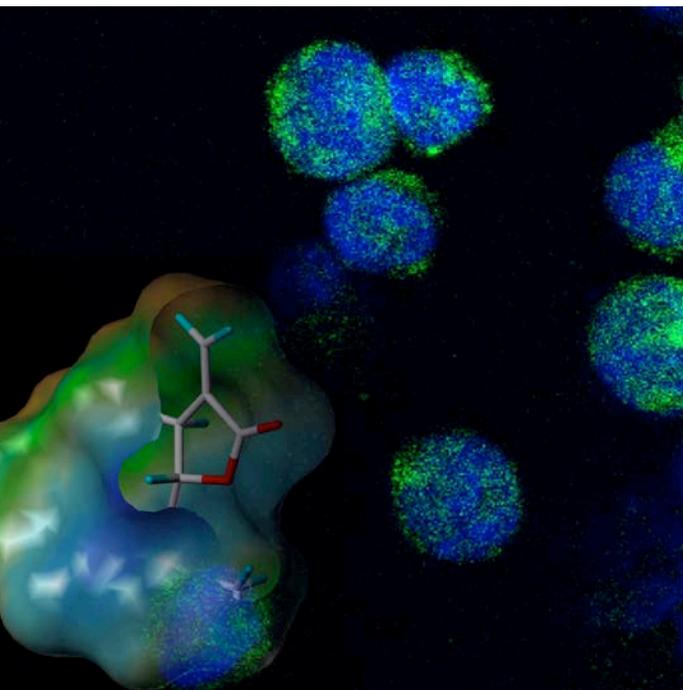
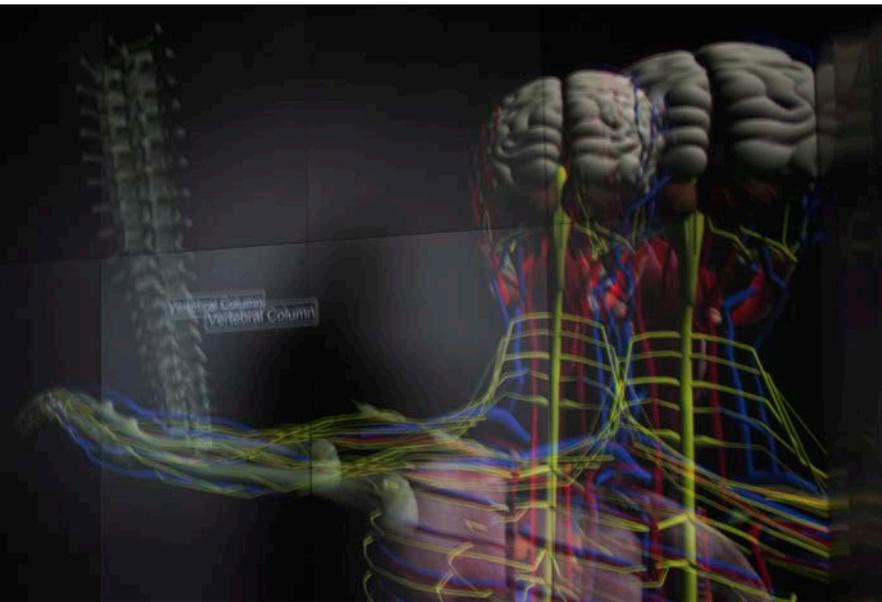




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UNIVERSITY OF ARKANSAS AT LITTLE ROCK

Research in the Rock • Fall 2015





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UNIVERSITY OF ARKANSAS AT LITTLE ROCK

Research in the Rock

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Contents



4

Letter from the Interim Vice Provost for Research



5

Digital Detectives



7

Tiny Weapons, Giant Battles



8

Meet Bailey Barnes



9

Nature and Nurture



10

What's the Big Deal about Big Data?



11

Keeping the "Beauty and Reverence" Alive



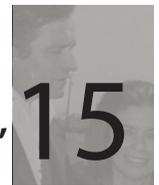
13

A City Transformed



14

Marine, Author, Investigator, Governor



15

Online Exhibit Chronicles "The Man in Black"



16

Thinking STEM? Start Early



18

Paying Attention to Prevention



19

Meet Brenda Branham



20

Meet Samer Al-khateeb



21

Digital Hostages



22

Ready to Research



23

Letter from the Director of ORSP

Up for the Challenge

UALR Students Ready for the 21st Century

As I write this letter, we are ending the summer 2015 semester, and my staff is processing applications for graduation. Completing a student's final paperwork is an intensive task but, oftentimes, a bittersweet one. We are proud of our students' accomplishments and know that they will be missed by their classmates and faculty mentors. The best part for us is hearing about their successes as they enter their careers or doctorate programs.

UALR is one of five research universities in the state of Arkansas. Our innovative facilities and programs have attracted academic talent from all over the world, which is great news for our faculty and even better news for our students. Our programs and resources create a culture of intellectual growth. We are proud of the ample opportunities our students have to conduct their own projects. Of course, this is true for other research-intensive universities, but UALR is leading the way in many disciplines and fields. Our students leave here fully prepared to take on the global challenges proliferating as the 21st century surges ahead.

In this premiere issue, we feature several of our student researchers, both graduate and undergraduate. They talk about working side by side with their faculty advisors, conducting projects in hard sciences such as nanotechnology, medicine, systems engineering, and chemistry, as well as social sciences such as criminal justice, political science, and cybercrime.

In the UALR Center for Integrative Nanotechnology Sciences, we have faculty and student teams working on cutting-edge technologies that seem ripped from the pages of a *Star Trek* script: creating 2D nanostructures to override chemo-resistance in cancer cells, using a printer to produce human cells, and developing an updraft tower to generate electricity for one building. Many of these projects are born from the minds of our students prepared to change the world.

UALR's funders include federal agencies such as the National Science Foundation, the National Institute of Justice, the National Institutes of Health, the U.S. Department of Defense, the National Endowment for the Arts, and the National Aeronautics and Space Administration, as well as state agencies such as the Arkansas Department of Higher Education, the Arkansas Space Grant Consortium, Winrock International, the Arkansas Science and Technology Authority, and the Arkansas Humanities Council. Our students, both graduate and undergraduate, are receiving research experience on the highest levels. Oftentimes, our students will travel with faculty nationally and internationally to see collaboration within the global community firsthand.

Our research initiatives just keep growing, and our students are reaping the benefits. In 2007, the Arkansas legislature approved the appropriation of start-up operational funding for the Arkansas Research Alliance (ARA), an organization dedicated to accelerating economic development and encouraging a vibrant, knowledge-based economy in the state. Our chancellor, Dr. Joel Anderson, was immediately invited by then-Governor Mike Beebe to join the 15-person ARA board of trustees, recognizing UALR's place at the forefront of national research.

"UALR is leading the way in many disciplines and fields. Our students leave here fully prepared to take on the global challenges proliferating as the 21st century surges ahead."



Paula Casey, J.D.

Two UALR researchers, Dr. Carolina Cruz-Neira, director of the UALR George W. Donaghey Emerging Analytics Center, and Dr. Alexandru Biris, director and chief scientist of the UALR Center for Integrative Nanotechnology Sciences, are connected to ARA. Dr. Cruz-Neira is UALR's first ARA Scholar and Dr. Biris was selected one of the first ARA research fellows last fall. Both researchers are profiled in this issue.

Every spring, we get the privilege of seeing some of the research our students are doing. We hold an Undergraduate and Graduate Research and Creative Works Exposition on campus where students publicly display their research projects, and winners receive awards. Their research cuts across various fields, which fosters inspiration for collaborative projects—research critical to the human issues we'll face in the years, decades, and centuries ahead.

We dedicate this new publication not only to our faculty, staff, and students, but to our community supporters in all areas of business and government, and to those with a personal interest in seeing Arkansas become the standard for academic research.

Sincerely,

Paula Casey, J.D.

Interim Vice Provost for Research and Dean of the Graduate School

DIGITAL DETECTIVES

Looking for Clues inside the CAVE

The classic science fiction film *Fantastic Voyage* tells the story of a group of medics trying to save a world-renowned scientist after an assassination attempt. This scientist has created a “shrinking machine” for military purposes. Using this new technology, the team shrinks itself to microscopic size, jumps into a minuscule submarine, then is injected into the scientist’s bloodstream to travel up to the brain and repair the damage done.

Far-fetched, isn’t it?

But inside the Computer Automatic Virtual Environment (CAVE) at the Emerging Analytics Center (EAC), the future, as they say, is here.

“When I designed the first CAVE system in the early 90s, I really didn’t know what I was doing or the impact it was going to have,” said Dr. Carolina Cruz-Neira, the director of EAC and co-creator of the CAVE. “When I finished the project, and it was shown in public for the first time, there were people waiting in line for six and seven hours in Chicago to see it. Then it was on the news. I got invited all over the world to give talks.”

The CAVE looks unassuming enough. It’s about the size of a cubicle with three walls, each 12 feet tall. An image of an enormous human skeleton is projected on the back wall. UALR researcher Carsten Neumann takes out a pair of red glasses for the viewer to wear then says to look forward. Suddenly, the skeleton explodes off the back wall into 3D, dominating the 144 square feet of the CAVE.

Neumann holds what looks like a video game controller. He pushes a button and a blue beam shoots out of the device and lands on the skeleton’s right rhomboid, the muscle that covers the shoulder blade. He raises the controller, and the muscle lifts upward then hovers in the air. He continues to remove muscles from the back, revealing the bones and nerves underneath. Each freed piece floats above like helium balloons.

The body disappears, and an enormous spine bursts into the air, encasing the viewer inside the column of vertebrae. Neumann gestures with the controller, and the blue beam strips away each vertebrae. One by one, they form a cluster of bones that suspend in the air to the left of the skeleton, leaving behind a line of giant, circular cartilage disks trailing down to the floor.

