# MU Medicine

University of Missouri School of Medicine / Summer 2018


## PILLAR OF EDUCATION

25 YEARS

SINCE 1993, PATIENT-BASED LEARNING HAS PROVIDED THE FOUNDATION FOR MU MEDICAL STUDENTS

## LETTER FROM THE DEAN

At the close of another academic year, it's a good time to reflect on what makes the MU School of Medicine distinct and successful.

The foundation for our students is patient-based learning (PBL), the curriculum we adopted 25 years ago. At a key moment in the School of Medicine's history, Dean Lester Bryant entrusted Michael Hosokawa to lead a team of forward-thinking faculty to find a better way to teach our students. They decided on PBL, a system in which first- and second-year students work in small teams to learn from real clinical cases.

The results have been impressive. Since the second year using the curriculum, our United States Medical Licensing Examination (USMLE) scores have exceeded the national average. We will be conducting a fundraising campaign for the 25th anniversary of PBL and to honor Dr. Hosokawa's contributions to the field of medical education.

Sadly, we learned in May that Bryant had passed away at age 87. He was a towering figure in the School of Medicine's history, and his legacy includes PBL and the Rural Track Pipeline Program.

In May, our graduating class included the nine pioneer students of the Springfield Clinical Campus. These students took a chance on a new environment for their third and fourth years of medical school. The students benefitted from receiving one-on-one attention from physicians at CoxHealth and Mercy Hospital Springfield and gave glowing reports about their experiences. Subsequent Springfield graduating classes are scheduled to have up to 32 students, which allows us to increase our overall class size and do our part to address the physician shortage nationwide and in the state of Missouri.

The highlight of every spring is Match Day, when our fourth-year students learn where they will serve their residencies. This year, 99 percent of our graduating class matched with a residency, 27 percent of those students will stay on the MU campus for their residency training, 39 percent will remain in the state and 41 percent selected residency programs in high-need primary care fields, including internal medicine, pediatrics and family medicine.

We are proud of our accomplishments this year, and we want to give special thanks to our alumni who have helped build our reputation and supported us financially with generous gifts. Have a wonderful summer, and I look forward to seeing you in October during Physicians Alumni Weekend.

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


# 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.

**EDITOR**
Joe Walljasper

**DESIGNER**
Ann Ellebracht

**PHOTOGRAPHER**
Justin Kelley

**WRITERS**
Jesslyn Chew, Jennifer Coffman, Joe Walljasper and Hli Yang

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**ON THE COVER:**
In this issue of MU Medicine, we spend a week in the life of first-year medical students as they go through a week of patient-based learning. The students are, bottom row, Jake Hartwig, Pooja Nair and Chance Walker; middle row, Mary Murphy, Miranda Eubank and Clarence Chu; back row, Ryan Akin and Taylor Ross.

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# LESTER BRYANT, 1930-2018

*A Towering Figure in School of Medicine History*

During his tenure as dean of the University of Missouri School of Medicine from 1989-98, Lester R. Bryant's powers of persuasion were legendary. He was a skilled cardiothoracic surgeon who knew what made people tick in more ways than one.

"Les would go to a meeting, and everyone would introduce themselves. The meeting would go on, and about a half an hour later, he'd say, 'Joe, don't you agree with that?' " recalled Michael Hosokawa, EdD, senior associate dean of education. "Somehow, he had all the names down."

The trick, Bryant once told Ted Groshong, MD, senior associate dean emeritus of alumni affairs, was to say each name out loud three times. He would repeat it immediately after an introduction, bring it up again soon thereafter and say it a third time after the meeting.

Bryant remembered the name, and the person in question felt more important … and more likely to agree with the dean.

Bryant died at age 87 on May 2, 2018, in Jonesborough, Tenn. He left behind a lasting legacy of enduring accomplishments at MU.

"I started medical school in 1963. I've known, one way or the other, every dean since that time," Groshong said. "He's had more influence on the medical school than any dean in my memory."

Soon after taking over as dean, Bryant started the process of changing MU's lecture-based curriculum. He appointed a group, led by Hosokawa, that recommended changing to problem-based learning, a more interactive style in which students learn from real clinical cases. Some faculty members hated the idea.

"With the new curriculum, he stuck his neck out, and I have to tell you, Les Bryant had a very long neck," Groshong said. "A number of faculty said it wasn't going to work and actively opposed it. He stuck to it."

After the switch to PBL — which is now referred to at MU as patient-based learning — in 1993, board scores soon exceeded the national average and have remained there since.

The Rural Track Pipeline Program is another of Bryant's legacies. A native of Frankfurt, Ky., he used to remind colleagues that he showed up at the University of Cincinnati medical school wearing overalls. Bryant appointed a group that included Hosokawa, Weldon Webb and Hal Williamson, MD, to create a program that recruited and developed students interested in practicing medicine in rural areas.

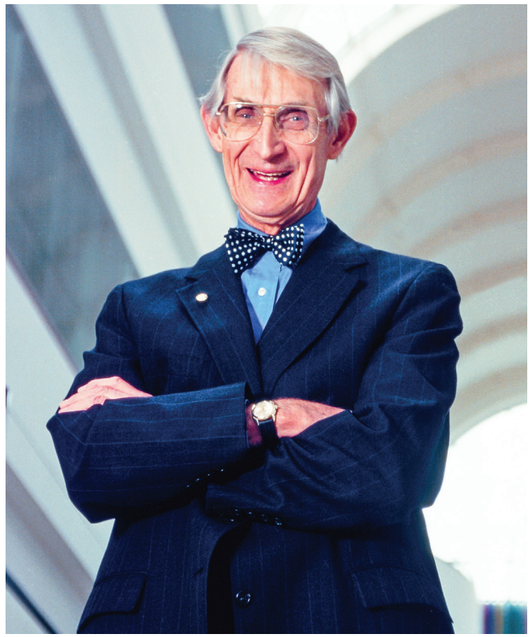
The first section of the Rural Track Pipeline — the Lester R. Bryant Scholars Pre-Admissions Program — was named in the former dean's honor.

"He cared so much about the program and cared so much about rural citizens getting quality care," said Kathleen Quinn, PhD, associate dean for rural health. "In the 18 years I've been here, it was very motivating to talk with him and be influenced by him and supported by him."

After working closely with Bryant on both successful projects, Hosokawa said the dean was interested only in the outcome, not the glory.

