

UAMS

UNIVERSITY OF ARKANSAS FOR MEDICAL SCIENCES • WINTER 2019

JOURNAL

INNOVATIVE APPROACHES

**UAMS Leads the way in
Meeting the Health Care
Needs of Arkansans**





MESSAGE

from the Chancellor

Dear Readers,

It is my pleasure to welcome you to the latest issue of the UAMS Journal, a publication that will shine a light on how the University of Arkansas for Medical Sciences continues to lead in the latest treatments, scientific discoveries and innovative approaches to meet the health care needs of Arkansans, the region and beyond.

In the last eight months since I became chancellor, the dedicated physicians, nurses, scientists, allied health workers, faculty and staff have shown how determined they are to work as a team to fulfill the purpose of the state's only health sciences university.

We are in the midst of setting strategic initiatives that will take us to 2029 – the 150th anniversary of the founding of UAMS.

And while we celebrate how far we've come, we enthusiastically look to the future to search out ways to make health care more accessible to those we serve.

In this issue, you will read about the expansion of our digital health efforts. Long a leader in telemedicine in Arkansas, beginning in 2003 with high-risk pregnancies, UAMS now has 30 separate programs that bring health care to the patient at all hours wherever they are.

You will also learn about our latest efforts to attain National Cancer Institute Designation for our Winthrop P. Rockefeller Cancer Institute. This distinguished status will significantly increase the ability to receive federal and other research funding and give our patients access to more clinical trials and new therapies unavailable elsewhere in the state.

Our regional campuses are another way we expand access to health care. With eight Family Medical Centers – two opened just last year – in regions across the state, we are looking for opportunities to increase that number.

I am excited about the future of UAMS. We are here for Arkansas — educating the health professions workforce, providing care not routinely available in a community setting, and performing and translating research to treatments and economic development.

Sincerely,

Cam Patterson, M.D., MBA
UAMS Chancellor

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We want to ensure access to UAMS through technology.”

Can UAMS Fit in Your Pocket?

By Ben Boulden

LIKE MANY LARGE HOSPITALS,

UAMS Medical Center never closes and never sleeps. The advent and expansion of digital health soon may give patients access to that dedication at all hours wherever they are.

“We want to ensure access to UAMS through technology,” UAMS Chancellor Cam Patterson, M.D., MBA, said. “We want people to feel like they have UAMS in their pocket. We want more partnerships across the state that can bring UAMS into more communities. Maybe that’s through pharmacies or through partnerships with other health care providers.

“Our idea is not to swoop in and pull people out of those communities using digital technology. It’s the opposite. We want to provide access so they can get care where they are.”

The idea of delivering care to patients wherever they might be is the origin point for telemedicine.

A Good Start

In the early years of the last decade, UAMS physician Curtis Lowery, M.D., began to work toward establishing a way to get medical expertise from urban areas to patients in rural Arkansas.

Lowery, chair of the Department of Obstetrics and Gynecology in the UAMS College of Medicine, decided a way had to be found to get the expertise of maternal-fetal medicine specialists like himself out to mothers with high-risk pregnancies in communities throughout Arkansas. He realized the barely developed, new field of telemedicine could use live video connections for one specialist to be on call for the entire state.

The UAMS Center for Distance Health that Lowery founded includes 30 separate, telemedicine programs. Smart phones, tablets, wearable health monitors and broadband have expanded the horizons of digital health far beyond telemedicine, though.

“Digital health is about designing a health care system that is 24 hours, seven days a week, treating them earlier in the disease than if they had to attach themselves to traditional health care,” Lowery said. “By being more responsive to the needs of the patient, I can treat them before there’s a need for hospitalization. It’s better for the patient, first, and second, it’s less expensive than being admitted to the hospital.”

Data to Improve Care

Intensive care units have collected millions of health records and streams of electronic data from patients the units constantly monitor. That ‘big data’ can be mined to improve care. Lowery said, for example, the data profile of a patient with a heart attack can be used to compare with other case histories and data sets to identify the best treatment. The patient’s care team could even run that data through a computer simulation to test its possible effectiveness.



Curtis Lowery, M.D., chair of the Department of Obstetrics and Gynecology

Computer algorithms can examine big data to do predictive computer modeling for that same patient, to intervene with a program to get him healthy and avoid that heart attack.

“We need to use these new resources to bend the curve,” Lowery said. “If we don’t, we’re going to get a bad outcome,

and we’re not doing anything real about it. Having the best health care is not going to keep you from a heart attack in the old model. With digital health, we’re not going to wait for that heart attack.”

Both Lowery and Patterson foresee a relationship between provider and patient that is constant, not one dependent on

in-person visits everything six months or a year.

Some providers are renting digital health services then making them available to patients they see, Patterson said. However, the providers have no good way to do quality control of those services.

Patterson said the parent of a sick child with a hacking ➡➡

cough that won't stop or allow them to sleep might access a 24-hour medical consultation service like that, but the physician reached could be very faraway with no real way of integrating their recommended treatment into that child's day-to-day care.

"I strongly believe that academic medical centers hold the best position compared to other types of providers to take advantage of digital health," Patterson said.

UAMS can work with providers and hospitals throughout Arkansas using established relationships to integrate a treatment into a patient's care, arranging for imaging at a local hospital or medicine with a pharmacist. UAMS also has long-established cultural roots that equip its health care professionals to better understand the communities Arkansas patients live in and the best way to communicate with them.

"This is the time that academic medical centers excel," Lowery said. "This is our time. This is cutting-edge. Our knowledge adds value to the population in making these decisions. We can change the lives of people in ways we couldn't before. We can touch everybody wherever they are. We're the ones who can take advantage of this. We're going to be training the future work force, and we need to be coming up with new ways of touching people and keeping them healthy." 🏠

Arkansas' FIRST and ONLY Comprehensive Stroke Center



After months, if not years, of teamwork to achieve it, UAMS Medical Center in July 2018 became the first and only health care provider in Arkansas to be certified as a Comprehensive Stroke Center by The Joint Commission.

The Joint Commission is an independent, not-for-profit organization that evaluates and accredits more than 20,000 health care organizations and programs in the United States.

"This is truly an extraordinary accomplishment that will save lives," UAMS Chancellor Cam Patterson, M.D., MBA, said.

Achieving the standard of care required by The Joint Commission to be certified as a Comprehensive Stroke Center means a stroke patient has a better chance at UAMS than anywhere else in the state.

According to the Joint Commission, the certification is the most demanding accreditation and is designed for hospitals that have the specific abilities to receive and treat the most complex stroke cases. It also means certified hospitals can provide endovascular procedures and post-procedural care, have an Emergency Department with a dedicated stroke-focused program, and are ready to treat all cerebrovascular disease from stroke and aneurysms to carotid arterial disease

"Achieving Comprehensive Stroke Center designation places UAMS among the top stroke centers in the country that have the resources and highly skilled health care teams with advanced training to handle the most complex stroke cases," Patterson said. "I am extremely proud of our medical center and our stroke team for their dedication to achieving this designation to provide Arkansans with access to the most advanced stroke care possible."



Meeting the Need for Orthopaedic Surgery

By David Robinson

TERRY BRADSHAW'S total knee replacement surgery at UAMS went so well he came back for ankle surgery, then wrist surgery.

"Knee doesn't hurt, foot doesn't hurt, wrist doesn't hurt," the former Pittsburgh Steelers quarterback told the 2,800 attendees of the American Association of Hip and Knee Surgeons annual meeting in November 2016. "It's been amazing."

Even before Bradshaw was enthusiastically promoting UAMS, Arkansans were seeing that you don't have to be a Pro Football Hall of Famer to get the same specialized surgical treatments.

