MU Medicine

University of Missouri School of Medicine / Fall 2016

FIGHTING MUSCULAR DYSTROPHY

RESEARCHERS DEVELOP PROMISING GENE THERAPY

Welcome to the inaugural issue of *MU Medicine*. I am delighted to share with you recent accomplishments of our researchers, physicians, students and alumni of the University of Missouri School of Medicine.

This is an exciting time in the history of our medical school. In June, we celebrated the opening of our clinical campus in Springfield. We still are one medical school, though we now have two top-quality campuses. With our partners at CoxHealth and Mercy Springfield, we are addressing the great need for more physicians in our state.

Construction is taking shape on Columbia's campus, as you can see on page 13 or online at **medicine.missouri.edu/morephysicians**. The Patient-Centered Care Learning Center will open in August 2017, just west of J. Otto Lottes Health Sciences Library.

I know that MU is home to outstanding clinical, research and educational programs, and we want the rest of the country to realize that as well. Innovative research and programs such as our Division of Nephrology's Annual Dialysis Conference are putting us on the map. Additionally, other medical schools across the country are adopting an original MU program. Our School of Medicine's Legacy Teachers™ program lets students recognize patients and their families who made significant impressions on their future careers as physicians. The program, which was created 11 years ago, has expanded to other medical schools including the University of Kansas-Wichita, the University of North Carolina and Tufts University.

In October, we will welcome Brad Perkins, MD, '85, to campus. A genomics expert and former CDC leader, he will present our school's Milton D. Overholser Lecture during the 59th Annual Physicians Alumni Weekend. You can find more details about the scientific presentation and Homecoming festivities in the final pages of this magazine.

To learn more about events and accomplishments at the School of Medicine, visit our website, **medicine.missouri.edu**, or give us your feedback on our Facebook page and other social media sites. I look forward to hearing from you.

Patrick Delafontaine, MD
Hugh E. and Sarah D. Stephenson Dean
University of Missouri School of Medicine
Professor of Medicine and Medical Pharmacology and Physiology

MU Medicine

MISSION STATEMENT
MU Medicine is published twice yearly to share updates that highlight the accomplishments of the MU School of Medicine's community of researchers, clinicians, students and alumni.

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ON THE COVER:
Using a virus to deliver microgene therapy, University of Missouri researchers have successfully treated Duchenne muscular dystrophy in an animal model. Dongsheng Duan, PhD, says human clinical trials will be the next step.

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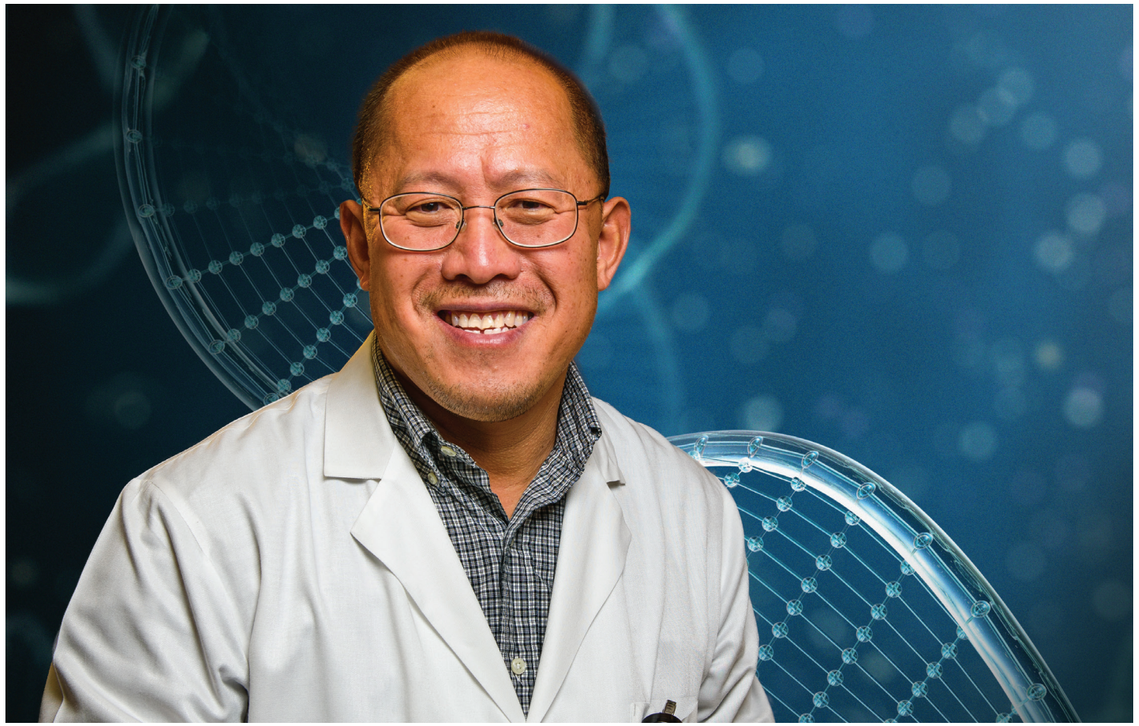


One step closer to muscular dystrophy treatment

Gene therapy treats all muscles of dogs with Duchenne

▲ Dongsheng Duan, PhD, leads a team of researchers that treated dogs with Duchenne muscular dystrophy. The study, "Safe and Body-wide Muscle Transduction in Young Adult Duchenne Muscular Dystrophy Dogs with Adeno-associated Virus," was published in the October 2015 issue of *Human Molecular Genetics*.