"One of his strengths was his humility," Hosokawa said. "He let other people take credit for things."

For the latter half of his tenure at Missouri, Bryant doubled as the chief executive officer of University Hospitals and Clinics. He also found the time to spend one day a week performing surgeries at the Harry S. Truman Memorial Veterans' Hospital.



▲ Lester Bryant was the dean of the University of Missouri School of Medicine from 1989-98. He died on May 2, 2018, at the age of 87.

One way or another, Bryant could persuade. Michael Misfeldt, PhD, recalled being summoned to Bryant's office in the mid-1990s and being asked to take over as the interim dean for research and academic affairs.

"My kids were at an age when they were in a lot of activities, and I wasn't really totally agreeable," said Misfeldt, who is now the senior associate dean for faculty affairs. "In his own way, Lester said, 'Well, I'll let you think about it overnight, but I expect you to come back in the morning and tell me yes.' That was my introduction to Dean Bryant. It was hard to say no to him."

After retiring and settling in Jonesborough, Tenn., Bryant remained interested in the happenings in Missouri. Quinn said Bryant requested multiple copies of the Rural Track Pipeline Program's annual magazine, and he kept in contact with his former colleagues at MU.

"Dean Bryant was a forward-looking administrator with a talent for turning his visions into reality," said Patrick Delafontaine, the Hugh E. and Sarah D. Stephenson Dean of the School of Medicine. "Considering the lasting impact of some of his initiatives, such as the PBL curriculum and the Rural Track Pipeline Program, he is truly one of the most important figures in the School of Medicine's history."

# WITH PBL, MISSOURI WENT FROM FOLLOWER TO LEADER

In 1990, the University of Missouri School of Medicine had just received a backhanded compliment from the LCME. The medical school accreditation agency noted that MU had a "perfectly preserved 1960s curriculum."

At the time, the curriculum included a two-year component of basic science, in which students learned mostly through lectures and memorization, and a two-year component of clinical practice.

Lester Bryant, the MU School of Medicine dean, scheduled a breakfast meeting with Michael Hosokawa, EdD, then a professor of family medicine and now the senior associate dean of education. Bryant put Hosokawa in charge of finding a better way to train the next generation of doctors.

"Information we give students has an estimated half-life of about four to six years," Hosokawa said. "In other words, when our students graduate, about half of what we taught them is out of date, because science is changing so rapidly. We decided we had to teach students to live in a world we couldn't even imagine. That meant we had to look at problem-solving rather than large amounts of information."

Hosokawa and the members of the curriculum design committee became intrigued with problem-based learning — a practice that had spread from its Canadian birthplace of McMaster University to a handful of American colleges — as the best way to teach first- and second-year medical students.

> **"We decided we had to teach students to live in a world we couldn't even imagine. That meant we had to look at problem-solving rather than large amounts of information."**
>
> **— Michael Hosokawa, EdD**

In PBL, students work in teams of eight to learn from real clinical cases. They teach each other by researching and reporting back on topics related to that week's case. The teacher in the room is referred to as a faculty facilitator, and his or her role is to keep the students on the right track and provide guidance.

Hosokawa and his team had two big jobs: 1, design the new curriculum; 2, convince the faculty the new curriculum would not ruin the University of Missouri School of Medicine.

With the strong backing of Bryant, Hosokawa divided and conquered. He called the people who planned the system "innovators." They helped spread the gospel to the "early adopters," who were eager to try something new, and then the "early majority," who were at least willing to give it a fair shot. The stragglers, he hoped, would fall in line once the success of the new system was obvious.

The new curriculum launched in the fall of 1993.

"People would jokingly say we were guinea pigs, but I don't think too many students really thought that way," said MU associate dean for student programs Laine Young-Walker, MD, who was a student in the inaugural class. "I can't speak for everybody, but I know for me and the people in my circle, nobody thought, 'This is bad, and I'm not going to stay here.'"

▲ Patrick Delafontaine, MD, dean of the MU School of Medicine, honors Michael Hosokawa, EdD, for his role in implementing patient-based learning during an Education Day ceremony.

Although the new way of learning seemed to be working, PBL's proponents worried for two years about the results of the United States Medical Licensing Examination Step 1 test, which measures the science knowledge of students at the end of their second year of medical school. Hosokawa needed an early win.

"If this failed, I was probably going to become a high school science teacher," he said.

Hosokawa recalled a nervous group of administrators gathering for the opening of the envelope. It revealed Step 1 scores that were a bit below the national average but were better than the previous year. That was a relief. The next year, MU's Step 1 scores exceeded the national average, and they have remained above average ever since.

MU has become a model program for universities from as far away as Taiwan, where all 12 medical schools use a version of Missouri PBL.

Along the way, MU adjusted the curriculum's name from problem-based learning to patient-based learning. Not much else has changed.

Now, Hosokawa and his colleagues are thinking about the future, lest MU be accused of using a perfectly preserved 1990s curriculum.

"We want to begin a process to update our curriculum, if not join some other schools to look at the next major change in medical education," Hosokawa said. "It might involve PBL, because PBL has been so successful, but it might be totally different. Again, we need to prepare our students to practice in a world we can't imagine."

25 YEARS

**READ** about the latest accomplishments of MU School of Medicine students and faculty at **medicine.missouri.edu**.

# THEY'RE IN THIS TOGETHER

*Students Take an Active Role in Their Education With Patient-Based Learning*

▲ Medical students in a patient-based learning lab review the details of a real patient's case under the watchful eye of faculty facilitator Luis Polo-Parada, PhD, at the back of the room. The same group of eight students works together for eight-week PBL blocks.

It is Monday morning, and the eight first-year University of Missouri medical students seated around the table have just been introduced to their latest patient.

It is a man with changes in his thinking ability. The students have access to his symptoms and medical history, but which details are valuable tidbits among all the red herrings? The childhood accident, an illness years ago, ringing in his ears — do any of them matter?

The group's faculty facilitator, Luis Polo-Parada, PhD, knows but isn't saying much. In fact, once the students start digging into the case, he doesn't say a word for the first 12 minutes. When he does speak, it is often to redirect a conversation wandering too far in the wrong direction. Sometimes Polo-Parada plays the devil's advocate — the devil, in this case, being an insurance company — rejecting a requested lab test on the grounds that the students have not justified its necessity.

