's not a problem. But undecided majors may not find an immediate \longrightarrow

Old. New continued

network of support, and they may not know exactly what courses to take their first semester.

The Office of First-Year Experience has the answer: University 101.

The course introduces students to experiential learning, explains the advantages of the KU Core curriculum, and - through small class sizes and individual attention — helps students find their place at KU.

Students and UNIV 101 instructors often form a close connection, one that continues past the end of the semester. The instructor is sometimes the first one students turn to for advice and support throughout their college years.

Because students who find success at KU are more likely to stay, First-Year Experience has ramped up programs like UNIV 101 by using standardized yearround training for instructors and changing how they promote the course to incoming students.

Interactive classrooms

Sure, KU still has lecture halls — but it also creates

more and more technology-rich classrooms that let students interact directly with their instructors and collaborate with other students.

These classrooms also promote project-based, active learning with low-tech elements such as U-shaped tables, rolling chairs, and walls lined with whiteboards.

In 4066 Wescoe, students, working in groups or individually, access Spanish-language websites, exchange information, react to the material, and create brief presentations for the rest of the class.

"The technology facilitates the students' interaction with authentic materials in Spanish," says Amy Rossomondo, associate professor and director of the Spanish Language Program. "It then allows us to support their comprehension and the development of speaking and writing skills."

Rossomondo finds that this method supports comprehension and the development of speaking and writing skills.



6.253 students have received \$48 million in scholarships, grants, and partial tuition waivers through our four-year scholarship program

—including the KU Pell Advantage for Pell-eligible students — since

Moral of the story

FAIRY TALES FODDER FOR RESEARCH

A fairy tale like "The Princess and the Pea" may be just a bedtime story to some, but to Alison Christy it's a practical lesson for research in the classroom.

Christy, a Ph.D. candidate and graduate teaching assistant in the Department of Theatre, worked with undergraduate students on a semester-long project that asked students to revisit, rethink, and retell fairy tales after doing their own research.

The project is part of the Graduate Research Consultant Program, which supports instructors in bringing research into the classroom and empowering

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undergraduate students to view research in a new way. Christy's students nurtured their creativity and responsibility through personal research to create a nontraditional piece of theater.

"Our students were excited about the idea, but for them, research was a solitary activity done with books and culminating in a written document," Christy says. "This project asked them to integrate information from both written documents and their performance training to produce a final presentation."



Christy, above, asked theatre students to use nontraditional techniques to tell fairy tales, above left.

Close to home

STUDIO 804 CREATES A SPACE IN ITS OWN BACKYARD

When KU architecture students needed a lecture space, they did what comes naturally: They built it themselves.

The Forum, an addition to the century-old Marvin Hall, is an innovative space where students and faculty gather to exchange ideas and showcase their work. It includes common areas and something the architecture building has never had before — an auditorium.

On the north side of the auditorium, Marvin's exterior limestone wall is still exposed, while the east, south, and west sides feature a glass "ventilated wall." Two thick layers of insulated glass help both heat and cool the building, while cedar louvers help control the amount of sunlight that comes into the space. The design admits fresh air to maintain the temperature while using little energy.

Versteeg, one of the students involved in the design and construction of the Forum. "I have a feeling many interesting things will come because of it."



From start to finish

Every year, Studio 804 students those in the final year of the architecture graduate program design a building. They write the specs, work with consultants and suppliers, and develop energy-



The Forum is the third building project Studio 804 has completed for the university. The Center for Design Research is on the site of the former Chamney dairy farm and incorporates elements of those buildings. The Hill **Engineering Research** & Development Center, completed in 2013, was named one of the best projects of the year by ARCHITECT magazine.

Six Studio 804 projects. including the 547 Arts Center in Greensburg, Kansas, have LEED Platinum certifications the highest ranking given by the Green **Building Council.**

efficient innovations. And then they get to work. They pour concrete, put up walls, even fabricate construction materials, from aircraft aluminum, for example, or recycled stone.

Dan Rockhill, J.L. Constant Distinguished Professor of Architecture, has directed the award-winning program for 20 years.

For more report.ku.edu/theforum

Far Above

RECORD-BREAKING GENEROSITY BOOSTS CAMPAIGN FOR KANSAS

Far Above: The Campaign for Kansas is helping KU achieve its bold aspirations.

