Diversity in Discovery
SGSHS takes strides to train diverse scientists
I HOPE YOU ENJOY THE FIFTH ISSUE of the Graduate Report, the School of Graduate Studies in the Health Sciences’ magazine. Our goal is to give alumni and prospective students a picture of what’s happening within our school and our accomplishments over the past year.

At the University of Mississippi Medical Center’s 2019 Commencement in May, the SGSHS had a record number of graduates: 74 M.S. and 20 Ph.D. candidates earned their degrees. This is a testament to both the popularity and quality of our programs. Our most recent Ph.D. graduates have accepted excellent postdoctoral fellowships, residencies, and jobs at Allergan, Emory University, Medical University of South Carolina, National Cancer Institute, Oregon Health and Science University, University of Colorado, University of Kentucky, University of Louisiana-Monroe, University of Michigan, Vanderbilt, Virginia Tech and Wake Forest. We also have several continuing their careers right here at UMMC. We are extremely proud of all of our graduates and wish them the best in their future studies and careers.

In this issue, we wanted to provide insight on our commitment to increase diversity and inclusion among our student body and build a pipeline of future biomedical scientists from a wide range of backgrounds. Research is a team effort and that team is strongest when we have many groups represented at the table.

The “person of the year” in terms promoting diversity and inclusion in the SGSHS is Dr. Mike Ryan, associate dean for student affairs and professor of physiology and biophysics. In 2019, he has been recognized by UMMC, the Mississippi Institutions of Higher Learning and the American Physiological Society for his commitment to teaching and mentoring students from underrepresented minorities in the biomedical sciences. We are immensely proud and glad to count him as one of our faculty!

Starting July 1, 2019, the annual Ph.D. stipend increased to $28,000. Combined with our tuition waiver and Jackson’s low cost of living, this change will increase our ability to recruit the best and brightest students from our state and beyond.

I would also like to recognize Dr. David Rogers (Microbiology and Immunology, M.S. 1998, Ph.D. 2001) and thank him for visiting campus last fall as our Distinguished Alumnus.

Thank you to everyone who submitted news to include in our Class Notes section. We enjoy receiving updates on your career, accomplishments and lives. It is a great resource for our alumni and trainees.

Support Our Success
A gift to the School of Graduate Studies in the Health Sciences is an investment in meaningful research and a contribution toward a brighter and healthier tomorrow.

Your gift will go a long way in helping us realize our vision for the future. You may designate a contribution to a specific need (i.e., student scholarships, visiting lectureship for Research Day, etc.). Gifts may be made in various forms, including cash, securities, planned gifts, life insurance and wills. There are different tax advantages for different assets. To make a donation, contact Dr. Sheila Henderson at 601-815-3302 or send an e-mail to sahenderson@umc.edu.

Joey P. Granger (Ph.D., Physiology and Biophysics, 1983)
Dean, School of Graduate Studies in the Health Sciences
University of Mississippi Medical Center
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On the cover: SGSHS Ph.D. students, clockwise from top left: Osvaldo Rivera Gonzalez (Physiology and Biophysics), John Aaron Howell (Neuroscience), Hannah Turbeville (M.D./Ph.D.—Experimental Therapeutics and Pharmacology), Dipa Mitra (Microbiology and Immunology) and Ngoc Hoang (Cell and Molecular Biology), center: Stacee Naylor (Nursing)
Each year, students from the School of Graduate Studies in the Health Sciences bring an assortment a lab equipment and science-fair style projects to the Mississippi Children’s Museum for Discovery U Day. The program’s mission is to teach kids a little about science and facilitate what may be their first encounter with an actual scientist.

“Growing up, it seemed that if you liked science, the only career people ever think of or encourage you to pursue is medicine. I wasn’t even sure what research was or what it meant until I was older,” said Olivia Travis, a third-year Ph.D. student in experimental therapeutics and pharmacology.

And for some of these elementary school students, it’s especially powerful to learn from someone who reminds them of themselves.

“At Discovery U, we get a chance to talk with these kids about science and research, and I see a lot of little girls like me who are curious about science,” said Travis, who is African American.

Why is diversity important in the biomedical sciences?

Consider the importance of Diversity in Discovery in scientific experiments and data analysis. In animal research, the NIH asks investigators to use both female and male individuals in experiments when possible. Clinical researchers are now trying to solve the puzzle of increasing racial and ethnic diversity of clinical study cohorts, still largely white.

Likewise, it’s important for the scientists conducting said studies to represent a broad spectrum of personal experiences and worldviews.

“Improving the participation of underrepresented groups is not just fairer — it could produce better research,” Nature magazine said in a 2018 editorial.
According to the National Institutes of Health and the National Science Foundation, underrepresented groups in science include people who identify as black, Hispanic or Native American. Based on NSF statistics from 2017, about 14 percent of students enrolled in biological sciences graduate programs nationwide self-identified as belonging to one of these groups.

In contrast, twenty percent of SGSHS students in 2018-2019 come from underrepresented minority groups. Within the master of science in biomedical sciences program, it’s 23 percent.

For the University of Mississippi Medical Center, diversity and inclusion is a priority, said Dr. Joey Granger, dean of the SGSHS.

“We want diversity of thought and diversity of experience,” he said.

UMMC has a campus-wide Office of Diversity and Inclusion, whose goal is to enhance the already-existing initiatives and look for new opportunities to build a more welcome environment for students, faculty and employees. Dr. Juanyce Taylor, UMMC’s chief diversity and inclusion officer, says that “diversity is based on socially constructed characteristics that each individual has. That includes characteristics like race, gender, age, religious background or disability.”

Meanwhile, inclusion is integral to actually reaping any benefits from a diverse workplace.

“Inclusion requires that we allow and welcome different perspectives and experiences to come to the table and have a voice,” Taylor said.

Diversity is being at the party, but inclusion is being asked to dance.

 Osvaldo Rivera Gonzalez admits to being a bit of a homebody, but he says he’s always felt welcome and included at UMMC. A third-year Ph.D. student in physiology and biophysics from Puerto Rico, he knows science is for him. Despite some “gut-wrenching failures” in the laboratory while working on a master’s thesis, he “enjoys the grind in the lab of running experiments and calculating statistics,” he said.

Rivera Gonzalez is working with Dr. Joshua Speed (Ph.D Physiology and Biophysics, 2011) on the role of endothelin in obesity and insulin resistance. He says the faculty, including those in his department as well and the Department of Cell and Molecular Biology, are invested in helping him and the rest of his classmates succeed.

“They won’t hold your hand, but they won’t let you fall, either,” he said.

“I mean, how many students have the chance to learn physiology from the man who actually wrote the book on it?” Rivera Gonzalez said, motioning towards his propped-up copy of the Textbook of Medical Physiology, co-authored by department professor and chair Dr. John Hall.

He chose UMMC for its reputation, but there was another value: the SGSHS pays for health insurance for its graduate students. Rivera Gonzales says having coverage for the medication he takes means he can focus more on studying for qualifying exams, preparing his dissertation and going to the gym.

In that vein, one of the most important steps an institution can take to promoting diversity and inclusion is easing certain barriers to attendance. UMMC strives to attract students through a generous stipend program. For 2019-2020, the SGSHS raised Ph.D. stipends to $28,000.

“It is vitally important that we provide competitive and sustainable stipends because this is how we can recruit the best and most diverse students,” Granger said. “When a student makes a decision about where to attend graduate school, they consider many things: the quality of the program, the faculty and the stipend. We want to make sure we attract the brightest students, and we don’t want cost of attending UMMC to be a major determining factor.”

Last fall, the SGSHS hosted its first “showcase” event – a visit day for faculty and advisors from other campuses came to meet with Ph.D. program directors and learn what UMMC may offer for their students. They represented 11 schools in Alabama, Arkansas, Louisiana and Mississippi, including Historically Black Colleges and Universities (HBCUs) like Xavier University of Louisiana and Tougaloo College.

“The SGSHS is hoping to work more directly with the campuses represented at our showcase event and to leverage our connection with faculty at places like the University of Mississippi in Oxford and Mississippi State University,” Granger said.

Besides the SGSHS’s other selling points, like a commitment to fund students without teaching or research assistantships that allows them to focus on their studies, the faculty point to other benefits.

“Our graduate school has a collegial atmosphere,” said Dr. Michael Ryan, SGSHS associate dean for student
DIVERSITY IN DISCOVERY

Osvaldo Rivera Gonzalez, Ph.D. student in physiology and biophysics
affairs, noting that students regularly cross department boundaries to collaborate academically, philanthropically and socially. “We want to instill in our students a sense of social responsibility – that they are citizens and scientists.”

The SGSHS is the largest school at UMMC that regularly accepts students from not only across the United States but around the world. Representing five continents in the last academic year, international students make up 18 percent of the student body.

Dipa Mitra is a third-year Ph.D. student in microbiology and immunology from Calcutta, India.

“I came to the United States to pursue my doctoral degree because the opportunities here will help me prosper in my future career,” she said.

Mitra spent her first semester in the United States at another university before transferring to UMMC. She says UMMC’s Office of International Services was helpful in making the switch.

Now, she’s working in the lab with Dr. Ritesh Tandon, associate professor of microbiology and immunology, studying models of human cytomegalovirus.

THE LEAKY PIPELINE
A 2018 study in PLOS One found two points in the educational pipeline where underrepresented minorities drop out of STEM participation: the first occurs during undergraduate education. According to the research, nearly half of white students who were interested in biology at the beginning of college eventually earned a bachelor’s degree in a related field, but only 25 percent of URM students did the same.

“What we see is that African American and Hispanic students do not choose college majors such as biology and chemistry as often as white or Asian students,” Taylor said. “We’re not galvanizing that pipeline well enough so that students choose these courses and degrees at the undergraduate level.”

One way to do this is to give students more opportunities to build their skills. The SGSHS’s education outreach efforts cover K-12 education and beyond. Project REACH (Reaching Education and Changing Healthcare) sends an SGSHS student each month to engage a majority-African American elementary classroom with a science lesson (see story on page 21). Discovery U brings students from Jackson’s Jim Hill High School and Clinton High School to observe and learn more about laboratory research. And while not directly a SGHS program, UMMC’s Base Pair collaboration with Murrah High School has fostered multi-semester research experiences with SGSHS faculty for 27 years.
At the undergraduate level, an NIH R25 grant promotes diversity in cardiorenal researchers, funding summer research opportunities for undergraduate students from HBCUs and underrepresented minority groups. There’s also the popular Summer Undergraduate Research Experience, a paid 10-week opportunity to work with UMMC mentors in the lab.

