Our bold aspirations are coming true

Research universities are vital to our nation’s prosperity and to our shared hopes for a healthier, more vibrant world. At the University of Kansas, we lift students and society by educating leaders, building healthy communities, and making discoveries that change the world. That mission is central to all that we do, and is at the heart of Bold Aspirations, our strategic plan, which guides us as we move the university forward.
Educate

“A DYNAMIC ECONOMY REQUIRES PIONEERS IN ALL DISCIPLINES. AS THE STATE’S FLAGSHIP RESEARCH UNIVERSITY, WE EDUCATE LEADERS ACROSS MANY FIELDS, FROM SCIENCE AND ENGINEERING TO THE ARTS, HUMANITIES, AND SOCIAL SCIENCES.”

— BERNADETTE GRAY-LITTLE
Core values

WE LAUNCHED THE KU CORE:
A COMPREHENSIVE, UNIVERSITY-WIDE UNDERGRADUATE CURRICULUM

In response to the ever-changing educational landscape, the University of Kansas has implemented a bold curriculum redesign. Our curriculum shifted from traditional course-based requirements to learning outcomes based on foundational skills for all majors. In addition, we are one of the first schools to integrate experiences such as study abroad, service learning, and hands-on research into general education. Our current freshman class — the largest and most diverse group of freshmen in recent years — has already begun completing the KU Core.

Through the KU Core, students accomplish six educational goals. Each goal has learning outcomes a student can achieve in various ways. For example, a geology major interested in how languages develop in regions with differing geological resources could complete part of her critical-thinking goal by taking a class in linguistics. A classmate with an interest in exoplanetary geochemistry could complete the same learning outcome by taking physical astronomy.

All students finish six goals. However, the path may vary widely for each student. An anthropology major can complete a requirement in culture and diversity by doing fieldwork in South America. A political science major can complete a semester-long internship in Washington, D.C., as a capstone experience — that is, his integration and creativity goal. The KU Core’s flexibility allows students to explore their interests while contributing to their comprehensive education. It also allows them to accumulate vital experiences in their chosen disciplines by the time they earn their undergraduate degree.

The KU Core is the future of general education at KU. It allows students to focus not on checking off boxes, but on integrating knowledge and thinking creatively. As they become productive members of their communities, students need a range of skills and knowledge, from critical thinking to a broader understanding of our world, and the KU Core will help them on their journey as leaders and lifelong learners.

"THE KU CORE LETS STUDENTS BROADEN THEIR HORIZONS BY TAKING THE CLASSES PERTAINING TO OTHER FIELDS. I CAN TAKE MORE CLASSES THAT FIT MY INTERESTS, KNOWING THEY WILL CONTRIBUTE TO MY OVERALL EDUCATION."

— SAMANTHA MURPHY, FRESHMAN
A prototype of the WellCar — a vehicle that one day may be used to make state-of-the-art house calls to patients in rural areas — is the latest innovation being developed at the Center for Design Research.

The center is a working laboratory that brings together students and faculty from diverse disciplines to create innovative products, services, and technologies. Companies such as Bayer HealthCare and Ford have turned to the center to help them develop imaginative and practical solutions to complex problems.

The WellCar prototype will be an adapted Ford Transit Connect Wagon. It’s being designed with advanced medical equipment and communications systems that will allow health care professionals to run on-site diagnostics, monitor a patient remotely, and administer preventive care without an expensive hospital or outpatient visit.

The WellCar prototype will be developed in partnership with Sprint, which will provide the vehicle’s mobile Wi-Fi hotspot.

The Center for Design Research itself incorporates cutting-edge sustainable technologies. The complex is comprised of three buildings and sits on the site of a 100-year-old dairy farm on KU’s west campus. The state-of-the-art, LEED Platinum central facility was designed and built by architecture students in the Studio 804 program.
An open book

“DUST CLOUDS BOILED UP, TEN THOUSAND FEET OR MORE IN THE SKY, AND ROLLED LIKE MOVING MOUNTAINS — A FORCE OF THEIR OWN.” — TIMOTHY EGAN

The Worst Hard Time: The Untold Story of Those Who Survived the Great American Dust Bowl by Timothy Egan was the 2013–14 Common Book.