The record \$253.2 million donated to KU Endowment for the benefit of the University of Kansas in FY2014 proves

that KU alumni and friends believe in the campaign's goals: to educate future leaders, advance medicine, accelerate discovery, and drive economic growth.



As the 2016 finish line approaches, Far Above's focus is on enhancing scholarships and fellowships, as well as faculty support. To date, donors have created more than 530 scholarships and about 30 new professorships. It's a great start, but only a beginning. The university's people are its most precious resource — they comprise the essence, and the measure, of its mission.

Far Above is both a physical description and a symbol of expectations. With the generosity and support of KU's donors, the university will thrive — because great universities never rest.

\$58 million gift boosts student aid

Generations of KU students will benefit from scholarships and fellowships from a new \$58 million gift from the estate of alumni Al and Lila Self – whose latest contribution makes them the most generous private donors in the university's history.

The Selfs, who died a few months apart in 2013, have donated \$106 million to KU within their lifetimes and through their estate.



The project was secured by Matthew Burke, associate professor of visual art, who also was the lead researcher and instructor. Because the course developed over four semesters, students had the opportunity to think within the parameters of the project and to develop art that meets a client's expectations — all within the Fed's budget.

The sculpture — An Abounding Asset: A Diligent Reserve — is a honeycomb

Consumer reporting

BUSINESS CENTER REFINES CUSTOMER EXPERIENCE

Can a hashtag influence customer service? How does online interaction compare to faceto-face experience? What role does social media play in brand building? The answers to these questions, asked by KU's new Center for Integrated Customer Experience, may change the way we do business across the globe.

The School of Business — along with Cerner Corp., Hill's Pet Nutrition, and The University of Kansas Hospital — launched the research initiative this fall. The center will learn more about today's customer, the best communication strategies for businesses, and consumer preferences.

With the help of the company partners, the center will capitalize on the school's

research capabilities — including students in the MBA program — to address real-world concerns facing today's businesses. Cerner will offer two research fellowships to MBA students. Hill's and the hospital will each offer one.

The center's directors are Kissan Joseph, professor of business, and Alan Halfen, a research and teaching fellow in business (marketing) and geography.

"The options that firms have to communicate and connect with their customers are increasing," Joseph says. "It's not only print but websites and social media. Customers are getting more information, and they are more demanding about the service experience."



Kissan Jose



Alan Halfen





Art colony

BEE SCULPTURES HONOR FED INDUSTRIOUSNESS

To celebrate the 100th anniversary of the Federal Reserve Bank of Kansas City, 50 students, faculty, and staff from the School of the Arts built a sculpture that represents the industriousness, productivity, and cooperation of the Fed employees who work together each day toward a common vision. A piece of artwork commissioned through KU is a complex balance of pedestals, found objects, and materials like wood, clay, and fibers.

of 55 hexagonal pedestals resembling a bee colony. Each pedestal holds beehive sculptures of ceramic, wood, plastic, glass, paper, and metal, 186 in all. And each beehive is designed using objects donated by staff — including an adding machine, a stamp marked "restricted," and mundane office supplies — that represent the 100year history of the Fed.

Thanks to the versatile design of the sculpture, Fed branches in Denver, Oklahoma City, and Omaha display smaller groupings of the artwork.

"The personalities in the artwork are what make this so interesting and attractive," says Pete Wolken, a metalsmithing major. He contributed seven of his own pieces to the sculpture, one of which featured a basketball trophy from a Fed employee. "I got to meet him at the unveiling and he was pleased with how the artwork turned out."





CHALLENGE BECOMES CHANGE

Building Communities

Obesity in rural areas is six percent higher than in urban areas.

SOURCE: National Rural Health Association

Gains and losses

RESEARCH GOES TO ROOT OF OBESITY IN RURAL AREAS

Christie Befort understands the obstacles to good health in rural America. Her family's experience has inspired her to investigate solutions.

Obesity is an issue for reasons beyond willpower, diet, and exercise, says the associate professor of preventive medicine and public health, citing her mother as an example.

When Befort encouraged her to exercise by walking to the store, her mother, a small town resident, declined. "She said, 'What am I going to do, take a cart with me? People would be talking about that all over town.'

The project

The Midwestern Collaborative for Treating Obesity in Rural Primary Care includes 36 primary care practices in Kansas, Nebraska, Wisconsin, and Iowa.