“These help us by connecting with students across the state and at different universities, and we plan to continue to expand that program,” Granger said.

All of these efforts serve the SGSHS’s goal of building a talented, diverse workforce for Mississippi, and the best way to do that is to train native Mississippians.

Growing up in Ridgeland, Olivia Travis didn’t have Discovery U day at the Museum to attend, but she did have science projects with her dad.

“When I was in first grade, we built an incubator for chicks together,” she said. “Ever since I was young, I’ve been curious about science and nature. My parents would say, ‘Why are you asking so many questions?’”

As an undergraduate at the University of Louisiana-Monroe, Travis spent her summers in UMMC’s SURE program working with Dr. Richard Roman, professor and chair, and Dr. Fan Fan (M.S. Biomedical Sciences, 2013), assistant professor in the Department of Pharmacology and Toxicology. The experience helped solidify her decision to pursue a Ph.D. in the SGSHS. Now, her mentor is Dr. Denise Cornelius (M.S. Biomedical Sciences, 2010; Ph.D. Microbiology and Immunology, 2012), an assistant professor of emergency medicine. In the lab, she’s studying the role of immunity in preeclampsia.

“It’s encouraging to have a mentor who shares some similar experiences [as an African American woman] with me. She’s not just a research mentor but a life mentor,” Travis said.

For example, Travis said she’d been encouraged to apply for grants and present at national conferences like the American Heart Association meeting early on in her Ph.D. studies. These early efforts will set her up for success later on.

“I’m not trying to be the best black female in my field, I’m trying to be the best, period,” Travis said.

WE’RE NOT THERE YET

The ultimate goal of diversity and inclusion initiatives is to be a more representative workforce for the biomedical sciences across all workplaces, such as industry, government, or academia. According to that PLOS One study, the other leaky spot in the academic pipeline is the transition from postdoctoral fellowship to faculty. That’s an area where UMMC still needs to improve as well, Taylor said, where senior faculty in basic science departments are overwhelmingly white and Asian.

“We need to increase opportunities and create more ways to prepare future faculty,” Taylor said. She said some potential efforts to reach that goal could involve creating partnership programs where faculty from HBCUs or other regional universities come to UMMC as visiting faculty.

“We need to think about how to retain faculty at UMMC for the long haul or otherwise we can lose them to other institutions. . .

Students can’t be what they don’t see.”

— Dr. Juanyce Taylor
DIVERSITY IN DISCOVERY

Olivia Travis, Ph.D. student in experimental therapeutics and pharmacology
Students in the School for Graduate Studies in the Health Sciences come from across the United States – and the world.
DIVERSITY IN DISCOVERY

Students in the School for Graduate Studies in the Health Sciences come from across the United States – and the world.

Around the Globe:
- Bangladesh
- Brazil
- China
- Croatia
- India
- Nepal
- Rwanda
- Vietnam

Map of the United States and Territories:
- Puerto Rico
- Various states including California (CA), Texas (TX), New York (NY), and Florida (FL) are highlighted.
SAYING “YES”
TO SELFLESS EXCELLENCE

Anatomy graduate Edgar Meyer makes serious impact across UMMC campus

BY KAREN BASCOM

On any given day, you can find Edgar Meyer darting around the University of Mississippi Medical Center, being on opposite ends of the campus in the same day as he goes from Associated Student Body roundtables, alumni events, interfaith dialogues and the anatomy labs on the seventh floor of the old hospital.

How does one student end up serving on no fewer than 20 campus committees while writing a dissertation and handling teaching assistantship duties?

"I'm a bit of a 'yes man,'” said Meyer, who graduated with a Ph.D. in clinical anatomy from the School of Graduate Studies in the Health Sciences.

But it's more than that: a selfless sense of service, a commitment to faith and a willingness to engage all around him. Saying "yes" has opened a lot of doors.

Meyer, who grew up on a farm in Bolivar County, was always interested in science and has an uncle who graduated from the School of Medicine.

After studying pre-med and classics at Millsaps College, Meyer applied to the School of Medicine but got a "no" in response. With the encouragement of a professor, he took a job teaching Latin at St. Joseph Catholic School in Madison, a move that changed his career path.

"I realized I loved teaching so much, I went on to get an education degree,” said Meyer, who earned a master’s degree in teaching at Delta State University. He then taught biology, anatomy and physiology, and chemistry for a couple years at Ray Brooks School in Benoit, which set the stage for his entry into anatomy.

Clinical anatomy stands out among the other Medical
Center-based Ph.D. programs due to its focus on educational research. The students study the process of learning through the context of anatomy, a topic studied in all health-science degree programs.

"I loved anatomy and teaching, and here was this program that blended the two," Meyer said.

While working on a literature review during his anatomy rotations, he came upon one of those factoids about the brain that makes you think.

"We typically forget 70 (percent) to 80 percent of what we learn within 30 days," Meyer said, citing studies on memory by Hermann Ebbinghaus. "So I started to think about a project for measuring and improving long-term retention, which is critical in anatomy."

Dr. Dongmei Cui, associate professor of neurobiology and anatomical sciences, said "yes" to Meyer's dissertation idea and helped him develop a project to assess how virtual three-dimensional models of the middle and inner ear can help medical students learn their anatomy.

Beyond his research and teaching duties, Meyer became a presence on campus. Enough students voted "yes" to make him president of the Associated Student Body for 2018-19. During his tenure, he set several goals to encourage service learning, interprofessional education, and diversity and inclusion initiatives in partnership with other campus offices.

"We also started hosting roundtable discussions where students could share their concerns or ideas for how to improve their experience, like increasing study spaces," Meyer said.

"Edgar has this 'can-do' enthusiasm and ability to connect with people that make him a valuable member of the graduate school, and he has done quite well here," said Dr. Joey Granger, dean of the SGSHS.

Granger had a running joke where each time he passed Meyer in the hall he asked, "How's that dissertation coming?" a nod to his busy schedule and looming deadline.

Meyer successfully defended in February, enough so that the SGSHS granted Meyer the 2019 Robert A. Mahaffey Jr. Award, which recognizes exceptional potential in a graduating student. The nomination letter speaks of his ability to communicate clearly with multiple groups of people and his sense of engagement on- and off-campus.

"You can never underestimate the importance of a relationship," Meyer said. "There are so many opportunities that start as an idea, and then through an email or a conversation, a connection forms and it morphs into something achievable."

One of the most important aspects of Meyer's life is his faith, shaped by his time teaching in a Catholic school and his training in an interprofessional health environment. He sees mind, body and soul all as important parts of helping people become well, especially in a region as steeped in religious tradition as the Bible Belt.

Meyer co-founded UMMC's Catholic Students Association and Faith Forum, a dialogue and lecture series that hosts speakers that represent several faith and spiritual perspectives. Head chaplain Doris Whitaker said "yes" to helping Meyer form a student chaplain program last fall, where UMMC students can learn how to meet with and support people of any or no faith tradition in their time of need.

"He adds value wherever he goes, creating conversations, activities and developing educational opportunities that will generate understanding and connection rather than misunderstandings and separation," Whitaker said. "Edgar has the capacity and inclination to 'dig' into the community in which he finds himself and works to make that community richer, stronger and better."

"How often do we say no to things that may help form who we are as a health science professional and as a human?" Meyer said. "The one problem with people saying they are too busy is that they miss these opportunities."

Meyer is on the job hunt, applying for junior faculty positions in anatomy departments of medical schools, primarily in the Southeast. Of all the courses that anatomists can potentially teach, the one he's most interested in is histology, which he first fell in love with as an undergraduate at Millsaps.

"When you look under the microscope, there's this kaleidoscope of color," Meyer said. "Looking at cells or tissues and their components can tell you exactly what organ it came from, the function it has. And from a pathological perspective, you can diagnose disease from these slices of tissues."

Hopefully, one of those institutions will say "yes" to an anatomist from Mississippi.
FACULTY FEATURE

Dr. Michael Ryan
To do well in the decathlon, one has to be able to run, throw and jump. But it’s a little more complicated than that. Throwing the javelin and the shot-put require different techniques, as do long and high jumps, or a 100 meter dash and a 1500 meter race.

So is the case for faculty, who must be able to teach, research and serve, but in different contexts. Think of it as an academic decathlon.

When a younger Michael Ryan was competing in pentathlon and decathlon in high school and college, his plan was to become a physical education teacher. One thing stopped him. “I found my education theory class to be painfully boring,” Ryan said.

What he did find interesting as a student at the State University of New York-Cortland campus in the state’s Finger Lakes region were his science courses, including biomechanics, anatomy and physiology. Combined with his childhood interest in science, he decided to switch his major to biological sciences.

Now as a professor of physiology and biophysics, Dr. Michael Ryan is participating in another decathlon of sorts. Among his events: associate dean for student affairs for the SGSHS, program director for his department’s Ph.D. course, research scientist at the G.V. (Sonny) Montgomery Veterans Affairs Medical Center, mentor, teacher, husband and father.

After graduation from Cortland, he stayed in the SUNY system and moved west to complete a Ph.D. at the University of Buffalo. He started out studying the effects of hyper- and hypo-gravity on cardiovascular function with mentor Dr. David Pendergast, who encouraged him to try something else.

“He told me to leave his lab and get broader experiences in cell and molecular physiology,” Ryan said. With Dr. George Hajduczok, he started working on the regulation of gene transcription for renin, which plays a role in blood pressure regulation.

As a graduate student at the suggestion of Pendergast, he became interested in autoimmunity after reading about chronic fatigue syndrome, a poorly understood condition that shares some characteristics with autoimmune diseases.

As a postdoctoral fellow at the University of Iowa with Dr. Curt Sigmund, he gained more skills, creating new genetic mice models for diseases like hypertension.

Ryan joined the UMMC faculty as an assistant professor in 2004.