"My role is to guide the students, not control the students," says Polo-Parada, the course director of the neurophysiology block. "Sometimes I'll let them get to a certain point and then I'll ask the question, 'But have you considered this?'

"I love the ability to interact with the students and not only to present basic knowledge but to relate it to clinical aspects. There is often a big gap there."

**"How you learn the knowledge is a lot more self-driven. In undergrad, I felt like everything was a lecture, and everything you needed was in that. Whereas now, you have to look for the information and don't always know what you need."**

— **Taylor Ross**, first-year medical student

This is patient-based learning (PBL), the curriculum the MU School of Medicine has used for the last 25 years to train its first- and second-year students. It is nothing like a traditional lecture model in which the professor is the fount of information and the students dutifully take notes.

In PBL, students are assigned revolving leadership roles. Mary Murphy, this week's quarterback, leads the discussion. Chance Walker, the dictionarian, provides definitions to unfamiliar medical terms. Pooja Nair, the scribe, pecks away at her computer, listing the man's problems and potential diagnoses on the screen at the front of the room.

No guess is too wild at this point.

The session ends with each student assigned one case-related objective to research. The students will spend two to four hours preparing for the 10-minute presentation they will give to the class on Wednesday. Jake Hartwig, a newlywed, will have to hustle, as he is expected on the couch with popcorn in hand at 7 p.m. for "The Bachelor."

## SOLVING THE MYSTERY

It is Wednesday morning, and judging by his polished breakdown of the patient's written mental status exams, Hartwig got his homework done before relaxing with his wife. As soon as he finishes speaking, Hartwig tears open a package of Pop-Tarts and heads straight for the classroom's coffee maker, so perhaps some of the polish was applied at the expense of breakfast this morning.

As the students report on their research, they reveal a bit about themselves.

Hartwig and Taylor Ross, another newlywed, mix wedding photos into their PowerPoint slides. Walker incorporates humor into his findings on the impact of recreational drugs on the brain, concluding with, "Don't do drugs." Ryan Akin sprinkles in sports references to his examination of memory. Miranda Eubank's slides are decorated with purple flowers. Murphy, Clarence Chu and Nair include memes, memes and more memes to break up the highly scientific material they are conveying.

After each presentation, the students applaud politely. This is their fifth week together, and they have developed a casual rapport. After eight weeks, there is a week of exams and a week off. Then a new block starts with the students shuffled into different groups.

After two years, each student will have worked closely with nearly half of his or her class and will have learned — and retained — knowledge in a way that has kept MU above the national average in board scores for more than two decades.

"How you learn the knowledge is a lot more self-driven," Ross says. "In undergrad, I felt like everything was a lecture, and everything you needed was in that. Whereas now, you have to look for the information and don't always know what you need."

Not every objective the students research is relevant to this week's case, but each one helps the students build a base of science knowledge. As the wilder diagnostic guesses about the patient's condition are eliminated from consideration, the students, with gentle nudges from Polo-Parada, start to hone in on a brain disease causing dementia.

When they finally get a look at a key test result, they identify Alzheimer's disease as the most likely diagnosis.

With the mystery solved, the students learn what happened next to their patient.

Then they are assigned another set of presentations to be given Friday. After class, Polo-Parada joins the 15 other faculty facilitators in a meeting with MU Health Care neurologist Joel Shenker, MD, PhD, a clinician who helps lead the neurophysiology block of PBL. He treated the actual patient discussed this week and wrote the case for the PBL student sessions after receiving permission from the patient and family.

Shenker discusses the important points of next week's case with the facilitators, many of whom are basic scientists. He reminds them a special guest will be here Friday.

## HUMAN TOUCH

It is Friday morning, and the smell of bacon fills the fifth floor of the Patient-Centered Care Learning Center. It is tradition for quarterbacks to cook or buy breakfast for their classmates on Fridays. Murphy picks up treats from Dunkin' Donuts on the way to class.

This round of student presentations focuses specifically on dementia — from diagnosis to medication options to pathology. Afterward, the results of an autopsy are shared.

The final business of the week takes place downstairs in the PCCLC's second-floor classroom. All the first-year medical students gather as Shenker reviews the key points of the case. He then turns the floor over to the special guest.

The patient's real name is revealed — again, he and the family had given permission to do so years earlier. His wife stands before the students now, dressed in purple, the color of Alzheimer's awareness. She holds up a poster board that has the couple's engagement photo next to another one in the same pose taken in the last year of his life. She asks how many of them have been affected by Alzheimer's. About half the students raise their hands.

She speaks bluntly — but not without humor — about the tragedy of watching her brilliant husband deteriorate, losing pieces of him like a peeled onion, until he forgot her name and no longer wanted to give her a kiss.

"There is nothing rewarding about being a caregiver," she says flatly.

But she filled that role. She tells the students that she gave up her job, reorganized their home so her husband could navigate it and ultimately had to care for his basic needs as if he were an infant. Around the room, there are some moist eyes.

At the beginning of the week, the students learned about a patient who was the sum of his symptoms, a scientific mystery on paper. By the end, they got to know a person and his caregiver, seeing the human consequence of the five-syllable words on a medical chart.

The students are training for complex jobs that will require them to be detectives, scientists and social workers and to rely upon curiosity, intelligence and compassion. In one week of PBL, they practiced each part of that job description and prepared themselves for the full spectrum of their future.

25 YEARS

**The University of Missouri's USMLE Step 1 board scores have exceeded the national average since the second year the PBL curriculum was used.**

ACHIEVEMENT

# FACULTY SPOTLIGHT

## NEW APPOINTMENTS

**PETER J TONELLATO, PHD**, is the director of the new Center for Biomedical Informatics. Tonellato brings more than 30 years of mathematics, bioinformatics and precision medicine expertise to the role. He successfully initiated similar multidisciplinary centers at other academic medical institutions. Tonellato is a professor in the Department of Health Management and Informatics with secondary appointments in several clinical departments.

"Peter's expertise will be a wonderful addition to the medical school and to our university as a whole," said Jerry Parker, PhD, interim senior associate dean for research. "He understands the challenges of implementing translational programs and has experience working through these issues to move initiatives forward."

Tonellato brings an applied mathematics and scientific approach to biomedical informatics initiatives with a specialty in simulations and mathematical modeling. As director of the Center for Biomedical Informatics (CBMI), Tonellato will work across disciplines to connect basic science, quantitative disciplines and health care research across campus while defining and providing momentum to Mizzou's precision medicine initiative.