The book chronicles the confluence of natural and man-made factors that caused one of the nation’s first large-scale ecological disasters. By telling the stories of the people who stayed, Egan touches on art, history, politics, economics, and ecology.

Through the Common Book program — started in 2012 — new students receive a book at orientation. When they return to campus for their first classes, they share their ideas about the book with their classmates and professors through seminars, lectures, and activities. Through the program, students strengthen essential skills and abilities, examining others’ viewpoints and thinking critically.

VIEW THE VIDEO AT report.ku.edu/educate/commonbook

DUST BY DESIGN

Students in a visual communications class designed “1 Kansas Farmer,” a series of six display panels inspired by The Worst Hard Time, KU’s 2013–14 Common Book. The designs, displayed in the Spencer Museum of Art, present the environmental realities facing Kansans today and their historic roots in the Dust Bowl.

The designs produced by the students also communicate the research of the biofuels and climate change project by scholars at KU and Kansas State University. That project examines farmers’ land-use decisions and their relationship to biofuel crop opportunities and climate change.
Long journey promotes stroke research

**WALK RAISES AWARENESS ABOUT EXERCISE AND RECOVERY**

Sandra Billinger and her son took a long walk in May. They started at the Kansas-Colorado border and walked east — for 572 miles.

Billinger, assistant professor of physical therapy and rehabilitation science, and her son Michael, 20, used the walk across Kansas to promote the benefits of physical activity for stroke survivors and to raise money for laboratory equipment.

They raised $38,000, which will help Billinger and her research team to better measure brain blood flow response during exercise early after stroke. The team’s study of the benefits of exercise during stroke recovery is also supported by a grant from the National Institutes of Health.

Working for rural families

**Fewer than five percent** of the licensed social workers in Kansas live in the state’s western half. A new master’s program in social welfare addresses that shortage.

The Western Kansas Master of Social Work program combines face-to-face and online learning with in-class attendance at Fort Hays State University or Garden City Community College. Practicum placements are available throughout western Kansas.

By the time they complete the program, graduates will be prepared for advanced clinical social work practice with individuals, families, and groups. The School of Social Welfare offers a regular two-year master’s program as well as a one-year advanced-standing program for those who already have a social welfare degree.

“SOCIAL SERVICE AGENCIES ARE EXTREMELY PLEASED THAT WE ARE COLLABORATING WITH OTHER INSTITUTIONS TO ADDRESS THIS URGENT NEED.”

— KENDAL CARSWELL, PROGRAM COORDINATOR
A NASA fellowship is helping a KU student to design better tools for predicting how climate change will affect sea levels.

Theresa Stumpf, a doctoral student in electrical engineering, will receive $90,000 over three years to conduct research on a new type of ice-penetrating radar for the National Science Foundation’s Center for Remote Sensing of Ice Sheets (CReSIS). The radar will gather data from a wider area and provide a much clearer picture of the conditions that affect sea-level rise.

The National Science Foundation created CReSIS as a Science and Technology Center at KU in 2005. The mission of the center — one of only 11 Science and Technology Centers in the nation — is to more accurately predict climate change’s effect on the world’s oceans by studying melting ice sheets in Greenland and Antarctica.
An unforgettable performance

AN ORIGINAL SYMPHONY TAKES KU STUDENTS ALL THE WAY TO CARNEGIE HALL
Excellence in nursing education

The School of Nursing has been designated a Center of Excellence by the National League for Nursing. The designation acknowledges the school’s sustained, substantive, evidence-based innovation in creating environments that enhance student learning and professional development.

KU is the only nursing school in the region and one of just 26 in the country to earn the designation since it was established nine years ago.

Learning by leading

Our special education graduate program — already ranked first among the nation’s public institutions by U.S. News & World Report — is now the highest-ranked program offered fully online.

The School of Education launched the online specialty education program in September. The master’s degree is the first of 15 online degrees and certificates in education that will be introduced over the next three years.