“Women who have experienced preeclampsia are more likely to experience seizures and cerebrovascular events such as stroke,” Ryan said. These events are responsible for about 40 percent of preeclampsia-related deaths.

Ryan is currently co-principal investigator, along with physiology professors Dr. Heather Drummond and Dr. Joey Granger, on a National Institutes of Health award to study the risk of stroke in in women with preeclampsia.

“Women who have experienced preeclampsia are more likely to experience seizures and cerebrovascular events such as stroke,” Ryan said. These events are responsible for about 40 percent of preeclampsia-related deaths.

Ryan is also interested in understanding how auto-antibodies affect renal function in hypertension and examining the role of autoimmunity in preeclampsia.
if he can acquire the money or hours of time to do it. “Science is incremental,” Ryan said. “There’s a million ways you can go with your research, but there are limited resources and time.”

That time is something he shares with mentees: graduate students, postdoctoral fellows, junior faculty and others who have passed through his laboratory or classroom at UMMC. “He’s enthusiastic about talking with trainees about their work, and doesn’t make us feel like we are a burden on his time,” said Elena Dent, a fifth-year Ph.D. student in Ryan’s lab. “He also reminds us that there are other aspects to training other than research in the lab or coursework.”

There’s a sense of camaraderie in the Ryan lab. Dent says they’ve all participated in healthy living challenges together, like aiming for daily step goals or eating five servings of fruits and vegetables a day. “For Dr. Ryan’s sake, we let him count sweet potatoes as a vegetable,” Dent said.

Ryan has been recognized for his efforts to promote diversity. The Office of Diversity and Inclusion at UMMC presented him with their Beacon Award, which recognizes one faculty member each year for their successful mentoring of diverse faculty, non-faculty, trainees and students, and significant advancement of one of the Medical Center’s core missions.

Diversity Educator of the Year in February. Dr. Ralph Didlake, associate vice chancellor for academic affairs, noted in Ryan’s nomination letter his “substantive work to attract and mentor underrepresented students into the sphere of bioscience research.”

“When we speak about diversity and inclusion at UMMC, we are speaking about excellence, quality and that we are better and stronger when we have diverse voices at the table,” said Dr. LouAnn Woodward, vice chancellor for health affairs. “Dr. Ryan is a remarkable role model for young scientists and a shining example of excellence.”

And in April, he received the American Physiological Society’s A. Clifford Barger Underrepresented Minority Mentorship Award at the 2019 Experimental Biology meeting.

Ryan doesn’t consider himself a crusader. It’s more about a sense of “decency” formed by his pre-science work experiences. Growing up in Albany, New York and during his college days elsewhere in the Empire State, he was a camp counselor, an attendant at a residential treatment facility for
children, an ice-cream scooper at Ben and Jerry’s and dishwasher for a regional family restaurant chain.

“There’s a lot of benefit to diversity at UMMC because the way people are brought up leads to different ways of thinking. The more diverse and inclusive a university is the more creative your solutions can be.”

Ryan is the principal investigator of the Mississippi Diversity in Hypertension and Cardiorenal Researchers Program, an NIH-funded grant that supports research opportunities for undergraduate students from underrepresented minorities and Historically Black Colleges and Universities.

When it comes to advancing science, Ryan said, “People from all walks of life are essential. Because the second that you think you know everything, that’s the second you’re in trouble,” Ryan said.

Ryan gets some of his teaching principles from his doctoral-work mentor at the University of Buffalo, who encouraged him to pursue a level of self-reliance and responsibility in the lab.

“Academic science is a tough field. Sometimes papers are rejected, grants don’t get funded, experiments don’t pan out,” Ryan said. “A very important quality for trainees to develop is the ability to persevere and not get flustered. I encourage them to keep an even keel – not get too high when things go well or too low when they don’t – and look at challenges as opportunities,” he said.

“His strength is how he lets us be responsible for our research and reminds us that things don’t always work out in science,” said Dr. Victoria Wolf, another physiology and biophysics student in Ryan’s lab. “For example, you can learn from negative studies. He’s good at seeing the positive, saying ‘actually this is exciting because of this.’”

Wolf graduated this year and is starting a postdoctoral fellowship at the Medical University of South Carolina. She says Ryan’s mentorship helped her feel “very confident in going through the application process for postdoctoral fellowships.”

For example, Ryan provides lots of red-lined feedback on grant applications and journal submissions, “but he also lets me have my own voice and didn’t change the style of the manuscript,” Wolf said.

A recipient of UMMC’s Nelson Order recognition for outstanding teachers, Ryan earned the 2019 Regions TEACH prize in May, UMMC’s highest honor for educators.

“Mike has this enthusiasm and personality that allows him to connect well with students, and that quality makes him an ideal person and ambassador for recruiting new students,” said Dr. Joey Granger, dean of the SGSHS.

For several years Ryan has led Discovery U, the SGSHS’s outreach program that includes activities like PhUN week, visits to the Mississippi Children’s Museum. He also is the director for the popular Summer Undergraduate Research Experience.

“Mississippi is underserved in just about all aspects of health sciences,” Ryan said. “Programs like these expose students to real, hands-on biomedical sciences. It opens their eyes to the possibility that they could use talents in this other incredible career path. It builds a pipeline to our Ph.D. programs and opens eyes to the excitement of discovery.”

It’s an enthusiasm Ryan still has.

“I still personally get excited every time a paper of ours is published,” Ryan said.

For the time being, his professional goals are focused on those kinds of moments. Already a leader in the SGSHS and the Department of Physiology and Biophysics, he says that in the future he would be “interested in leading at a different level” within the institution.

Ryan isn’t doing decathlons and the sort anymore, but he’s still running when he can. He enjoys reading biographies and spending time with his family.
With a career that combines clinical pharmacy, teaching at the graduate level and leading a team researching antifungals, among other things, Dr. David Rogers (Microbiology and Immunology, M.S. 1998, Ph.D 2001) was a natural choice for the 2018 School of Graduate Studies in the Health Sciences Distinguished Alumnus of the Year award. He accepted the honor and spoke to a group of graduate students, faculty and alumni gathered in the Norman C. Nelson Student Union on Friday, October 26, 2018 for the school’s annual alumni event.

Rogers holds the First Tennessee Endowed Chair of Excellence in Clinical Pharmacy, is professor of clinical pharmacy and translational science, and professor of pediatrics at the University of Tennessee Health Science Center College of Pharmacy and serves as the vice chair for research for the Department of Clinical Pharmacy and Translational Science, the director of clinical and experimental therapeutics, and co-director of the UTHSC Center of Excellence for Pediatric Experimental Therapeutics. Though he’s grateful for the path his career has taken, he admits he never dreamed this is how it would look.

After completing his undergraduate work at the University of Memphis, he realized a deeper interest in clinical pharmacy and earned a Pharm.D. degree from the University of Tennessee, and then M.S. and Ph.D. degrees in Microbiology and Immunology at the University of Mississippi Medical Center.

Rogers now leads a research team of 10 people and lectures to and works with graduate students at UTHSC. The research program centers on antifungal agents and ways to treat severe fungal infections. “Specifically, we’ve focused the bulk of our work on understanding how resistance to antifungal agents emerges and understanding the molecular and genetic basis of that clinical problem,” he said.

Rogers is quick to brag on the team he has at UTHSC, but humbly downplays his contribution, something that his department chair, Dr. Richard Helms, disputes. “Dave Rogers is among the best professionals I have ever met. Quietly accomplished, respectful, never a braggart, he sees value in all of those around him.

Helms added, “Dave has built a mycology team now with new targets for drug development, which may revolutionize the way fungal infections are treated. This translational approach to fungal pathogenesis will support our Center for Drug Development.”

This research has roots in a topic that Rogers first got interested in while doing his graduate work at UMMC.

“You know the saying, ‘Everything you’ve learned that’s of importance, you learned in kindergarten,’ well everything I learned that’s of importance in my academic career seems to all stem back to the five or six years I spent in Jackson with that particular group,” said Rogers. “The whole time I was there had a profound effect on my career. The Department of Microbiology was very important, and it sounds almost trivial to say they played a crucial role in the way I think about the world as a scientist.”

Rogers’ professors also had a profoundly significant impact on his approach to leading a graduate program, three in particular.

“Dr. John Cleary recruited me to Jackson to train with him in the Infectious Diseases Pharmacy Residency and Fellowship program that he created and directed. He made it possible for me to pursue graduate education while training there, and so that I could continue my Ph.D. training after I joined the faculty there,” said Rogers.

“Also, Dr. Stan Chapman carried enormous influence and he did it in such a positive way for the good of others, and he provided opportunities for individuals training in research
Rogers Distinguished Alumnus for 2018

in his lab but also on the clinical side,” said Rogers. “This might have been the most important thing I learned at UMMC—academic servant leadership.”

Dr. Stanley Chapman is professor emeritus in the Department of Medicine. A long time professor at UMMC, Chapman even has a Research Day award named in his honor, the Stanley Chapman Young Investigator Award.

Rogers said that he is also forever grateful for having worked with Dr. Donna Sullivan, professor emeritus of infectious diseases, who was his Ph.D. mentor. “On a day-to-day basis she provided instruction, opportunities, resources, advice, and forgiveness when I broke things or made mistakes,” he said.

“Dave is, was, always will be one of the most remarkable people I have ever worked with,” said Sullivan. “He was such a go-getter as a student, I could barely keep up! Dave generated his own research funds, planned experiments that I only tweaked, and I was amazed at his writing skills.”

Rogers has applied what he learned from Cleary, Chapman and Sullivan in regard to his team at UTHSC, which is the career accomplishment he’s most proud of thus far.

“It’s a tight knit, connected, collaborative group, and the power of collaboration or power of critical mass of individuals working on similar but not the same things that can play off each other and interact within one another. We’ve kind of created on a larger scale what I feel like I experienced in Stan’s lab with Donna — that environment where it’s very grad student driven,” said Rogers.

He insists he doesn’t really deserve much of the credit for that. He’s just happy to be a part of it.

“He always gives credit to his team, but the direction of his team is always under his watchful eye. He gently keeps all focused and moving in a common direction,” said Helms.

Over his career, Rogers has noticed a few practical applications of his education that he shared with students during the annual Research Day Luncheon.