He circles one of the disks with the beam. “You can see that it’s damaged,” he says. Even to the untrained eye, it does look wrong—slightly warped and pinched at one end. Such an immediate discovery in this 3D MRI would have limitless benefits for physicians, patients, scientists, and researchers.

When the CAVE system arrived on campus, UALR was no stranger to this technology. The university’s Virtual Reality Center (VRC), operational since 2001, was one of the first visualization centers of its kind on a university campus.

However, 10 years later, the VRC was about to hit maximum overload. The vast changes in technology, the rise of big data, and the need for more expertise threatened to surpass its resources.

In June 2013, Chancellor Joel Anderson and then-Governor Mike Beebe announced the creation of the EAC, calling it a “game changer” in higher education and the economy in Arkansas. The Center was made possible through a \$5 million grant from the George W. Donaghey Foundation and had promotional partnerships with Mechdyne Corporation, HP, and Today’s Office. Dr. Mary Good, founding dean of the George W. Donaghey



College of Engineering and Information Technology (EIT) and chair of the EAC Data Science Advisory Board, would take the helm as EAC’s first director.

Located on the fourth floor of EIT, the EAC holds data visualization systems that were among the first of their kind in the world: 35 screens and monitors with more than 50 million pixels providing high definition resolution for both 2D and 3D applications. When Good announced she was stepping down as director, Anderson already knew a potential candidate—the co-creator of the CAVE.

Cruz-Neira was serving on the board of the EAC where Anderson was also a member. At the time, she was the William Hansen Board of Regents Endowed Superchair in Telecommunications, Electrical and Computer Engineering at the University of Louisiana at Lafayette. “The group here coordinated a short meeting with the governor [Beebe] to introduce ourselves,” said Cruz-Neira. “He said, ‘We need to bring people like you to the state.’ The conversation sort of transitioned from a casual coffee in the governor’s office, then it became serious.”

In August 2014, Anderson announced the appointment of Cruz-Neira as the new director of the EAC. Her list of accolades and accomplishments were astounding: founder of the Louisiana Immersive Technologies Enterprise, Stanley Chair in Interdisciplinary Engineering, co-founder and co-director of the Human-Computer Interaction graduate program at Iowa State University, and a member of advisory task forces for U.S. Federal and State Governments.

Cruz-Neira has received numerous awards for her work, including international recognition. In 1997, *Business Week* magazine recognized her as a “rising research star” in the new generation of computer science pioneers.

It’s clear to see why Cruz-Neira is lauded as an “international pioneer” in the areas of virtual reality and interactive visualization, but she originally had a very different career in mind.

“I was not one of those people who said, ‘I want to be an engineer or work with computers when I grow up,’” Cruz-Neira remembers. “My life interests were more in the arts. I had an art degree in dance. Then I was thinking I wanted to be a veterinarian, so I could work in a zoo or some wild animal preserve.”

Her father insisted she study computer technology instead. She enrolled in the Universidad Metropolitana in Caracas, Venezuela, and graduated cum laude with a degree in systems engineering.

Turned out, Cruz-Neira had an uncanny acumen for technology. She received master’s degrees in electrical engineering and computer science from the University of Chicago, then went on to earn PhDs in those disciplines.

While in Chicago, at the age of 23, she set her sights on a burgeoning technology called virtual reality. She'd met a group of computer graphic artists and began to mingle her technologic skills with her eye for art. The result was the CAVE system.

The CAVE may not be as dramatic as diving through the human body in tiny submarines, but that doesn't make the experience any less fantastic. However, the EAC is more than just its superstar, the CAVE, said Cruz-Neira. Making this distinction is part of her mission to reposition and re-envision the EAC.

"Before I came here, the EAC was exclusively the CAVE," she said. "What is good for the state and good for the university is not that we have the CAVE, but that we have a center with incredible expertise here. I want to de-emphasize specific technologies at the EAC, because technology changes. Two or three years from now, that technology may be history. I want EAC to be known for the expertise we have here on doing amazing, innovative, and creative things with technology."

Currently, four faculty members, two fulltime researchers, one administrative assistant, one technician, six undergraduate students, and three graduate students make up the EAC faculty and staff.

We have all this expertise in emerging analytics, but what exactly is it? According to Cruz-Neira, emerging analytics is pretty much everything. "You have data, and you need to figure out how to get information out of that data," she said. "So, with emerging analytics you can think about what the current technologies and trends are that might help me to extract information out of data better."

"We are almost data detectives," she added. "We are a visually-focused group and look at data and investigate different ways to represent that data that has some kind of meaning to the experts. A critical component is how to visually present that information to you."

This visual representation of information in the CAVE is reminiscent of the holodeck in the *Star Trek* series. "The CAVE has a special feature," Cruz-Neira said. "Instead of having a single projector per screen, it has eight projectors per screen. We have eight times the number of points or eight times the resolution."

She says it's like going to see a 3D movie, but the viewer is completely surrounded by the experience. "In a movie theater, the screen doesn't know where you are located, but with the CAVE, we actually have some electronics on the person so that we can track what that person is doing and what they are looking at. We know their whole motion. No matter where you are in the room, you always have a good perspective and an interactive experience."

But the CAVE is not just a visual system. "It also has a 3D sound system that we are in the process of developing some prototype applications to hear data. Sound is part of our daily experiences, so we need it in the virtual world; without it, we miss a lot of the experience," she said.

In the CAVE, users have access to "props" that further help them interpret their data. "The CAVE has 26 projectors. It is exponentially higher real estate than you have on the monitors. We also play with dimension of depth. We can pull it out of the screen, so instead of being flat, it has volume and a space to it."



A user experiences the CAVE.

As big data develops, traditional computer screens have become inadequate to meet its demands. "We no longer have 20 dots to put on the screen," she said. "We have 20 million, million, million dots, so there are not enough dots to put on a computer screen."

So, what is big data? Cruz-Neira said it is not necessarily a ton of gigabytes and terabytes. It also refers to data that has a lot of complexity. She cites Twitter. "You look at a Tweet. It almost has no data, but a Tweet is extremely complex. It gets retweeted and goes all over the world. Most importantly, it's instantaneous. Big data might be something that has a big impact, bigger in speeds of distribution, and bigger accessibility."

"People have had to resign over a tiny Tweet," she states. "So, that's what I mean when I talk about big data. It's the big implications or the big impact that the data might have."

Big data is inherent in all disciplines, not just the hard sciences.

"I have been getting to know faculty and research groups on campus. We have talent that has not been brokered as a strong multidisciplinary focus," Cruz-Neira said. "First of all, we are very general. We do medical, training, military, analytics, education, video gaming, and architecture."

She points out historical research. "We may use some visuals to understand a historical period in human life," she said. "We might use it to look at some archaeological space to try to reconstruct as it was in its time."

Cruz-Neira enjoys the altruistic aspects of the CAVE, the potential it has to transform lives. "Before I came to Arkansas, I worked in different industries, and medical experts would say 'If you had shown it to me this way before, I could have known this was happening,'" she explained. "Sometimes there were life-threatening situations they would now avoid. The experts in that field are better informed. I am honored when they thank me for helping them with their research in, say, cancer."

To learn more about the work of the EAC, visit ualr.edu/emerginganalytics/.



Dr. Carolina Cruz-Neira

Tiny Weapons, Giant Battles

UALR Nanotechnology Research Works towards Major Medical Finds

nanotechnology (nan-uh-tek-nol-uh-gee): noun. *A technology executed on the scale of less than 100 nanometers, the goal of which is to control individual atoms and molecules.*

Describing a nanometer as a microscopic unit of measurement seems to be an understatement—one nanometer is a billionth of a meter. For example, an individual page in this publication is about 100,000 nanometers thick. A single human hair is approximately 80,000 to 100,000 nanometers wide. Fingernails grow at one nanometer per second.

Yet enormous scientific breakthroughs are occurring on that miniscule scale—some of which have the potential to improve the quality of human life.

Nanotechnology has radically altered food packaging, cosmetics, textiles, waterproofing materials, and the medical field. Exciting research and discoveries using this technology are happening now at the UALR Center for Integrative Nanotechnology Sciences (CINS). CINS was founded in 2006 with a \$5.9 million grant from the Arkansas state legislature. Since then, the Center has received grants from the U.S. Department of Energy (\$3.36 million), National Science Foundation (\$1.78 million), and the U.S. Department of Defense (\$4.7 million), among other federal agencies. First housed in the Engineering, Technology, and Applied Science building, CINS began to outgrow its space, and the university started construction of a new facility in 2010. In 2012, the new CINS building opened with much anticipation.

Alexandru S. Biris, director and chief scientist of CINS, has stated that significant research using nanomaterials to detect, treat, and understand cancer as a disease are currently being developed. "One major area of research that we are involved in is the use of the nanomaterials' properties for the detection of cancer cells. The unique spectroscopic signatures of various types of nanomaterials attached to a variety of targeting molecules, such as antibodies, are investigated as the modality to detect and identify single cancer cells in complex environments."

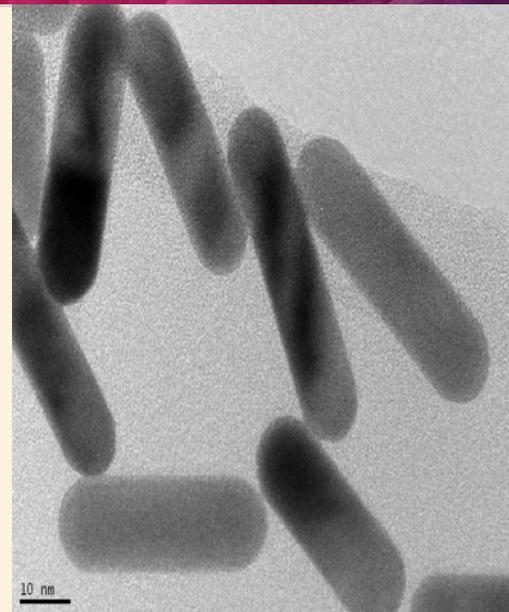
Researchers at CINS also explore the ways that nanotechnology can be used in the treatment of cancer. For example, complex nanoparticles could hold the potential to address the disease at its most basic levels. Multifunctional nanoclusters decorated with various types of active bio-chemical molecules, under electromagnetic excitation, basically act as agents responsible for killing the cancer cells from the inside out. The details and ramifications of such approaches, along with other utilizations of nanoparticles in cancer research, are continually being researched at CINS in collaboration with other universities and companies.