For years, scientists have searched for a way to successfully treat Duchenne muscular dystrophy. Children with this disease face a future of rapidly weakening muscles and a shortened life expectancy.

Dongsheng Duan, PhD, is one step closer to developing treatment for the deadly disease.

"This discovery took our research team more than 10 years, but we believe we are on the cusp of having a treatment for the disease," said Duan, a Margaret Proctor Mulligan Professor in Medical Research at the University of Missouri School of Medicine.

Duchenne muscular dystrophy is the most common form of muscular dystrophy, a group of diseases characterized by muscle weakness. It primarily affects boys, and, in most cases, symptoms appear between the ages of 2 and 5. As the disease progresses, many children lose the ability to walk. Eventually, muscles in the heart and lungs stop working.

In 2015, Duan's team successfully treated dogs with Duchenne. This study, "Safe and bodywide muscle transduction in young adult Duchenne muscular dystrophy dogs with adeno-associated virus," was published in Human Molecular Genetics in October.

The next step is translating the treatment to humans. Although a cure may still be years away, Duan is closer than ever to finding solutions to treat children with the disease.

DEVELOPING A GENE THERAPY TREATMENT

Muscular dystrophy is caused by gene mutations, and children with Duchenne have a specific gene mutation that interrupts the production of dystrophin, a protein that maintains muscle integrity. Without dystrophin, muscle cells become weak and eventually die.

Through gene therapy, Duan replaces the faulty genes with healthy ones. Dystrophin is tricky to replace, though, because of its large size. It is an incredibly long gene, containing nearly 10 times the amino acids of a typical human protein.

"Due to its size, it is impossible to deliver the entire gene with a gene therapy vector, which is the vehicle that carries the therapeutic gene to the correct site in the body," Duan said. "Through previous research, we were able to develop a miniature version of this gene called a microgene. Now, the technology used to create the gene-therapy has been licensed by Solid GT."

It has taken Duan's team more than a decade to find a method to successfully distribute the microgene to all affected muscles in dogs. Like humans, dogs develop the disease naturally. Because of the similarity in size between dogs and small children, successfully treating dogs with Duchenne offers hope for treating the disease in humans.

In the study published last fall, Duan's team showed how a common, harmless virus effectively carries the microgene to all muscles in the bodies of diseased dogs.

"The virus we are using is one of the most common viruses; it is also a virus that produces no symptoms in the human body, making this a safe way to spread the dystrophin gene throughout the body," Duan said. "It's important to treat Duchenne early before the disease does a lot of damage, as this therapy has the greatest impact at the early stages in life."

The researchers injected the diseased dogs with the virus carrying the corrected microdystrophin gene when the dogs began displaying symptoms at about 2 to 3 months of age. Those same dogs, now 1 year old, continue to develop normally.

CONNECTIONS WITH FAMILIES

Duan said he is motivated by patients and their parents who are waiting for a cure.

"The parents want it to be cured tomorrow," Duan said. "I'm so glad that, along the way, we have identified different problems and tried and solved problems, and now we're so close. One day, we're going to get to there."

Bob McDonald, MD, '88, and his wife, Annette, met Duan after their youngest son, Mark, was diagnosed with Duchenne. Nearly a decade later, the McDonald family and Duan remain comrades in their endeavor to find successful treatments for Duchenne.

"Dr. Duan is beyond a prototypical scientist; he's the ideal person you want working on any type of disease," said Bob, who has served as a clinical faculty member at the medical school.

The McDonald's eldest son, Thomas, begins his second year at MU's medical school in the fall. He also hopes to make strides in muscular dystrophy research and spent time working in Duan's lab as an undergraduate student and later as a full-time lab technician.

▼ Brothers Mark, Andrew, Thomas and Stephen McDonald, from left, play soccer at home in Jefferson City, Missouri. They are children of Bob McDonald, MD, '88, and Annette McDonald. Mark's diagnosis of Duchenne muscular dystrophy has made the family aware of the disease — and research discoveries at the University of Missouri.

"He's very thorough in his work," Thomas said of Duan. "Every detail is analyzed, and he's very critical. He's one of the most motivated people I've ever met, and the work he's doing will make a huge difference for my brother and other kids with Duchenne."

Duan consistently receives funding to pursue his research and recently received a five-year, $3 million award from the National Institutes of Health's National Heart, Lung and Blood Institute. He also has received funding from the U.S. Department of Defense and private foundations, such as Jesse's Journey and Hope for Javier.

> This discovery took our research team more than 10 years, but we believe we are on the cusp of having a treatment for the disease.
>
> — **Dongsheng Duan, PhD**, Margaret Proctor Mulligan Professor in Medical Research at the University of Missouri School of Medicine

"I'm so glad others realize what a fantastic researcher Duan is," Bob McDonald said. "It's very comforting to know he's a good role model. He's training a group of people that are going to go forward. His legacy will be great."