"Here, I am one of several individuals all with a common purpose, each leading a group with its own expertise," Tonellato said. "Together, we form a tremendous multidisciplinary team solving a collection of beautiful problems requiring the collective team's effort. In spite of this complexity, our efforts, like those of the larger MU Health system, are clearly purposed — to use genetics and the sophisticated methods of translational, precision medicine for the singular purpose of improving patient outcomes."

**ZHENGUO LIU, MD, PHD**, was appointed director of the Division of Cardiovascular Medicine and the Margaret Proctor Mulligan Endowed Professor in Heart and Cardiovascular Research. "Dr. Liu is an outstanding electrophysiologist with a major interest in basic and translational cardiovascular research," said Edward T.H. Yeh, MD, chair of the Department of Medicine. "He is charged with expanding the cardiovascular service and fostering collaboration of cardiovascular researchers throughout the University of Missouri."

**MICHAEL CHAPMAN, PHD**, was selected as the chairman of the Department of Biochemistry, effective July 16, 2018. Biochemistry is a joint academic unit within the College of Agriculture, Food and Natural Resources and the School of Medicine at MU. Chapman comes from Oregon Health and Science University, where he was interim chair of Biochemistry and Molecular Biology. Before that, at Florida State University, he was director of the Center for Excellence: Biomolecular Computer Modeling and Simulation and associate director of the Institute of Molecular Biophysics.

## ACCOLADES

**JAMES COOK, DVM, PHD,** was chosen as a member of the University of Missouri System's first Presidential Engagement Fellows class. Cook — the William & Kathryn Allen Distinguished Chair in Orthopaedic Surgery — is one of 15 UM system faculty members to receive the honor from President Mun Choi. The fellowship was created to fulfill the university's land-grant mission by sharing research discoveries with Missouri citizens in every county. Cook holds 18 patents, including the Missouri Osteochondral Allograft Preservation System (MOPS) technology, and has seen four biomedical devices through FDA approval to human clinical trials. He is also the co-founder of Be The Change Volunteers, an organization dedicated to building schools in remote villages in the developing world.

**PATRICK DELAFONTAINE, MD**, the Hugh E. and Sarah D. Stephenson Dean of the MU School of Medicine, was named a fellow by the American Association for the Advancement of Science. He is one of five MU campus faculty members and one of 396 scientists nationwide to receive the honor. Delafontaine was honored for his research on atherosclerosis and the role of angiotensin II in skeletal muscle atrophy.

**FREDERICK FRAUNFELDER, MD**, chair of the Department of Ophthalmology, joined Saving Sight's board of directors for the 2017-2018 fiscal year. "Dr. Fraunfelder brings years of experience in corneal surgery and eye banking," said Tony Bavuso, Saving Sight's chief executive officer. "I'm sure we will be able to change more lives by saving sight through his engagement and support."

**BETSY GARRETT, MD**, professor emeritus in the Department of Family and Community Medicine, is the first recipient of the Anna B. Searcy Award for promoting female faculty. The award is named in honor of the first woman to graduate from MU with a medical degree in 1900.

Garrett created the Legacy Teachers™ program, in which medical students honor patients who have taught them valuable lessons, and it has become a model for other universities. Garrett is also an avid medical historian who brought to light the accomplishments of early women in medicine at MU, such as Searcy.

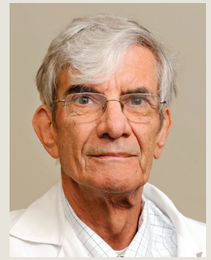
"Betsy isn't the kind that you would find shouting about women faculty from the rooftops," said Richelle Koopman, MD, who presented the award to Garrett. "She led with her ideas and her presence."

**BARBARA GRUNER, MD**, associate professor of clinical child health at the MU School of Medicine, was selected to serve on the National Cancer Institute's pediatric central institutional review board. Members of the review board are dedicated to protecting the rights and welfare of pediatric oncology patients participating in clinical trials.

**DEBRA KOIVUNEN, MD**, associate professor of surgery and senior associate dean of graduate medical education, was elected president of the Frederick A. Coller Surgical Society, a national organization based at the University of Michigan. Koivunen is the first woman to ever hold the position in the organization, which has more than 400 members. The Coller Society was founded in 1947 to honor the former doctor, and its mission is to promote the art and science of surgery, foster education and perpetuate friendships. Koivunen was also elected to the American College of Surgeons' board of governors as the governor-at-large. She will serve a three-year term in the position.

**JONATHAN MITCHEM, MD**, assistant professor of surgery, and College of Veterinary Medicine researchers Michael Lewis, PhD, and James Amos-Landgraf, PhD, received a top award for basic science from the American Society of Colon and Rectal Surgeons. This multidisciplinary team is studying the use of a fluorescent staining peptide to identify cancerous polyps and precancerous lesions in the colon and rectum.

**ABU MOSA, PHD**, director of research informatics and assistant research professor of health informatics, was accepted to the Data Science Rotation for Advancing Discovery Trip fellowship program. The RoAD-Trip program accepted only 10 fellows. Mosa traveled to Tulsa, Okla., in May to collaborate with other junior biomedical researchers and senior-level data scientists to address the challenge of translating complex data into new knowledge. Mosa is currently conducting data science research using a National Cancer Institute database to discover the deep prognostic factors that lead to poor cancer survival rates.



**WILLIAM SALZER, MD**, professor of clinical medicine, won the highest honor in medical education bestowed by the University of Missouri — the Jane Hickman Teaching Award — on Feb. 8 during the School of Medicine's annual Education Day. "He has been a huge contributor to the patient-based learning curriculum as a case and exam writer since the inception of PBL 25 years ago," said Kevin Kane, MD, the associate dean for education improvement. "He also serves as an attending physician in internal medicine in both inpatient and outpatient settings and has mentored hundreds of students, residents and fellows over the years."

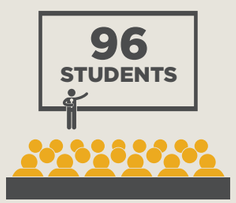
**CAROL WARD, PhD**, was selected as a fellow in the American Association of Anatomists. The rank of fellow is designed to honor distinguished members who have demonstrated excellence in science and in their overall contributions to the anatomical sciences. The honor is reserved for the top 10 percent of the organization's members. Ward is the director of anatomical sciences in the MU School of Medicine's Department of Pathology and Anatomical Sciences.