Transformation

Bradshaw's knee surgeon, C. Lowry Barnes, M.D., started transforming the Department of Orthopaedic Surgery when he became chairman in 2014. After more than two decades in private practice, he joined UAMS with the goal of leading the department's expansion along with greater integration of education, research and clinical care.

When Barnes arrived, he was the department's 12th surgeon. Today he is leading 26 surgeons and researchers whose collaborations are leading to better care for patients. ➔



We now serve patients after hours, with a walk-in practice weeknights and Saturday mornings.”



Shahryar Ahmadi, M.D., examines Kathy Thomas after surgery to repair a gunshot to her elbow.

“We take care of all comers,” Barnes said. “If we’re called by someone in the state, the answer is yes, we’ll take care of them.”

As a result, the department’s adult surgical cases have surged since 2014 from 1,100 to more than 7,000 a year. Barnes has also made his deep bench of talented surgeons more accessible to Arkansans. He moved the orthopaedics clinic off the main UAMS campus in Little Rock to clinics UAMS established on Colonel Glenn Road, Autumn Road and Shackelford West Boulevard. He also expanded to Conway as part of a UAMS/Baptist Health partnership. The full-time practice in Conway is staffed by the department’s fellowship-trained subspecialty surgeons.

“We now serve patients after hours, with a walk-in practice weeknights and Saturday mornings at our Autumn Road and Colonel Glenn clinics,” Barnes said.

The department under Barnes has also addressed opioid prescribing. Led by hip and knee surgeon Simon Mears, M.D., and a department committee, policy changes were enacted that have significantly reduced opioid painkiller prescriptions and refills without affecting pain control.

Doing ‘The Impossible’

Bradshaw, also co-host of *FOX NFL Sunday*, said he had endured four or five years of chronic knee pain before deciding to find a surgeon. He sought out Barnes on the recommendation of James Andrews, M.D., medical director of the Andrews Institute in Gulf Breeze, Florida. “Five weeks after surgery, you wouldn’t know I had a problem,” Bradshaw said.

He had equally great experiences with ankle and foot surgeon Robert Martin, M.D., and hand and wrist surgeon Theresa Wyrick, M.D.

Patient testimonials abound for all UAMS orthopaedics surgical subspecialties, including back and spine, oncology (cancer), shoulder and elbow, trauma and sports medicine. Examples include:

Kathy Thomas of Oxford, Ark., had her gunshot-shattered elbow put back together by Shahryar Ahmadi, M.D., shoulder and elbow specialist. “UAMS did the impossible,” said Thomas, who was injured when she accidentally dropped her husband’s gun.

Jacob Mauterstock of Conway was the first person in Arkansas to undergo a targeted muscle reinnervation, allowing him to use a robotic arm controlled by his thoughts. The procedure was performed by John Bracey, M.D., and Mark Tait, M.D., who have advanced surgical training in the hand and upper extremity. Mauterstock lost his arm when his shirt sleeve was caught in an auger during a home improvement project. He credited his recovery in part to “outstanding care and leading-edge technology at UAMS.”

The **Rev. Susan Sims Smith** of Little Rock endured knee issues for nearly 15 years until the pain began to interfere with her many physical activities, including hiking and ballroom dancing. A total knee replacement by Barnes got her back to the lifestyle she enjoys. “Dr. Barnes restored me to the joy of movement.”

Brachial Plexus

Brachial plexus refers to the cluster of nerves extending from the spine to the arm and hand. They control the motion and feeling in the arms, wrists and hands.

UAMS is one of the few places in the U.S. offering state-of-the-art treatment for brachial plexus conditions and injuries. Brachial plexus injuries cause disabilities such as a loss of movement or feeling and can be successfully treated with nerve grafting, nerve transfers, and tendon or muscle transfers among other

procedures. Recent advances in nerve surgery have reduced pain and improved function for the shoulder, elbow, wrist and hand.

“Patients are referred to us from surrounding states,” Barnes said.

The department’s experts provide surgical and nonsurgical treatments and work in collaboration with other specialists at UAMS to provide comprehensive care and achieve the best outcomes.

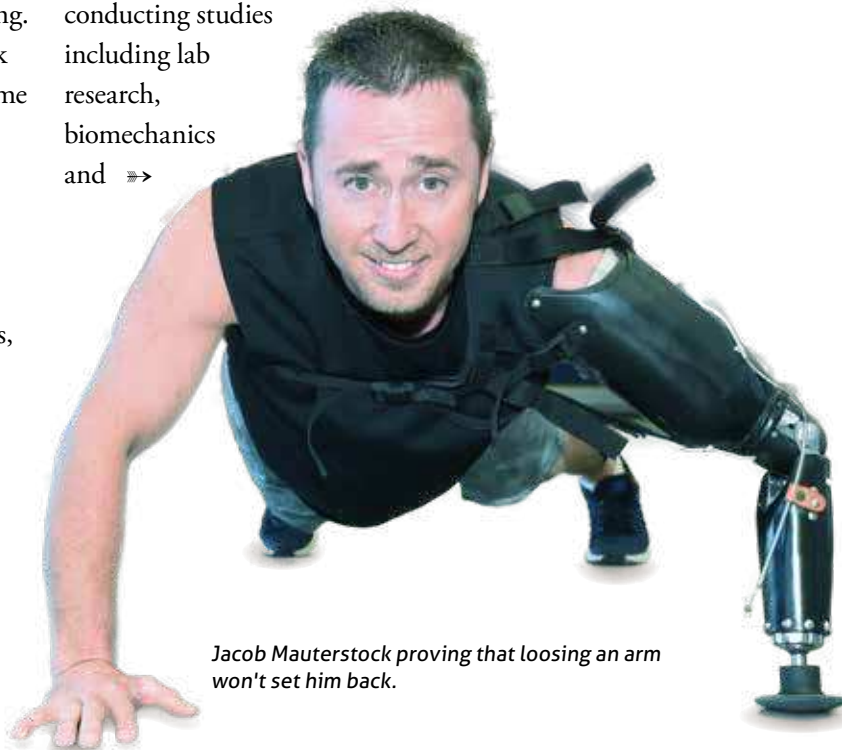
Integrated Approach

The department’s exceptional clinical and surgical services are increasingly augmented by research. Today the department’s approach to patients uses an integrated basic research, clinical research and evidence-based clinical program.

“We have shown through our research that patients can be safely discharged home from hip and knee replacement early after surgery and they do not require rehabilitation or placement in a skilled nursing facility,” Barnes said.

Because of the low complication rate with such an approach, the department was chosen by Arkansas Blue Cross and Blue Shield to conduct a pilot study testing the outpatient surgery program for joint replacement.

Barnes has added four Ph.D. researchers conducting studies including lab research, biomechanics and =>



Jacob Mauterstock proving that losing an arm won't set him back.



Dr. Barnes restored me to the joy of movement.”



Rev. Susan Sims Smith is able to move again after knee surgery.

human motion. The number of research publications in the department has grown from 10-12 a year to about 90 a year, Barnes said.

The department is also a collaborator on UAMS' Bone and Joint Initiative, a multidisciplinary research program. Led by Stavros Manolagas, M.D., Ph.D., the initiative is seeking to improve understanding of bone and joint problems that can be translated to better treatments and prevention measures. The collaborative effort includes the VA Center for Osteoporosis and Metabolic Bone Diseases, one of the largest osteoporosis research centers in the world.

“Our orthopaedic surgeons and scientists are collaborating across research disciplines, specialties, and with other institutions to make cutting-edge advances that translate into better outcomes for patients,” Barnes said.