WATCH A VIDEO about Duchenne muscular dystrophy research at **medicine.missouri.edu/DMD.**

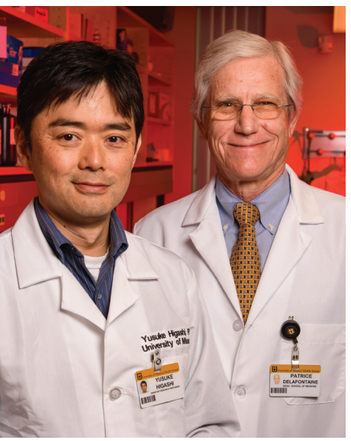
KATTI RECOGNIZED GLOBALLY FOR GREEN TECHNOLOGY

Kattesh Katti, PhD, has dedicated his career to discovering new ways to use gold nanoparticles and "green" technologies such as phytochemicals from tea, soy, cinnamon, and other common herbs and fruits, as non-toxic alternatives to treating cancer, arthritis and other debilitating diseases. In April, Katti was named the 2016 Person of the Year in Science by *Vijayavani*, the leading daily newspaper in the Indian state of Karnataka.

At the University of Missouri, Katti serves as Curators' Professor of Radiology and Physics, director of the MU Institute of Green Nanotechnology and Margaret Proctor Mulligan Distinguished Professor of Medical Research at the MU School of Medicine.

Katti, who was born in Karnataka, said this recognition helps validate the quality of interdisciplinary translational medical research in the field of green nanotechnology being carried out at MU.

In addition to the India honor, Katti received a competitive RMIT Foundation Fellowship Award from RMIT University in Melbourne, Australia. This award allows Katti to travel to Australia to spend two weeks at the global university of technology, design and enterprise, and collaborate with RMIT administrators, faculty and students.



EXAMINING THE LINK BETWEEN HEART DISEASE, AGE

Researchers at MU have found that a protein, which is naturally found in high levels among adolescents, can help prevent arteries from clogging.

"The body already works to remove plaque from arteries through certain types of white blood cells called macrophages," said Yusuke Higashi, PhD, assistant research professor in the Division of Cardiovascular Medicine and lead author of the study. "However, as we age, macrophages are not able to remove plaque from the arteries as easily. Our findings suggest that increasing Insulin-like Growth Factor-1 (IGF-1) in macrophages could be the basis for new approaches to reduce clogged arteries and promote plaque stability in aging populations."

Results of the study, funded by the NIH and American Heart Association, were published in *Circulation* in June 2016.

In a previous study, Higashi and Patrick Delafontaine, MD, the Hugh E. and Sarah D. Stephenson Dean of the MU School of Medicine, examined the arteries of mice fed a high-fat diet for eight weeks. IGF-1 was administered to one group of mice. Researchers found that the arteries of mice with higher levels of IGF-1 had significantly less plaque than mice that did not receive the protein. Since the macrophage is a key player in the development of atherosclerosis, the researchers decided to investigate potential anti-atherosclerosis effects of IGF-1 in macrophages.

"Our current study is one of the first ever to examine a link between IGF-1 and macrophages in relation to vascular disease," Delafontaine said. "We examined mice whose macrophages were unresponsive to IGF-1 and found that their arteries have more plaque buildup than normal mice. These results are consistent with the growing body of evidence that IGF-1 helps prevent plaque formation in the arteries."

In future research, Higashi and Delafontaine plan to conduct the same study on larger animals before eventually studying human subjects. The researchers say studies on larger animals genetically closer to humans will be important for furthering the development of IGF-1-based therapeutic strategies.

GETTING TO THE HEART OF ANTIVIRAL SIDE EFFECT

In a study funded by the National Heart, Lung and Blood Institute, MU researchers identified an enzyme that may reduce the risk of cardiovascular disease caused by HIV medications.

"When protease inhibitors are used to treat HIV, endothelial cell function is compromised," said William Durante, PhD, a professor of medical pharmacology and physiology at the MU School of Medicine and lead author of the study. "The cells' natural tendency to promote blood flow through the vessel is lost and they also become inflamed. These issues lead to plaque build-up within arteries and, ultimately, cardiovascular disease."

Durante and his research team knew from previous studies that the enzyme heme oxygenase-1, or HO-1, offers protection against endothelial dysfunction. Using a cell-based model of cultured human endothelial cells, the researchers were able to increase the amount of the enzyme within the cells.

More research is needed to verify that HO-1 will prevent endothelial cell dysfunction with all antiviral medications. The study, "Heme Oxygenase-1-Derived Bilirubin Counteracts HIV Protease Inhibitor-Mediated Endothelial Cell Dysfunction," was published in the May 2016 issue of *Free Radical Biology and Medicine*.

PHYSICIAN-SCIENTIST LEADS CANCER CENTER, SURGERY DEPARTMENT

Kevin Staveley-O'Carroll, MD, PhD, joined MU in September 2015 as chair of MU's School of Medicine Hugh E. Stephenson Jr., MD, Department of Surgery and director of MU's Ellis Fischel Cancer Center.

Before coming to MU, Staveley-O'Carroll served as chief of oncologic and endocrine surgery; medical director of Hollings Cancer Center; Alice Ruth Reeves Folk Endowed Chair of Clinical Oncology; and a professor of surgery, microbiology and immunology at the Medical University of South Carolina.