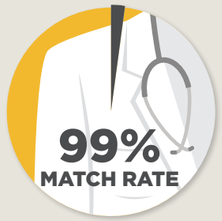
**STAY UP TO DATE** on the latest happenings at the MU School of Medicine at **medicine.missouri.edu**.


# MATCH DAY

Each fall, fourth-year medical students apply to their desired residency programs. After interviews throughout the fall and winter, students and program directors rank each other and send their lists to the National Resident Matching Program. The NRMP uses a formula to match students with programs. On March 16, 2018, students nationwide — including 96 at the University of Missouri — simultaneously learned where they would spend the next three to seven years as resident physicians.

## MATCH DAY BY THE NUMBERS:








Bri Herriott and Jeff Shuler show their excitement after learning they were chosen for their top-choice pediatric residency at Cincinnati Children's Hospital Medical Center. Herriott and Shuler met in their first year of medical school and were married in April.

Molly Johnson and husband Galen Johnson show off her match letter. She is headed to the University of New Mexico for an emergency medicine residency.

**SEE ALL THE EXCITEMENT** from Match Day at **youtu.be/-c3oDjBB7Kg**.

# 2018 COMMENCEMENT CEREMONY

*The University of Missouri School of Medicine celebrated graduation on Saturday, May 12, in Jesse Auditorium.*

Class president Molly Johnson addresses her fellow 2018 MU School of Medicine graduates in the commencement ceremony. Johnson will serve her emergency medicine residency at the University of New Mexico.

Derek Su poses for photos outside of Jesse Hall after graduation. Su will remain at MU and train in psychiatry at University Hospital and Clinics.

Ross Smith receives his diploma from Patrick Delafontaine, the Hugh E. and Sarah D. Stephenson Dean of the MU School of Medicine. Smith will train in neurology at University Hospital and Clinics.

# SPRINGFIELD GRADUATES TOUT EXPERIENCE

*Nine pioneer students relish one-on-one attention they received at SCC*

When Jakob Allen interviewed for plastic surgery residencies, he described medical school experiences at the University of Missouri's Springfield Clinical Campus that put him years ahead of the competition.

"I can speak a lot about doing plastic surgery," Allen said. "I've gotten to do a lot more than other students across the whole U.S. This is a unique situation and something all my interviewers wanted to ask me about. I have a lot of examples of being in surgeries and telling them some of those basic fundamental skills that first-year residents or second-year residents would usually do."

Allen is one of nine MU medical students in the first Springfield graduating class. MU partnered with the CoxHealth and Mercy Hospital Springfield health systems to open the Springfield Clinical Campus in 2016. The idea was to help address the statewide and nationwide physician shortage by expanding MU's class size from 96 to 128.

All MU medical students spend their first two years in Columbia and then have the option of choosing Springfield or Columbia for the final two years. After the initial nine "pioneers" — as recent graduate Kelsey Clary refers to her SCC classmates — subsequent classes are slated to have as many as 32 members.

▲ Ashley Albertson, Jakob Allen and Kelsey Clary were three of the nine students who formed the first MU graduating class from the Springfield Clinical Campus. Albertson will be serving a general surgery residency at the University of Kansas-Wichita, Allen will do his plastic surgery residency at the University of Tennessee Health Science Center in Memphis and Clary will go to Children's Mercy Hospital in Kansas City for a pediatrics residency.

The experiences of the pioneers could inspire others to choose Springfield.

"It's worked out quite well," said Andrew Evans, MD, associate dean and chief academic officer of the Springfield Clinical Campus. "We've had great faculty engagement from Springfield. We've had over 250 of the local Springfield docs participate. Student experience has been excellent, but we kind of expected that. The difference is they get closer one-on-one relationships with attending physicians, more of a hands-on experience. That's really proven out."

Joining Allen and Clary in the Class of 2018 were Ashley Albertson, Jeffrey Dorhauer, Murphy Martin, Leo Maurer, Scott Miller, Devin St. Clair and Chris Weil.

"I was a little hesitant at first because it had not been established," said Albertson, who is specializing in general surgery. "But any time there was an issue, our opinion was heard and it was remedied almost immediately. I also work much better in a smaller environment, so being down here, I really thrived."

The Springfield students are able to do rotations in Columbia and other locations, but the advantage of doing them in Springfield is they aren't sharing attending physicians' attention with residents.

"I've had a lot of teachers tell me they would have liked to have had students for ages, and there just haven't been many students come through Springfield," said Clary, who is specializing in pediatrics. "That's a shame because Cox and Mercy are such large hospital systems with amazing doctors and good teachers, and we just weren't using those resources. I've had teachers tell me that not only were they excited to have students but were excited to have Mizzou students, because they felt like we were good, quality learners."

**FOLLOW ALONG** with the accomplishments of MU School of Medicine students and faculty on our Facebook and Twitter pages.

## PARTICIPATE IN DISCOVERY PROGRAM LAUNCHES

*Database connects researchers with interested participants*

JERRY PARKER, PHD

At the University of Missouri, clinician scientists and health researchers conduct studies involving humans. But finding research participants can be a challenge.

Whether the study requires completing a telephone survey or participating in a clinical trial, researchers need to connect with willing, qualified people to advance their research. Often, their studies have the capacity to directly inform patient care.

"Researchers often have a major challenge finding participants for research studies, and, conversely, consumers who would like to contribute to new discoveries often do not know how to do so," said Jerry Parker, PhD, associate dean for research at the MU School of Medicine. "The Participate in Discovery project addresses this issue by allowing potential volunteers to identify the types of studies that are of interest to them so researchers can more easily find them."

Parker is the principal investigator for the Participate in Discovery project, which includes several interdisciplinary collaborators across the MU campus. Parker and his colleagues recognized the need to more easily connect researchers with interested participants.

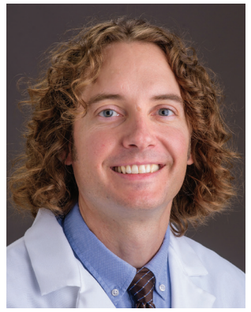
To address this issue, the team developed a form that gathers basic demographic data from volunteers and allows them to designate their interest in certain areas of research, such as weight loss, autism or breast cancer. By acknowledging their areas of interest, volunteers aren't signing up for specific studies; rather, they're agreeing to be contacted about research studies that align with their interests.