Within the last year, department researchers have secured more than \$1.5 million from sources inside and outside of UAMS. Led by

Erin Mannen, Ph.D., a biomechanical engineer recently recruited from the University of Denver, researchers are working with the HipKnee Arkansas Foundation and using a state-of-the-art motion capture laboratory to understand how adult and infant patients move. Among the studies is a golf biomechanics study – a multi-year assessment of performance and biomechanics of golf swings before and after surgeries. The results should help surgeons determine when patients can return to golf after surgery. Likewise, a biomechanics of yoga study will provide insight on yoga's demands on the joints, especially the hip and ankle.

Regenerative Orthopaedics

Not all painful degenerative joint damage or injuries require joint replacement or surgery. The department has begun research that includes stem cell therapy and other regenerative treatments for patients with early degenerative or post-traumatic arthritis, as well as enhanced soft-

tissue healing for ACL injuries and rotator cuff repairs. The department also hopes to explore nerve healing and regeneration for brachial plexus injuries. An \$11.3 million National Institutes of Health grant supports the new UAMS Center

for Musculoskeletal Disease Research. Two of the grant's project leaders are orthopaedics department faculty Srividhya Iyer, Ph.D., and Jinhu Xiong, M.D., Ph.D. 

FIRSTS & ONLY

The UAMS Center for Hand and Upper Extremity Surgery is the only center in Arkansas offering care for all hand injuries

24-hours

-a-day, **365** days a year

Corey Montgomery, M.D., and Richard Nicholas, M.D., are the **only two fellowship-trained bone and muscle cancer specialists in Arkansas** and also provide care for patients at Arkansas Children's Hospital.



The Orthopaedic Spine Services has performed **120** Shilla procedures, the most of any center in the world. Invented by UAMS' Richard McCarthy, M.D., the technique allows scoliosis correction while still allowing young children to grow without a spinal fusion surgery.

McCarthy and David Bumpass, M.D. are the **first surgeons in Arkansas** to implant the MAGEC spinal rod system, which lengthens within a child's back using a magnetic motor to correct scoliosis. The rod can be lengthened painlessly in the clinic, avoiding numerous surgeries during childhood.

UAMS has Arkansas' only EOS spinal X-ray system, which reduces patients' radiation exposure by

90 percent.





*Lisa Evans, Ph.D., with
Little Rock Police Officer
Jessica Eubanks.*

Offering Mental Health Instead of Jail

By Tim Taylor

MOST PEOPLE would prefer to never see the inside of a police squad car. Lisa Evans, Ph.D., however, did exactly that in an effort to better understand the needs of those she and the Pulaski County Regional Crisis Stabilization Unit (CSU) serve.

The unit, which opened in August 2018, was created to help people experiencing a mental health crisis who otherwise might have ended up in jail or an emergency room.

Evans is an assistant professor in the UAMS College of Medicine Department of Psychiatry and program director of the CSU. Last summer, she spent a day in a Little Rock Police Department vehicle. Joined by two LRPD officers, she spent most of the time trying to gain some insight into the stumbling blocks law enforcement officials might have in referring to the CSU people showing signs of behavioral health issues.

Located in a former Pulaski County juvenile detention facility, the 16-bed unit is the second of its kind in Arkansas. It is staffed by UAMS nurses and social workers who are on duty around the clock. The Pulaski County facility also serves Perry, Saline, Lonoke, Jefferson and Grant counties.

The Sebastian County Five West Crisis Stabilization Unit opened in February 2018 in Fort Smith. Additional units are planned for Craighead and Washington counties.

The CSUs offer a more cost-effective approach to treating people with mental illness who come into contact with police officers. Evans prefers the term “guest” when referring to those brought to

the CSU, where they will spend, on average, four days after being referred by a police officer trained to recognize a person dealing with mental health issues. The goal is to get the guests stabilized and connect them with services and resources in the community, she said. While in the CSU, they will receive counseling, health assessments and medications, if necessary.

When planning the center, Evans and UAMS and county officials devised a facility that was both effective and calming. The CSU includes bathrooms and showers for men and women, a nursing station, an intake room and a medication room. All are painted in soothing colors, with some of the walls covered in tranquil murals designed and painted by UAMS personnel.

Evans’ recent tour with the LRPD officers offered her the chance to witness firsthand the interventional methods the police use with those in the midst of a mental crisis. She offered them some suggestions and was even able to provide direction when they came into contact with someone displaying emotional problems. The officers provided feedback on how to make the CSU accessible to guests and officers and helped provide an understanding of some of the obstacles officers face in getting people the help they need.

“The officers were very receptive to my feedback,” said Evans. “I hope that this is the start of an ongoing productive relationship with law enforcement that will help us understand how we can help our community and provide officers with resources to allow them to more effectively intervene with people experiencing a crisis.” 🏠



Fighting the Opioid Crisis

By Amy Widner

THE OPIOID CRISIS is not one problem, so naturally, the clinicians, researchers and administrators across UAMS are working on more than one solution.

Opioid overdose deaths are a nationwide epidemic. There were 130 deaths per day from opioid-related drug overdoses in the United States from 2016-2017, according to the U.S. Department of Health and Human Services. Arkansas ranks second in the nation for its opioid prescribing rate with an average of 105.4 prescriptions per 100 people, according to U.S.

Centers for Disease Control and Prevention data from 2017.

UAMS is fighting the epidemic on several fronts. The following is a small sampling.

AR IMPACT

UAMS has launched a free weekly education and consultation service to give health care providers statewide a direct line to UAMS expertise and resources.

Arkansas Improving Multidisciplinary Pain Care Treatment (AR-IMPACT) is a live-

streaming online video conferencing service staffed by a pain physician, addiction psychiatrist, family medicine physician also board certified in geriatrics and hospice/palliative care, psychologist, two pharmacists and a physical therapist.

Participants are encouraged to present patient cases for individualized feedback about approaches to treatment. Visit ARIMPACT.uams.edu for more information.

MATRIARC

UAMS and the Arkansas Department of Human Services have launched a free one-on-one consultation service for health care providers treating patients with opioid use disorder.

These providers can call the Medication-Assisted Treatment Recovery Initiative for Arkansas Rural Communities (MATRIARC) hotline for advice. To connect with the service, call 1-833-872-7404 or 501-526-8459.

In addition, Project ECHO, a component of MATRIARC, is a weekly case-based learning video conference for community health providers offering free continuing education. Participants are encouraged to present patient cases for individualized feedback about providing medication-assisted treatment. The panel includes experts in addiction, therapy and case management.

To connect to the video conference, email video@uams.edu or call 501-686-8666. For more information, contact Anner Douglas at ADouglas2@uams.edu.

Research

The *Centers for Disease Control Prevention Morbidity and Mortality Weekly Report* published a study in 2017 led by UAMS pharmacy professor Bradley Martin, Pharm.D., Ph.D., showing that by prescribing patients opioid supplies of three days or less, providers can reduce the likelihood of the patient using opioids chronically one to three years

later. In September 2018, Martin and his team sold the rights to algorithms that assesses an individual's risk for opioid overdose, abuse and addiction.

The UAMS Psychiatric Research Institute's Division of Health Services Research, directed by Teresa Hudson, Pharm.D., Ph.D., is conducting studies related to opioid addiction, including opioid addiction among people with mental health diagnoses and among veterans.

Peter Crooks, Ph.D., is working to develop safer opioid molecules that work better for pain than existing drugs, with fewer side effects and less potential for addiction. Within the Women's Mental Health Program, Jessica L. Coker, M.D., is studying opioid addiction in pregnant women. Lisa Brents, Ph.D., is developing new therapies for opioid addiction during pregnancy that reduce fetal exposure to opioids. William Fantegrossi, Ph.D., is studying new types of opioids and whether they are more addictive than older types or require more aggressive treatments for dependence and overdose. Benjamin Teeter, Ph.D., is studying ways to more effectively distribute naloxone, which is used to treat opioid overdoses in emergency situations in the community.