In addition to its work with cancer cells, CINS is exploring the potential role of nanotechnology in bone regrowth—a vital need in the medical community. When a person loses a section of structural bone, there is typically a rather limited spectrum of solutions.

One is to use grafts, possibly along with various metal devices for mechanical stability, but that can often lead to long-term undesired health issues. "Some of the most commonly used materials are based on titanium alloys. However, they have quite different mechanical and physico-chemical characteristics compared to those of actual human bone tissue," explained Biris.

"Furthermore, the onset of biofilm or bacteria at the interface of the implant could take place and further complicate the healing process. That's why we're trying to rethink the materials used to re-grow the tissues such that the process occurs in a controlled manner and, eventually, these types of metallic structures are no longer required."

To learn more about the work of CINS, visit ualr.edu/nanotechnology.



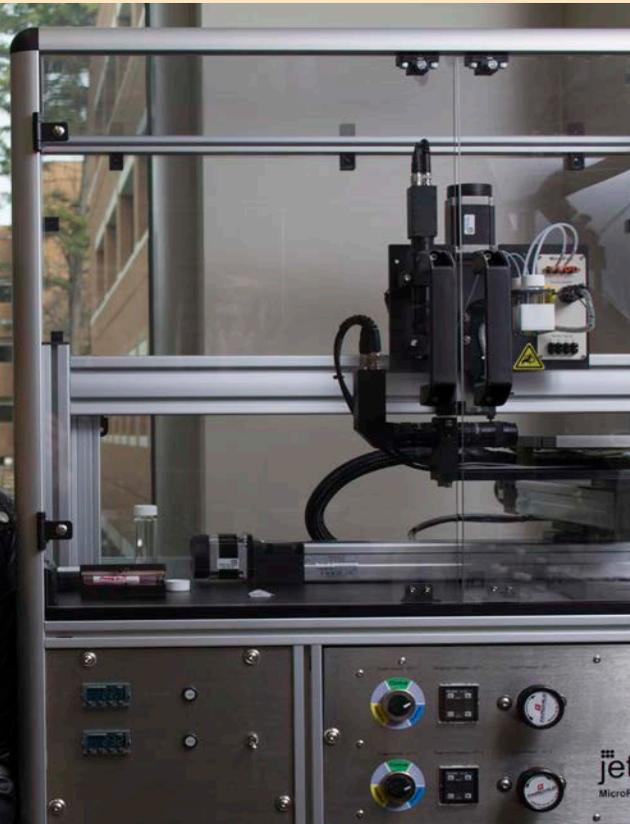
It's the little things. Top: graphene. Bottom: plasmonically active gold nanorods for bio-medical applications. Courtesy of the UALR Center for Integrative Nanotechnology Sciences.



Dr. Alexandru Biris

Meet Bailey Barnes '17

Ph.D. in Applied Science



A native of Texas, Barnes attended the University of Arkansas at Fayetteville, where she earned a bachelor's degree in mechanical and materials engineering in systems engineering. She is currently working with Dr. Alexandru S. Biris, director and chief scientist of the Center for Integrative Nanotechnology Sciences, on a National Science Foundation EPSCoR-funded materials research project led by the Arkansas Science and Technology Authority (ASTA). Her research involves the use of a Specialty Research Printer that CINS was able to purchase with \$30,000 awarded by the Central Arkansas Planning and Development District.

Q: What is a Specialty Research Printer?

The printer is a device that we are able to use to load our own 'inks' or solutions to create nanomaterials. The inks are printed in single, rapid drops but can be printed as multiple drops on top of each other to create a larger drop on the substrate, a line of drops or an array of drops. Its jets use piezoelectricity—electricity resulting from pressure—to basically squeeze the tube which pushes the solution out of the tip.

Q: How have you made use of this new technology?

I have proposed several approaches to build morphologically complex 3-dimensional scaffolds using layer-by-layer deposition while controlling the characteristics of each film layer. As a result, I have been able to perform studies demonstrating a relationship between surface morphology as measured by Atomic Force Microscopy and the optoelectronic characteristics of polymeric films with varying levels of protonation.

Q: What drew you to this research?

When I began applying to undergraduate programs, I initially thought I wanted to focus on flexible electronics. I had known that I wanted to pursue engineering for about five years at that point and had found electrical engineering and materials science to be the most interesting. However, as a freshman at the University of Arkansas at Fayetteville, I spent the first year of engineering delving deeper into each of the disciplines. By the time I had to declare a major, I knew that my ultimate goal was to conduct research in materials science.

Q: What is it like to be part of a research team?

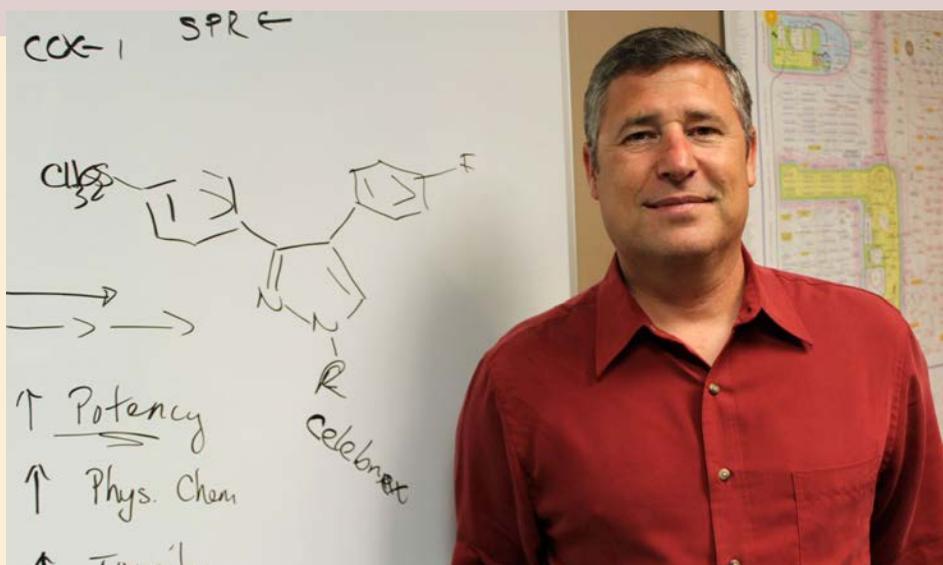
As part of an interdisciplinary research group, I am learning to think outside of my respective area of expertise and understand how I can learn and benefit from my colleagues with different discipline backgrounds. One problem can be viewed from many angles, and often people will think that the angle they are seeing is the only way to a solution. However, by working together and bringing our differences together, we can often come up with much better, more holistic approaches and solutions.

Q: What are some of your professional goals?

After graduate school, I plan to be a materials research scientist in a research lab. I believe that many materials that work well for one application, such as biomedicine, can also work well in other areas, such as construction or defense. By analyzing the properties of materials, applications other than the initial concept can come to light. For example, a bio-mimetic material that can replicate the toughness of bone but is also able to withstand large forces could be incorporated into architectural design and construction to reinforce building structures.

NATURE AND NURTURE

UALR Scientist Looks to the Forests of Ecuador for Possible Leukemia Cure



Dr. Darin Jones is getting to the “root” of finding a cure for leukemia. Photo courtesy of UALR Communications.

When UALR announced last summer that Dr. Darin Jones, an assistant professor in the Department of Chemistry, had received a \$50,000 grant from the Arkansas Science and Technology Authority, the news immediately received national attention.

And rightly so—Jones’s work could lead to a cure for leukemia. He is familiar with such groundbreaking research; before coming to UALR in 2011, Jones was a senior scientist in the Department of Biochemistry and Molecular Biophysics at the Washington University School of Medicine. Previously, he served as a senior principal scientist and research scientist at the pharmaceutical company Pfizer.

Leukemia, one of the most pernicious forms of cancer, attacks blood-forming tissues, including bone marrow and the lymphatic system. According to Jones, 50,000 cases of leukemia are reported every year—with half of those cases ending in death. “Leukemia is a complex disease comprised of many different cell types, which makes treatment difficult,” said Jones.

Jones’s research posits that a molecule found in many Ecuadorian plants, dehydroleucodine, can attack the stem cells of leukemia that are left behind after chemotherapy or radiation treatments.

“One small group of cell types are called leukemic stem cells or leukemia initiating cells,” he said. “In normal chemotherapeutic drug treatments, only actively dividing cells are targeted.”

There are more than 310,000 people living with, or in remission from, leukemia in the United States.

Leukemia causes almost one-third of all cancer deaths in children and adolescents younger than 15 years old.

More males than females are diagnosed with leukemia and die of leukemia.

An estimated 52,380 new cases of leukemia are expected to be diagnosed in the United States in 2014.

-Leukemia and
Lymphoma Society
lls.org

As a result, the initiating stem cells lie dormant in the body for many years, only to reemerge resistant to chemotherapeutic drugs. “Usually, a person doesn’t survive when it reemerges since the disease is now resistant,” he said. “If you leave just one viable stem cell, the cell that leads to the disease, the disease will eventually return. What this compound does is blight those stem cells, so the idea is that the disease won’t reemerge, ever.”

Jones says dehydroleucodine affects as many as eight different cell lines and has shown greater cytotoxicity in leukemia than other forms of treatment in current Phase II clinical trials. Importantly, this compound exhibits minimal cytotoxicity effects in normal cells. Additionally,

dehydroleucodine has antibacterial and anti-inflammatory properties, so its results could be two-fold, increasing the quality of life for leukemia patients.