First, he told them to expect to be lifelong learners. “Biomedical sciences now sort of all interconnect. There’s going to be new techniques, new principles, new ideas that come about, and you’ve got to stay on top of that.”

Collaboration is also key. “If you can’t do a technique yourself, go find the best person in the world that does that, and convince them that your question is important.”

And lastly, stay open to all possibilities. “You’re at the beginning of your career. You have all these doors open to you, don’t close any of these doors until you absolutely have to. You don’t know you don’t like it until you’ve tried it on,” said Rogers.

Dr. Joey Granger, dean of the School of Graduate Studies in the Health Sciences, is excited about Rogers’ being the alumnus of the year.

“This is the highest award given to our graduates from the SGSHS. He joins the list of accomplished and nationally and internationally recognized alumni from our graduate school,” said Granger.

Rogers was both surprised and humbled by the award. “I feel like I was just there, how can it be time for this? I hope fully have at least 20 more years to go and a lot more to accomplish. You look at a place like UMMC and this is where the likes of Arthur Guyton once roamed the halls and many scientists of that caliber, so it’s a grad program and health science center to be reckoned with, and to be recognized by them is an honor.”
Students and faculty from the SGSHS ready for Discovery U 2019 at the Mississippi Children’s Museum in Jackson.

After receiving her Ph.D. in Nursing, Katie Hall, left, is hooded by Dr. Jennifer Robinson, one of her professors.

Xiao Zhang, Ph.D. student in neuroscience, shares his poster with judge Dr. Denise Cornelius, assistant professor of emergency medicine.

Experimental therapeutics and pharmacology Ph.D. students Shaoxun Wang and Letao Fan at the Associated Student Body’s annual crawfish boil.

Incoming SGSHS students Jaren Reeves-Darby, left, and Charles Barnes walk the halls during new student orientation.
SGSHS REACHes elementary students for science education

By Karen Bascom

There are few classroom demonstrations as joy-inducing as the vinegar-and-baking soda volcano. How much more fun is it to make six of them in rainbow colors?

It’s more than fun: it’s a lesson on the properties of light through Project REACH, or Reaching Education and Changing Healthcare, a partnership between the University of Mississippi Medical Center and Barack H. Obama Magnet Elementary School in Jackson. Students and postdoctoral fellows from the School of Graduate Studies in the Health Sciences lead monthly lessons designed to reinforce and enhance the science concepts the younger students learn in their classes.

“[Obama Elementary Project REACH coordinator] Beth West Roach provides us with learning objectives and outcomes in a schedule each year, and the graduate students have freedom to create a lesson plan that helps meet those outcomes,” said Dr. Hanna Broome (Ph.D. Biochemistry, 2013), SGSHS assistant dean of graduate education and Project REACH coordinator.

On March 5, Obama Elementary fourth graders had a lesson on light from “Miss Daisy the Science Lady.” That’s the alter ego of Adesuwa Ekonwe, a master’s of science in biomedical science student from Clinton.

“Who can tell me about Isaac Newton?” Ekonwe asked the fourth graders. Most of the students raised their hands.

“He came up with the three rules of gravity!” one said.

“He learned about light and colors!” another added.

Meanwhile, students passed around a prism, like the one Newton used to develop his theory of color, to create rainbows using the light shining through their classroom window.

Fourth-grade teacher Jennifer Tanner said her students look forward to Project REACH because of the hands-on activities.

“The lessons relate to what they’ve learned in class, but they gain a deeper knowledge of the topic,” Tanner said. “I love the reaction on the visiting graduate students’ faces when they ask a question they don’t think my students will know the answer to, and then they get it right.”

The students continued to answer Ekonwe’s questions about reflection, absorption, and refraction with ease.

“Refraction is when something becomes bent,” one student said.

Their demeanor went from confident to ecstatic when Ekonwe brought out the volcano supplies. The students took turns adding the red, orange, yellow, green, blue, and violet food dyes, creating the bubbly oxides, and finally mixing them all together to make black.

Warren Meeks, 10, an Obama Elementary School student, pours vinegar for a classroom demonstration with assistance from Ekonwe.

Project REACH is one way for SGSHS students and trainees to experience education from the other side of the desk. In creating lesson plans, delivering the lesson and engaging students with the material, they advance their professional development by learning skills applicable to multiple health sciences career opportunities.

“I think each student should have to teach, because the experience usually gives them a greater appreciation for those teachers and faculty who have taught them and the profession as a whole. We get overwhelmingly positive feedback from our students and trainees that participate in Project REACH each year,” Broome said.

Project REACH also introduces the younger students to health science-related educational and career opportunities. Some are already making plans: one fourth grader wants to be a veterinarian, another a scientist.

And when Ekonwe told the students she plans to go to medical school and become a doctor, the whole class cheered.
UMMC a national leader in ELP research, patents

By Karen Bascom

Medical advances happen when science is able to stretch beyond its known boundaries. To make those advances, several faculty at the University of Mississippi Medical Center are using a technology that is as flexible as its name implies.

UMMC is one of the nation’s leaders in developing elastin-like polypeptides, or ELP, for applications ranging from drug delivery to tissue engineering and now holds six patents related to its use as a drug-delivery tool.

ELP is a synthetic molecule based on elastin, one of the most abundant proteins in the human body. Elastin allows your blood vessels to dilate and contract, your lungs to fill with air and your skin to snap back in place after a pinch. In fact, ELP was developed as a model to understand the protein’s stretchiness, said Dr. Lee Bidwell (Ph.D. Biochemistry, 2007), associate professor of neurology.

UMMC’s most recent patent was issued September 25, 2018 for a drug-delivery method to increase the safety of medication use in pregnancy, authored by Bidwell and Dr. Eric George (Ph.D. Biochemistry, 2009), assistant professor of physiology and biophysics.

“Many drugs have either a known risk or toxicity to a developing fetus, or there is not enough safety data to know that risk,” Bidwell said. Because many drugs can cross the placenta into the baby’s bloodstream, physicians may not be able to treat a pregnant woman’s medical conditions, whether they are related to her pregnancy or not.

The patent covers a broad range of applications, but one of the essential innovations allows for attaching a drug or therapeutic agent to an ELP, which can prevent drugs from crossing the placenta.

The ELP can also make new kinds of therapeutics viable.

“When you attach an ELP to a drug, you alter that drug’s plasma half-life,” Bidwell said. In other words, you can increase or decrease the amount of time therapeutic levels stay in the blood stream, increasing efficacy.

For example, the new patent also covers a way to use ELP to target therapeutic agents to the placenta and other maternal organs as a way to treat preeclampsia, a serious complication of pregnancy involving high blood pressure and abnormal blood vessel formation in the placenta.

How can the same molecule both prevent and facilitate drug delivery to a particular part of the body? It’s all in the design.

Scientists grow customized ELP sequences in bacteria by encoding a sequence in its genome. The bacteria produce the peptide, which can then be isolated and used. Depending on the sequence used, it can take on different sizes and shapes that affect its physical properties. If an ELP is sufficiently large, it can’t pass through a cell membrane.

“We are able to cut and paste DNA sequences to create something that has never existed before,” said Dr. Drazen Raucher, professor of cell and molecular biology.

Bidwell studied ELP with his mentor Raucher, who in turn studied the techniques as a postdoctoral fellow at Duke University.

The work started as a short-term time-filler experiment during Raucher’s first year as UMMC faculty.

“We attached an ELP and a cell-penetrating peptide to an oncogene inhibitor, applied to BRCA-type [breast cancer] cells in vitro, and we found that it killed the cells,” Raucher said. “So, we applied for research funding, bought more materials and everything started.”

Raucher’s primary research continues to focus on using the molecule for thermally-targeted drug delivery to tumors. Local hyperthermia, raising a tumor or body part’s temperature by a few degrees, can make the composite aggregate and allow the drug to work. He’s the author of three patents, alongside Bidwell, for cancer therapeutics and thermal targeting.

In 2016, Raucher and Dr. Parminder Vig, professor of neurology, also authored a patent that uses ELP for targeting neurodegenerative conditions in the brain and spinal cord, including spinocerebellar ataxia.

“One of the delivery routes we are using is pretty innovative. Our group is exploiting the olfactory pathway to the brain,” Vig said. “We administer peptides through the nose, instead of intravenously. This allows them to bypass the blood-brain barrier and reach the target faster and more efficiently.”

However, ELP has many more diverse applications than drug delivery. Dr. Amol Janorkar, professor of biomedical materials science, uses ELP in his research using techniques he learned as a postdoctoral fellow at Harvard.

One of his lab’s projects uses a combination of ELP, polyelectrolytes and cells to create “stable spheroid” models of liver and adipose tissues.

“The body is not two-dimensional,” Janorkar said. “If you can create a mini-model of tissue that is three-dimensional, that can make in vitro models more relevant.”

Janorkar is also studying the physical properties of different ELP configurations and how to use that information to create nano- and micro-particles for various applications.

Dr. Jim Petell, UMMC director of innovation development and licensing, said UMMC’s overall ELP portfolio accounts for nearly 20 percent of ELP-related issued patents in the United States, making the Medical Center one of the top institutional leaders in this field.

The IDL office is working with the inventors to determine the best ways to commercialize the whole of UMMC’s
ELP-related IP. So far, Raucher and Bidwell each have spin-off companies targeting different applications. “Having an established company set up makes it easier to work with other companies and get private investment,” Raucher said.

Among the different projects happening at UMMC, the ELP application that may be closest to market – although still several years away – involves techniques for targeting the kidneys. Bidwell and Dr. Alejandro Chade, professor of physiology and biophysics, which was patented in June 2019.

“For the next steps we’re focused on dose escalation studies to determine the safe dosing range, and eventually finding an independent, good laboratory practices partner to continue testing and remove bias,” Bidwell said.

Despite ELP’s flexibility, there remains a number of hurdles for each potential use. “Only about one in every six or seven configurations turns out to be useful,” Raucher said. Furthermore, certain applications, like the need for heating devices to make thermally-targeted versions work, may limit its use.

Creating an ELP is relatively easy, Bidwell said. Rather, its limitations come from physiological restraints of the body, like breaking directly through the blood-brain barrier.