The volunteers' information is entered into a secure database. Researchers across the MU campus can request reports through principal investigator Parker and his team.

The team hopes this project will streamline research recruitment and enrollment and encourage community members' involvement in research activities on campus.

"There are many ways that volunteers can help to advance knowledge, and, ideally, research should be highly participatory with both patients and volunteers working together to see projects to completion," Parker said. "The Participate in Discovery project is one such way that consumers can become involved."

**TO LEARN MORE** about the program or to get involved, visit: **medicine.missouri.edu/research/participate-in-discovery/.**



TIMOTHY DOMEIER, PHD

## MOLECULAR CLUES AID FIGHT AGAINST HEART COMPLICATION

While being treated for a heart attack, patients are in danger of suffering what is known as reperfusion injury — damage to the heart caused in part by a sudden rush of calcium ions into muscle cells that previously were starved of oxygen-rich blood. This can trigger fatal arrhythmia, particularly in older patients.

The laboratory of Timothy Domeier, PhD, has discovered molecular clues into how calcium enters cardiac muscle cells during reperfusion in aged mice. He hopes to use that knowledge to find an inhibitor that shuts off one of the leaky culprits — a subtype of the Transient Receptor Potential ion channel — to prevent reperfusion injury and ultimately save human lives.

Domeier has received a five-year, $1.9 million R01 grant from the National Institutes of Health (National Heart, Lung, and Blood Institute) for his study.

## RESEARCH COULD HELP CANTU SYNDROME SUFFERERS

Cantu syndrome is a rare genetic disease characterized by distinct facial features, excessive hair growth, low blood pressure and an enlarged heart. About half of Cantu sufferers also have lymphedema — fluid retention and swelling in the limbs caused by a malfunctioning lymphatic system — and that is why Michael Davis, PhD, of the MU School of Medicine's Department of Medical Pharmacology and Physiology, was drawn into the fight against the disease three years ago.

Cantu is caused by mutations that lead to hyperactive potassium ion channels. When a Washington University clinician team studying Cantu sought answers about the lymphedema issue, they connected with Davis, an international expert on the lymphatic system.

Through his study of mice with mutations causing hyperactivity of a potassium channel, Davis found that dysfunction in lymphatic muscle pumping causes their lymphedema.

Davis recently received an R01 grant from the National Institutes of Health worth $1 million over four years to study, in part, whether a potassium channel blocker called glibenclamide applied topically to the legs of afflicted mice could rescue lymphatic system dysfunction without affecting other system functions, such as insulin production. If so, the treatment could help humans with Cantu.

"What was appealing to me about this is it's a specific cohort of patients and nobody knew anything about why they developed lymphedema until we started," Davis said. "Plus, my other projects are disease-related — because they are related to lymphedema — but they don't actually involve any direct relationship to patients. This one does. I'm tied in with clinicians, and I can go every year to the clinic they have and actually meet some of these patients. That's quite rewarding for somebody who studies mice as a basic scientist."





# SCHOLARSHIP GIVES BULGER HEAD START ON FUTURE

It's a big world with almost limitless possibilities for a bright young medical student, but Ben Bulger can imagine only one destination.

"When I was a kid, I would think, 'I want to live in New York City,' or, 'I want to live in the mountains,'" he said. "Now, I think about practicing medicine in Springfield and being with my family. There's nothing else I want."

Bulger grew up the seventh of 10 children in crowded houses where the kids outnumbered the beds at times. He and his siblings were mostly home-schooled by their mother. The family bond grew so tight that Bulger and his brothers now share a dream of buying homes in the same neighborhood.

The reality that intruded on his dream was the expense of medical school. Bulger, the first member of his family to graduate from college, was accepted to the MU School of Medicine last year, but he worried that student loans would follow him into middle age and hamper his ability to help family members in need and serve his patients. A weight was lifted when he received a full scholarship.

"I am so grateful to get this kind of out-of-nowhere gift from people I haven't even met," Bulger said.

The gift came from Michael DePriest, MD '80, a St. Joseph plastic surgeon, and his wife, Barbara Braznell, a recently retired lawyer who specialized in elder law and estate planning. Both are MU graduates. In 2011, they started an endowment that would fund a scholarship for all four years of medical school for a student in every other incoming class.

"The debt often associated with years of university and medical school can be extremely burdensome to a young doctor starting out," DePriest said. "It might even affect decisions about practice area or positions. Hopefully, with less debt, the young doctor will have more options to pursue the medical practice he or she is truly interested in and be able to focus more energy to that pursuit."

The average MU medical student's debt at graduation is $171,292. That is more than $9,000 below the national average but is still a significant burden. Funding for scholarships to offset that cost falls mostly on private donors such as DePriest and Braznell. Approximately two-thirds of the $1.8 million in MU medical scholarships awarded this year came from private donations.

Bulger said mounting debt is a frequent topic among his classmates. He is spared that distraction, allowing him to focus on his studies and, in rare moments of free time, play chess, read and ride his bicycle.

Bulger didn't realize his aptitude for science until he got to Missouri State University, where he majored in cell and molecular biology. He is now considering a specialty in emergency medicine and fully expects to return to Springfield, where he can serve his hometown and help support his family.


▲ When Ben Bulger was accepted to the MU School of Medicine, his biggest concern was the debt he would accrue. Much of that worry was alleviated when he received the Michael D. DePriest, MD, and Barbara A. Braznell Scholarship.

"At first, I was embarrassed to admit I was interested in medicine, because I didn't think I could do it. It seemed like a big, daunting thing," Bulger said. "I started shyly looking into it without telling anybody, but when I would think about it, it just really felt right.

"It felt like the best possible way I could spend my time. Just knowing myself and knowing my strengths, this is the best way I could help people."

**MICHAEL D. DEPRIEST, MD, AND BARBARA A. BRAZNELL**

If you would like to help students like Ben, contact Yvonne Miller in the MU School of Medicine's Office of Advancement at **573-882-6100** or at **millerym@health.missouri.edu**.

The Mizzou Biojoint® Center recently received two grants from the U.S. Department of Defense with a total value of more than $2.5 million.