“It would be a curative treatment that would have a palliative effect, because you’d be treating the disease, and the effects of the disease would be mitigated,” Jones said.

On a broader scope, dehydroleucodine could also serve as a core treatment for other types of cancer. “Breast cancer operates in a similar fashion

as leukemia,” said Jones. “We have shown that the molecule has some anti-breast cancer activities on a couple of different cell lines.”

It’s all about survivability beyond five years, Jones states. “In the long term, the compound should be more effective than the other methods we have, because you’ll have no reinitiating the disease once it’s been killed. Hopefully, this would result in long-term survivability.”

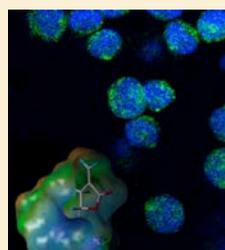


Photo credit:
Dr. Monica L. Guzman
Cornell University

WHAT'S THE BIG DEAL ABOUT BIG DATA? _

**The difference of about 100 years,
says Dr. Kenji Yoshigoe.**

The mass of information rushing through our desktops, laptops, tablets, and smartphones is merely a sliver of the digital information living in cyberspace. Unsurprisingly, then, the amount of data needed for a myriad of research initiatives and digital storage overwhelms typical computers—demanding the rise of the “supercomputer.”

“A supercomputer is a very powerful system for solving problems that cannot be solved by a personal computer,” said Associate Professor Kenji Yoshigoe. Yoshigoe is not only the chair of the UALR Department of Computer Science but also serves as the Director of the UALR Computational Research Center (CRC). Additionally, in 2012, he became the Director of the National Security Administration and Department of Homeland Security Designated Center of Academic Excellence in Information Assurance Education (CAE-IAE).

Last fall, Yoshigoe received a three-year, \$291,908 grant from the National Science Foundation for the deployment of a peta-scale data storage system to increase the capacity of the supercomputers in the CRC. The new system will outperform the old one tenfold.

“Since scientific discovery typically goes through a series of findings depending on prior findings, a supercomputer is necessary for fast-paced knowledge discovery in various fields, including big data projects,” he said.

According to Yoshigoe, his current project requires one week of computing per single experiment using a supercomputer; the same project would take a century of computing on a contemporary desktop computer. “I would not be able to publish my paper for 100 years,” Yoshigoe explains.

This data storage system will be the largest of its kind for higher education and research in Arkansas. The new-and-improved supercomputers will support big data research projects throughout the state, including the bioinformatics partnership program between UALR and the University of Arkansas for Medical Sciences (UAMS).

“We have several big data projects going on with our group, such as the understanding of social network connections, genomics, and human connections. Progress in big data research can advance our lives in countless ways,” said Yoshigoe.

Examples of some of these ambitious big-data projects include simulating the evolution of spiral galaxies and their supermassive black holes, increasing the efficacy of anatomy scans, creating immense digital storehouses for images needed for medical research, and culling the internet to understand how social media communities organize campaigns and rally support.

Outside of academia, there are other groups taking advantage of big data analytics. “In business, retailers have already started using big data analytics to better understand and identify relationships among sales, customer profiles, and additional seemingly unrelated parameters through massive collection of their [customers'] purchasing preferences and routines,” Yoshigoe states.

Yoshigoe also points out that the educational component of the supercomputer is a critical advantage for Arkansas students.

“Computational thinking is going to be a fundamental and valuable skill set in various STEM (science, technology, engineering, and mathematics) workforces,” Yoshigoe said. “With the rapid growth in big data, data science is one of the most rapidly growing workforces over the next decade.”

**The new system will
outperform the old one
tenfold.**

Yoshigoe's UALR co-investigators are Nitin Agarwal, associate professor of information science; John Talburt, professor of information science; Jerry Darsey, professor of chemistry; and Jiang Bian from UAMS.

The project will run through August 2017. For more information about the CRC, visit ualr.edu/crc/.

Keeping the “Beauty and Reverence” Alive

Stories from the Rohwer
Japanese Internment
Camp Live on in
Life Interrupted



Courtesy of the UALR Center for Arkansas History and Culture

World War II ended 70 years ago, in August 1945. Terms like “the Battle of the Bulge,” “the storming of Normandy,” and “the horrors at Auschwitz and Dachau,” and names like General Patton, FDR, and Hitler still permeate modern American culture. These are the stories that dominate World War II documentaries, movies, textbooks, and historical research today.

The words “Rohwer” or “Jerome” are less recognizable in connection to World War II, even by the people of Arkansas, where, in the southeastern corner of the state, the events behind these names quietly unfolded.

In the aftermath of Japan’s Dec. 7, 1941, attack on the U.S. naval base at Pearl Harbor, Hawaii, people of Japanese ancestry—many of them American citizens—fell victim to the nation’s growing paranoia. Suddenly, they found themselves taken from their communities, homes, and, sometimes, their own family members.

On Feb. 19, 1942, President Franklin D. Roosevelt issued Executive Order 9066 mandating the relocation of 120,000 Japanese Americans from an exclusion zone on the West Coast to assembly centers and ten “War Relocation Centers”—internment camps—around the nation. Of the ten internment camps, two, Rohwer and Jerome, were built in Desha, Drew, and Chicot counties in Arkansas.

“The federal government said all of the camps were to be in remote places that didn’t have a lot of population around them but could be accessed by rail,” said Johanna Miller Lewis, professor of history. “The Arkansas Delta qualified for that. That was part of the reason why nobody knew about Jerome and Rohwer.”

Due to Lewis’s efforts and expertise, these long-hidden stories have finally made it to the front lines of World War II history.

Lewis came to UALR in 1991. When word spread throughout the museum community that the university had someone who had worked at Colonial Williamsburg on its faculty, Lewis began receiving requests from groups across central Arkansas to work with them on projects.

“Rohwer has the most powerful sense of place I have ever encountered”

The National Dunbar History Project was Lewis’s first such project; it featured an exhibit on the history of Paul Lawrence Dunbar High School of Little Rock, the first accredited high school for African Americans in Arkansas. That project led her into extensive involvement in the 40th Anniversary Commemoration of the Central High Crisis, including the restoration of the Magnolia/Mobile service station, which became the Central High Museum and Visitor Center, and the exhibit inside.

Later, in 1999, Lewis and a group of graduate students researched and curated a traveling exhibit, *A Gathering of Women: Arkansas Women, 1836-2000*.

“Civil rights and social justice became a theme of all of the public history projects I worked on,” she said.

In 2000, Lewis received a call from the Winthrop Rockefeller Foundation. “They asked me about doing a project on the Japanese relocation camps in Arkansas,” she said.

The Foundation first awarded UALR a planning grant, which was followed by a \$2.8 million grant to complete five tasks: to document the histories of Rohwer and Jerome; to showcase four exhibits, called *Life Interrupted*, in Little Rock with the help of the Japanese American National Museum in Los Angeles; to create an hour-long documentary, *Time of Fear*, including taped interviews with internees, their families, and local Arkansans who had lived near the camps; to develop curriculum for grades 4 to 12; and to organize a two-day symposium, *Camp Connections: A Conversation about Civil Rights and Social Justice in Arkansas*, to be held in Little Rock in the fall of 2004. Additional funding came later from the Arkansas Humanities Council (\$22,000) and the Arkansas Natural and Cultural Resources Council (\$100,000).

Camp Connections drew more than 1,500 people from all over the nation. Attendees included Rohwer’s most famous internee, George Takei, better known as Lieutenant Hikaru Sulu in the original *Star Trek* television series, as well as Hawaii Senator Daniel K. Inouye, a decorated veteran of the U.S. Army’s all-Japanese American 100th Battalion/442nd Regimental Combat Team, who had visited Rohwer before serving overseas in World War II.

After the war, Inouye became the first congressman of Japanese descent to be elected to either house of Congress and the first legislator from Hawaii after the territory became the 50th state in 1959.

Lewis said they were expecting, at most, around 1,000 people to attend the symposium, so planning a trip to the camps had seemed pretty manageable. However, transporting the actual 1,500 attendees to the site proved a challenge. “We had a big field trip to the Delta,” she said. “It was a logistical nightmare, but we were able to handle it.” When the group arrived at Rohwer, the personal impact was immediate.

“Some of the people literally ran off the bus and into the cotton fields where they believed their barracks were located. It was pretty powerful stuff,” said Lewis.

Both camps reached their maximum population—Rohwer at 8,475 and Jerome at 8,497—in November 1942. In the Rohwer cemetery, there are 35 headstones, including three inscribed with the names of children.

One of those buried children, Lewis said, came as a shock to an attendee. “There was a woman standing in front of one of these headstones, and she was very emotional,” Lewis said. “I asked if this grave belonged to someone related to her.”

The woman told her that when government officials evacuated her family from their home, her father ended up in a camp in Crystal City, Texas, while the rest were sent to Rohwer. Afterward, her mother found out she was pregnant.

“She knew there was something not right about her mother,” said Lewis. “Her mother went to the hospital and had a stillborn baby. The siblings never knew. They were not old enough to process it.”

The visit to Rohwer affected all attendees. “Rohwer has the most powerful sense of place I have ever encountered,” Lewis said, “which is saying something when you are a public historian.”

The conference, the exhibits, and the documentary were successes, surpassing what Lewis had imagined in the beginning. The National Education Association awarded Lewis the Ellison S. Onizuka Memorial Award for her work on the project. However, she knew *Life Interrupted* couldn't stop with encased artifacts, personal letters, and taped interviews.

“What was not included [in the original grant] was anything that had to do with the actual relocation camp sites of Rohwer and Jerome,” she said. “There is not much left at Jerome, but Rohwer is a different case. It has a cemetery and two monuments.” In fact, the National Park Service (NPS) awarded Rohwer National Historic Landmark status in 1995.