“THE ENSEMBLE … PERFORMED WITH POLISH, ASSURANCE AND COPIOUS SPIRIT, ELICITING A ROUSING OVATION…”

— STEVE SMITH, THE NEW YORK TIMES

The KU Wind Ensemble performed the world premiere of a symphony, “In the Shadow of No Towers,” at Carnegie Hall in New York City in March. The symphony — an exploration of post 9/11 reality — grew from discussions between composer Mohammed Fairouz and Pulitzer Prize–winning graphic novelist Art Spiegelman. The symphony was commissioned for the wind ensemble by the nonprofit foundation Reach Out Kansas.

VIEW THE 3-PART VIDEO SERIES AT report.ku.edu/educate/carnegie
Build

“We serve the world through scholarly and creative endeavors that enhance quality of life and create jobs and prosperity. And we serve society through the work of countless individuals on our campuses, across the state, and around the globe.”

— Bernadette Gray-Little
Recharging the brain’s batteries

EXERCISE MAY DELAY THE EFFECTS OF AGING AND THE ONSET OF ALZHEIMER’S

“This prestigious designation has put KU on the national and international Alzheimer’s disease and brain-aging map.”

— DR. RUSSELL SWERDLOW, DIRECTOR

The Alzheimer’s Disease Center at KU is studying the effects of exercise in preventing the disease.

Through a $3 million grant from the National Institutes of Health, researchers are studying mitochondria, the structures within cells responsible for generating energy — essentially a cell’s battery.

“With aging this battery runs down,” says Dr. Russell Swerdlow, the center’s director. “With Alzheimer’s disease, the battery runs down even more. One of the things we’re working on is how to recharge that battery.”

The study — which will enroll healthy adults over 65 who have a higher risk of developing Alzheimer’s disease — will be one of the first such studies in the country.

The KU Alzheimer’s Disease Center is a wide-ranging initiative with key facilities and personnel at the Medical Center and at the Lawrence campus. The center is one of just 29 Alzheimer’s disease centers in the nation to receive National Institute on Aging designation and funding.

The goal of all NIA-designated centers is to translate research advances into improved diagnoses and care — and ultimately to find a way to cure and prevent Alzheimer’s disease. KU’s center focuses on mitochondrial genomics, metabolism, and neuroimaging.
Where business is going

The School of Business broke ground in 2013 on a new $65.7 million building. The 166,000-square-foot structure will be the largest academic facility ever erected at KU entirely through private support. It will open during the 2015–16 academic year, in time to celebrate the university’s sesquicentennial.

University research meets industry

An expansion of the Bioscience & Technology Business Center’s main facility will provide more space to house companies that want to partner with KU researchers and students, as well as new startup companies created by KU research.

Once the expansion is complete, the main facility will have 50,000 square feet of leasable space, which can accommodate approximately 20 tenant companies.

The BTBC network includes three facilities totaling 70,000 square feet of space and 29 tenant companies, making it the largest incubator network in the Midwest. These companies combine to employ more than 100 people.

The Jayhawk Health Initiative, founded by KU student Leigh Loving, provides health care to those in need and learning opportunities to students in pre-health programs. In summer 2013, the students traveled to Panama, working with doctors there to provide medical and dental care, medication, and health education to residents.
Everyone deserves a voice

“We’re all included in the concept of multiculturalism. Culturally responsive instruction helps children see themselves in the curriculum.”

— Matthew Gillispe, Clinical Assistant Professor of Speech-Language-Hearing

Hearing loss, cerebral palsy, autism, or Down syndrome may impair a child’s development of speech and language skills. Early action is critical.

KU graduate students will soon start working more closely with American Indian and Alaskan Native children with speech-language impairment, helping them develop the communication skills necessary for education and socialization.

The Culturally-Responsive Early Literacy Instruction (CRELI) program — established through a $1.2 million grant from the U.S. Department of Education — will recruit and educate speech-language pathology graduate students from indigenous backgrounds.

CRELI will include field experiences that pair students with American Indian or Alaskan Native children and their families. Children will receive individualized language and literacy instruction; parents will learn to meet their child’s communication and educational needs.

The grant will provide tuition, stipends, and faculty and peer mentoring for about 18 graduate students over the next five years.
Select KU partnerships across the nation

FORD, MICROSOFT, SAMSUNG, COCA-COLA, EXXONMOBIL, AND BAYER HEALTHCARE are a few of the companies working with KU faculty and researchers

22 KANSAS-BASED STARTUPS (Lawrence, Kan.)
KU research has led to 24 startup companies, all but two of which are in Kansas.