Treatment methods being studied:

• A traditional fee-forservice model of primary care, used in most physicians' offices

• A patient-centered medical home approach that uses an in-house care coordinator to provide counseling, phone visits, and after-hours visits

• A telephone-delivered disease management program, including regular phone calls to discuss nutrition and exercise and to provide support and accountability "It's just not part of the culture to do that," Befort says. "Just having grown up watching the ups and downs of people in my family struggling with weight, I feel like I've had the inside scoop."

She has received a \$10 million award from the Patient-Centered Outcomes Research Institute to figure out what works in rural communities. Befort and her team will compare the effectiveness of three obesity treatment options in rural primary care practices in Kansas, Nebraska, Wisconsin, and Iowa. The project, known as the Midwestern Collaborative for Treating Obesity in Rural Primary Care, is expected to last five years. \longrightarrow

Befort Continued

Befort cites a range of issues, including a lack of fresh fruits and vegetables, the absence of recreational activities, and insufficient support systems as barriers to good health and weight loss.

Although obesity increases the risk of serious and often deadly diseases such as heart disease, stroke, and breast cancer, Befort says few primary care physicians offer intensive programs to patients. In rural areas, where residents already

have a higher rate of obesity than in cities, the problem is more prevalent.

Studies have shown that physicians don't always know how to raise the issues or don't think patients want to



Befort studies challenges of obesity in rural communities.

talk about obesity because they are embarrassed or uncomfortable, she said. "Then, in the rural setting that's exacerbated in a small town where everybody knows each other."

For more, report.ku.edu/obesity

Taking research to the real world

It supports scientists. It involves the health care community. And it reduces the time it takes to get newly discovered cures or therapies out to patients.

It's called Frontiers: The Heartland Institute for Clinical and Translational Research. Located at the KU Medical Center, it was established in 2011 by a \$20 million Clinical and Translational Science Award from the National Institutes of Health.

Each year, Frontiers awards pilot grants of \$20,000 to researchers at participating institutions to conduct promising early-stage research projects. This year, 27 individuals — 23 of whom are affiliated with KU — received funding.



Learning is listening

Volunteers — not physicians or other health care professionals are usually the first responders for those who are contemplating suicide. In his upcoming documentary, "The Listeners," KU filmmaker Bob Hurst focuses on the power of empathy, interviewing college-age trained volunteers at a statewide suicide prevention hotline. Hurst, associate professor of film & media studies, also examines how we could reshape public policy to improve prevention services.

For more, report.ku.edu/documentary



Prevention, treatment, and cures

KANSAS AT FOREFRONT OF DRUG AND VACCINE DEVELOPMENT

Top-class investigators at KU are creating new vaccines and customizing molecules with therapeutic promise — a "one-two punch" to fight disease and keep Kansas at the forefront of human and animal health research.

The Drug and Vaccine Discovery Institute is a highpriority effort with dual parts: the Kansas Vaccine Institute and the Translational Chemical Biology Institute. Each will save lives worldwide and boost the economy close to home.

Highly sought-after pharmaceutical biochemists William and Wendy Picking arrived at KU this

summer to establish the Kansas Vaccine Institute, where they are refining immunizations to combat

killer pathogens like *Shigella, Salmonella,* and *Burkholderia*.

While KVI develops vaccines to ward off diseases, Little known fact: Bill and Wendy Picking met as graduate students at KU while playing softball.

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the Translational Chemical Biology Institute combats illnesses that have already developed. The institute discovers and modifies small molecules that show potential as disease fighters, transforming them into "probes" that are even more efficient at protecting human health.

The TCBI will be a pipeline between investigation into this basic chemical biology of molecules at KU's Lawrence campus and clinical scientists at the KU Medical Center, where the work will progress into life-saving treatments for diseases ranging from AIDS to cancer to chronic illness.

According to Joe Heppert, associate vice chancellor of the Office of Research, both "punches" in the

KU Drug and Vaccine Discovery Institute's battle against disease will deepen Kansas' contribution to the world.

For more, report.ku.edu/vaccine

"Kansas has carved out a place of leadership in areas that are critical to the future of human and animal health and to economic development. This research effort has brought great benefits to our state, to our universities, and to our people over the past 50 years — and it is one that we need to continue to invest in."

— Joe Heppert



Making it better

SMALL THINGS HAVE BIG BENEFITS IN TREATING YOUNG PATIENTS

Singing a lullaby. Getting a haircut. Using a wheelchair.

KU researchers — professors and students — have built innovative behavioral experiments around these simple actions.