Rohwer internees built both monuments. The monument in the cemetery is a towering obelisk with an eagle perched on a globe on top of it; the other is a giant sculpture of a military tank listing the names



Two monuments stand at the site of Rohwer.
Photo credit: Ken West Photography

of Japanese Americans who served in the 100th Battalion and 44nd Regimental Combat Team during the war. Not only had age and weather contributed to the erosion of both monuments and the headstones, but also the inferior composition of the original concrete. According to Lewis, the government took any higher-quality materials for the war.

One of the inscriptions on the cemetery monument in Rohwer reads “May the people of Arkansas keep in beauty and reverence forever this ground where our bodies sleep.” “Obviously, we weren't doing that,” said Lewis.

One of the inscriptions on the cemetery monument in Rohwer reads “May the people of Arkansas keep in beauty and reverence forever this ground where our bodies sleep.” “Obviously, we weren't doing that,” said Lewis.

Restoration efforts for Rohwer began in 2004, when the NPS awarded UALR \$35,000 to do a conservation study of the cemetery. Afterward, NPS granted another \$250,000 toward preserving the monuments and creating a drainage system to prevent more groundwater damage to the

cemetery. Today, “the two monuments look fabulous, back to what they looked like when they were created,” said Lewis.

In January 2015, Lewis and the restoration team received an honorable mention award from the Historic Preservation Alliance of Arkansas for their restoration work at Rohwer.

NPS funded the next phase of the project at \$220,706 to focus on the cemetery. “Phase II will address the actual cemetery and the headstones and try to take care of the drainage there. We'll level the headstones, clean them, and restore them when necessary,” Lewis said. Work on this project will begin in fall 2015.

To learn more about the *Life Interrupted* project, go to ualr.edu/lifeinterrupted.

A CITY TRANSFORMED

Returning the Arcade to Downtown Little Rock

On an early summer evening in 1914, a major celebration raged in downtown Little Rock.

The structure at the center of the celebration would mark a cultural transformation of Little Rock. "It's how Little Rock went from just a river town to a city," said Shannon Lausch, archivist for the UALR Center for Arkansas History and Culture (CAHC).

The City Market and Arcade, later known just as the Arcade, encompassed the entire 600 block of Louisiana Street. European in style, the building featured arched passageways leading to an open-air market, where patrons could stroll from Louisiana Street to Center



The original City Market and Arcade. Courtesy of the UALR Center for Arkansas History and Culture.

In 1960, the city razed the Arcade and replaced it with the Downtowner Motor Inn, but alleged seedy activities forced the shutdown of the motel in 2004. Today, a parking lot sits on the block where the Arcade once stood.

But the Arcade's story isn't over. In 2012, Moses Tucker Real Estate and the Central Arkansas Library System collaborated on a mixed-use building project which they named "the Arcade." At the groundbreaking ceremony, employees of Moses Tucker handed out postcards printed with a vintage photo of the original building, which got Lausch thinking. "I wondered if our archives had anything and started researching the history of the Arcade."

Her research led to other historical documents about the old Arcade; she also found the original blueprints of the building in the CAHC archives. "So, that snowballed into doing an exhibit," she said.

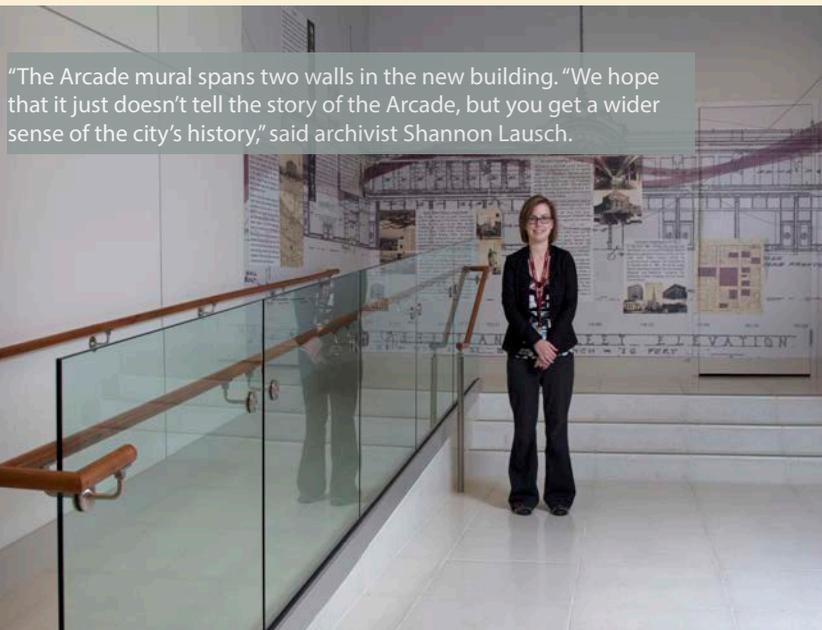
CAHC approached the Arkansas Humanities Council (AHC) about funding a planning initiative for the exhibit. "After Shannon started her initial research, we went to the AHC and applied for a mini-grant of \$1,000," said Kimberly Kaczinski, assistant director of CAHC. "It allowed us to create a layout and mock-up of the exhibit. We presented the plans to Moses Tucker. They loved the idea and funded the actual exhibit."

The new Arcade, located at 100 River Market Avenue, opened in late 2013. It includes a theatre, office spaces for the Little Rock Film Festival, a restaurant, and various shops. In the lobby, the Arcade exhibit spans two walls and is an interplay of architectural drawings, old photos, and historical text. Thomas Clifton, chair of the UALR Department of Art, designed the mural. "It was a great experience," he said. "The combination of large-scale format and the collaborative opportunity with Shannon on a topic that can inform so many people about the history of Little Rock, do not present themselves that often."

People who remember the original Arcade have reacted positively. "All of them have fond memories and remember the open-air tunnel that allowed you to walk straight through the building. Many also remember the white-tiled floors," said Lausch.

The exhibit is visible to passers-by through the glass doors of the building. At night, it's illuminated, so the mural's tale is revealed to patrons walking past the Arcade in the evenings. "We hope that it just doesn't tell the story of the Arcade, but you get a wider sense of the city's history," Lausch said. "The Arcade was a focal point, and we wanted to tell the larger story of Little Rock."

For more information about the history of the Arcade, visit the digital exhibit at ualrexhibits.org/arcade. This project is supported in part by a grant from the Arkansas Humanities Council and the National Endowment for the Humanities.



"The Arcade mural spans two walls in the new building. "We hope that it just doesn't tell the story of the Arcade, but you get a wider sense of the city's history," said archivist Shannon Lausch.

Street as they shopped at 100 market stalls with state-of-the-art refrigeration systems. The Arcade was a place where the community could purchase groceries and congregate. According to a newspaper article in the *Arkansas Democrat*, thousands of people gathered for the grand opening of the building.

As progressive as the structure was at the time, modern strides in commerce surpassed the Arcade sometime in the 1950s. Indoor shopping malls sprung up in major cities, so the owners of the Arcade felt pressure to compete. They began to add department stores, salons, gift shops, and jewelry stores, forsaking the marketplace's original food market concept.

Despite its efforts at modernization, the Arcade became too expensive to maintain and too archaic for contemporary consumers. Vendors began closing their businesses; those who remained were evicted on New Year's Eve, 1959. "It was slated for destruction," said Lausch. "The building was looking shabby since it was not properly cared for. People bemoaned the loss of the close-knit community there."

MARINE, AUTHOR, INVESTIGATOR, GOVERNOR

Tales and Trials from the Jim Guy Tucker Gubernatorial Collection



Speaker of the House Tip O'Neill swears in new U.S. Congressman Jim Guy Tucker in D.C., January 1977. Courtesy of the UALR Center for Arkansas History and Culture.

Except to political science and history experts, the term “gubernatorial collection” may sound a little underwhelming, conjuring thoughts of bland memos, lengthy law documents, old newspaper clippings, and campaign financial records.

You will find these documents in former Arkansas Governor Jim Guy Tucker’s collection, but you’ll also find tales of an undercover prison investigation, a post-Civil War feud, and political rivalry.

The UALR Center for Arkansas History and Culture (CAHC) announced in 2012 that the former Arkansas governor had donated his papers to the archive. Once completed, Tucker’s collection may be one of the largest held at CAHC. The Center also holds the gubernatorial collections of Arkansas governors Carl Bailey, Winthrop Rockefeller, Dale Bumpers, and Frank White.

Last summer, Dr. Deborah Baldwin, Associate Provost of the UALR Collections and Archives, received word that the National Historical Publications and Records Commission would award the Center \$136,851—the largest grant given to an archive in the state of Arkansas—to process the considerable Tucker collection.

“We were pleased to have been awarded funding from the National Archives,” said Baldwin. “Clearly this is a testament to the quality of work demonstrated by our archivists and staff.”

Now, it’s archivist Dr. Colin Woodward’s task to process the Tucker papers. This job is making Woodward deeply familiar with the ups and downs of Tucker’s life and leadership. He said that Arkansas did well economically under Tucker’s leadership. “In his state of the state address, Tucker said unemployment was at a 16-year low, and more Arkansans were working than ever before,” said Woodward.



Deborah Baldwin, Associate Provost of the UALR Collections and Archives

Tucker was born in Oklahoma in 1943. His family moved to Arkansas when he was quite young, but Tucker’s ancestors were already known in parts of the Natural State. “His father’s side of the family has had a colorful role in Arkansas’s ‘Wild West’ past,” said Woodward. “In the early 1900s, Tucker’s grandfather, Marshal Guy Tucker—a native of Georgia who married in El Dorado—was involved in the Tucker-Parnell Feud in Union County. The story is complicated, but the feud led to a shooting in October of 1902 that left three men dead.”

Tucker attended public schools in Little Rock and, afterward, enrolled at Harvard, graduating with a bachelor’s degree in government. He enlisted in the Marine Corps as an officer but was medically discharged.