BAYER HEALTHCARE (Tarrytown, N.Y.)
Bayer has partnered with the Center for Design Research to enable students to design applications for its blood glucose meter, a portable diabetes management device.

FORD MOTOR CO. (Dearborn, Mich.)
Ford has partnered with the Center for Design Research to enable students to conceptualize new interior layouts for vehicles.

ARCHER DANIELS MIDLAND CO. (Decatur, Ill.)
ADM, one of the world’s largest agricultural processing companies, has established a research center in Lawrence to partner with KU researchers on chemical biorefining technologies.

LIGAND PHARMACEUTICALS (La Jolla, Calif.)
Ligand has signed a lease with the Bioscience & Technology Business Center to continue pursuing partnerships and drug-discovery research.

SAVARA PHARMACEUTICALS (Austin, Texas)
This startup — cofounded by an assistant professor of pharmaceutical chemistry at KU — raised $8.6 million to develop nanocluster dry powder aerosol technology.

TERTIARY OIL RECOVERY PROJECT (Houston, Texas)
Scientists with the Tertiary Oil Recovery Project traveled to Houston in 2012 to discuss industry-sponsored nanotechnology research projects with several major corporations in the energy sector.

KEY
• Startups
• Research Partnerships
• Student Engagement
• Workforce Development
When discoveries drive industry

Two KU technologies were featured at the University Research & Entrepreneurship Symposium, a showcase of the nation’s most promising university-based inventions for venture capitalists and entrepreneurs.

Mark Fisher, professor of biochemistry, presented new technologies to address protein-folding diseases such as Parkinson’s, cystic fibrosis, some cancers, diabetes, and emphysema. The other presenters, Heather Desaire, professor of chemistry, and Melinda Toumi, who recently received a doctorate in chemistry, are developing new protein production technologies applicable to many areas of biomedical research.

Only 33 technologies were chosen for presentations. KU was one of only seven institutions—including Harvard, Johns Hopkins, and Massachusetts Institute of Technology—that received more than one presentation slot.

“MOVEMENT IS ESSENTIAL TO HEALTH. DANCE HAS POWERFUL IMPLICATIONS FOR THE WAYS WE PARTICIPATE IN COMMUNITIES, NOT MERELY IN TERMS OF HEALTH, BUT ALSO IN TERMS OF RELATIONSHIPS.”

— MICHELLE HEFFNER HAYES, PROFESSOR AND CHAIR, DEPARTMENT OF DANCE

Students from the University Dance Company performed jazz, ballet, baroque, and modern dance as part of a residency in central Kansas. The outreach event was coordinated with the Salina Community Theatre.

The company also taught two master classes in hip hop and modern dance to children and adults.

This year KU professors...

RECEIVED a grant from the National Multiple Sclerosis Society to study aerobic exercise, cognitive function, and sleep quality.

PRESENTED research on post-traumatic stress disorder among journalists and nonmilitary personnel to the U.S. State Department.

EDUCATED physicians in Wichita and Salina as part of innovative efforts to train exceptional doctors who want to practice in rural areas.
Discover

“What we do today will change the lives of countless people tomorrow and serve as a testament to the talent and dedication of the faculty, staff, and students of this university.”

— BERNADETTE GRAY-LITTLE
When Robert DePalma noticed the strange shape of the bones he’d uncovered — crumpled, misshapen, fused together with a pebble-like texture — he knew he’d found something special. He took the fragment to his mentor, David Burnham, preparator of vertebrate paleontology at KU’s Biodiversity Institute, who also recognized an opportunity for discovery.

As a graduate of KU’s paleontology doctoral program, ranked seventh in the nation by U.S. News & World Report, DePalma already had exceptional field experience. His foresight to use meticulous techniques borrowed from archaeology helped him find hadrosaur vertebrae others might have missed among the fossil-rich fields of South Dakota.

DePalma and Burnham took the bones to a lab at Lawrence Memorial Hospital. X-rays and high-resolution scans revealed the tip of a predator’s tooth embedded between the vertebrae.