Power of lullabies

By gently strumming a guitar and softly singing to the tiniest of infants, a KU researcher has been creating a crescendo of discoveries in the field of music therapy.

Deanna Hanson-Abromeit, assistant professor of music education and music therapy, has found that crooning a simple lullaby to premature infants soothes their overwhelmed nervous systems, organizes their behaviors, and ultimately helps them grow.

Her research suggests that prerecorded music may have less of an effect — the musician must watch the infant and adapt tempo and volume to the newborn's reactions.

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Everyday activities like going to the doctor or getting a haircut can terrify some children with autism. Take 2-year-old Mark's first trip to the barber, for example: He screamed and cried. And his dad had to restrain him.

But Mark's mom, KU senior Kristin Miller, had an idea — she would seek a KU Undergraduate Research Award to develop ways for children with developmental disabilities like Mark to learn how to

Change in perspective

For nearly 20 years, Cynthia Colwell has asked her students to read sheet music with jumbled words, put on goggles that distort their vision, and use wheelchairs in public places.

She is investigating the best way to prepare therapists, teachers, and children to interact with people with disabilities.



Hanson-Abromeit's work has resounded across the globe. It's led to the formation of Music and Neuro-developmentally At-Risk Infant, or MANDARI, a group of researchers from the United Kingdom and Australia who are exploring how music therapy affects the brain.

She is co-leading MANDARI's international effort to develop procedures for music therapists based on specific response of the infants, answering questions like "What should I do if the infant looks away from me?"

Eventually, Hanson-Abromeit wants to help parents understand the cues and adapt their lullabies to help babies manage pain or discomfort.

accept routine health care treatment, such as going to the dentist or even getting a buzz cut. The research involved creating and evaluating techniques using repetition and familiarization to increase her son's compliance with routines.

Miller, an applied behavioral science and communication studies major, assessed the treatment in a behavioral laboratory and at actual health care appointments.

For more, report.ku.edu/treatment.

Recently, Colwell, a professor of music education and music therapy and director of music therapy, published her research in the International Journal of Music Education. Her findings: Students who had simulated a disability were changed by their experience — they had more positive attitudes toward people with disabilities afterward and said they gained helpful insights.



Teaching is seeing

Using one-on-one coaching and immediate feedback, the Kansas Center for Autism Research and Training (K-CART) helps parents of children with autism teach independent living skills and manage disruptive behaviors.

The parent training program — known as OASIS — uses teleconferencing and the Internet to help families in dozens of Kansas communities, including Emporia, Hays, and Salina.

The program is successful, but the waiting list is long.

That's why KU's Bureau of Child Research is testing a new headset technology, Google Glass. It could take the training to another level — and to even more remote locations across the country and around the globe.

Training autism specialists

Of the

10,635 children

with autism

spectrum

disorder

in Kansas,

about a third live

in rural areas.

Children and youth with autism spectrum disorder may find it difficult to connect with the world, and they need lots of support. To help meet the growing need professionals in the field, the School of Education has developed an ASD program at the Edwards Campus in Overland Park. Students participate in multiple field-based practica in a variety of school and clinical sites, including multicultural settings.



Honoring sacrifice

Some have fought on the battlefield. Others have never stepped foot in enemy territory, but know firsthand about the losses suffered by the men and women of America's military.

This year, KU's Office of Graduate Military Programs awarded Wounded Warrior scholarships to four of these heroes.

Thank you for your service

KU's Wounded Warrior scholarship program – established by KU Endowment in 2013 – honors the service of our military heroes and seeks to ease the financial challenges of furthering their education.

The Wounded Warrior scholarships offer up to \$10,000 per year. Available at the graduate and undergraduate level, the scholarships are open to military veterans with a VA disability rating or to the spouse, primary caregiver, or child of a veteran with a VA disability.

1. Alex Cataudella,

an undeclared freshman, received the award in honor of her father, Army Sgt. Sean Cataudella, who died while serving in Iraq when Alex was seven years old. A freshman in the College of Liberal Arts & Sciences, she says the scholarship made college a reality for her.

2. Timothy Hornik

lost his sight while serving as an air defense artillery platoon leader in Iraq. Now a retired Army officer, he is pursuing a doctoral degree in therapeutic sciences and intends to assist and advocate for disabled veterans. He has a master's in social work from KU.