He ended up in the war zone anyway when, as a freelance war correspondent, he embedded himself with troops from Arkansas who were fighting in South Vietnam. His collected interviews with these men resulted in the book *Arkansas Men at War*.

After returning to Arkansas, Tucker, a Democrat, ran for prosecuting attorney and won. Then-Governor Winthrop Rockefeller had taken on prison reform as a political platform, and Tucker saw an opportunity to show his totally-committed support for the Republican governor.

BECOMING “BRUBAKER”

At that time, the penitentiary system in Arkansas was rife with corruption, with charges of violence and abuse. The attorney turned spy and investigated these allegations himself. “Tucker went undercover as a prisoner at Cummins prison farm,” said Woodward. “He had some cash in his pocket, about \$50, and it didn’t take him long before he found somebody willing to take a bribe. This was during the height of the Arkansas prison scandals, when the penitentiary was still run by the armed trusty guards.” Trustees were prisoners who oversaw the penitentiary; Arkansas was one of only three states that engaged in this practice.

“He didn’t stay long at the prison undercover, but it was a memorable experience for him. You could say Governor Tucker was the original *Brubaker*,” said Woodward, referencing the 1990 eponymous film based on a former warden’s actual accounts of abuse in the Arkansas prison system. A federal judge would declare the state’s entire prison system unconstitutional in 1970.

A HIGH-PROFILE RIVALRY

Eventually, Tucker was elected congressman, ran unsuccessfully for the Senate against David Pryor in 1978, then considered a run for the governorship. Young and dynamic, Tucker was a sharp contrast to his mostly older, more staid political colleagues, as was another charismatic up-and-comer, Bill Clinton.

“Both Clinton and Tucker wanted to move Arkansas away from the stereotypical image of the state as a place of corrupt politics, cronyism, and race-baiting,” Woodward said.

A political rivalry was born, according to Woodward. They ran against each other for the nomination for governor in 1982. “At this point, Clinton had been governor for just two years and lost to Frank White in the previous election. Tucker had been in Congress and had run for the Senate.”



Archivist Dr. Colin Woodward is processing the Tucker gubernatorial collection.

Since Arkansas requires the offices of governor and lieutenant governor to run separately in elections, Tucker began to realize that he may not be able to win the governor's office over Clinton. He ran for lieutenant governor in 1990 and won.

When Clinton ran for president in 1992, a constitutional crisis arose; by law, the Arkansas governor has no authority whenever he leaves the state. So, with Clinton out on the campaign trail, Tucker gained all gubernatorial powers.

When President Clinton won the election but didn't resign immediately, Tucker sent him a terse memo, which stated, "You have previously assured me you would resign 'immediately' after the election should you win. This assurance was given knowing that we might have litigation over the succession issue ..."

During Tucker's tenure as governor, from January 1992 to December 1996, Arkansas began to flourish in several areas in which it had previously been floundering. "Tucker obtained increased funding for higher education without raising taxes, and he wanted to promote the cause of education generally in a state that historically was not known for doing so," Woodward said.

AGAINST THE GRAIN

Tucker encountered some criticism when he took on what were usually considered more "conservative" stances. "He was tough on crime, which is usually more associated with Republicans," said Woodward. "He cracked down on 'good-time' paroles and also toughened laws against youthful offenders. Tucker was not against the death penalty; he had to make some very tough decisions about capital punishment."

The Tucker gubernatorial collection will take years to process, according to Woodward, and is still growing, currently at 746 square feet or approximately 600 boxes.

"Tucker has offered to give us more boxes," said Woodward. "If we get everything, it might eclipse the Rockefeller collection in terms of size." The collection is currently open to the public.

The Arkansas Studies Institute, which houses the UALR Center for Arkansas History and Culture and the Butler Center for Arkansas Studies, is the largest facility in the state dedicated to the study of Arkansas history and culture. Through its connection to the university, the archives benefit from the rigorous scholarship of UALR faculty, creating a valuable resource for students, researchers, stakeholders, and the general public.

The ASI research room at is available from 9 a.m. to 6 p.m. Monday through Saturday.

For more information, visit ualr.edu/cahc/.

Online Exhibit Chronicles "The Man in Black" Campaigning for Justice in Arkansas



In 1968, Cash (seen here with his wife, June, and Gov. Rockefeller) campaigned to end corruption in the Arkansas prison system. Courtesy of the UALR Center for Arkansas History and Culture.

By the mid-20th century, the deplorable conditions of Arkansas's prisons had made international news. The conditions not only prompted future governor Jim Guy Tucker to infiltrate Cummins prison in Grady, Arkansas, but they caught the attention of famous Arkansas native Johnny Cash.

Born in Kingsland, Arkansas in 1932, Cash lent his world-wide fame to Winthrop Rockefeller to promote the governor's promise of prison reform during his reelection campaign in 1968.

Earlier that year, he had released his most successful album to date, *At Folsom Prison*, a live performance recorded at the titular penitentiary. The following year, at the height of his career, Cash returned to Arkansas and played a concert at Cummins.

In October 2014, the Center for Arkansas History and Culture (CAHC) opened an exhibit on Cash's life, which included accounts about his collaboration with Governor Rockefeller on prison reform.

The exhibit opened with much anticipation and fanfare at the Arkansas Studies Institute building (ASI) in downtown Little Rock. Concerts by Jeff Coleman and the Feeders and the W.S. Holland Band at the Ron Robinson Theater bolstered the celebration. Holland, who had performed with Cash's band, Tennessee Three, for 40 years, shared stories with the audience about his time with Cash. More than 250 people attended the performances.

Those who want to know more about the "Man in Black" and his history with Arkansas can visit the virtual exhibit at ualrexhibits.org/cash.

THINKING STEM? START EARLY

Jodie Mahony Center Primes the Pump for STEM Pipeline

“If you want scientists and engineers majoring in those subjects at the university level, then you have to capture the motivation much earlier than we do. Middle school is too late if you want to make a difference in the engineering talent pool,” says Dr. Ann Robinson, Director of the UALR Jodie Mahony Center for Gifted Education.

That the U.S. struggles to fill professions in science, technology, engineering, and math, also known as STEM fields, has been thoroughly documented and debated. According to a 2012 report from the President’s Council of Advisors on Science and Technology (PCAST), only about a third of U.S. college students graduate with bachelor’s degrees in STEM fields, significantly less than their counterparts in China (53%) and Japan (63%).

In U.S. universities, more than half of graduate students majoring in science and engineering are from other countries.

“I would say that the U.S. struggles because it devotes most of its resources to kids achieving minimum standards and layers in a few extra resources to kids and teachers to meet Common Core Standards in Literacy and Mathematics,” said Dr. Ann Robinson, Director of the UALR Jodie Mahony Center for Gifted Education. “What is profoundly missing are resources for high-potential and high-achieving students to take them to the next level.”

The idea that STEM education needs to start earlier is gaining ground.

In the same 2012 report, PCAST cited a study by *The Trends in International Mathematics and Science* that found that fourth and eighth graders in the U.S. display average proficiency in STEM subjects when compared to industrialized or industrializing countries, but as their grade levels increase, these same students dip progressively lower when compared to international statistics regarding STEM proficiency.

Robinson says, “If you want scientists and engineers majoring in those subjects at the university level, then you have to capture the motivation much earlier than we do. Middle school is too late if you want to make a difference in the engineering talent pool.”

Rising to the challenge of the U.S. STEM crisis must include innovative professional development to make teachers comfortable with adding STEM concepts to their lesson plans. “Another goal is how we equip teachers. We are not going to have science specialists in grade one,” Robinson said. “We want to present this curriculum material in a way that teachers will increase their confidence in teaching science concepts and the engineering design process so that they can see benefits for their students. This is our job at the Mahony Center, to help teachers observe closely and make things better for their students.”

Last fall, the Center received a multi-year, \$2 million grant from the U.S. Department of Education called STEM Starters+. The grant, awarded through the Jacob K. Javits Gifted and Talented Students Education Program, is aimed at underrepresented children, such as low-income students, English language learners, and high-ability students with disabilities. Beneficiaries are to include 2,000 students and 100 teachers in 16 different schools in the Little Rock, Pulaski County, and El Dorado school districts.

“We want to scale up a previously successful project that raised elementary teachers’ and students’ achievement in science content, science concepts, and science process skills—the ability to design a science experiment, control for variables, and generate testable hypotheses. Now, we are adding Engineering is Elementary, developed by the Museum of Science, Boston, a collaborating partner for STEM Starters+.”

STEM Starters+ builds on a previous project, STEM Starters. “We were funded again, because we had a good, scalable project paired with a rigorous field study,” Robinson said.

The grant will enable the Mahony Center to serve more grade levels, while expanding the initiative geographically and modifying and implementing an engineering curriculum for advanced learners in grade schools. The four major components of STEM Starters+ are professional development for teachers; science and engineering curriculum implementation; curriculum materials enhancement, including *Blueprints for Biography*, a STEM series created at the Mahony Center; and evaluation through a randomized field study.

“In the *Blueprints* series, we work on the motivational end by engaging kids with the life stories and biographies of scientists, engineers, and mathematicians. We’re after capturing the interest of young children in the STEM disciplines and making these disciplines relevant to their lives,”

said Robinson. “One of the themes I hear from STEM business leaders is that STEM professionals need to be able to communicate complex ideas articulately and persuasively. After all, they all have to write proposals to fund their own research and development projects. *Blueprints* includes non-fiction literacy components in an imaginative way to develop those skills early.”



Photo credit: Krista M. Smith

One example of an engineering project for very young children, found in the Engineering is Elementary Curriculum, is to design a windmill. "Now, that project sounds very simple, but the science behind a windmill and applied through engineering design concepts [involves] content and skills we need to cultivate in children."

Again, Robinson emphasizes the key to growing STEM professions in the U.S. is to seize on the natural curiosity of a child.