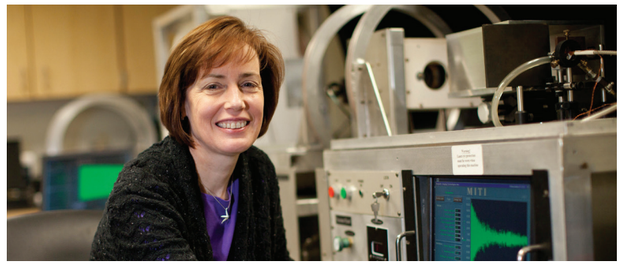
Staveley-O'Carroll's research and mentoring activities have been funded by the National Institutes of Health and American Cancer Society. His involvement with national and international organizations includes serving as president of the Association for Academic Surgery and leading the Society of Clinical Surgery's membership committee. The author or coauthor of more than 90 peer-reviewed articles and book chapters, Staveley-O'Carroll has served as editor for the *World Journal of Gastroenterology*; *World Journal of Hepatology*; and *Cancer, Biology and Therapy*.

MRI RESEARCHER TAKES REINS OF RADIOLOGY

Talissa Ann Altes, MD, chair of the School of Medicine's Department of Radiology, joined MU part-time in September 2015 and full-time in January 2016. She holds the endowed title of the Gwilym S. and Maria Antonia Lodwick Distinguished Professorship in Radiology.

Altes came to Missouri from the University of Virginia in Charlottesville, where she served as vice chair of clinical research and associate professor of radiology. Altes is a leader in research involving the contrast agent hyperpolarized gas in MRI. Her early observations and her leadership resulted in the identification of applications of hyperpolarized gas MRI in the management of children's lung diseases, as well as emphysema and chronic obstructive pulmonary disease.

Her research has been funded by the NIH, the U.S. Department of Defense and the Society of Pediatric Radiology. The author of more than 80 peer-reviewed articles and book chapters, Altes has served as a grant reviewer for the NIH, the Canadian Institutes of Health Research and the German Federal Ministry of Education and Research.



MEDICAL SCHOOL WELCOMES NEW RESEARCHERS

The School of Medicine welcomed two researchers in March 2016 from Wright State University (WSU) in Dayton, Ohio. Dana Duren, BA '93, PhD, and Richard Sherwood, PhD, are married, and both are involved with research projects funded by the NIH.

Duren, professor and director of orthopaedic research at MU, studies bone and joint health over the life span. At WSU, she served as a professor and director of research for WSU's Department of Orthopaedic Surgery, Sports Medicine and Rehabilitation.

Sherwood, professor of pathology and anatomical sciences and professor of orthopaedic surgery, studies human growth and development of craniofacial structures. At WSU, he served as co-director of The Fels Longitudinal Study, the world's largest and longest running study on human growth and body composition.

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School of Medicine news at
medicine.missouri.edu/news.

CLASS OF 2016

▲ School of Medicine students share their Match Day results on March 18. From left, Lila Wahidi, MD '16, will train in pediatrics at University of Missouri Health Care in Columbia; Lauren Miles, MD '16, will train in internal medicine at Louisiana State University in Baton Rouge; and Alicia Webb, MD '16, will train in pediatrics at the University of Alabama Medical Center in Birmingham.

MATCH Illuminates Success

100% of MU students matched with a residency program

University of Missouri School of Medicine students simultaneously ripped open the sealed envelopes that contained their fates as physicians on March 18 during the school's annual Match Day.

The school's gallery was overwhelmed with hugs, high-fives and tears from families and friends as fourth-year medical students celebrated the start of a new chapter in their lives.

The 2016 class of medical students from the MU School of Medicine was highly sought; all 85 students received a residency program match. At 100 percent, the number of MU School of Medicine graduates matched with residencies is above the national average match rate of 94 percent.

The MU School of Medicine filled all its residency positions in the match. Many of those physicians – 30 percent of MU School of Medicine's class of 2016 – will stay on the MU campus for their residency training.

Forty percent of the MU School of Medicine 2016 class will remain in Missouri. Additionally, 42 percent of this graduating class selected residency programs in high-need primary care fields, including internal medicine, pediatrics and family medicine.

LEGACY TEACHERS™ PROGRAM EXPANDS

An original MU program now is being adopted by other medical schools. The MU School of Medicine's Legacy Teachers™ program lets students recognize patients and their families who made significant impressions on their future careers as physicians. The program, which was created 11 years ago, has expanded to other medical schools including the University of Kansas-Wichita, the University of North Carolina and Tufts University.

"We are delighted to see the Legacy Teachers program being adopted at other medical schools," said Betsy Garrett, MD '79, William C. Allen Professor in the Department of Family and Community Medicine. "Gratitude is such an important trait for physicians to have and express. It is important we give students the opportunity to thank patients who are among their best and most memorable teachers. We truly believe that this program, which we are proud to say is an MU original, could and should occur at every medical school in the country."

Learn more about Legacy Teachers at **medicine.missouri.edu/legacy**.

▶ Nicole Blakely, center, takes a photo with Betsy Garrett, MD '79, and fourth-year medical student Gabriella Johnson during a recognition luncheon at MU on April 14. Johnson nominated Blakely as her Legacy Teacher — a patient from whom she has learned immensely.