The bone had healed around the tooth, causing visible deformities and indicating the animal’s survival long after the failed attack.

The KU researchers knew that only two species once native to the region — Tyrannosaurus rex or a prehistoric crocodile — could have wounded another dinosaur in this specific way. DePalma and Burnham hypothesized that the tooth was from T. rex and, if so, could show definitive evidence of predatory behavior.

Although popular culture has often depicted T. rex as a hunter, until this discovery scientists had never uncovered physical evidence of predatory behavior in T. rex. Most, if not all, had already accepted that the T. rex was both a predator and a scavenger, but some notable scientists had continued to argue for an ecosystem in which the tyrant king existed primarily as an overgrown turkey vulture.

Once the KU researchers had extracted the tooth, they examined its edge and, by counting the serrations per millimeter, identified a species-level fingerprint belonging to T. rex.

“This settles the debate,” Burnham says. “You’ve got T. rex, hands-down, predator.”

The findings were published in the Proceedings of the National Academy of Sciences.

VIEW THE VIDEO AT report.ku.edu/discover/trex
Hunter Harlow, a KU graduate student in geology, helped extract the first intact core sample from the Ogallala aquifer, the source of 30 percent of all fresh groundwater in the United States. And Holly Lafferty, an undergraduate studying ecology and evolutionary biology, researches changing ecosystems in the Kansas River.

Their research is part of the KU Water Research Initiative, which pushes the boundaries of knowledge for everyone whose lives and livelihoods depend on water. Researchers and scholars from many areas of inquiry — architecture, law and policy, public health, humanities, science, and engineering — share ideas, interests, and findings across disciplines.

A one-day workshop in September brought together more than 100 faculty and staff from 30 academic departments and research centers. The workshop capitalized on KU’s existing research strengths, and the goal was to form a water research community and generate new ideas on high-priority topics.

At the workshop, research teams explored such urgent topics as water quality and quantity, water recovery and reuse, sustainable agriculture, the High Plains aquifer, the water and energy nexus, climate change, green infrastructure, water security, reservoir sedimentation, and public education and perception of water issues.

Throughout 2014, these researchers will continue to advance our understanding of both surface water and groundwater, so we can better manage these resources around the world and predict their impact on our communities. Researchers will also contribute to the creation and implementation of a 50-year vision for the future of water in Kansas.

View videos at report.ku.edu/discover/waterpower
A world beneath the ice

KU CONTRIBUTES TECHNOLOGY TO GREENLAND CANYON DISCOVERY

By analyzing images obtained with technology developed at KU’s Center for Remote Sensing of Ice Sheets (CReSIS), international researchers discovered a ravine 470 miles long and twice as deep as the Grand Canyon.

The technology also contributed to the discovery of a hidden aquifer the size of Ireland under Greenland’s glacial ice. The discovery of the melt water, stored in old compacted snow known as firn, is detailed in a Nature Geoscience article that cites four KU researchers as contributing authors.

CReSIS instruments collected about 80 percent of the data in the canyon study on NASA Operation IceBridge missions between 2009 and 2012. Operation IceBridge is a six-year NASA mission to survey the Earth’s polar regions with annual airborne missions. CReSIS will also join the next IceBridge mission to Greenland in spring 2014.
A team of KU physicists is helping to design, build, and improve components for a pixel detector, part of a 12,500-ton instrument that tracks particle collisions at the Large Hadron Collider.

The National Science Foundation recently awarded a $1.78 million grant to KU to continue this work.

The European Organization for Nuclear Research (CERN) operates the vast three-part collider in Geneva, Switzerland. Two postdoctoral researchers from KU are there year-round as part of the worldwide community of scientists and technicians working to increase understanding of the model of physics that predicted the existence of the Higgs boson.
An elite fellowship

TWO PROFESSORS JOIN THE RANKS OF KU FACULTY WHO HAVE RECEIVED THE PRESTIGIOUS NATIONAL ENDOWMENT FOR THE HUMANITIES FELLOWSHIP

Iris Smith Fischer – ENGLISH

“Charles Peirce and the Role of Aesthetic Expression in 19th Century U.S. Philosophy and Semiotics”

Smith Fischer will study the 19th century philosopher Charles Sanders Peirce, whose interests in theater and semiotics led him to combine scientific study with acting and performing methods.