# MIZZOU BIOJOINT® CENTER RECEIVES TWO DOD GRANTS

The Mizzou BioJoint® Center recently received two grants totaling more than $2.5 million from the U.S. Department of Defense to research how surgeries performed at the center can help soldiers and civilians with knee and ankle injuries.

The biological joint restoration surgeries performed at the Mizzou BioJoint® Center use natural tissue grafts of cartilage, menisci and/or bone to improve joint function in young, active patients.

Knee and ankle injuries often lead to post-traumatic osteoarthritis (PTOA). That condition is the primary reason for disability discharge among all U.S. military personnel. One in three active-duty personnel suffers from PTOA. A $2 million grant enables the BioJoint team to further explore how well the procedure works for military personnel and other highly active patients with injuries to their knees or ankles that inevitably result in PTOA.

"Preliminary applications of the proposed treatment on soldiers and veterans have allowed them to return to high levels of activity and even active military duty," according to the DOD's written review of the funding proposal. "The proposed study can potentially have a positive impact and provide relief to military personnel diagnosed with PTOA."

James Stannard, MD, medical director of the Missouri Orthopaedic Institute and the Hansjörg Wyss Distinguished Chair of Orthopaedic Surgery at the MU School of Medicine, will serve as principal investigator for the clinical study.

"During my 10-year active-duty career that included tours with the 82nd Airborne Division, I saw firsthand how big a problem PTOA is for soldiers," Stannard said. "It is an honor to be able to work with the Department of Defense to solve this critical medical issue."

The BioJoint team will collect and analyze data to further document how well these biologic joint restoration surgeries can work for patients. Additionally, the team will continue to follow all patients who receive surgeries at the Mizzou BioJoint® Center for the rest of their lives.

"Based on the reviewers' comments, our grant proposal was successful, in part, because of the translational and collaborative nature of our program," said James Cook, DVM, PhD, OTSC, director of the Orthopaedic Research Division and Mizzou BioJoint® Center at MU Health Care. "We have a multidisciplinary team of engineers, veterinarians, physicians, surgeons and scientists working side-by-side to make the treatments we provide at BioJoint as safe and effective as possible."

This is a second-series grant awarded to the Mizzou Biojoint® Center by the DOD. The first was a phase-one $1.1 million grant in 2015. The DOD sought phase-two grant applications only from projects that showed success in phase one. The acceptance process included a rigorous evaluation, including written reviews from scientific and bioethics experts at the DOD.

The BioJoint team was also awarded a $570,000 grant as part of a collaborative study with the mechanical engineering department at Columbia University in New York.

Researchers will study the effectiveness of bending and shaping donor grafts to further optimize the fit for individual patients. Engineering researchers will bend and shape grafts. Then, they will send those grafts to the Mizzou BioJoint® research team for further testing on how long the grafts remain viable and functional in a model that simulates what is done for patients.

**TO KEEP UP** with the latest School of Medicine research news, visit **medicine.missouri.edu/research**





# FISCHER TAKES THE PLUNGE, **DONATES TO HMI**

GERARD FISCHER

When Gerard Fischer was looking for a place to study hospital administration, he sought the brochures of every accredited program in the nation. He was so convinced the University of Missouri was the best choice, he didn't apply anywhere else.

After Fischer received his master's degree in health administration in 1984, the quality of that education was put to the test. At age 25, he became the administrator of Prosser Memorial Hospital in Prosser, Wash.

"That was kind of jumping into the deep end of the pool," Fischer said. "I've had just a terrific career. One of the major things that launched that career was my degree from the University of Missouri.

"What you learn in the books is one thing. Actually being in the reality of the world and working with people is a little bit different, but I think I was as prepared as I could be. Definitely without that degree of education, I would never have made it."

Fischer is now the vice president for ancillary services at Kaiser Permanente in Seattle. After more than 30 years in management, and with his children almost done with college, Fischer's thoughts turned to philanthropy.

One of his lifelong passions has been the arts. When he was younger and had more free time, he strummed the banjo for fun. As he got older, the banjo got less use, but Fischer's appreciation of music and theater have continued. He also appreciated the role MU played in launching his career.

So he selected the Spokane Symphony and MU's Department of Health Management and Informatics as the benefactors of his estate.

"That was good, but what was kind of gnawing on me was that this was not going to do anything until I die, and hopefully that is a long ways off," Fischer said.

Eduardo Simoes, MD, the chair of the MU Department of Health Management and Informatics, stayed in touch with Fischer and kept him aware of the challenges the department was facing during hard financial times at the university.

Fischer decided to make a $25,000 donation to Missouri's HMI department, earmarked mostly for scholarships. Then he decided to do even more, offering to match up to $25,000 if the department could raise that much money in 2017. The matching grant is expected to help fund the salaries of graduate research assistants.

"That's not what I expected to do, but (the matching grant) got people motivated, and they started a campaign that was very successful," Fischer said. "They've raised well over that $25,000."

▲ The MU Health Management & Informatics program has been accredited by the Commission of Accreditation of Healthcare Management since its inception in 1968.

The total money raised, including Fischer's matching grant, exceeded $97,000. Fischer hopes his gifts will help the next HMI student be ready for a plunge into the deep end after graduation.

"It's a well-known program, but there's a lot of competition, and to be able to secure this gift to give to the students when they come here, it goes a long way toward attracting the best student," Simoes said. "That's very important. The good programs nationwide have graduate research assistants. This year we will be able to continue funding the level of GRAs that we had, thanks to Gerard.

"Donations like the one Gerard gave with this matching gift are critical at any time, especially in tough years economically for the university. It becomes like a life-saver."


MU's Health Management & Informatics program received the 2018 CAHME/ Cerner Award for Excellence in Healthcare Management Systems Education.

**LEARN MORE ABOUT** HMI by watching the video at **medicine.missouri.edu/hmi-award**.

Anyone interested in donating to HMI can do so online by visiting the HMI department's page on **medicine.missouri.edu** and clicking the "Giving" tab.

The 2018 Medical Alumni Award winners include: front row, Lana Zerrer, MD; Russell Hall, MD; Neal Gray, MD; and Joseph Corrado, MD; middle row, Christine White, MD; Susan Even, MD; and Benson Hsu, MD, MBA, FAAP; back row, Terry Smith, MD; Patrick Delafontaine, MD; and Michael Ashley, MD.