▲ Matthew Bartley, MD '16, receives his diploma from Patrick Delafontaine, MD, dean of the School of Medicine, at Jesse Auditorium on May 14. Bartley will train in general surgery at the University of Colorado in Aurora.

Dean Inducted Into ACCA

Patrick Delafontaine, MD, Hugh E. and Sarah D. Stephenson Dean of the MU School of Medicine, has been inducted into the American Clinical and Climatological Association (ACCA). Active membership in this society is limited to 250 physicians. Delafontaine is the only ACCA member at MU and one of only eight members from Missouri.

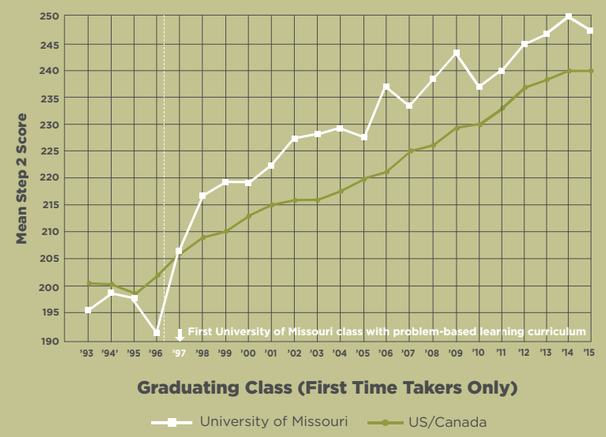
"I am delighted to join this society of outstanding physicians and scientists," said Delafontaine, who is also a professor of medicine and medical pharmacology and physiology at MU. "I welcome the opportunity to use my knowledge and research to advance the scientific understanding and compassionate care of human disease."

Founded in 1884 over concerns about tuberculosis and the effect of climate on its treatment, the ACCA has since expanded its interests to cover all aspects of internal medicine, with an emphasis on the clinical study of disease. Members are selected on the basis of their leadership, excellence in their chosen field, demonstration of a high-level of integrity and professionalism, and their yearning to nurture a spirit of warmth, diversity and friendship.

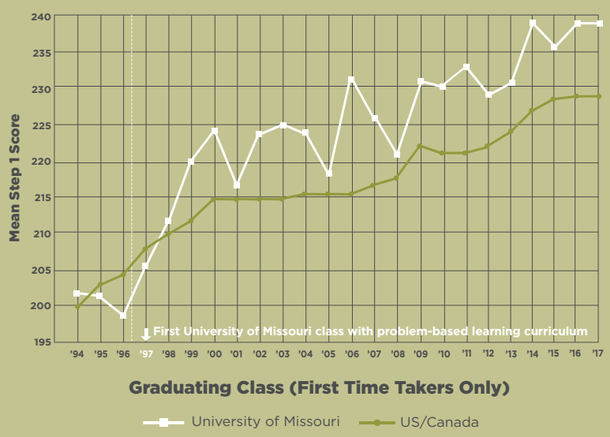
EXAM SCORES ON THE RISE

In 1993, the University of Missouri School of Medicine implemented a curriculum that substantially reduced lectures in favor of patient-based learning. The curriculum emphasizes problem solving, self-directed learning and early clinical experiences rather than memorization. The curriculum's success is illustrated in the following graphs of average exam scores for first-time takers on the United States Medical Licensing Exam (USMLE).

US/Canada and University of Missouri USMLE Step 2 (Clinical Knowledge) Scores



US/Canada and University of Missouri USMLE Step 1 (Science Knowledge) Scores



MU Hosts WORLD'S LARGEST Dialysis Conference

Event has brought in more than 66,000 attendees representing 60 countries

SAVE THE DATE

Annual Dialysis Conference

MARCH 11-14, 2017
LONG BEACH, CALIFORNIA

annualdialysisconference.org

Little did Karl Nolph, MD, and his team know when they started a symposia in 1980 that the event would turn into an annual conference bringing international attention and recognition to the University of Missouri School of Medicine.

With encouragement from the National Institutes of Health (NIH), Nolph's team organized the first conference to educate health care professionals on the clinical and administrative aspects of planning, starting and maintaining a new therapy for patients with end stage kidney disease. Known as continuous ambulatory peritoneal dialysis (CAPD), today it is a common treatment. They organized the first National CAPD Conference in Kansas City, Missouri, as a way to educate centers about peritoneal dialysis.

"The first meeting was very successful and had about 350 attendees," said Ramesh Khanna, MD, the Karl D. Nolph Chair of Nephrology and the chair of the Annual Dialysis Conference. "People came from more than 40 states and 11 countries to participate. The conference was so successful that we were urged to organize another one the next year."

At the first meeting, Nolph stressed the need for a national registry of CAPD and announced that the NIH had agreed to sponsor a national directory, which he would direct. Nolph, who died in 2014 at age 77, was a pioneer in the field of peritoneal dialysis and a longtime leader of the MU School of Medicine's Division of Nephrology. He served MU for nearly 45 years.

Throughout the years, the conference broadened its scope and reach. Instead of solely focusing on CAPD, conference organizers decided to include research and speakers exploring all forms of dialysis. Before long, the National CAPD Conference evolved into the International Peritoneal Dialysis Conference and eventually the Annual Dialysis Conference, what it is known as today.