ELP on its own is inert. The functionality comes from what you attach to it, like a power drill with interchangeable bits. These modifications include cell-penetrating peptides to break past the membrane, targeting sequences for certain receptors, and therapeutic peptides. Each of the UMMC patents covers one or more of these components.

From a business development standpoint, Petell said, packaging all of UMMC’s ELP-associated technologies as part of a single toolbox means corporate collaborators have a one-stop shop to use these advancements and access to our combined expertise.

“The interconnected approach gives business partners access to the broad range of our ELP intellectual property portfolio without requiring multiple licenses for their specific product,” Petell said.

Bidwell said working with ELP is satisfying because of its flexibility. “It’s a chance to be creative,” he said. “It’s a versatile molecule and the possibilities are almost endless.”

Funding for this research came from the National Institutes of Health, National Science Foundation, United States Department of Agriculture, American Heart Association and National Ataxia Foundation.
The American Society for Microbiology South Central Branch held their annual meeting October 2-3, 2018 at UMMC.

The Department of Microbiology and Immunology hosted about 180 attendees from universities and research institutions across Mississippi, Arkansas, and Louisiana in the Medical Education Building to discuss the latest advances in their work and connect with other regional scientists.

Dr. Larry McDaniel, professor and chair of microbiology and immunology, said it was the first time UMMC has hosted the meeting since 2002.

“We’ve had a desire to bring the meeting back to UMMC, and this year we were able to showcase both our department and the new School of Medicine building,” McDaniel said. “Having this facility on campus made hosting this meeting a possibility.”

The conference featured poster presentations, a scientific career panel and invited speakers in the areas of bacteriology, virology, pathogenesis, immunology, and applied microbiology. There were also several featured speakers, including national ASM CEO Dr. Stefano Bertuzzi and keynote speaker Dr. Terje Dokland of the University of Alabama-Birmingham.

“There’s a changing dynamic in microbiology in terms of what we do and how we do it,” McDaniel said. This was highlighted in Bertuzzi’s Saturday talk, where he advocated for shift in the field of microbiology towards broader “microbial sciences,” which can include physicists, engineers, clinical scientists and others.

 “[Bertuzzi] discussed how ASM supports more than just microbiology research, because microbial sciences research is really an interdisciplinary collaborative effort,” said Dr. Justine Dees, a former postdoctoral fellow in microbiology and immunology at UMMC. “I really enjoyed his talk because he was charismatic and clearly excited about microbial science.”

Many of the presenters during the poster and oral sessions were undergraduate and graduate students, and postdoctoral fellows. Dees said that smaller, regional conferences like the ASM branch meeting are “heavily focused” on scientists-in-training.

While the presenters at larger national and international conferences tend to be faculty, “trainees have more opportunities to share their research at these smaller meetings,” she said. “It helps them to sharpen their oral communication skills and practice presenting their work in front of an audience.”

In addition, several trainees, Dees included, served as chairs for meeting sessions, a responsibility typically given to faculty at larger conferences.

The ASM branch meeting also recognizes an outstanding junior faculty member from the region through the Charles C. Randall lectureship, named for the former chair of microbiology at UMMC. Dr. Jason Bodily, an assistant professor at Louisiana State University Health Sciences Center-Shreveport, delivered the 2018 lecture.

The meeting was also a networking opportunity. Microbial scientists at each level of training had a chance to connect with potential mentors. Likewise, faculty members were able to meet and begin discussions that could lead to new research projects.

“We are able to gather and talk with other people in our region and look for opportunities to build collaborations,” McDaniel said.

Both McDaniel and Dees say they have received positive feedback from attendees.

“It was the efforts of everybody pitching in that helped make this meeting a success,” McDaniel said, including the Department of Microbiology and Immunology, ASM, and the Schools of Medicine, Graduate Studies in the Health Sciences and Office of Research at UMMC, and several outside vendors.

The University of Mississippi in Oxford will host the 2019 South Central Branch meeting.
Pharmacology alum’s assay may uncover dubious specimens

By Karen Bascom

If someone tries to pass fake urine off as the real deal during a drug screen at the University of Mississippi Medical Center, he or she will be in trouble.

“We’ve seen samples come through that are simply water and some that were all-white, which turned out to be hand soap from the dispenser,” said Dr. Patrick Kyle (Ph.D. Pharmacology and Toxicology, 2006), director of clinical chemistry and toxicology at UMMC.

But it’s not always so clear.

Kyle, a professor of pathology, presented work at the Society of Forensic Toxicologists meeting in October 2018 in Minneapolis, Minnesota, on an assay he developed to catch one class of fakes: synthetic urine.

“These products are packaged and labeled for novelty and entertainment purposes, but inside the packages you’ll find instructions for heating to physiologic temperature and a heating pad,” said Kyle, whose work was featured on Scientific American’s website in January 2019.

Sold under several brand names, these products are available online, in gas stations or in smoke shops.

In 2018, the Mississippi State Legislature considered a bill that would make synthesizing urine products illegal, but did not pass it into law.

“Non-physiologic specimens,” as Kyle calls them, can be quite sophisticated.

Standard urine drug screenings check for metabolites, or broken-down parts, of drugs like amphetamines, marijuana and opioids. They also check some characteristics of the sample to see if it is comparable with human urine, such as pH, specific gravity and levels of creatinine and urea, normal products of metabolism.

Synthetic urine can pass all these criteria, potentially leading to a false negative result. However, these yellow liquids are a little too clean.

Kyle’s assay checks urine samples for the presence of four compounds. Three come from legal vices: cotinine, a nicotine metabolite; theobromine, found in chocolate, tea and coffee; and caffeine. These exogenous – from outside the body – compounds are joined by endogenous urobilin, a product of hemoglobin breakdown.

“We chose these compounds because they are common,” Kyle said. “However, we could detect false samples using any number of endogenous and exogenous compounds.

“Other clinical labs are developing their own new assays.”

Using a technique called liquid chromatography-mass spectrometry, the lab tested 10 products marketed as synthetic urine, 100 known urine samples collected explicitly for the project, 200 samples collected for pre-employment screening for a state agency, and 100 samples for pain management testing at UMMC.

One reason clinical labs are interested in developing a new assay is in response to the opioid crisis, Kyle said. For pain management patients, health care providers want to make sure patients are using their medications as prescribed.

Dr. Jaswinder Kaur (M.D., 2015), a fourth-year resident in pathology, also worked on the project.

“I was excited to get involved in a research project that was a little different than the typical surgical work in pathology and applied my experience studying chemistry,” she said.

None of the synthetic samples contained any of the four compounds.

Meanwhile, the assay detected at least one of the four in all 100 real samples. This suggests the assay could be an effective tool to distinguish real from fake.

Among the experimental samples, three percent from pre-employment and one percent from pain management lacked all four components. These samples didn’t pass secondary testing, either, which included checking for biological material like cells usually present in urine.

This suggests they were non-physiologic specimens, which Kyle said is consistent with other data on the prevalence of false specimens in drug testing.

The assays are sensitive but labor- and cost-intensive. However, there’s an easier way to screen for suspicious samples.

“Shaking could be a good preliminary check of the validity of the sample that can be performed in the clinic,” Kyle said.

While the new assay may flag some false specimens, it won’t work for other ways people may try to cheat test results, such as adding chemicals to neutralize drug metabolites or simply substituting another person’s urine for their own.

“We’re also limited by the sensitivity of our equipment,” Kyle said. “If a compound is below detection level, we won’t catch it.”

Couldn’t synthetic urine manufacturers just add caffeine or urobilin to their products?

“Of course,” Kyle said. But in the chemical arms race, this assay is another tool that labs can add to their work stream to catch dubious samples.
An SGSHS dissertation project has helped form the basis for a partnership between UMMC and the National Cancer Institute to reduce the number of cervical cancer deaths in Mississippi, and hopefully everywhere.

The seed for the project was planted when Dr. Carolann Risley (Ph.D. Nursing, 2019), a women’s health nurse practitioner who graduated from the SGSHS in May, noticed something peculiar while working for the Mississippi State Department of Health in 2014.

“By performing cervical colposcopies and biopsies I could clearly see there were differences in Mississippi when compared to other populations where I worked,” she said. “HPV was acting differently by race or ethnicity ... and cancerous infection was somehow persisting and progressing at a faster rate and infecting women at an earlier age” in the state.

Her observation would later guide her dissertation research, which then led to the unique partnership between the NCI and the School of Nursing at UMMC. Risley now holds a dual appointment as SON faculty and as a NCI postdoctoral fellow, where she will receive training in clinical epidemiology, study design, risk assessment and data analysis.

Women in Mississippi have more than triple the risk of dying from cervical cancer compared to women living in Vermont, according to the Centers for Disease Control and Prevention. The data shows further disparities by race – black women in Mississippi die from cervical cancer at greater than twice the rate of white women.

HPV, or human papillomavirus, causes most cases of cervical cancer, as well as other cancers in women and men. Of the more than 150 recognized strains, just two are responsible for the most HPV-related cancers.

“There was no type-specific HPV data in Mississippi to describe the prevalence of cervical precancer or why black women are dying at greater than two times the rate of white women,” said Risley.

Risley reached out to Dr. Mary Stewart (Ph.D. Nursing, 2003) director of the Ph.D. in nursing program and began her doctoral studies under Stewart’s direction and with funding from the SGSHS, the School of Nursing and the Mississippi Nurses Foundation. Risley looked at data from Pap smear and HPV test results from women across the state to see whether her original hunch was supported by data.

She used a screening technology that divides patients’ test results into three categories of HPV types: type 16, the most dominant high-risk type in cervical cancer; type 18, which leads to a certain type of cervical cancer; and a category that encompasses 12 less common cancerous types of HPV.

“Black women were more likely to have the other less-common HPV types,” she said. “White women were significantly more likely to have HPV 16 than black women. That’s a significant finding because type 16 and 18 are the types that frequently guide our clinical HPV triage to colposcopy and biopsy, the tests that diagnose cervical cancer.”

The findings are significant because there is not much of this data available for African American women, said Dr. Kim Geisinger, former UMMC professor of pathology who was a member of Risley’s dissertation committee.