# MEDICAL ALUMNI HONORED AT CEREMONY

Distinguished graduates and supporters were honored on April 20, 2018, at the University of Missouri School of Medicine and Medical Alumni Organization awards at Reynolds Alumni Center in Columbia.

## CITATION OF MERIT

**Terry Smith, MD '75**: The Frederick G.L. Huetwell Professor in Ophthalmology and Visual Sciences at the University of Michigan is an internationally known endocrinologist who has studied Graves' disease, its eye manifestation and related autoimmune disease for over 20 years. Smith's laboratory was first to describe the unique molecular attributes of tissue surrounding the eye that make it susceptible to inflammation in Graves' disease.

## HONORARY MEDICAL ALUMNI

**Michael Ashley, MD**: Surgeon, Springfield, Mo.

**Joseph Corrado, MD**: Surgeon and president of the Missouri State Medical Association, Mexico, Mo.

## DISTINGUISHED SERVICE

**Susan Even, MD '80**: Executive Director of the MU Student Health Center

**Russell Hall, MD '75**: J. Lamar Callaway Professor of Dermatology and Chair of the Department of Dermatology, Duke University School of Medicine, Durham, N.C.

**Neal Gray, MD '66**: Founding member of Tejas Anesthesia, San Antonio, Texas

## OUTSTANDING YOUNG PHYSICIANS

**Benson Hsu, MD '05,** MBA, FAAP: Chief Medical Analytics Officer of Sanford Health, Sioux Falls, S.D.

**Christine White, MD '04**: Associate professor of Pediatrics at University of Cincinnati College of Medicine, Medical Director of the Division of Hospital Medicine, Burnet Campus, Cincinnati Children's Hospital Medical Center, Cincinnati, Ohio

**Lana Zerrer, MD '99**: Chief of Staff, Harry S. Truman Memorial Veterans' Hospital, Columbia, Mo.

## IN MEMORIAM

**IRA HUBBELL, MD '63**, a fourth-generation physician, died at age 90 on Jan. 8, 2018. Dr. Hubbell served as a captain in the Navy and Naval Air Force before earning a bachelor's degree from Yale and master's and doctor of medicine degrees from MU. He practiced anesthesiology in Columbia and was a faculty member at the University of Missouri School of Medicine.

**DIANE BRUKARDT, MD**, died at age 88 on Feb. 17, 2018. She earned a bachelor's degree from MU and an MD from Harvard. She served as the director of MU's Student Health Service and as an assistant professor of medicine until her retirement in 1990.

**DAVID PAYNE, MD '64**, died at age 79 on March 23, 2018. Payne was a native of Kansas City and was a long-time dermatologist in Columbia.

**JARROD DYE, MD '15**, died at age 30 on Feb. 28, 2018. Dye was a third-year resident physician in internal medicine at University of Nebraska Medical Center in Omaha, Neb.



# DISTINGUISHED ALUM ENJOYS PRACTICING 'PUREST MEDICINE'

Greg Mundis, MD '03, takes four weeks per year off from his practice as a spine surgeon at Scripps hospitals in Southern California to volunteer for Global Spine Outreach, providing free treatment for children with spinal deformities.

The volunteer work has occasionally required him to be a medical MacGyver, cobbling together surgical solutions from the materials at hand. For example, on one of his first trips to Mexico, some of the GSO team's equipment was stopped at the border. The doctors were forced to postpone several surgeries, but one child had such severe scoliosis, he was in danger of paralysis.

"We said, 'OK, literally, we have four screws, we have two hooks and that's it, and we have to do this 14-level fusion,' " Mundis recalled. "So we're in the middle of the surgery, and we needed more stuff, because this kid needed more fixation. So we said, 'Bring anything you have in the room.' They brought in all these different wires, things the heart surgeons were using years ago.

"We jury-rigged this construct using Mersilene tape, wires from cardiac surgery and the four screws and two hooks that we had. The cool thing is, the patient did phenomenal and three years out from surgery is doing great."

Mundis received one of three Outstanding Young Physician awards at the 2017 Alumni Awards Ceremony. He will be the featured speaker at the White Coat Ceremony on Aug. 3, 2018.

In addition to Mexico, his medical outreach destinations have included Colombia, Brazil, Kenya and China. Global Spine Outreach usually sends teams of 15, including three surgeons, for weeklong trips. The teams set up in a hospital and work with local doctors and staff to treat children with conditions such as scoliosis, kyphosis and cerebral palsy.

Greg Mundis, MD, a 2003 graduate of the MU School of Medicine, spends four weeks per year volunteering with Global Spine Outreach, performing free spine surgeries for children.

"It's the purest medicine that can be practiced," Mundis said. "We make no money. If anything, we lose a bunch, because we're not working for a week. The only thing you really care about is getting the kid better.

"The other fun thing is just the environment you're operating in. You have to adapt your skill set to a different environment. You try to help impart Western standards to a culture that is not accustomed to that level of care. To be able to elevate the game for the whole team around you is pretty cool."

# MEDICAL STUDENTS HONOR SPECIAL TEACHERS

The exchange of knowledge between a health care professional and a patient isn't a one-way street. In its 13th year, the Legacy Teachers™ program offers third-year medical students the opportunity to honor a patient who has been one of their greatest teachers. This year, 36 medical students singled out 18 of these teachers for praise.

Rebecca Aguayo said her Legacy Teacher taught her how to embody patient-centered care. She met Kelly Bailey while serving in Rogersville, Mo., as part of her Family Medicine rotation through MU's Springfield Clinical Campus.

"My Legacy Teacher taught me to always keep the patient as the priority, not the illness," Aguayo said. "She encouraged me to find ways to remind myself why I entered the field of medicine. I will always be grateful for the time and effort she committed to my education."

The program, created at MU, has been adopted by other medical schools across the country, including the University of Kansas-Wichita, the University of North Carolina and Tufts University. Representatives from Penn State College, Southern Illinois University, the University of Iowa and the University of South Dakota attended the Legacy Teachers luncheon on April 12, 2018, at the Reynolds Alumni Center to learn more about the program.

Medical student Rebecca Aguayo, left, honors Kelly Bailey as her Legacy Teacher at a luncheon on April 12, 2018, at the Reynolds Alumni Center.

**SEE HIGHLIGHTS** of the Legacy Teachers luncheon at **youtube.com/MUHealthCare**.

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