▲ Ramesh Khanna, MD, right, chats with patient Bob Mullett of Eldon, Missouri. In April 2016, the National Kidney Foundation awarded Khanna the J. Michael Lazarus Distinguished Award for his outstanding research contributions to clinical science and care of dialysis patients. The foundation also posthumously awarded Karl Nolph, MD, for improving the lives of patients worldwide.

This exposure extends beyond the week-long conference through numerous publications, including *Advances in Peritoneal Dialysis* and the *Journal of International Society for Hemodialysis*. Khanna estimates that more than 1,700 proceeding papers have been published and consumed worldwide since the symposia's inception.

"Without a doubt, the reputation of our Division of Nephrology and MU continues to grow as a result of this conference," said Patrick Delafontaine, MD, the Hugh E. and Sarah D. Stephenson Dean of the MU School of Medicine. "Dr. Ramesh Khanna does an excellent job in gaining international exposure on the importance of dialysis."

MILLIONS IN NIH FUNDING

In 2015, half of the National Institutes of Health funding for University of Missouri research was garnered by MU School of Medicine investigators. The medical school brought in more than $18 million in NIH funding. The Blue Ridge Institute for Medical Research (BRIMR) ranks MU's medical school 89th for NIH funding among a field of 138 medical schools.

Nancy and Bill Thompson tour the construction site for the Thompson Regenerative Orthopaedics Laboratory with James Stannard, MD, and James Cook, DVM, PhD, at the Missouri Orthopaedic Institute on May 5.

Pursuing Discoveries

$3 million gift establishes regenerative orthopaedics center

The Thompson Foundation, created by Bill and Nancy Thompson, has pledged $3 million to the University of Missouri School of Medicine to create the Thompson Center for Regenerative Orthopaedics.

"I am very lucky and blessed to be successful in a career that has generated wealth that I can do something with," said Bill Thompson, BS CiE '68, the retired chief executive officer of Pimco, a global investment management firm. "I know the deep value of private investment in higher education. We need private philanthropy to do special things."

Investing in Mizzou is not new for Bill and Nancy Thompson, BS HES '67, of Irvine, California. In 2005, their $8.5 million gift helped establish the Thompson Center for Autism and Neurodevelopmental Disorders, now a national leader in the diagnosis and treatment of autism spectrum disorders.

The new orthopaedics center will be housed on the fourth floor of a new addition to the Missouri Orthopaedic Institute, which is currently under construction. Recent research into regenerative orthopedics at MU includes the development of a better method to store donor tissue, and improved procedures for repairing torn knee ligaments and other joint injuries. These discoveries led to the creation of the Mizzou BioJoint Center at the institute, drawing patients from around the globe for biological joint replacements.

James Cook, DVM, PhD, the William and Kathryn Allen Distinguished Professor of Orthopaedic Surgery and director of the Orthopaedic Research Division at MU, said this gift will create a unique opportunity to provide world-class care for Missourians.

"It truly will be a one-of-a-kind laboratory right in the heart of the clinical orthopaedic center," Cook said.

The Thompsons' hope for the gift is to boost the scope and quality of care at the Missouri Orthopaedic Institute. James Stannard, MD, medical director of the Missouri Orthopaedic Institute, believes it will happen.

"This gift is a game-changer," Stannard said. "We can go from very good to great. That's an elite jump that only a very few can make." By training at the new center, surgeons and researchers hope to spread the regenerative orthopaedic programs and technologies developed at MU's medical school across the nation and around the globe to benefit millions of people.

Researchers at the new center will pursue discoveries and advances to help people with joint replacements resume family and work activities sooner and lower costs and improve access to health care.

"We cannot thank the Thompsons enough for their generosity and vision to support such life-changing research here at MU," said Patrick Delafontaine, MD, dean of the MU School of Medicine. "Our faculty and students are doing amazing things at the Missouri Orthopaedic Institute and with regenerative orthopaedics in particular. This financial support will have a tremendous impact on health care and improving the quality of life for Missourians and people around the world."

GIVING TO MIZZOU

Your gift to the MU School of Medicine can make a difference. Please visit **medicine.missouri.edu** and click the "Giving" link in the upper right corner. For more information please contact Yvonne Miller, executive director of advancement, at **573-882-6100**, or ***millerym@missouri.edu***.

LEARN ABOUT the Mizzou BioJoint Center at **biojoint.org**.

ONE Medical School, **TWO** Campuses, **MORE** Physicians

▲The first nine students at MU's clinical campus in Springfield pose for a photo following a ribbon-cutting ceremony on June 13. From left: Leo Maurer, Jeffrey Dorbauer, Jakob Allen, Ashley Albertson, Devin St. Clair, Kelsey Clary, Scott Miller, Chris Weil and Murphy Mastin.

The University of Missouri School of Medicine is expanding its medical school class size from 96 to 128 students to address a critical shortage of physicians in Missouri and the nation. As part of the expansion, the School of Medicine, in partnership with CoxHealth and Mercy health systems, opened a second MU clinical campus in Springfield in June 2016 and will open a new medical education building in Columbia in 2017.

EVANS LEADS SPRINGFIELD CAMPUS

Andrew Evans, MD, was appointed associate dean and chief academic officer for the medical school's Springfield clinical campus in February.

"The University of Missouri has a strong background in medical education and has trained more Missouri physicians than any other university," Evans said. "The opportunity to bring medical education to the Springfield community is the exciting part for me."