3. Carol Meza

survived a severe roadside bomb attack while on deployment in Iraq in 2010. With a master's in social work, she plans to help other veterans who are struggling to reintegrate into society. She continues to serve in the National Guard.

4. Jennifer Thornton is the primary caregiver to her husband, Jason, who has been diagnosed with severe post-tramautic stress disorder and a traumatic brain injury after serving two tours in Iraq. She is pursuing a graduate degree in social work, with the goal of becoming an advocate for wounded veterans and their families.

A fresh start

SUPPORT SYSTEM TAILORED FOR SUDANESE REFUGEES

Some suffer from post-traumatic stress. Others are depressed. Still others struggle to raise children in American society, far from their homeland in east central Africa.

But now, thousands of women who fled the horrors of civil war in Sudan are benefiting from a culturally tailored support system in their new home in Kansas City.

Martha Baird, an assistant professor who teaches psychiatric nursing in the nurse practitioner program, is researching ways to improve the health and well-being of about 2,000 South Sudanese refugees living in the Kansas City area.

Sudan's ongoing civil wars have displaced as many as 5 million people from South Sudan, including 20,000 who have fled to the United States. The majority are women with children.

Baird's work focuses on community-based participatory action research that engages the refugees as collaborators. Baird has worked with one of the refugees to translate the Hopkins Symptom Checklist-25, a well-known anxiety and depressionscreening instrument, into the South Sudanese tribal language of Dinka.

Baird used the translated checklist to screen refugee women for symptoms of anxiety and depression. She developed a culturally tailored intervention program for post-traumatic stress disorder, depression, suicide, domestic violence, and divorce.

The sessions include parenting skills, counseling, medication, and relaxation techniques, such as mindfulness, guided imagery, yoga, dance, and prayer.

Martha

Perfect fit



MATCHMAKING TOOL FINDS FAMILIES FOR FOSTER KIDS

Melissa Hutton goes home every night to a boisterous family — including an energetic 3-year-old toddler girl and 2-month-old twin boys.

An online tool called ECAP (Every Child a Priority) helped Hutton find her family. ECAP uses algorithms — similar to those used by online dating services —to help child welfare

officials make better matches between children and families on the first try.

Information about the child is put into the program, which uses algorithms to rank possible matches from the available foster homes.

"It matches you with the behaviors that you can handle, so it matches the right kids to the right homes," says Hutton, who is also a resource family worker for Topeka-based TFI Family Services.

Because foster parents have more knowledge about the child at the start, fewer children have to be moved later to different families.

Besides the emotional benefit, ECAP also provides an economic savings for foster care agencies. By eliminating the cost of moving kids around, KU researchers determined, ECAP saved \$730,000 in just one year.

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Startup success

TFI developed and began using the ECAP online tool in 2010.

Its initial success led TFI to reach out to the School of Social Welfare to help test, validate, and improve the software. TFI also enlisted the Bioscience & Technology Business Center to help market the online application.

In 2014, they formed Foster Care Technologies LLC (fostercaretech.com), a startup with two full-time employees as a BTBC tenant in KU's West District.

"ECAP is designed to get that placement for foster care right," says Paul Epp, managing director. He is marketing ECAP to the thousands of foster care agencies around the country.





STUDY LOOKS AT EFFECTIVENESS OF RELIGION IN CANCER PREVENTION

Crystal Lumpkins grew up in churches. The daughter of a preacher, she sees the power that spirituality and a religious community can have in a person's life. Today, that community — and its ability to change the outcomes of health behaviors — is the focus of her research.

It's also the subject that earned her a \$600,000 National Cancer Institute grant, which she's using to launch a pilot intervention program about the promotion of colorectal cancer screening within churches.

Lumpkins is an assistant professor of family medicine at the School of Medicine and teaches strategic communications at the William Allen White School of Journalism & Mass Communications. She kicked off the pilot

Economic drivers

KU HELPS BRING CENSUS DATA CENTER TO AREA

The U.S. Census Bureau's newest Research Data Center, coming soon to Kansas City, is one of just a few across the nation.

The new RDC, located in the Federal Reserve Bank, will provide restricted micro-level Census data to approved researchers.

Researchers can use the data to produce economic indicators and spark deeper understanding into the regional and national economy, including changes affecting

households.

Donna Ginther the quality of social science, economic, and health research by providing access to the highest quality data collected by the federal government," says Donna Ginther, professor of economics and director of the Center for Science Technology & Economic Policy at KU's Institute for Policy & Social Research.