The Psychiatric Research Institute's Center for Addiction Research has ongoing studies related to improving opioid detoxification treatments by testing different methods and drugs or combinations.

Clinics

The Center for Addiction Services and Treatment in the UAMS Psychiatric Research Institute provides medication-assisted treatment services for opioid use disorder. For appointments, call 501-526-8400.

The Women's Mental Health Program treats pregnant women with opioid use disorder. For appointments, call 501-526-8201. 🏠



What this funding allows us to do is bring together a diverse group of investigators who can work as a team that is more than the sum of the parts.”

Securing the Future of Bone Research at UAMS

By Amy Widner

UAMS' PAST AS AN IMPORTANT LEADER IN BONE RESEARCH IS NOT IN QUESTION, and now, neither is its future, thanks to an \$11.3 million grant from the National Institutes of Health (NIH) to launch the Center for Musculoskeletal Disease Research.

The Centers of Biomedical Research Excellence (COBRE) grant comes from the National Institute of General Medical Sciences branch of the NIH. Awarded to Professor Charles O'Brien, Ph.D., of the Department of Internal Medicine — Endocrinology, the grant will be distributed over five years, but its effects will be felt for years to come.

The COBRE program aims to create multidisciplinary, collaborative and synergistic research centers focused around a theme. The program supports research faculty who are early in their careers and have yet to secure grant funding of their own. Once they do, they are considered “graduated” from

the COBRE and another junior researcher benefits from the funding, technology and mentoring.

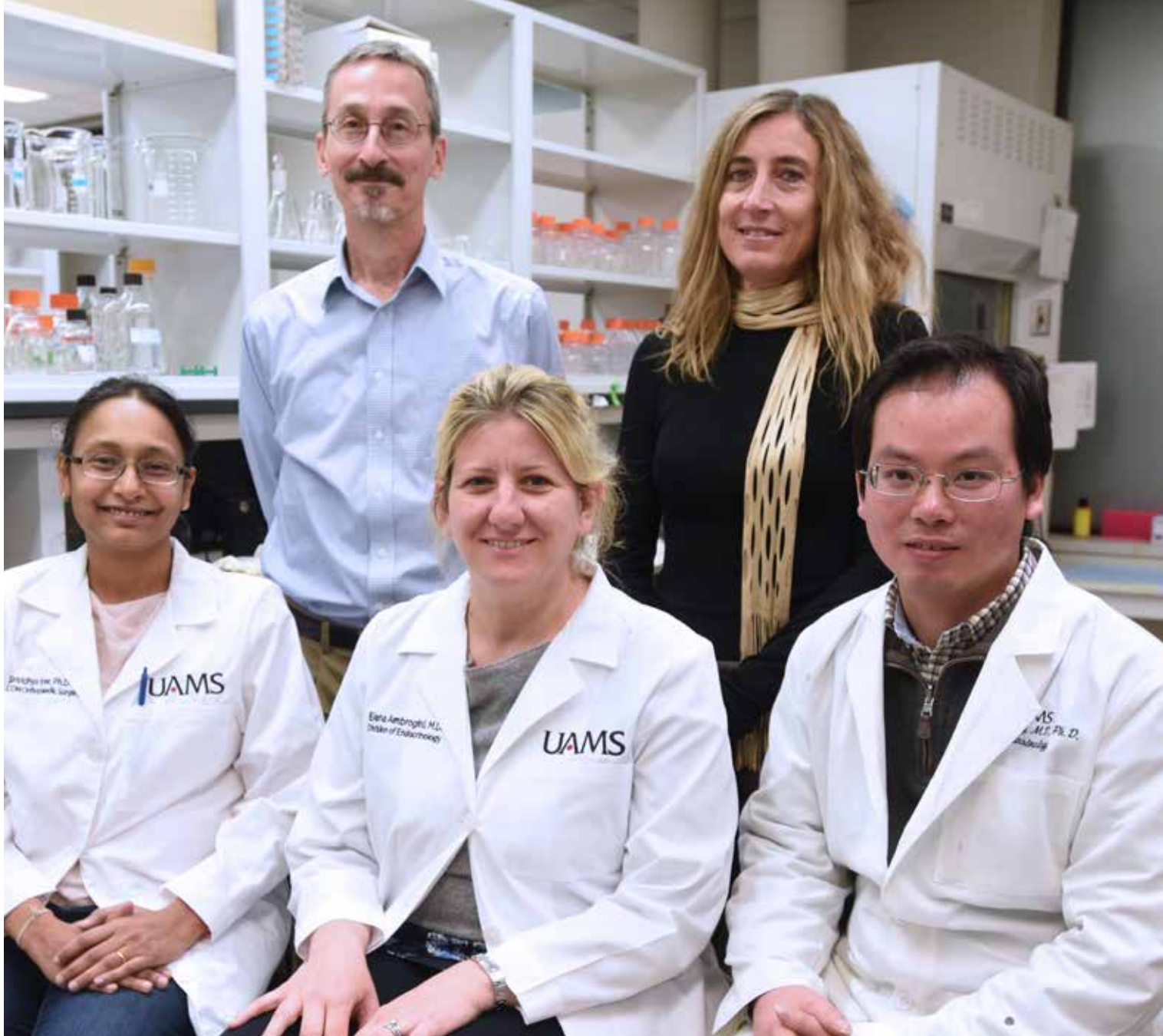
“What this funding allows us to do is bring together a diverse group of investigators who can work as a team that is more than the sum of the parts,” O'Brien said. “The COBRE approach is a proven model. Its participants are more likely to obtain independent federal funding, and it serves as a springboard for innovative, quality research.”

Elena Ambrogini, M.D., Ph.D., of the Endocrinology Division, is studying the association between atherosclerosis and osteoporosis and a therapy that could target both diseases. Her work was published in June 2018 in *Nature Communications*. Ambrogini was able to stop bone loss in genetically altered mice and build new bone by manipulating certain innate immune antibodies, suggesting the potential for a novel approach to the treatment of osteoporosis.

Ambrogini credited the COBRE for supporting her during this key stage in her career.

“Not only do I have the funding, I have the mentoring and expertise of seasoned investigators, and I have this environment — the resources, technology and collaborators with the technical skillsets needed to make my research possible,” Ambrogini said. “It's the ideal combination of factors.”

Jinhu Xiong, M.D., Ph.D., of the Department of Orthopaedic Surgery, is studying the mechanics behind how exercise improves bone health; Niels Weinhold, Ph.D., of the Myeloma Center, is studying why some forms of myeloma (cancer that develops in the bone marrow) are more aggressive than others; and Srividhya Iyer, Ph.D., of the Department of Orthopaedic Surgery, is studying how different cellular stress pathways are important for issues like low bone mass.



*(Back) Charles O'Brien, Ph.D., Maria Schuller Almeida, Ph.D.
 (Front) Srividhya Iyer, Ph.D., Elena Ambrogini, M.D., Ph.D., Jinhu Xiong, M.D., Ph.D.*

“The NIH believes in this approach and so do we,” said Lawrence E. Cornett, Ph.D., vice chancellor for research. “With each graduate, the cycle continues, and over time it helps an institution develop a critical mass of investigators focused on a theme and supported by the necessary technology to do cutting-edge research.”

Endocrinology Division Chair Stavros Manolagas, M.D., Ph.D., has led the Center for Osteoporosis and Metabolic Bone Diseases at UAMS for more than 20 years. It is one of the largest and longest-funded osteoporosis research centers in the world. O'Brien credited it with providing a springboard

for his own COBRE grant application.

“We’ve seen the success that consistent funding can bring, so we want to build on that success and take the lessons we’ve learned in the division and share them with others,” O’Brien said. 🏠



Sue Griffin, Ph.D.