"My contention is if you want a pipeline that gushes at the far end, you had better have a very large pool of water at the beginning," Robinson

states. "We often don't think about young children with talents as worthy of our attention in schools."

The UALR Mahony Center for Gifted Education provides programs and services to talented students and their families, teachers, and administrators. Established in 2001, it is one of only 25 gifted education centers in the country. In 2011, the Center was renamed in honor of Mr. Jodie Mahony, an Arkansas legislator and life-long supporter of gifted and talented education. For more information about the Center, visit ualr.edu/gifted/.

PAYING ATTENTION TO PREVENTION

MidSOUTH teaches families and professionals to tackle issues early

For decades, MidSOUTH has strived to meet the needs of Arkansas's children, families, and communities, as well as those of the professionals that serve them. The organization works closely with the Division of Children and Family Services (DCFS) to accomplish this goal. According to Gigi Peters, the director of MidSOUTH, "We provide training all year long to DCFS. In the past year, we trained 2,200 DCFS workers and 508 foster parents, and that's just through one program. As the community service arm of UALR's School of Social Work, MidSOUTH is charged with providing education and training to prepare practitioners to work with vulnerable populations in the community."

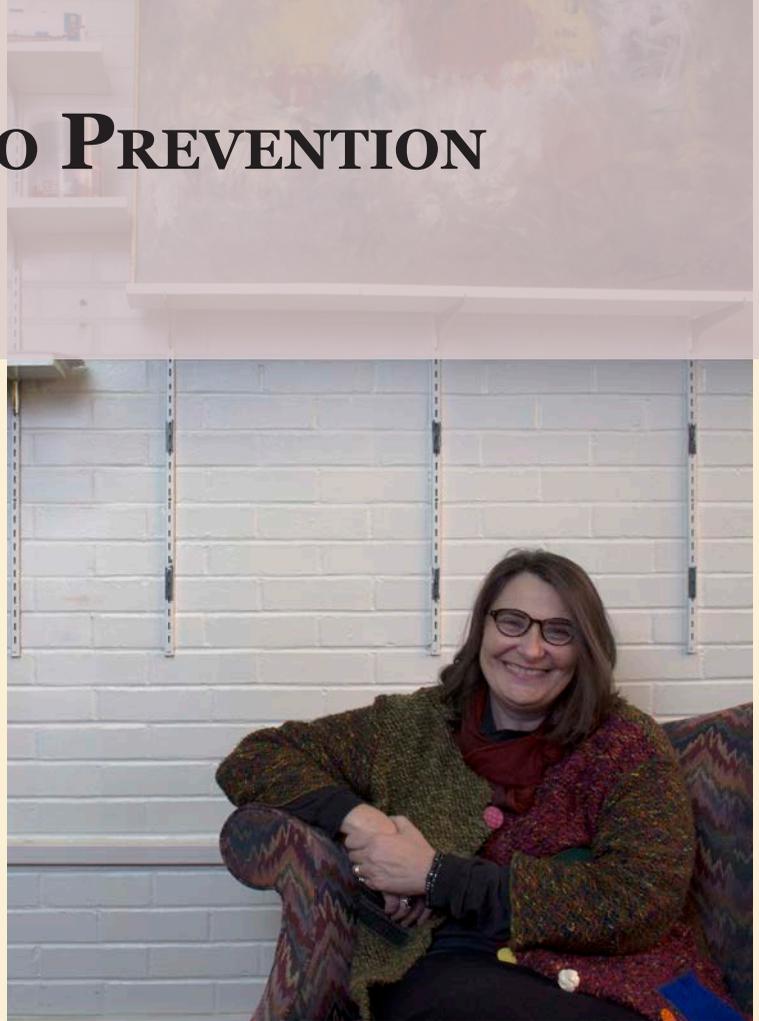
With five sites in Arkansas, MidSOUTH reaches professionals and families throughout the state. As a member of the federal Title IV-E Child Welfare Partnership, MidSOUTH provides a variety of resources and services to social workers and other human service professionals concerned with child welfare, most frequently in the form of training sessions. Its focuses include education, prevention, treatment, and recovery. It's even on the move—thanks to Title IV-E funding, MidSOUTH travels to bring training programs to rural areas outside its usual reach. The programs of MidSOUTH are constantly growing and evolving to meet the needs of Arkansas's children, families, social workers, mental health professionals, and health professionals.

Last year, MidSOUTH received a four-year, nearly \$5 million contract from the Arkansas Department of Human Services to launch the Nurturing Families of Arkansas initiative (NFA), which utilizes the nationally used Nurturing Parenting Program (NPP) curriculum. "The NFA will be a parenting program for families with open, protective cases where the child has not been removed from the home," says Pam Plummer, coordinator for MidSOUTH's Center for Prevention and Training. The focus of NFA will be prevention, addressing problems such as parental substance abuse before they escalate and allowing families to learn together as issues are resolved.

As a 16–35 week program that covers constructs like empathy, parenting knowledge, and appropriate family roles, NFA will be one of MidSOUTH's most comprehensive, intensive parenting programs. According to Sharon Long, the NFA program manager at MidSOUTH, "DCFS has had parenting programs, but the intervention may not have been long enough or strong enough to make lasting changes." NFA's longer time frame and established assessment tools will allow trainers to become deeply involved in the improvement of both the parents' and the children's wellbeing. "We have the time allocated to nurture and teach the parents and the entire family system," says Sharon.

One of the key features of NFA is that the children remain at home with their parents throughout the program. "The child has not been removed from the home," says Pam. "Participants will be referred by DCFS. Parents [with substance abuse problems] will have to be in substance abuse treatment." The goal of this kind of program is prevention—addressing issues at home to promote healthy, unified families.

Pam states, "We believe that this program in four years can make such a difference in child abuse and keeping children at home with parents who have learned to re-parent. . . . We really believe it can reduce the number of children going to foster care. Which is prevention at its best."



MidSOUTH Director Gigi Peters

However, sometimes keeping children in their original home isn't an option. According to a 2015 third quarter report from DCFS, 4,178 Arkansas children are in foster care. MidSOUTH addresses the needs of these children as well, primarily through training for foster parents, adoptive parents, and DCFS workers. Through its Foster Parenting Program—one of its Title IV-E-funded programs—and DCFS, MidSOUTH provides a variety of invaluable services to those working in foster care.

Gigi explains, "We provide foster parent training. We provide in-home safety. We provide a years' worth of following in the field for new DCFS family service workers."

In March, MidSOUTH received a \$200,000 grant from the Department of Human Services to further grow its education, training, and support initiatives. This project focused on the behavioral needs of children, adolescents, and their families and provided training and education services to both clinicians and families.

MidSOUTH's Center for Prevention and Training also facilitates many of the organization's training initiatives, generally for professionals in the field. Like NFA, one of the Center for Prevention and Training's current focuses is stopping problems before they require more serious intervention. The Center equips social workers and other professionals to effectively engage in this kind of concentrated prevention.

From education programs for parents to the most current resources and training for professionals, MidSOUTH provides a diverse range of services to the Arkansas community. NFA, the Foster Parenting Program, and the Center for Prevention and Training make up just a portion of MidSOUTH's community service initiatives, and they are growing all the time.

To find out more about MidSOUTH, visit midsouth.ualr.edu.



Meet Brenda Branham '18 M.A. in Criminal Justice

Brenda is collaborating with Dr. Emily Berthelot, assistant professor in the Department of Criminal Justice, on a research project, "Person or Place? A Contextual, Event-History Analysis of Homicide Victimization Risk," which was funded by a \$161,551 grant from the National Institute of Justice. The two-year project will examine how the effects of social disorganization and individual behaviors increase the risk of homicide victimization.

Q: What is the subject of your research?

The purpose of this research is to increase the understanding of homicide victimization in the United States using public health data from the National Health Interview Survey (NHIS), while at the same time integrating these data with criminological methods of studying homicide.

Q: Why did you take on this research project?

I love to learn, and working on this project is an opportunity for me to do that. It allows me to learn about the research process through experience, such as how to analyze and interpret data and about different data sources. I have the chance to apply what I have learned in my classes. It also gives me the experience of working on a national grant and learning about that process.

Q: How do you see this project being beneficial to society?

According to lifestyle theory, a person's daily activities, such as work or social activities, may increase the risk of victimization. Accounting for both these individual characteristics and characteristics of the neighborhood in which a person lives will exhibit how the social environment affects the influence of individual characteristics and vice versa.

Q: What are the factors in becoming a homicide victim?

Violence is considered a public health problem and public health professionals have recommended that changes in behavior may prevent violence. The call for violence to be deemed a threat to public health led to the establishment of the Violence Epidemiology Branch

of the Centers for Disease Control (CDC) in 1983 and to epidemiologic research of violence. This has led to data collection, research, and legislation with the intention of preventing violent behavior. Recent research also suggests that homicide spreads like an infectious disease. Homicide clusters in areas where the proportion of residents living below the poverty line is higher, and people with certain lifestyle characteristics may have higher risks of homicide victimization.

Q: How will the results of this project be used?

The results of this research will be beneficial for academics, policy makers, and the criminal justice community concerning research, policies, and programs seeking to decrease the risk of homicide victimization, specifically for those living in highly disadvantaged neighborhoods who experience the highest risk of being the victim of homicide.

Q: How will this research benefit you as a professional?

This is an excellent opportunity to be involved in working on a large-scale, quantitative research project that is unique regarding data access, management, and analysis. By exposing me to these unique experiences, this project will help prepare me for continuing to conduct research once I graduate.

Meet Samer Al-khateeb '13, '15 B.S. in Computer Science, M.S. in Applied Science

Samer is working with Dr. Nitin Agarwal, professor of information science in the College of Engineering and Technology, on Agarwal's research on the effects of Deviant Cyber Flash Mobs, a social media propaganda tactic used by transnational crime organizations. The U.S. Office of Naval Research (ONR) funded the project, "Predictive Modeling of Cyber Flash Mobs: Understanding Emerging Socio-Technical Behaviors for Conflict Monitoring," with a \$160,000 grant. Samer recently presented some of his findings at the International Conference of Digital Forensics and Cyber Crime at Yale University.