Spreading the word

intervention program in the fall after conducting 23 focus groups with members of predominately African-American churches. She used the focus groups — specifically, the community involvement and input she received — to develop educational materials for the program.

"We want to see how effective the church is and whether it's poised to be the leader in marketing and not a silent partner," Lumpkins says. "The church isn't just a place where you leave promotional materials hoping someone will pick up — it's at the forefront as the primary sponsor of cancer preven-

African-American men and women were targeted in the study because of the higher incidence rates and mortality rates of colorectal cancer than other populations.

tion among African Americans."

The intervention study includes a workshop on colon cancer led by church members and a series of mini-campaigns where congregation members, including the pastor, take an active role in promoting awareness.

business and personal

"The RDC will improve



Ginther led the effort to bring the RDC to Kansas City by spearheading a National Science Foundation proposal that ultimately led to the creation of the center and provided some of its funding.

In addition to KU, the consortium that established the center included the Federal Reserve Bank of Kansas City, the Kauffman Foundation, the University of Missouri-Kansas City, and the University of Missouri-Columbia.



TENACITY BECOMES BREAKTHROUGH

Making Discoveries



Green water

TINY ALGAE TAKE FIRST BITE IN BIOFUEL CHAIN

With a slimy green complexion and a name like Chlorella kessleri, it conjures up the image of a cruel Disney villainess.

But the tiny algae plant, also known as Chlorella vulgaris, has become the real-life hero of a process being perfected by University of Kansas engineering students and faculty — a process that could not only help to improve the planet's fresh water supply, but also be the source of a biofuel.

The process, KU's Feedstock to Tailpipe Initiative, has teamed engineering faculty members with about 25 graduate and undergraduate engineering students to turn the microalgae into environmentally friendly fuel for cars, trucks, trains, and even aircraft.

Belinda Sturm, associate professor of civil, environmental, and architectural engineering, said the microalgae naturally remove \longrightarrow

Susan Williams, above with students in her lab, is the director of the KU Biodiesel Initiative.



"We're finding that it produces a quality of fuel that is close to petroleum. We believe it's unique and we're excited about it."

— Belinda Strum

Algae Continued

nutrients from wastewater ---nutrients like nitrogen and phosphorous, which would otherwise harm the environment. The process not only cleans up the wastewater, but the resulting toothpaste-like algae then becomes a feedstock for biofuels.

One of the project's goals is to set up a real-world model for a local municipal water treatment plant to use to grow its own algae to treat nutrient-rich wastewater. After the algae consume the nitrogen and phosphorus, the cleaner water can be returned to nature. As a bonus, the municipality could send the resulting microalgae to a biofuel facility.

At KU, the process begins in a greenhouse atop the M2SEC research facility, part of the School of Engineering complex. Civil and



Emily Cook, a senior majoring in civil engineering with an environmental emphasis, is on the team managing an algae-growing operation in a greenhouse on the roof of KU's M2SEC research facility.

species-finding footsteps:

"Do it the

old-fashioned wav.

Wade through the

mud and get dirty."

environmental engineering students grow the microalgae in wastewater ponds.

The chemical and petroleum engineering researchers turn the microalgae into biofuel. Then the mechanical engineering team takes over, testing the biofuel in an engine for its performance and emissions.

The initiative is funded by several federal grants from agencies including the Department of Energy, the National Science Foundation, and NASA.

For more, report.ku.edu/algae

Jumping to a conclusion



As a child in Malaysia, Chan Kin Onn crawled through jungles and swamps to find specimens of frogs, lizards, and snakes. Now a doctoral student in herpetology, Chan is still collecting. His latest discovery: yet another new species of frog.

Chan identified Hylarana centropeninsularis, an orange-striped frog with yel-

low speckles found by another herpetologist in the swamps of the Malay Peninsula. The frog was originally confused with the Siberut Island Frog, which is similar in color and pattern but found more than 450 miles away in Indonesia.

Chan and a research team at KU's Biodiversity Institute used genetic analysis

to confirm that the dop-Chan's best advice for pelgänger frog was indeed would-be herpetologists a new species. looking to follow in his

> "The lab is able to run a number of different genetic analyses, including cutting-edge Next Generation Sequencing," Chan says. "Our bioinformatics lab can analyze extremely large and computationally expensive datasets. The

great thing about our lab is that we have the equipment and expertise to run everything ----from initial DNA extractions to the final data analyses — without any outsourcing."