Delivering New Insight to Alzheimer's

By David Robinson

THERE'S A QUARTER TAPED TO HER OFFICE DOOR, and Sue Griffin, Ph.D., delights in explaining why.

Griffin's Alzheimer's disease research team totals 29 scientists dedicated to rooting out the causes of Alzheimer's and finding solutions. They frequently

dive into discussions about the complex genetic and molecular processes that lead to Alzheimer's disease. They toss around ideas. Sometimes they disagree. And recently, in their typical collegial spirit, there was a bet. Experiments ensued.



We are using computer modeling to identify target sites for the development of drugs.”

One day Griffin saw the quarter attached to her door, and she knew. “I was right,” she said with a mischievous grin.

Her eyes light up talking about her team’s most recent findings and the team members behind it.

“We have brilliant young researchers and they’re voracious learners,” she said.

Lately, the UAMS team has been creating important science literature of its own. Their recent publications show new insight into the underlying genetic and molecular processes that lead to Alzheimer’s. Advances in this understanding are key to combating the disease, which affects 5.7 million Americans, according to the Alzheimer’s Association.

In a recent paper, the team revealed the “why” behind a well-known genetic risk factor for Alzheimer’s – ApoE4. People with two copies of ApoE4 are 13-15 times as likely to develop Alzheimer’s. Griffin’s team found that ApoE4 disrupts the process used by cells to get rid of waste proteins. When this process – known as autophagy – is blocked, it leads to the buildup of tangles inside brain cells and plaques outside the cells. The tangles and plaques are hallmark features of Alzheimer’s patients.

The findings were published in February 2018 in *Alzheimer’s and Dementia*, the Journal of the Alzheimer’s Association.

The paper, Griffin said, has been “a real live wire.” The new understanding of ApoE4 suggests that it could be a risk factor for numerous diseases, including cancer, she said.

“This is so important,” she said. Commercially available genetics testing can show people whether they have the genetic trait.

As a clearer picture emerges of the underlying mechanisms, scientists can draw a sharper focus

on the more likely sites to target with drugs that can thwart the negative effects of ApoE4.

“We are using computer modeling to identify target sites for the development of drugs,” Griffin said. “As a result, we are trying some of the more promising drugs in brain cells themselves (from surgical waste) and in animal models.”

Recently inducted into the Arkansas Women’s Hall of Fame, Griffin is known internationally for her decades of research and groundbreaking discoveries related to Alzheimer’s. Her legacy as a pioneer in the field of Alzheimer’s disease was sealed in 2016 when she received the Lifetime Achievement Award in Alzheimer Research at the international meeting of the Alzheimers Association in Toronto. After joining UAMS in 1986, she published a landmark study in 1989 describing how inflammation in the brain can provoke an out-of-control immune response. During such a response, neurons continue to release a molecule identified by Griffin (Interleukin-1) that ultimately leads to the creation of plaques and intraneuronal tangles and the loss of nerve cells.

Griffin proved to the world that inflammation in the body has a major influence on the build-up of inflammation in the brain. It is the main driver of neurodegenerative diseases, particularly Alzheimer’s.

At her Hall of Fame induction ceremony, she spoke frankly to the audience.

“Now in our country we are faced with an avalanche of inflammation in our bodies – young bodies and old,” she said. “That is the inflammation caused by obesity and its companion, type 2 diabetes. So I’m asking you to join me in the fight – don’t let yourself or your children become obese.” 📌

Collaborating to Advance Cancer Research

By Susan Van Dusen

THE PAST TWO DECADES HAVE SEEN UNPARALLELED ADVANCES IN CANCER THERAPIES. Where patients with many types of cancer were once given a grim prognosis, many now go on to live long and productive lives.

These life-extending treatments are undoubtedly blessings for patients and their families, adding years to their time together and offering them the chance to remain active and functioning members of society.

However, while these research advances have positively impacted thousands, there are countless others with advanced-stage or complex disease for which a research breakthrough has yet to emerge.

These are the people who inspire researchers like UAMS' Alan Tackett, Ph.D., to push forward in search of new and better ways to prevent, diagnose and treat cancer.

Tackett's focus on metastatic melanoma is particularly vital, as about 91,270 Americans – including 670 Arkansans – were diagnosed with the deadly form of skin cancer in 2018. While not all of these cases will metastasize, or move to other areas of the body, for those that do, treatment options are limited and often unsuccessful.

While new immunotherapies, such as the drugs Keytruda and Opdivo, show tremendous promise for many patients, others fail to receive the same favorable outcome. Immunotherapy uses drugs to stimulate a patient's own immune system to recognize and destroy cancer cells.

“About half of metastatic melanoma patients become cancer free with the use of



immunotherapy. While that's a significant and intriguing advancement, we are interested in finding out why the other half of patients don't respond in the same way,” said Tackett, professor of biochemistry and molecular biology in the UAMS College of Medicine.

To that end, Tackett's team utilizes a new collaborative system developed at UAMS for the sole purpose of providing scientists with the fresh tissue specimens needed to advance their research.



(From left) J. Camilo Barreto, M.D., Mindy Gibbons, R.N.P., and Alan Tackett, Ph.D.

Before this online system was established in 2017, Tackett and other UAMS researchers were limited to the use of archived tissue specimens stored in the UAMS Tissue Biorepository and Procurement Service (TBAPS).

Moving Research Forward

Housed in the UAMS Winthrop P. Rockefeller Cancer Institute, TBAPS provides researchers with a mechanism for collecting, processing and storing tissue specimens needed for research

purposes. While the facility's archived tissue samples are a valuable resource for many projects, the ability for Tackett to receive fresh specimens taken immediately from the operating room to be assessed by a clinical pathologist and then transported to his lab in the UAMS Biomedical Research Center increases his capabilities exponentially.

“Getting fresh tissue out of surgery and into our lab very quickly is key. This gives us the ability to sort it into individual cell ➡



Surgeons are the primary source for tissue samples, so we have a unique opportunity to collaborate with scientists and help facilitate research.”

populations and analyze it in ways that are difficult to do with older, fixated tissue,” he said.

Tackett’s research relies on the use of metastatic melanoma tissue removed during surgery at UAMS Medical Center. While melanoma sometimes metastasizes to an inoperable part of the body, such as the brain, it spreads in other patients to areas of the skin, where it can be surgically removed. In these cases, Tackett relies on surgical oncologists, such as J. Camilo Barreto, M.D., to identify appropriate patients, gain their consent to donate tissue and ensure it is provided fresh to Tackett’s lab.

“When I have a melanoma patient whose tissue could be beneficial in research, I will either determine if that patient has already consented to donate or speak to them about their interest in doing so. If they consent, I contact Dr. Tackett in advance of the surgery, so he is prepared to receive the sample,” said Barreto, assistant professor of surgery in the UAMS College of Medicine.

To further facilitate this process, de-identified patient information is entered into a password-protected program alerting researchers of upcoming surgeries that could result in valuable tissue samples.

“Surgeons are the primary source for tissue samples, so we have a unique opportunity to collaborate with scientists and help facilitate research,” Barreto said.

This digital system, which was developed at UAMS, is not commonly found at other academic medical centers, but plays an essential role in the advancement of cancer research.

“This service has been highly impactful for my lab, and puts us in an excellent position to be competitive on a national level for grant

funding,” said Tackett, who holds the Scharlau Family Endowed Chair in Cancer Research at UAMS.

The Consent Process

New patients at the UAMS Cancer Institute are approached in the early stages of treatment about their interest in becoming a research partner by donating a portion of their surgically removed tumor, or other specimen, such as blood or urine, either at that time or any time in the future.

If a portion of tissue is donated to research, it never affects a patient’s level of care, impedes the ability of pathologists to properly diagnosis their disease, or alters any methods or techniques used by the surgeon, said Mindy Gibbons, a registered nurse practitioner and TBAPS clinical services manager.