Enter the NCI’s Division of Cancer Epidemiology and Genetics, which will help further investigate Risley’s findings and potentially answer several questions, such as: should race be considered along with genotype in determining screening for Mississippi — and possibly all — women?

Risley became part of the National Institutes of Health Graduate Partnership Program after attending the NCI Summer Fellowship in Cancer Prevention in 2018. Now, she is part of the research team for STRIDES, short for STudying Risk and Improving DisparitiES in Mississippi. The collaborative study, which also includes the Mississippi State Department of Health, will evaluate risk of cervical precancer and cancer and study new screening techniques.

“As a result of her passion, persistence and expertise, Mississippi is now one of the major sites, along with California and Brazil, for the NCI’s efforts surrounding cervical cancer prevention, detection and treatment,” said Stewart. “The collaboration is only beginning, but it is incredibly promising for the School of Nursing — but more importantly for the women in Mississippi.”
A January ceremony dedicating two Mississippi Hall of Fame portraits drew some 80 guests – roughly the number of terms and titles trotted out to do justice to the legacies of the men portrayed between the frames: Dr. Arthur C. Guyton and Dr. James D. Hardy.

“Master teacher,” “hero,” “innovator,” “role model” and, most of all, “giant” – these were among the accolades echoing in the House of Representatives Chamber in Jackson’s Old Capitol Museum the day their official portraits were unveiled.

Of all the distinguished figures who have taught, researched and healed at the University of Mississippi Medical Center, none were more prominent than Guyton and Hardy “in terms of their innovative and enduring contributions to their respective fields,” said Dr. LouAnn Woodward in her remarks.

Woodward, UMMC vice chancellor for health affairs and dean of the School of Medicine, was a 1991 graduate of the School of Medicine and Guyton’s and Hardy’s student.

Guyton, the seminal chair of the Department of Physiology and Biophysics, is renowned for his Textbook of Medical Physiology which, in its various updated editions, remains the best-selling volume on the subject in the world.

Affected by residual paralysis from polio he had contracted as an adult, Guyton received a presidential citation in 1956 for designing a motorized wheelchair with joystick, special crutches and braces, and hoists for lifting patients. His research triggered life-saving improvements in the treatment of hypertension, heart failure and other cardiovascular diseases.

At age 29, Guyton overcame some skepticism about his youth and stamina when he became chair of the Department of Physiology at the University of Mississippi in Oxford before he and the department moved to the new Medical Center in Jackson in 1955.

He built “what many consider the premier physiology department in the country,” said Dr. John Hall, Arthur C. Guyton Professor and Chair of the department today. “He was a tremendous role model and inspiration. He had tremendous courage and kindness as well.

“No one had a greater impact on my career.”

At one point, Guyton invited Hall to join him in editing the ninth edition of the physiology textbook which remains popular, Hall said, because “it’s written for the students, not for the professors.”

Guyton was elected to the Hall of Fame in 2011. The founding chair of surgery at UMMC, Hardy led a team that performed the world’s first lung transplant, in 1963; the following year, he and his team transplanted a chimpanzee heart into a dying man, completing the first heart transplant into a human. For his contributions to the state, Hardy was elected to the Hall of Fame in 2016 by the Mississippi Department of Archives and History board of trustees whose current president, Kane Ditto, presided over the ceremony.

Guyton and Hardy, both of whom died in 2003, are among 136 Hall of Fame inductees representing a host of political leaders, along with artists Walter Anderson and George Ohr, authors such as Eudora Welty and Walker Percy, and civil rights leader Medgar Evers, who was sent to the Medical Center emergency room with a fatal gunshot wound while Hardy was performing the historic lung transplant.

The portraitist for both men is Steve Moppert of Signal Mountain, Tennessee, a past winner of the National Portrait Competition’s best-in-show prize. The paintings will hang in the Old Capitol with the others whose totality represents the Hall of Fame.
Dr. Barbara Alexander (Ph.D. Biochemistry, 1997), professor of physiology and biophysics, received the Harriet Dustan Award at the American Heart Association’s Council on Hypertension Scientific Sessions 2018 meeting in Chicago.

Established in 2008, the award recognizes female scientists who have made outstanding contributions in the field of hypertension.

A member of the UMMC faculty since 1999, her research focuses on fetal programming and developmental insults, including the link between low birth weight and hypertension later in life. In particular, she developed an animal model of intrauterine growth restriction that shares many characteristics with human maternal high blood pressure and preeclampsia.

“These are exciting and growing fields of research that have major implications for prevention of hypertension in future generations and for women’s health,” wrote Dr. John Hall, professor and chair of physiology and biophysics, in his nomination letter for Alexander.

Alexander is also director of basic research for the Mississippi Center of Excellence in Perinatal Research and director of UMMC’s Analytical and Assay Laboratory.

This year, the School of Graduate Studies in the Health Sciences starts its first classes in an online certificate program in graduate medical biochemistry.

Meant to be taken over the course of two semesters, the 11-credit certificate is designed to meet the needs of a variety of learners, including medical- and dental-school hopefuls, college instructors and biotech and laboratory personnel, said course director Dr. Bettye Sue Hennington (Ph.D. Biochemistry, 1995).

“We are seeing a shifting paradigm in education from classroom learning to online learning,” said Hennington, a professor of cell and molecular biology. A 2016 survey found that more than 6 million students in the United States took at least one online course that year, a number that has been growing for 14 years. Higher education has also seen a 15 percent increase in the number of online, non-degree courses available, Hennington said.

“Our goal is to take what is being taught in medical and dental biochemistry courses and break it down into manageable and digestible blocks,” said Dr. Maryam Syed (Ph.D. Cell and Molecular Biology, 2018), assistant professor of cell and molecular biology and co-director of the program.

Those courses include molecular structure and cellular function; enzymology and metabolism; forensic biotechnology; and genetics, development and disease. These are some of the topics that medical and dental students struggle with the most, Syed said, so creating new opportunities to learn them prior to enrollment could help student outcomes.

While educational data suggest that students who learn in the traditional classroom setting may perform better on tests of general knowledge of material, Hennington said that “students who take online courses seem to do better with analysis and synthesis – the higher levels of Bloom’s Taxonomy – which is what we want to see in terms of long-term success in learning.”

Tuition revenue from the medical biochemistry program will go towards supporting the Department of Cell and Molecular Biology’s research mission. If successful, the SGSHS may expand the program to other departments and offer certificates in additional biomedical science disciplines.
Dr. Amol Janorkar, professor of biomedical materials science, received the Outstanding Young Alumni Award from the Clemson University College of Engineering, Computing and Applied Sciences.

Janorkar earned his Ph.D. in chemical engineering from Clemson in 2005 and was subsequently a research fellow at Harvard Medical School before joining the UMMC faculty in 2007. His research interests include biomaterials engineering, novel drug delivery mechanisms and in vitro tissue models. His research is funded by a National Institutes of Health R01.

The Outstanding Young Alumni Award recognizes fast-track young graduates under the age of 40 who are making a major impact on the world around them. This honor singles out those who have achieved significant career success, made notable contributions to society or have developed substantial advancements in engineering or scientific practice.

AIMBE inducts Hester into College of Fellows

Dr. Robert Hester (Ph.D. Biomedical Engineering, 1983), Billy S. Guyton distinguished professor and professor of physiology and biophysics and interim chair of data science, has been inducted into the College of Fellows of the American Institute for Medical and Biological Engineering (AIMBE).

Composed of the top two percent of medical and biological engineers, the AIMBE College of Fellows honors society members who have made outstanding contributions to engineering and medicine-related research, practice or education, are pioneers in new and developing fields of technology, or who have advanced traditional areas of biological engineering.

Hester was nominated and elected by his peers for his “significant contributions in renal and cardiovascular research, professional society leadership, and physiological modeling environment development.” He is one of the leading engineers of HUMMOD, considered to be the best, most complete, mathematic model of human physiology, and is active in international efforts to advance the use of in silico models to improve medicine and clinical research.

Hester is one of 156 new fellows who were inducted during the AIMBE Annual Meeting at the National Academy of Sciences in Washington, DC on March 25.

Janorkar receives Clemson Alumni Award

Dr. Amol Janorkar, professor of biomedical materials science, received the Outstanding Young Alumni Award from the Clemson University College of Engineering, Computing and Applied Sciences.

Janorkar received the award at a celebratory banquet on the Clemson campus April 25.
Grants and Awards

The following SGSHS faculty received some of the largest new and competitive renewal extramural research grants and awards during the past academic year. Please join us in congratulating these investigators:

Dr. John Hall, Arthur C. Guyton Professor and Chair of Physiology and Biophysics, received a $2.2 million competitive renewal from the National Institutes of Health for the Cardiorenal and Metabolic Diseases Research Center.

Dr. Alejandro Chade, professor of physiology and biophysics, and Dr. Lee Bidwell, associate professor of neurology, received a four-year, $2.2 million renewal from the NIH for the project, "Microcirculation in Renovascular Hypertension."

Dr. Jason Griggs, professor and chair of biomedical materials science, received a five-year, $1.9 million grant from the NIH for the project, "Design optimization of reduced-diameter implants in simulated and cadaver bone."

Dr. Fan Fan, assistant professor of pharmacology and toxicology, received a five-year, $1.9 million grant from the NIH for the project, "Adducin, actin cytoskeleton and cognitive impairments."

Dr. Michael Garrett, professor of pharmacology and toxicology, received a four-year, $1.55 million grant from the NIH for the project, "Genetic targets of hypertension and organ damage."

Dr. Bradley Walters, assistant professor of neurobiology and anatomical sciences, received a $775,467 grant from the Office of Naval Research for the project, "Zeiss 880 Confocal with Airyscan to Study Auditory/Vestibular Function."

Dr. Kedra Wallace (Ph.D. Neuroscience, 2009), assistant professor of obstetrics and gynecology, received a two-year, $640,000 grant from the NIH for the project, "Hypertension and neuroinflammation during pregnancy – the impact on maternal behavior and offspring neurodevelopment."

Dr. Yin-Yuan Mo, professor of pharmacology and toxicology, received a $620,000 grant from the Department of Defense for the project, "Identification of IncRNAs Required for Synthetic Lethal Interactions with Mutant KRAS in Pancreatic Cancer."