Hylarana centropeninsularis is not Chan's first discovery: He has described seven new species of frogs and three new species of lizards.



A tiny "lab on a chip" in development at KU could transform the early diagnosis of some cancers.

Yong Zeng, KU assistant professor of chemistry, and Andrew Godwin, deputy director of the University of Kansas Cancer Center, are

creating a byte-sized biomedical testing device that could lead to less invasive, earlier detection and boost patients' survival rates.

"Our lab on a chip is designed to identify patients' tumor burden using blood as a liquid biopsy — or as a way to detect cancer early, before an individual experiences related symptoms," Godwin says.

Yong Zeng and Andrew Godwin received a \$640,000 grant from the National Cancer Institute at the **National Institutes** of Health to perfect the "lab on a chip" technology.

"A lab on a chip shrinks the pipettes, test tubes, and analysis instruments of a modern chemistry lab onto a microchip-sized wafer." —Yong Zeng

Cellular reception

TINY DEVICE COULD DETECT CANCER IN EARLIEST STAGES

This microchip-sized testing device screens molecule-filled nanoparticles that are released from cells for cancer. The screens can be used in cancer detection instead of more invasive and costly biopsy procedures.

"We can just use those nanoparticles —

exosomes — to study the molecular makeup of those tumors to identify if this is a really invasive or aggressive tumor or if it's dormant and we still have time to treat it," Zeng says. "This will help us plan the treatment — to find the right dosage or the right timing to improve the efficacy of cancer therapy."

Initially, the researchers and their team used the device in the detection of lung cancer, but Godwin sees the potential for it in the detection of ovarian cancer.

"Ovarian cancer has very vague symptoms," Godwin says. "That leads to women going to their gynecologist or physician at very late stages where they tend to have widespread disease. If you can find it early, the outcomes are much better."

The researchers plan to develop new lab-on-a-chip devices for different types of cancer so that tests for specific cancers can be developed.

Eventually, the researchers say, the technology may be adapted to diseases other than cancer.



Kenneth Peterson in his lab.

Flipping a switch

HELPFUL HEMOGLOBIN COMPOUNDS LIGHT UP RESEARCH

Kenneth Peterson used light in his ongoing search for an inexpensive, effective drug to treat sickle cell disease.

Peterson, a professor and vice chair in the biochemistry and molecular biology department at KU Medical Center, needed a way to screen 121,000 compounds to find ones that turn on a helpful form of hemoglobin that counteracts the form that causes sickle cell disease.

"We used luciferase — light-emitting proteins that were fused to the hemoglobin," he says. "Using light was a good way to measure the on/off switches for a given gene. It was a very cute way to monitor it."

Working with researchers at the High Throughput Screening Laboratory on the Lawrence campus, Peterson eventually narrowed the compounds down to 232, seven of which are the most promising ones so far.

Peterson says the seven compounds are now being tested and next, he will work with

Sickle cell disease, a hereditary disease that causes mutation in red blood cells, distorts the cell shape, and cuts off the blood supply to tissues. Eventually, tissue and cell death occur and can cause strokes, anemia, and organ damage.

medicinal chemists at KU to make sure the compounds are safe for humans.

Current treatments for sickle cell disease are expensive and can also be ineffective, he says. "There are millions of people in the world with sickle cell and other genetic blood diseases, particularly in developing countries. The idea is that if we can discover a compound and we can make it into a good pharmacologic, that it will be that sort of magic \$3 pill."

Universal questions

NEW MODEL OF DARK MATTER EARNS RECOGNITION

Mikhail Medvedev is shining new light on mysterious dark matter.

Dark matter is estimated to make up 85 percent of our universe, but it can't be detected with scientific instruments. Researchers infer its existence through astronomical observations — and they have a number of cosmological questions.

Medvedev, professor of physics and astronomy, has developed a new model — the flavormixed multicomponent dark matter model based on his theory that a particle has several identities, or flavors, at the same time.

The new model he created relies on these flavor-mixed particles and on "quantum evaporation," a theoretic discovery he and his team made in 2010. Quantum evaporation changes how dark matter clumps gravitationally and ultimately changes the measurement of dwarf galaxies in the universe and how dark matter is distributed within them.

"If confirmed, this will be a huge step forward — a quantum leap, so to say — in unraveling the nature of dark matter," Medvedev says. "It will rule out a lot of theories that are on the table, and could lead us to a better understanding of how the universe has developed."