The procurement of donated tumor tissue does not require any type of additional procedure, but simply makes use of a portion of the tissue that was removed during the normal surgical process. Patients who agree to donate blood, however, have an extra vial drawn during their routine blood draw procedure.

Those who are interested in participating in research are told about the process, safety measures and potential long-term benefits for future patients.

“Through research, we attempt to gain knowledge about how cancer behaves and to find better targets for more effective therapies down the line. Patients who are willing to donate their tissue are a vital part of this process,” Barreto said.

For the patient, the risk of any harm from participation in research is extremely low.

All personal information is de-identified throughout the process, and the research team has no idea from whom the tumor sample was removed.

“We go over a series of questions and explain everything thoroughly to the patients, so they completely understand what is involved. Participation in research is voluntary, and patients can call us at any time to withdraw their lifetime UAMS consent if they change their mind,” Gibbons said.

In addition to the collaboration between scientists, surgeons and patients, other key members of the team include the pathologists who initially handle the tissue and confirm the patient’s diagnosis and the medical oncologists who treat the patient and monitor their outcome.

It is this joint effort that ensures research findings will continue to advance and push the boundaries of what was previously thought possible for patients with cancer.

“It’s not only about receiving the fresh tissue samples. It’s also about this important clinical interaction. Working together throughout this process, we gain a better idea of how to design or improve therapies for patients, which is our ultimate goal,” Tackett said. 🏠

QUEST for National Cancer Institute Designation



For 30 years, the UAMS Winthrop P. Rockefeller Cancer Institute has provided high-quality, research-driven cancer care for thousands of patients from across Arkansas and around the world.

It is now the institute’s research focus that propels it toward the country’s most distinguished status for cancer centers: National Cancer Institute (NCI) Designation.

The first eight Comprehensive Cancer Centers were named in 1973, with the goal of getting research results to the maximum number of people in the shortest possible time.

As of 2019, there are 70 NCI Designated Cancer Centers in the United States, with the closest to Little Rock being in Memphis (which only provides pediatric care), Dallas and Oklahoma City.

To achieve designation, cancer centers undergo a highly competitive assessment process that demonstrates an outstanding depth and breadth of research in three areas: basic laboratory, patient/clinical and population-based. Designated centers also are expected to transform their research into measurable clinical outcomes for patients.

“Arkansans deserve to have a designated cancer center within their home state, and we are dedicated to making that dream become a reality,” said Cancer Institute Interim Director Laura Hutchins, M.D.

According to the American Cancer Society, approximately 44 Arkansans a day were diagnosed with cancer in 2018, and 6,910 died of the disease.

Achieving NCI Designation would provide both UAMS and Arkansas with multiple benefits:

- Significantly increased ability to receive federal and other research funding
- Improved access to clinical trials and new therapies unavailable elsewhere in the state
- Creation of new, high-paying health care jobs
- Increased visibility and research collaboration opportunities with leading cancer treatment teams
- Expansion of Arkansas as a health care destination

“While the process of achieving NCI Designation is long and complex, it is of vital importance as we work to expand our research capabilities and provide the most advanced therapies to all Arkansans,” Hutchins said



The most important thing is not so much the number of lesions but how big they are.”

Finding New Indicators of Myeloma Prognosis

By Linda Haymes

PIONEERING ADVANCES that have become standards of care and led to improved survival rates are the hallmark of what UAMS myeloma researchers do.

The myeloma program at the UAMS Winthrop P. Rockefeller Cancer Institute marks 30 years in 2019, and since that beginning has grown into the most comprehensive center in the world for research and clinical care related to multiple myeloma, a rare cancer of plasma cells that develops in the bone marrow.

One of the most recent research findings at the Myeloma Center has to do with focal lesions as indicators that may help predict the outcomes for patients being treated for myeloma.

Focal lesions are solid, elevated areas of plasma cell accumulations within the bone present in most myeloma patients, and can be found through radiology imaging techniques. Important contributors to the progression of the disease, focal lesions begin in the bone marrow.

A research team, led by Leo Rasche, M.D., and Niels Weinhold, Ph.D., in 2017 discovered myeloma cells can vary depending on their location, with the most aggressive tumors frequently only found in large focal lesions. In 2018, they showed for the first time the predictive value of large lesions in myeloma. They reported their findings in the July 2018 edition of *Blood*,

Journal of the American Society of Hematology in the article “The Presence of Large Focal Lesions is a Strong Independent Prognostic Factor in Multiple Myeloma.”

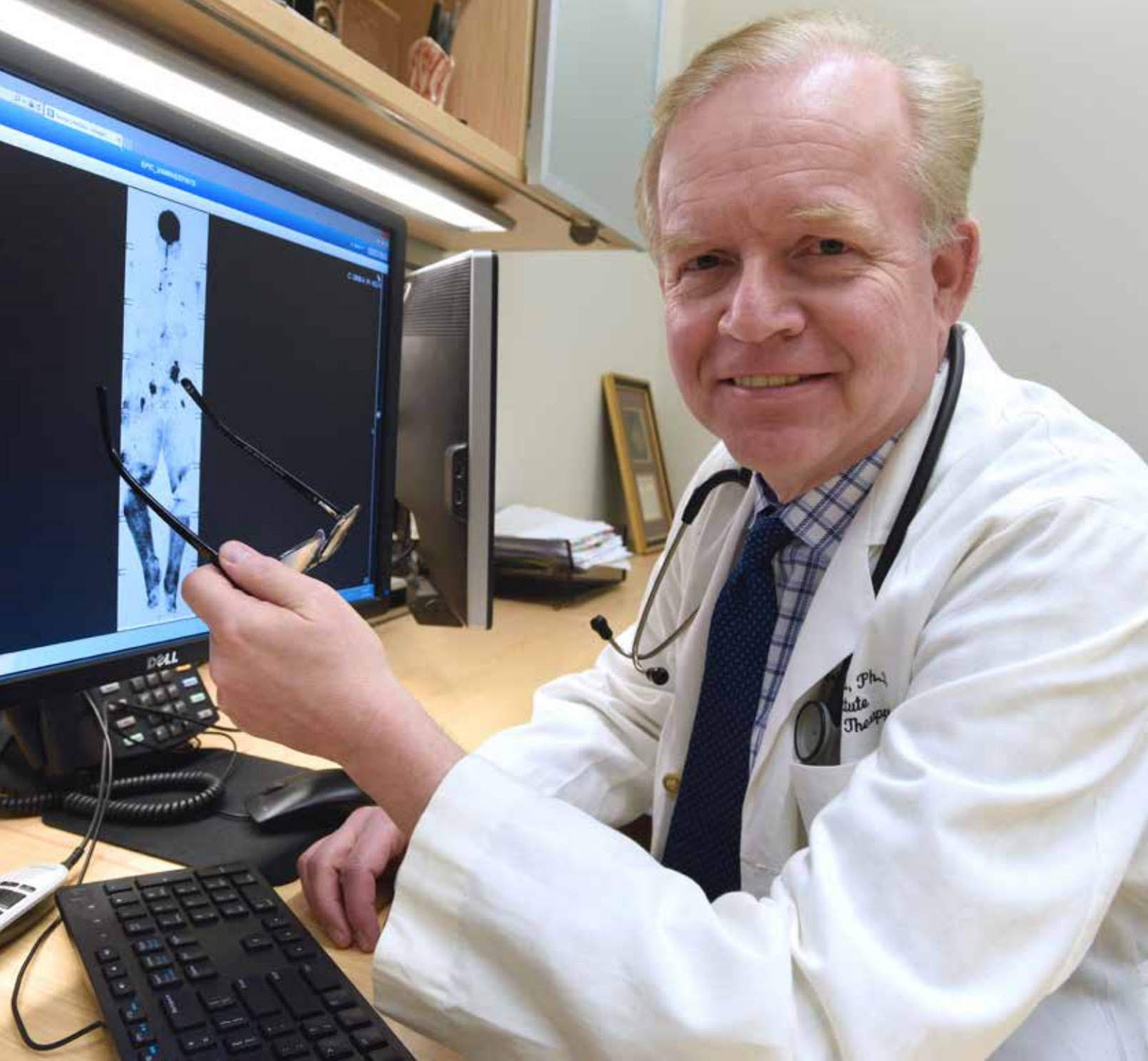
The researchers found that newly diagnosed patients with at least three focal lesions with perpendicular diameters of at least 5 square centimeters were associated with poor rates of survival.