Dr. Hong Zhu, professor of otolaryngology and communicationscience, received a two-year $464,606 grant from the NIH for the project, "A Novel Animal Model of Blast-induced Vestibular Deficits."

Dr. Barbara Alexander, professor of physiology and biophysics, received a $299,999 grant from the NIH for the project, "Hypertension in Adult IUGR Offspring: Beneficial Effects of Perinatal Intervention."

Graduate Student Awards

Angela Benton (Microbiology and Immunology) – Sigma Xi Grant-in-Aid of Research Award; National Eye Institute travel grant

Laura Blackmon (Microbiology and Immunology) – American Association of Immunologists Trainee Travel Award; NSF Travel Award and Best Poster Presentation, 14th Congress of the International Society of Developmental and Comparative Immunology

Jared Cobb (Biomedical Materials Science) – Graduate Research Day Poster Presentation Winner; Phi Kappa Phi Honor Society inductee

Gwen Davis (Physiology and Biophysics) – American Heart Association Predoctoral Fellowship

Elena Dent (Physiology and Biophysics) – American Heart Association Predoctoral Fellowship; American Physiological Society Caroline tum Suden/ Francis A. Hellebrandt Professional Opportunity Award

Sonja Dragojevic (Cell and Molecular Biology) – Graduate Research Day Poster Presentation Winner

Adrian Eddy (Physiology and Biophysics) – American Heart Association Predoctoral Fellowship

Jason Engel (Physiology and Biophysics) – American Physiological Society Caroline tum Suden/ Frances Hellebrandt Professional Opportunity Award; Finalist for the APS Predoctoral Excellence in Renal Research Award; Graduate Research Day Poster Presentation Winner

Bhuvaneswari Gurumurthy (Biomedical Materials Science) – Selected as Honorable Mention for the STAR Award by the Society for Biomaterials; Travel award for American Association for Dental Research Fall Focused Symposium

Mohammad Hasan (Microbiology and Immunology) – Second place award in the 2019 Mississippi Academy of Sciences Student Manuscript Competition; Travel award for the 2018 Meharry Translational Research Center Health Disparities Conference

Mary Darby Jackson (Microbiology and Immunology) – Graduate Research Day Poster Presentation Winner; Sigma Xi Honor Society inductee

Kartikeya Jodha (Biomedical Materials Science) – International Association for Dental Research KULZER Travel Award; North American Travel Award from the Academy of Dental Materials
Sara Klender (Clinical Anatomy) – American Association of Anatomists’ Travel Award

Tyler Lomax (Physiology and Biophysics) – Martin Frank Diversity Travel Award to attend Experimental Biology 2019; Graduate Research Day Poster Presentation winner

Kenji Maeda (Experimental Therapeutics and Pharmacology) – Graduate Research Day Poster Presentation Winner; Elected as a Trainee Advisory Subcommittee Member of the American Physiological Society Water & Electrolyte Homeostasis Section

Ciara McKnight (Cell and Molecular Biology) – Graduate Research Day Poster Presentation Winner

Edgar Meyer (Clinical Anatomy) – Poster Award Finalist for an Anatomical Sciences Education Student/Postdoctoral Education Research Poster Award at the American Association of Anatomists Annual Meeting at Experimental Biology 2019; Excellence Award as part of The 2019 Pillars: Recognition of Service & Inclusive Excellence by the Office of Diversity and Inclusion.

Caroline Mueller (Clinical Anatomy) – American Association of Anatomists Travel Award for Experimental Biology 2019 and ticket to the AAA Closing Awards Ceremony for presenting an abstract at their annual meeting

Stacey Naylor (Nursing) – Jonas Scholar Award

Danielle Porter (Neuroscience) – NIH F31 grant

Kathleen Rhodes (Nursing) – Phi Kappa Phi Honor Society inductee

Katherine Rigdon (Nursing) – Phi Kappa Phi Honor Society inductee

Carolann Risley (Nursing) – Phi Kappa Phi Honor Society inductee

Ellen Robertson (Clinical Anatomy) – American Association of Anatomists Travel Award; Finalist for ASE Student/Postdoctoral Education Research Poster Award

Marcelo Sakiyama (Pathology) – Graduate Research Day Poster Presentation Winner

Olivia Travis (Physiology and Biophysics) – Graduate Research Day Poster Presentation Winner; Phi Kappa Phi Honor Society inductee

Hannah Turbeville (M.D./Ph.D. – Experimental Therapeutics and Pharmacology) – Travel award with mentoring program at Kidney Week 2018; Portland Press Predoctoral Research Recognition Award Finalist; Travel award to Experimental Biology 2019 from Water & Electrolyte Homeostasis Section of American Physiological Society including oral presentation competition for selection of final award; NIH Ruth L. Kirschstein National Research Service Award

Sydney Vita (Neuroscience) – First place winner for her poster at the Mission Connect Symposium; First place winner at the 25th Annual Neuroscience Poster Session

Jamarius Waller (M.D./Ph.D. – Experimental Therapeutics and Pharmacology) – Martin Frank Diversity Travel Award to attend Experimental Biology 2019

Shaoxun Wang (Experimental Therapeutics and Pharmacology) – Award winner in BioTek’s Imaging Perspectives competition

Monica White (Nursing) – Jonas Scholar Award

James Walker Wiggins (M.D./Ph.D. – Neuroscience) – Graduate Research Day Poster Presentation Winner

Erika Guise Williams (Physiology and Biophysics) – Finalist for the Water & Electrolyte Homeostasis Section Portland Press Predoctoral Research Recognition Award to present at Experimental Biology 2019; American Heart Association Predoctoral fellowship award

Victoria Wolf (Physiology and Biophysics) – American Physiological Society Caroline tum Suden/Frances Hellebrandt Professional Opportunity Awards; Travel Award for American Physiological Society Fall Conference on Cardiovascular, Renal and Metabolic Diseases: Sex-Specific Implications for Physiology; Abstract-based travel award from American Physiological Society; American Heart Association predoctoral fellowship award

Subhi Talal Younes (M.D./Ph.D. – Physiology and Biophysics) – American Heart Association predoctoral fellowship award

Austin Zamarripa (Neuroscience) – NIH F31 award; Graduate Research Day Poster Presentation Winner; Phi Kappa Phi Honor Society inductee

Postdoctoral Fellow and Instructor Awards

Dr. Bhavisha Bakrania (Physiology and Biophysics) – American Heart Association Postdoctoral Fellowship; Juan Carlos Romero Postdoctoral Award winner

Dr. Jessica Bradshaw (Ph.D. Microbiology and Immunology 2018) (Physiology and Biophysics) – 2019 Juan Carlos Romero Postdoctoral Award finalist

Dr. Lais Fernanda Berro (Psychiatry and Human Behavior) – 4th Annual Steven G. Holtzman Travel Award for Preclinical Investigators; Alkermes Pathways Research Award; Graduate Research Day Poster Presentation Winner

Dr. Jeremy Duncan (Ph.D. Neuroscience 2015) (Physiology and Biophysics) – American Heart Association post-doctoral fellowship

Dr. Pallabi Pal (Biomedical Materials Science) – Graduate Research Day Poster Presentation Winner

Dr. Edgar Torres Fernandez (Cell and Molecular Biology) – Virendra B. Mahesh Award of Excellence in Endocrinology by the Endocrinology and Metabolism section of the American Physiological Society at Experimental Biology 2019; Graduate Research Day Poster Presentation Winner; Else School of Management Scholarship; Travel and poster award for American Physiological Society Cardiovascular, Renal and Metabolic Diseases: Sex-Specific Implications for Physiology

Dr. Erin Taylor (Ph.D. Microbiology and Immunology 2015) (Physiology and Biophysics) – Graduate Research Day Poster Presentation Winner
Dr. Bhavisha Bakrania
Instructor, Physiology and Biophysics
Bakrania earned her Bachelor of Health Science in 2010, Master of Medical Research in 2011 and Ph.D. in 2015, all from Griffith University, Australia. She was also a visiting Ph.D. student at Bond University, Australia; at the University of Vienna, Austria; and at UMMC, where she was most recently a postdoctoral research fellow.
Bakrania received the 2017 Postdoctoral Research Distinction Award from the American Physiological Society Water Electrolyte Homeostasis Section and the 2018 Postdoctoral Fellowship Award from the American Heart Association. She is a member of the American Heart Association, American Physiological Society and the American Association of Anatomists.
The author of 11 articles, Bakrania has given eight oral presentations to national and international audiences. She is principal investigator of an American Heart Association-funded project.

Dr. Jeremy Duncan
Instructor, Physiology and Biophysics
After serving in the U.S. Army, Duncan received his B.A. in psychology at the University of West Georgia in 2006. Duncan earned his M.S. in biomedical sciences in 2010 and his Ph.D. in neuroscience in 2015 at UMMC, where he had a postdoctoral fellowship in physiology and biophysics from 2015-18.
A member of the Society for Neuroscience, the American Heart Association and the American Physiological Association, Duncan was a 2018 recipient of the Caroline tum Suden/Frances Hellebrandt Professional Opportunity Award. He is the author or coauthor of 10 articles in peer-reviewed publications.

Dr. Yann Gibert
Associate professor, Cell and Molecular Biology
Cancer Institute member
After receiving his B.Sc. in biology from the University of Pau, France in 1997, Gibert entered the French military and received the Medal of National Defense for his service in the 17th Regiment of Artillery, Biscarrosse. In 1998 he received a graduate diploma from the University of Limerick, Ireland, then earned his M.Sc. in biochemistry at the University of Limerick in 2001 and his Ph.D. in developmental genetics at the University of Konstanz, Germany in 2005. He had a postdoctoral fellowship at the Institute of Functional Genomics of Lyon, France, from 2004-2007 and was a fellow at Harvard Medical School from 2007-2009.
Gibert joined the Tufts School of Medicine in 2009 as a research assistant professor, then moved to the Deakin School of Medicine, Geelong, Australia, in 2011 where he was senior lecturer in medical biotechnology and head of the Metabolic Genetic Diseases Research Group.
A member of the British Society for Developmental Biology, the American Endocrine Society and the Australian and New Zealand Society for Cell and Developmental Biology, he has given several invited presentations internationally. He is the author of more than 50 articles in peer-reviewed scientific publications, serves as editor for a number of professional journals and has helped obtain two patents.