As associate dean for the Springfield clinical campus, Evans engages Columbia and Springfield leaders to provide strategic direction and vision. He will ensure that the educational programs in Springfield align with and support high quality, effective patient-centered care.

Formerly a hospitalist at Mercy Clinic Springfield, Evans is board-certified in internal medicine. He is a fellow of the American College of Physicians and a senior fellow of the Society of Hospital Medicine. He received his medical degree from the University of Washington in Seattle and completed residency training in internal medicine at Baylor College of Medicine in Houston. He holds BA and MBA degrees from Drury University in Springfield.

Evans previously held a faculty appointment at the School of Medicine and has worked on the medical staff and served in administrative positions in all three health systems involved with the medical school expansion.

Evans said his strong relationships with and understanding of the partner organizations will help him in his new role.

"I've had positive experiences with all three organizations and regard all of them highly," Evans said. "I'm looking forward to building on existing relationships and working with CoxHealth, Mercy and MU to expand exceptional educational opportunities for future physicians."

A lead clerkship coordinator, several support staff and associate clerkship directors have joined Evans on the Springfield team.

Get updates on the medical school's expansion at **medicine.missouri.edu/morephysicians**.

DEVELOPING EXCEPTIONAL CLINICAL FACULTY

One of Evans' first duties included attending a month-long conference in Palo Alto, California, at Stanford's Faculty Development Center for Medical Teachers. Shelby Han, MD, a physician at CoxHealth, and Betsy Garrett, MD '79, director of medical student education at MU, also attended. The three physicians now will train other clinical faculty members to become more effective and engaging medical educators.

A faculty training session April 29 in Springfield brought together physicians from Mercy, Cox and MU for the first time — together, these individuals collectively form the Springfield clinical campus faculty.

The faculty members in Springfield have similarities to those in Columbia, said Weldon Webb, associate dean for the Springfield clinical campus implementation.

"They're busy practicing physicians who also teach," Webb said. "It's one school, two locations. One faculty, two locations."

NEW BUILDING, NEW STUDENTS

The School of Medicine hosted an open house June 13, 2016, for its new location at 1845 South National in Springfield. The leased building houses administrative offices and a testing site. Move-in began in late May and should be completed by the end of the summer.

Nine third-year medical students compose the Springfield clinical campus' first class. They began their studies in mid-June. Six of the students have hometowns in Missouri. The other students are from Iowa, Kansas and Washington.

"Students volunteer to study in Springfield because they view it as an opportunity to be exposed to high-quality practice in a community setting while working one-on-one with attending physicians," Evans said.

The students will spend their third and fourth years of medical school in Springfield. Eleven students will join the Springfield campus in spring 2017. Eventually, 24 third- and fourth-year students will study in Springfield each school year.

▲Construction continues on the Patient-Centered Care Learning Center on the University of Missouri's campus in Columbia, shown in May 2016. The facility is being constructed just west of J. Otto Lottes Health Sciences Library. The dome of MU's iconic Jesse Hall is visible in the distant center.

◀This rendering, courtesy of architect Berkebile Nelson Immenschuh McDowell, Inc. (BNIM), shows the Patient-Centered Care Learning Center. The new building is set to open in summer 2017.

GET A LIVE VIEW of the construction site at **medicine.missouri.edu/morephysicians**.

HACKING THE SOFTWARE FOR LIFE

Genomics expert, former CDC leader speaking at MU during Homecoming

BRAD PERKINS, MD ’85

When Brad Perkins, MD ’85, applied to medical school in 1981, he imagined a world where medicine and artificial intelligence were intertwined. His father’s work as a flight engineer and his own pre-medicine lab work with bacterial meningitis at the University of Missouri fostered that vision.

“But I didn’t know then that it would take quite this long,” Perkins said with a laugh.

Perkins is now the chief medical officer of a startup that has an estimated 20,000 human genomes in its growing database, which it endeavors to transform into a range of services to improve health. He will present the Milton D. Overholser Lecture, “Hacking the Software for Life,” Friday, Oct. 21, 2016, during the 59th Annual Physicians Alumni Weekend at the MU School of Medicine.

In his leadership position with Human Longevity Inc. (HLI), Perkins oversees clinical and therapeutic operations for the company, which includes collecting and analyzing phenotypic data and stem cell therapeutics. The company has raised more than $300 million from investors.

Perkins said his passion for genomics comes directly from his background in bacteriology.

“The first revolution in genomics occurred in bacteria, and I was fortunate enough to be a witness to that early on,” Perkins said.

For more than 20 years, Perkins led high-profile programs at the Centers for Disease Control and Prevention (CDC). These programs included field and lab investigations into the United States anthrax attacks in 2001.

“That was the first time the CDC used whole genome sequencing in an investigation,” Perkins said. “Now, we are seeing broad use of that in medical and public health investigation.”

Perkins began his career at the CDC in 1989 after completing residency training in internal medicine at the Baylor College of Medicine in Houston. While at the CDC, he published more than 120 peer-reviewed publications and book chapters.