“These observations offer insight into how myeloma develops and how the lesions behave because there are unique mutations in these areas,” said Frits van Rhee, M.D., clinical director for the Myeloma Center.

“The most important thing is not so much the number of lesions but how big they are,” van Rhee said. “If there are three or more that are bigger than 5 centimeters squared on the MRI [magnetic resonance imaging], then you have the worst outcomes.”

Large focal lesions have more mutations and some contain therapy-resistant tumor cells, van Rhee said. “However, it’s not practical to do a biopsy on all the lesions to determine if patients have high-risk disease. Instead, our researchers have determined MRIs can be used to predict early relapse.”

Currently, either x-ray or PET-CT scan is used to assess the severity of disease for myeloma patients. For the most recent study, which included 404 transplant-eligible, newly diagnosed myeloma patients, the researchers used a specific type of MRI



Frits van Rhee, M.D., clinical director of the Myeloma Center

— called diffusion-weighted MRI with background suppression — to identify the presence of multiple large focal lesions as a strong predictive factor of the outcome.

“Using this novel MRI technique, we have identified for the first time a pattern, which is strongly associated with poor outcome,” said Rasche. “It is independent from other established risk factors, and can be used

as criteria for clinical trials to determine whether patients have a high-risk form of myeloma, which is more challenging to treat.

“Based on the results we present in this paper, we are firmly convinced that diffusion-weighted magnetic resonance imaging with background suppression will become standard in the diagnostic work-up of multiple myeloma,” said Weinhold. 🏠



Increasing UAMS' Presence Statewide

By Ben Boulden

UAMS WANTS TO EXPAND ITS PRESENCE ACROSS ARKANSAS

because the need is great and widespread. UAMS has over the years established regional campuses to deliver health care education and clinical services to the various communities across the state. But there are more communities to reach.

“The state of Arkansas is tremendously under-resourced in the health care professions, especially in the Delta and southern part of the state,” said

UAMS Chancellor Cam Patterson, M.D., MBA. “I see Regional Campuses as bringing UAMS-level services to those communities, and perhaps more importantly, training health care professionals in those communities.”

Through its Regional Campuses division, UAMS trains medical residents in family medicine while providing clinical care and health education services. The eight regional campuses are UAMS Northeast in Jonesboro, UAMS Northwest in Fayetteville/Springdale, UAMS North Central in Batesville,



Jordan Weaver, M.D., and Julia Roulter, M.D.
in front of the new UAMS Family Medical
Center in Batesville.



A resident in family practice is more likely to practice in the last place they trained.”

is a great example of collaboration between a local partner and UAMS that can be used as a future model for expanding health care services in other communities across the state.

White River Medical Center in Batesville took out a loan to finance the \$5.5 million renovation of a building in Batesville to house the new Family Medical Center, and UAMS committed to a long-term lease to generate income for the hospital to pay off that loan. In addition, two local physicians agreed to move their practices into the new facility in Batesville. In late 2017, UAMS recruited a physician for its Family Medical Center at UAMS East Regional Campus in Helena.

“The more local providers who are willing to integrate their practices into the UAMS platform locally, then the more potential there is to really make one of the campuses stand out,” Moore said.

The UAMS Family Medicine Residency Program in Batesville plans to begin its first class of residents training in July 2019.

Moore said UAMS would like to consider extending a presence to smaller towns that might not be able to support a family medical center, but could support a clinic.

Regional Campuses has trained 810 residents who have stayed in the state to practice in 69 of its 75 counties.

Mark Jansen, M.D., UAMS Regional Campuses chief medical officer, said aging physicians in many communities in Arkansas feel obliged to continue working instead of retiring because they don't see any successor on the horizon.

“We're able to have conversations with those physicians about what we can do to relieve their burdens and free them to just practice medicine and mentor new physicians — our residents, the types of doctors these communities want to embrace,” Jansen said. “We're the biggest generator of primary care physicians for the state of Arkansas, bar none.” 🏠

UAMS South in Magnolia, UAMS South Central in Pine Bluff, UAMS Southwest in Texarkana, UAMS West in Fort Smith and UAMS East in Helena-West Helena.

Patterson said, “A resident in family practice is more likely to practice in the last place they trained. If UAMS is not training residents in those communities, then those communities are going to continue to struggle in attracting health care professionals.”

The eight regional campuses are doing a great job, but Patterson said he thinks the right number for the state is 12 or 13, and UAMS is going to be looking at opportunities to expand their number.

Sterling Moore, MBA, vice chancellor for Regional Campuses, said the August opening of the new Family Medical Center in Batesville



The program is designed to make you the best physical therapist you can possibly be.”

NWA Delivers Physical, Occupational Therapy

By Yavonda Chase

2018 HAS BEEN AN EXCITING YEAR for the physical therapy and occupational therapy programs on the UAMS Northwest Regional Campus in Fayetteville.

The Doctor of Physical Therapy program achieved full accreditation by the Commission on Accreditation for Physical Therapy Education (CAPTE) and graduated its first class of 22 students. Meanwhile, the Occupational Therapy Doctorate (OTD) program, a partnership with the University of Arkansas at Fayetteville, developed an innovative curriculum, moving one step closer to admitting students.

“Both of these programs are the first of their kind in northwest Arkansas,” said Pearl McElfish, Ph.D., vice chancellor for the Northwest Regional Campus. “UAMS saw a need in the region for physical and occupational therapists, and we are proud of our role in educating the next generation of health care providers.”

Earning full accreditation is a multi-year process. The physical therapy program, created in 2014, received candidacy status from CAPTE in July 2015 and started educating students in the fall of that year. On May 19, those first students graduated — three days after the program received notification that it had achieved full accreditation.

“This accreditation is validation of the quality of our program,” said John Jefferson, Ph.D., P.T., program director, associate professor and

chair of the Department of Physical Therapy in the College of Health Professions. “All the hard work our faculty put in developing this program, creating our community partnerships and mentoring our students has paid off, resulting in students who are well-equipped to provide amazing health care to patients.”