Arienne Dwyer – ANTHROPOLOGY

“Narrative and Metanarratives of the Silk Road”

Dwyer, a linguistic anthropologist, will explore the stories told by and about Central Asians. She will analyze fictional and historical texts by Central Asian storytellers as well as the narratives of early Western explorers and the modern Chinese state.

Fixing student loans

THE ASSETS AND EDUCATION INITIATIVE HOPES TO REDUCE THE HIGH COST OF EDUCATION

Total student debt has risen 76 percent nationally since 2007 — and it affects more than students’ bank accounts.

“The American financial aid system is in crisis,” says William Elliott III, associate professor of social welfare. “We simply cannot continue to rely on borrowing. Not only does it leave students with crippling debt, it significantly reduces college completion and enrollment rates, especially for low-income students.”

Elliott leads KU’s Assets and Education Initiative, which recommends the creation of savings accounts with automatic enrollment for every American child at birth, initial contributions for low- and moderate-income families, matching contributions, and withdrawals for pre- and post-college expenses. The report estimates that account balances of $16,000 mitigate the potential negative effects of debt on the average student.

In practical terms, this means that — assuming no initial deposit, one-to-one matching contributions, and a five percent return — families need to save just $23 per month, starting at a child’s birth, to achieve $16,000 in savings by the time the child reaches 18.


For the third time in four years, the KU School of Pharmacy was ranked #2 in the nation for National Institutes of Health funding.

The School of Pharmacy earned more than $25 million in NIH research funding in fiscal year 2012 — an increase of $3 million from the previous year’s total.

The school’s 24 NIH-funded faculty members brought in an average of more than $1 million each. Per-faculty NIH funding is considered a key indicator of the productivity and quality of a school’s faculty.

VIEW THE VIDEO AT report.ku.edu/discover/pharmacy
Excellence on the Hill

New marks for freshman talent, diversity:
The 4,000 freshmen in the Class of 2017 set KU records for average ACT (25.3) and diversity (21.8 percent).

Two students have received Barry M. Goldwater Scholarships. Qi Chen is a junior in chemical engineering, and Lianna Dang is a junior in chemistry. The awards are the premier undergraduate recognition for academically gifted students in science, technology, engineering, and mathematics.

Hannah Sitz, a senior in psychology and journalism, received a Harry S. Truman Scholarship for those pursuing careers in public service. The scholarship provides up to $30,000 for graduate school. Sitz will pursue a master’s of public administration.

Researchers generated $275.2 million in externally sponsored research, second in the Big 12 Conference and more than all other Kansas universities combined.

13 students and alumni won National Science Foundation Graduate Research Fellowships for 2013–14.

A senior in journalism, Michael Vernon, won the prestigious 2013 Jim Murray Memorial Foundation Scholarship, a national award for excellence in sports writing at the college level.

Four professors were chosen as fellows by the world’s largest scientific society, the American Chemical Society.

A team of aerospace engineering students won first place in the American Institute of Aeronautics and Astronautics Foundation 2013 Graduate Team Aircraft Design Competition.

Researchers at the Life Span Institute found that omega-3 fatty acid DHA has benefits ranging from reducing early preterm births to improving infants’ cognitive functions.

A leader in the open access movement, Dean of Libraries Lorraine Haricombe was elected chair of the steering committee of the Scholarly Publishing and Academic Resources Coalition.

Read more at report.ku.edu/discover/awards
Funding discoveries in the golden valley

To achieve the bold aspirations of the University of Kansas and The University of Kansas Hospital, KU Endowment launched Far Above: The Campaign for Kansas. The campaign seeks support to educate future leaders, advance medicine, accelerate discovery, and drive economic growth to seize the opportunities of the future. With two years left, Far Above is already more than 80 percent toward its $1.2 billion goal.

Far Above supports discovery by giving endowed professorships and graduate fellowships to the university’s brightest minds, by renovating and modernizing laboratories across campus, and by fostering collaboration through professional development and research initiatives.
A **bold new era** continues.

*Join us today at report.ku.edu.*