He first joined and then led the Meningitis and Special Pathogens Branch where he investigated global bacterial disease epidemics. He co-discovered the bacteria that causes cat scratch diseases and conducted translational research leading to development of several new bacterial meningitis and pneumonia vaccines, now the standard of vaccine therapy globally. In 2005, he was appointed CDC’s chief strategy and innovation officer, a position in which he managed 15,000 employees with offices in more than 50 countries. Working closely with the CDC director, he built a $2 billion emergency response capability and positioned the improvement of population health as a focus of the health care reform movement within the White House administration at that time.

Following his career at the CDC, Perkins served as executive vice president for strategy and innovation, and chief transformation officer at Vanguard Health Systems. The multi-state, for-profit, integrated health services provider employed nearly 46,000 individuals. He helped transform Vanguard from a traditional fee-for-service health care model, to a population health model. During his tenure, Vanguard’s revenues grew from approximately $2.6 billion to nearly $6.5 billion.

In addition to his medical degree, Perkins received a bachelor’s degree in microbiology from MU and an MBA from Emory University in Atlanta.

CLASS NOTES COMING SOON

Tell us about your personal and professional activities, and we’ll share the news with your former classmates. Visit **medicine.missouri.edu/alumni** and click the “Share News” link or contact Laura Gerding, director of alumni affairs, at **573-882-6949** or **gerdingla@missouri.edu.**

ALUMNA SELECTED FOR FELLOWSHIP

Laine Young-Walker, MD ’97, an associate professor of psychiatry and chief of the Division of Child and Adolescent Psychiatry at MU, has been accepted as a fellow in the 2016-2017 class of the Hedwig van Ameringen Executive Leadership in Academic Medicine (ELAM) Program for Women through Drexel University’s College of Medicine.

The ELAM program is an intensive year-long fellowship for female faculty members working in medicine, dentistry and public health. The program provides fellows with extensive coaching, networking and mentoring opportunities.

In addition to her medical degree, Young-Walker completed residency training in psychiatry and fellowship training in child and adolescent psychiatry at MU. She now serves as the training director for MU’s child and adolescent psychiatry fellowship program.

LAINE YOUNG-WALKER, MD ’97

IN MEMORIAM

THOMAS FISCHER, MD, BS MED ’57, one of the first graduates of the medical school’s four-year program, died Jan. 20, 2016, in Hannibal, Missouri.

JOHN HOLCOMB, MD ’60, family medicine physician, died March 24, 2016, in Cape Girardeau, Missouri.

NOEL LAWSON, MD, professor emeritus of anesthesiology at the MU School of Medicine and former chair of the Department of Anesthesiology, died March 19, 2016, in Columbia, Missouri.

REBECCA LUECKENHOFF, MD ’82, family medicine physician, died May 27, 2016, in Jefferson City, Missouri.

GREGORY MUNSON, MD ’75, orthopaedic surgeon, died May 30, 2016, in Orlando, Florida.

BONNIE RANNEY, MD ’84, family medicine physician, died Dec. 13, 2015, near Rolla, Missouri.

DAVID SCHERR, MD ’59, retired orthopaedic surgeon, died June 3, 2016, in Atlanta.

WILLIAM TRUMBOWER, MD ’71, obstetrician-gynecologist, died March 4, 2016, in Columbia.

From left: Patrick Delafontaine, MD, dean of the MU School of Medicine, presented awards to Donald Kuenzi, Victoria Fraser, John Cowden, Jacob Quick, Eileen Meehan Dyer, Pritish Tosh, Debra Howenstine, Randy Sherman and Linda Headrick.

2016 ALUMNI AWARDS

The MU School of Medicine presented nine graduates and supporters with awards during a reception and dinner at the Norwood Hills Country Club in St. Louis on March 17. The ceremony was held in conjunction with the Missouri State Medical Association’s annual conference.

CITATION OF MERIT
Victoria Fraser, MD ’83

HONORARY MEDICAL ALUMNI
John Cowden, MD
Eileen Meehan Dyer, BSN ’68
Linda Headrick, MD

DISTINGUISHED SERVICE
Debra Howenstine, MD ’88
Donald Kuenzi, MD ’51
Randy Sherman, MD ’77

OUTSTANDING YOUNG PHYSICIAN
Jacob Quick, BJ ’98, MD ’08
Pritish Tosh, BS ’99, MD ’03

School of Medicine
University of Missouri Health

Communications, DC028.00
1020 Hitt St.
Columbia, MO 65212

59th ANNUAL

PHYSICIANS ALUMNI WEEKEND

University of Missouri School of Medicine • Friday and Saturday, Oct. 21-22, 2016

Ann Marty, MD '85, Susie Ailor, MD '85, Dee Fenner, MD '85 and Steven Daniels, MD '87

REUNION CELEBRATIONS FOR THE CLASSES OF 1951, 1961, 1966, 1971, 1976, 1981, 1986, 1991, 1996, 2001 and 2006

FRIDAY, OCT. 21

- Scientific Program, School of Medicine
- Dean's Address, School of Medicine
- Alumni Banquet, Country Club of Missouri

SATURDAY, OCT. 22

- Alumni Tailgate in Lot A next to Memorial Stadium *(Founders Lot)*
- MU Tigers vs. Middle Tennessee State Blue Raiders in MU's Homecoming Game

REGISTER ONLINE: www.mizzou.com/PAW16

For more information, please contact Laura Gerding, director of alumni affairs, at ***gerdingla@missouri.edu*** or call **573-882-5021**.