Medvedev's research was on the cover of Physics Review Letters, a prestigious physics research journal.

A taste of medicine

RESEARCHERS STUDY ANTICANCER PROPERTIES IN TOMATILLOS

Kelly Kindscher went foraging last spring. He trudged down country roads in central Kansas, dug in ditches — and bagged 20 pounds of wild tomatillos. He brought them home and used them to cultivate new plants.

Kansans sometimes call these plants ground cherries. They are related to the tomatillos often used in cooking. But he's not making salsa — he's fighting cancer.

Kindscher, senior scientist in KU's environmental studies program, says wild tomatillos have a long history in food. "Native people picked these in quantity, dried them into cakes, and used them in soups and food.

"So I thought, wow, they could be both food and medicine."

Along with Barbara Timmermann, distinguished professor of medicinal chemistry, Kindscher is studying the molecular properties of the Physalis longifolia, a type of tomatillo native to Kansas. They are using a \$400,000 strategic initiative grant from KU, part of the university's *Bold Aspirations* plan to energize research and scholarship.

The project is still in the research phase within Timmermann's chemistry lab, but the team is close to finding validation that tomatillos could be used to reduce side effects "We were delighted — the screen showed that they are very high in antioxidants," Kindscher says. "The hope is that this would lead to a product on the market — either a





from chemotherapy and improve a patient's quality of life.

natural product or pharmaceutical product — that would be useful for treating cancer."

But how do they taste? "Surprisingly good!" Kindscher says. "It's something like a raisin or dried cranberry. These are really, really tasty."

The new Chancellor's Doctoral Fellowships awarded \$25,000 stipends to 12 promising doctoral students across the university.

Four students won **Fulbright awards** for research and study for 2014-15.



Every 2014 aerospace engineering graduate was part of at least one awardwinning team in AIAA international design competitions a first in KU and American Institute of Aeronautics and Astronautics history.

KU's new **School** of Languages, Literatures & Cultures offers 20 degree programs and 25 languages providing richer global experiences for our students.



Holly Storke

Professor

Holly Storkel, chair of the Department of Speech-Language-Hearing, was named a fellow of the American Speech Language-Hearing Association.

Nearly 28 percent of all physical therapists working in Kansas and licensed by the Kansas Board of Healing Arts were trained at KU — the largest percentage of any Kansas school.

> U.S. News' Best Public University graduate programs City management & urban policy Special education





The KU Medical

Center received a five-year, \$19 million grant from the National Institute of General Medical Sciences of the National Institutes of Health to continue a Kansas cell and developmental biology research program. This grant has brought \$64 million into the state since 2001.

Active startup companies created from KU research



ars – K. Christopher Beard, ecology & evolutionary biology; David Roediger, American studies and history; and William Picking pharmaceutical chemistry – are the first of 12 Foundation Distinguished Professors. These professorships, funded through a partnership with the state of Kansas, will advance our strategic initiatives and lay the foundations for tomorrow's most important discoveries.

The annual National Science Foundation (NSF) survey of

(NSF) survey of federally funded university research expenditures placed KU 38th for 2012 among national public research universities.

EXCELLENCE ON THE HILL





Three leading schol-

The Bioscience & Technology Business Center,

which completed a 31,400-square-foot expansion of its main facility in summer 2014, now has 31 tenants, including Garmin and Archer Daniels Midland.

In FY2014, KU had

100 active license agreements for commercial use of KU technologies or inventions — an increase of 22 from FY2013.

Dorothy M. Daley,

associate professor of public affairs & administration, received an NSF grant that will fund a threeyear study on state and local climate risk governance. Former Sen. Bob Dole returned to campus in April to reflect on his career in politics, thank those who supported his career, and cap off a yearlong celebration of the 10th anniversary of the Dole Institute of Politics.



Bob Dole

Patrick Dooley, professor of design, received a 2014 Fellow Award from the American Institute of Graphic Arts Kansas City.





5 faculty members earned prestigious Fulbright Scholar awards.

Total NIH funding awarded to KU pharmacy researchers in 2013, an average of \$588,000 per researcher

Presidential visit

Barack Chalk, Jayhawk

Two days after his 2015 State of the Union address, President Barack Obama visited the Lawrence campus and spoke to a crowd of more than 7,000 about the importance of higher education and child care.

Next year's report will have full coverage of this historic event.