Q: What are "Deviant Cyber Flash Mobs?"

Deviant Cyber Flash Mobs (DCFM) is when a group of people get together in cyber space to perform a harmful act then quickly disperse. DCFMs are forms of cyber-collective actions that aim to improve a group's conditions—such as in status or power. These DCFMs are the new face of transnational crime organizations and can pose significant risks to political, social, and economic stability.

Q: Which groups use these techniques to spread propaganda?

We have noticed that some of the terrorists groups, such as ISIL (Islamic State of Iraq and the Levant), are using this behavior to disseminate their propaganda across social media sites such as Twitter. They use "powerful actors/nodes" for information dissemination, recruitment, radicalization, and raising funds.

The affiliations of those individuals are either self-identified or provided through other information, for example, in Tweets or Facebook updates that clearly indicate membership of a particular group. Those individuals have motivation to disseminate propaganda to assist in the toppling of regimes in Syria and Iraq.

Q: What drew you to this research?

The rapid and daily usage of social media made me think of the amount of data that are freely provided by people around the world. I was always wondering how to get those data, analyze it, and use it in research. I took Dr. Agarwal's "Social Computing" class, and one day, he talked about his NSF-sponsored research on the women's "right-to-drive" movement in Saudi Arabia. At that point, I decided to choose this field as my research area.

Q: What were the reactions to your research at the International Conference of Digital Forensics and Cyber Crime at Yale University?

The conference was a great experience for me. I received good feedback, and many people at the conference were interested in the idea and were eager to see more research in the future.

Q: How will this research benefit you as a professional?

I am planning to continue my studies and pursue a Ph.D. in information science. I would like to be an academic in the field of social media so that I can share my knowledge with my students and contribute towards the advancement of fundamental research on communication and organizational behavior observed on social media platforms.

DIGITAL HOSTAGES

UALR Students Join Forces to Fight Cybercrime

Big data is one of cybercrime's most popular targets. Headlines about recent colossal breaches in major corporations' digital databases have put customers, CEOs, and business owners on edge. According to *The Wall Street Journal*, in one particular incident involving a national retail chain, hackers gained access to 40 million credit and debit cards and 70 million records of customer information.

The demand for cyber security experts in the workplace will mushroom as technology continues to become more sophisticated and better able to handle big data. Businesses and federal agencies will invest more money and personnel to counter cybercrime as hackers become more resourceful. Luckily, UALR is educating future cyber defenders on campus.

Last fall, the university received designation as a National Center of Academic Excellence in Information Assurance/Cyber Defense Education.

This recognition is a coincidental boon for the UALR Cyber Security Club and other students interested in online safeguards, since it makes them eligible to apply for educational and project grants through the U.S. Department of Defense.

Formed in 2012, the Cyber Security Club recently took second place at the first-ever Cyber Defense Competition at the University of Kansas. "This is a great accomplishment for our club members," said Dr. Kenji Yoshigoe, their faculty advisor.

The club members are quickly becoming experts in the data security field. According to the team captain, sophomore information science major Dylan Hailey, smaller businesses shouldn't feel safe because of their seemingly inconspicuous size. "If you're in e-commerce, take credit cards, or store personal data on customers, you are a target," said Hailey.

One preventative technique against online sabotage is for businesses to create more awareness, policies, and training in the workplace, suggested Hailey. "Usually, the answer is with the employees. Many businesses are breached due to human error rather than vulnerabilities in the system."

One example of such a malicious digital breach is "Ransom Ware." Hackers "hold hostage" a company's sensitive information regarding finance, organizational structure, or their customers until the business "pays up." These cyber interlopers may demand cash or bitcoins—an online, open-source payment system. "This malware is usually poorly coded, because the hackers are in a rush to get the money," Hailey said. "Then, they won't know how to decode the part that frees the files."

The best practice against these attacks begins with prevention—arming the staff. "All it takes is tricking an employee to download a file through any one of many different means, getting their passwords, and spreading it throughout the company network," said Hailey.

Cyber security students get to hone their defensive skills when they attend conferences and competitions. With the support of the Department of Computer Science, the club is planning to host a national cyber security conference for high school students later this year.

For more information about the Department of Computer Science and its cyber security programs, visit ualr.edu/computerscience/.



UALR's Cyber Security Club. From left to right: Yanyan Li, Connor Young, Dylan Hailey, Andrew Lewis, Tommy Haycraft, Vineet Agrawal. Photo credit: Kenji Yoshigoe

READY TO RESEARCH

Six Undergraduates Earn Competitive State Fellowships



Front (left to right): Hicks, Bradley, Rouse. Back (left to right): Lassiter, Lopez, Smith

Six UALR undergraduate students have been awarded Statewide Undergraduate Research Fellowships (SURF) through the Arkansas Department of Higher Education (ADHE). The grants will support in-depth research in the students' chosen fields under the guidance of faculty mentors.

The UALR recipients stand out among their peers in the state. According to Jonathan Coleman, ADHE program coordinator, the agency received 225 SURF applications statewide; only 67 were awarded. This year's 2014-2015 SURF awards to UALR undergraduates totaled more than \$20,000.

UALR SURF Awardees

Benjamin Bradley, a senior from Little Rock, is pursuing majors in both anthropology and French. He is conducting his research project, "Multi-Modal Communication in Captive Chimpanzees," with his faculty mentor Kathryn King, assistant professor of anthropology. Bradley is also a Donaghey Scholar. "Ben is an independent and creative thinker, and he never fails to impress me with his insights and ideas," said King.

Zachary Hicks, a senior from Searcy, is majoring in both chemistry and biology. His project, "Conductive Polymer and Ligand Graphene and Carbon Nanotubes for Developing Economic Fuel Cell Cathodes," focuses on advances in nanotechnology. Hicks's faculty mentor is Tito Viswanathan, professor of chemistry. Hicks is also a student in the Donaghey Scholars program. "Zach is a rare and excellent student," said Viswanathan. "He is totally dedicated to both his research and school work and excels in both."

Sarah Lassiter is a senior from Little Rock. She is conducting her research project, "Attraction Effects and Self Control," under the mentorship of Benjamin Kowal, visiting assistant professor of psychology. Lassiter is a double major in psychology and philosophy. "Sarah is an exceptional student with the rare ability to analyze problems in the science of human behavior from both philosophical and psychological perspectives," said Kowal.

L. Miguel Lopez is pursuing his undergraduate degree in political science. He is conducting his research project, "Killing From Above: Assessing America's Drone Strategy," under Rebecca Glazier, assistant professor of political science. Lopez, a senior from Little Rock, is also in the Ronald E. McNair Scholars Program. Glazier said, "Miguel is a great student, one of the most hardworking and ambitious I have ever had the privilege of teaching."

Autumn Rouse, a junior from Bryant and a student in the Chancellor's Leadership Corps, is majoring in computer systems engineering. She, with her faculty mentor Seshadri Mohan, professor of systems engineering, is developing her research project, "Design and Implementation of Efficient Algorithms for Cognitive Radio Networking with a Relay Using Software." Mohan said, "I was impressed with Autumn's drive to obtain a deep understanding of the subject matter."

Zachary Smith, a post-baccalaureate student from Little Rock, is researching "Catalytic Conversion of Carbon Dioxide to Methanol" with the assistance of his mentor Anindya Ghosh, assistant professor of chemistry. Smith is completing his studies in chemistry. "Zach is a tenacious and brilliant student, who pushes himself to understand chemistry for his intellectual curiosity and to apply his knowledge for his future career," said Ghosh.

Planting the Seeds of the Future

Creating Ideas across the Disciplines



We're living in interesting times at UALR. In the past few years, our university underwent a major restructuring process which added new colleges, programs, and initiatives in a variety of academic areas. Research funding is critical in meeting our new goals.

To say that recent financial cutbacks on federal and state research programs have made the research world more competitive is an understatement. Programs that were routinely funded in the past are now having to rethink their strategies, objectives, and outcomes. Grant proposals in technology, medicine, science, education, and community service have to be years ahead of the current "cutting edge" and strongly rooted in the "future forward."

But such aspiring solutions start with single ideas, sometimes generated from conversations in groups made up of just a few people excited about the realm of possibilities.

To achieve our goals, faculty and staff will have to reach out to their colleagues in other academic departments and engage in interdisciplinary research. Such collaborations make strong proposals for

extramural funding. This interdisciplinary mindset will address the more complex challenges and issues we face on a global scale.

We're taking three approaches to these challenges.

First, we organized a "Research Roundtable" event to bring together faculty and staff from across campus to begin thinking about creating competitive research proposals grounded in interdisciplinary philosophy. At the second annual roundtable last fall, 90 attendees began such discussions over lunch, and several stayed after the two-hour meeting to continue their conversations.

Another issue we addressed was faculty and staff requests for more assistance in finding funding opportunities and writing the proposals. As a result, the Office of Research and Sponsored Programs has begun a relationship with Hanover Research, a grant development firm to assist us by providing comprehensive expert support in identifying and pursuing funding to fulfill our mission-critical and funding objectives.

The next step was the creation of a new initiative, the Research Cluster Seed Grant Competition. This internal competition is for two, two-year grants, funded at \$25,000 per year. This project will encourage innovative, high-impact, scholarly activity across college and departmental lines. It will result in leveraging external funding for sustained collaborative efforts. We want faculty and staff to engage more effectively with the private sector, federal government, other institutions, and the community.

With all of these factors in place, we start the fall 2015 semester with high expectations that these new resources, those conversations over lunch, and a little internal competition will give UALR the edge to lead our academic research ahead of our time.

Tammie Cash

Director, Office of Research and Sponsored Programs