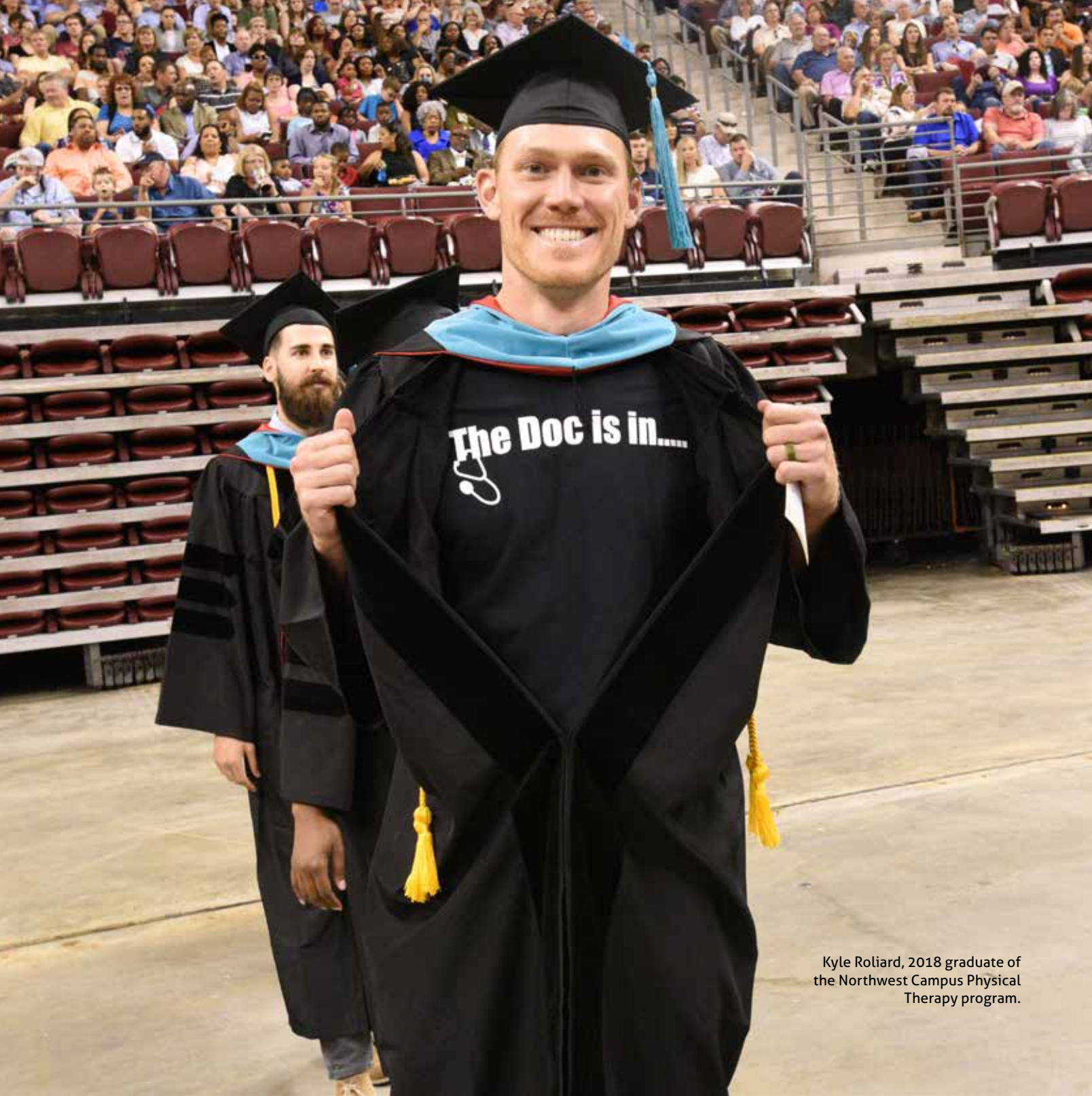
Further proof of that excellence was evident in July when the graduates took their national board exams and achieved a 100 percent pass rate. In 2017, only 8.3 percent of programs across the nation achieved such a feat, Jefferson said.

“The program is designed to make you into the best physical therapist you can possibly be,” said Katie Bowin, a member of the Class of 2018.

That level of excellence is what Sherry Muir, Ph.D., is aiming to create with the OTD program, a joint offering from the UAMS College of Health Professions and the College of Education and Health Professions at UA-Fayetteville that will be housed on both campuses, which are less than a mile apart.

Muir, who was hired as program director in September 2017, has made great strides in creating the program. So far, she has hired three faculty members and they have designed a groundbreaking curriculum that employs the Subject-Centered Integrative Learning for Occupational Therapy model.

“This type of non-traditional program puts occupation at the center of every course,” said Muir.



Kyle Roliard, 2018 graduate of the Northwest Campus Physical Therapy program.

Creating the curriculum is a major component in getting initial approval from the Accreditation Council of Occupational Therapy Education, she said.

The program is on track for students to begin course work in January 2020. The admission cycle will open in the summer of 2019. Initially, the

program will accept 24 students, with plans to grow to 32 over three to five years.

“We have more than 100 interested students on the waiting list for our program,” Muir said. “By the time we begin accepting students, we anticipate there will be 300 to 400 applications for our 24 openings.”

First Act After Hearing Loss Surgery: Propose to Fiancé

By Amy Widner

“YES” WAS THE FIRST

WORD Chad King of Redfield wanted to hear when he got his cochlear implant.

“On the day my implant was activated, I went home and proposed to her,” King said. “I wanted to be able to hear her say ‘yes’ to me.”

King’s girlfriend, Jamie, did indeed agree to become his wife, and King is doing well with the cochlear implant to restore his hearing loss. However, the decision to have the surgery wasn’t easy and it wasn’t a sure thing.

“He has a new lease on life,” said John Dornhoffer, M.D., who performed King’s surgery and is chairman of the Department of Otolaryngology — Head and Neck Surgery at UAMS. “Every day is a celebration for him, and it’s an inspiration to everyone on the medical team that he’s doing so well.”

King is now glad he took the plunge — in more ways than one.

“In addition to getting engaged, he has also gone sky diving since he got his implant,” Dornhoffer said. “We just laugh every time we’re around Chad. That’s how we all should live.”

King has been blind since birth. During most of his life,

a love of music has sustained him and has been a source of connection to others. He plays piano in church. Anywhere he goes and starts playing, a crowd soon gathers.

Then King started losing his hearing at age 9. His hearing loss has had some impact on his enjoyment of music, but it has had an even greater impact on his ability to communicate with others.

Jamie is blind as well. They met at school and started dating about four years ago.

“She knows me really well and helps me in situations where she knows I can’t hear, but it was getting to where she couldn’t even help me sometimes,” King said. “That’s when I knew I needed to start thinking about the implant.”

The problem is that cochlear implants help with day-to-day communication, but they actually make things like music more difficult. Cochlear implants are surgically implanted devices that replace lost hearing function in the ear. However, cochlear implants don’t translate sound into as many tones as the human ear does. With voices, that might not matter as much. Jamie’s voice might sound to King like she’s off by a note or two, but he can still understand what she’s



saying. However, when it comes to playing or listening to music, the difference in notes and tones is much more of an issue.

In addition, not everyone has the same success with cochlear implants. The brain has to learn how to interpret the new information about the sounds brought in by the cochlear implant. Not every brain relearns as quickly or as completely. And to implant the device, the surgeon must destroy the patient’s remaining hearing.



I feel like I've gotten my connection to the world back."



Chad King playing the piano.

Photo courtesy of Katrina Dupins

"It's an issue we're keenly aware of," said Dornhoffer, who also has hearing loss and a cochlear implant in one ear. "We walk each patient through a realistic assessment of the risks and the potential gains. It's a tough decision for everyone. For King, who — because of his blindness — was facing losing his main link to the world, I can only imagine it was terrifying."

Despite the risk of the unknown, King said at some point the choice became clear. Human interactions were more

important to him than anything else. He got his first implant in spring 2018 and his second that the fall.

"I feel like I've gotten my connection to the world back," King said. "Hearing was so important to me that I was willing to sacrifice the one thing I really care about, music, for the chance to communicate with the people I love. I'm blessed to have Jamie and many friends and family in church, and I want to keep enjoying their company."

Dornhoffer is one of the few in

the state performing the cochlear implant surgeries, but he hopes to change that in the coming year by hiring an additional faculty member who could help make the surgery available to more people.

As for King, Dornhoffer said he has been progressing faster than average at learning to use the cochlear implants.

"Losing my hearing felt like setback after setback," King said. "Now it's the opposite. Every day, I get to watch my hearing get better and better."



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