Dr. Barbara Gisabella
Assistant professor, Neurobiology and Anatomical Sciences
After receiving her B.Sc. in biology from the University of Bologna, Italy, in 1997 and her M.S. in electrophysiology from Vrije University, Netherlands, in 1999, Gisabella earned her Ph.D. in electrophysiology at Trinity College, Ireland, in 2003. She then had postdoctoral training as a research fellow in psychiatry at McLean Hospital, Harvard Medical School from 2003-04.
Gisabella joined the Harvard Medical School faculty in 2004 as an instructor in psychiatry and an assistant neuroscientist at McLean, serving nine years before joining the Massachusetts Institute of Technology McGovern Institute for Brain Research as a research scientist. She was a research fellow in the Program in Sleep Medicine at Harvard Medical School from 2017-19.
A member of the Society for Neuroscience and the Society of Biological Psychiatry, Gisabella serves as a reviewer for the journal Neural Plasticity. An invited speaker at five scientific conferences, she is the author of nine articles and two book chapters.
Her research interests include mechanisms underlying memory consolidation during sleep and the role for emotional memory dysfunction in psychiatric disorders, including PTSD and schizophrenia, and in memory deficits in aging.
Dr. Hyun Joon Lee
Assistant professor, Neurology
After receiving his B.Sc. from Hanyang University, South Korea, in 2002, Lee earned his M.Sc. in biology in 2005 and his Ph.D. in molecular neurobiology in 2009 at the University of Hamburg, Germany. He then had a postdoctoral fellowship in neuroscience at Georgetown University Medical Center from 2009-11 and in the Departments of Neurology and Physiology at Emory University from 2011-16. He joined the UMMC Department of Neurobiology and Anatomical Sciences and the G. V. (Sonny) Montgomery VA Medical Center as a scientist in 2016.

A member of the Society for Neuroscience and the National Neurotrauma Society, Lee has authored several articles. His research interests are neural plasticity associated with pain and autonomic dysregulation following spinal cord injury.

Dr. Hong Yan Liu
Assistant professor, Microbiology and Immunology
Cancer Institute member
After earning her B.S. in biochemistry in 1992, M.S. in biochemistry in 1995 and Ph.D. in immunology in 2000 at Jilin University, China, Liu held several postdoctoral fellowships and was a senior research associate at the Oregon Health and Science University. An acting instructor in bioengineering at the University of Washington from 2009-13, she has served as an assistant professor of biochemistry and molecular biology at Augusta University since 2014.

A member of the American Chemical Society, American Association for Cancer Research, Biomedical Engineering Society and American Society of Gene and Cell Therapy, Liu has served on the editorial board for multiple journals and as a reviewer of the Graduate Women in Science fellowship.

The author of 27 articles and one book chapter, Liu has helped obtain five patents. She is a recipient of the NIH Ruth L. Kirschstein National Research Service Award and a Department of Defense grant.

Dr. Omar Logue
Assistant professor, Cell and Molecular Biology
After receiving his B.S. in biology from Millsaps College in 1993, Logue was a laboratory technician in the Department of Microbiology at UMMC from 1993-1997 before joining the U.S. Army. He served as airborne infantryman in the 82nd Airborne Division at Fort Bragg, North Carolina, then earned a Ph.D. in neuroscience at the Uniformed Services University of the Health Sciences in 2014. He then became a postdoctoral research fellow and instructor in the Department of Neurology at UMMC. During this time he completed the Millsaps Business Advantage Program.

A member of the American Heart Association and the American Physiological Society, Logue is the author of eight articles. Recipient of the 2018 Trustmark Postdoctoral Fellow Publication Award, he has given five presentations at scientific meetings nationally.

Dr. Nita Maihle
Professor, Cell and Molecular Biology and Medicine
Cancer Institute associate director for basic research
After receiving her B.A. and M.S. in botany from Miami University, Maihle earned her M.S. and Ph.D. in biomedical sciences at the Albert Einstein College of Medicine. She completed postdoctoral fellowships in molecular biology at Cold Spring Harbor Laboratory and the National Cancer Institute and in tumor virology and biology at Case Western Reserve University. She also received an honorary M.A. from Yale University.

A member of the Mayo Clinic Comprehensive Cancer Center from 1989-2003, Maihle was associate director for basic research and directed its Growth Factors and Cancer Program. She was a professor of biochemistry and molecular biology and a founding director of its tumor biology training program.

A member of the Yale Comprehensive Cancer Center from 2003-13, Maihle was a professor of obstetrics, gynecology and reproductive sciences and director of the Female Reproductive Tract Cancers Program.

Maihle joined Augusta University in 2013 as a professor, program director of its biochemistry and cancer biology Ph.D. training program, associate director of the Georgia Cancer Center and founding director of the Racial Disparities of Cancer Post-Baccalaureate Training Program.

Dean of the National Ovarian Cancer Academy, Maihle has obtained more than $22 million in research funding during her career. The holder of more than 10 patents, she has authored more than 135 peer-reviewed articles.

Her research interests include cancer detection, prevention and treatment, particularly gynecologic cancers; precision medicine; and using receptor biology to improve diagnostics and biotherapeutics for cancers and other diseases.
NEW FACULTY

Dr. Alan Mouton
Instructor, Physiology and Biophysics
Mouton received his B.S. in biochemistry from Louisiana State University in 2011 and his Ph.D. at the LSU Health Sciences Center, New Orleans, in 2017. He then became a postdoctoral researcher in physiology and biophysics at UMMC.

A member of the American Physiological Society, the American Heart Association and the American Society for Matrix Biology, Mouton is the author of 15 articles in peer-reviewed publications.

His research interests include effects of chronic alcohol abuse on the progression of cardiac remodeling, obesity, cardiorenal diseases and myocardial infarction.

Dr. Charalampos “Harry” Pantazopoulos
Assistant Professor, Neurobiology and Anatomical Sciences
After receiving his B.S. in psychology from the University of Massachusetts-Amherst in 2001, Pantazopoulos earned his A.L.M. in biology at Harvard University in 2006 with the first evidence for perineuronal net dysfunction in subjects with schizophrenia, and his Ph.D. in neurobiology at Northeastern University in 2010 with a focus on circadian rhythms. He then had postdoctoral training as a research fellow in psychiatry at McLean Hospital, Harvard Medical School, from 2011-12.

Pantazopoulos joined the Harvard Medical School faculty in 2012 as an instructor in psychiatry and as an assistant neuroscientist at McLean Hospital. He also served as a database administrative assistant for the Harvard Brain Tissue Resource Center’s National Brain Databank from 2010-13.

A member of the Society for Neuroscience, the Society for Research in Biological Rhythms and the American Physiological Society, Pantazopoulos serves as a reviewer for 10 scientific journals, co-guest editor for Frontiers in Neuroscience and guest editor for Neural Plasticity. An invited lecturer at 12 scientific meetings, he is the author of 26 articles in peer-reviewed publications and two book chapters.

Dr. Audra Schaefer
Assistant professor, Neurobiology and Anatomical Sciences
After receiving her B.A. in biology from Wartburg College in 2007, Schaefer earned her M.P.H. in 2009 and her Ph.D. in 2013 at Indiana University where she was then a visiting assistant professor. She then became an assistant adjunct professor at the University of California-San Francisco before joining the Indiana University School of Medicine as an assistant professor in 2015.

The author or coauthor of 10 articles, Schaefer has given 12 invited presentations at scientific meetings nationally. An active member of the International Association of Medical Science Educators, the American Medical Women’s Association and the American Association of Anatomists, Schaefer’s research interests include metacognition and mindset in medical students; training of anatomy educators; remediation in anatomy education; and learning strategies.

Dr. Maryam Syed
Assistant professor, Cell and Molecular Biology
After receiving her B.S. in biochemistry from Mississippi State University in 2011, Syed served as a research volunteer from 2011-12 at UMMC, where she became a graduate student in 2012 and earned her Ph.D. in biochemistry in 2018. She has served as a researcher since 2018.

A Dean’s Scholar at UMMC, Syed is an active member of the American Physiological Society and the American Society for Biochemistry and Molecular Biology. She is the author or coauthor of eight articles in peer-reviewed publications and 15 abstracts or posters presented at scientific meetings nationwide. Her research interests include the role of microRNA-21 in primary aldosteronism.
Class Notes

1970s

Dr. Albert "Pete" Shepherd (Ph.D. Physiology and Biophysics, 1971) received official status as professor emeritus at the University of Texas Health Science Center at San Antonio on February 25, 2019.

Dr. Wilton "Bo" Marsalis (Ph.D. Anatomy, 1972) earned an M.D. at UMMC in 1979 following graduate school and teaching anatomy. He completed a residency in anesthesiology at the University of Alabama and practiced anesthesiology until his retirement in 2018. He now resides in Oxford, Mississippi.

Dr. William Yarbrough (M.S. Immunology, 1978) is the chief of pulmonary and critical care at the Dallas VA Hospital, a professor of medicine at UT Southwestern Medical School and the VHA national program director in pulmonary, critical care and sleep medicine, all in Dallas, Texas. He is having a great time practicing medicine, interacting with residents and fellows and developing policy for the VA system.

2000s

Dr. Laura Kearney Schenk (Ph.D. Nursing, 2005) has retired and now holds leadership roles in various genealogical societies. She enjoys travelling to genealogical society functions and visiting historic places. She resides in Madison, Mississippi.

Dr. Carolyn Dollar (Ph.D. Nursing, 2005) retired from Alcorn State University School of Nursing in 2008 as interim dean in the Department of Graduate Nursing. She has worked part-time as an associate professor in the School of Nursing since 2013. She has also continued work as a family nurse practitioner for the School of Nursing Family Clinic and various other health care institutions in Mississippi.

Dr. Quincy Moore, III (Ph.D. Microbiology and Immunology, 2007) was promoted to director of the honors program at Prairie View A&M University on September 1, 2018. He took on this new role as an extension of his current tenured position as associate professor in the Department of Biology in the Marvin D. and June Samuel Brailsford College of Arts and Sciences. As director, Moore will oversee the academic preparation for students including opportunities that establish them as global leaders. He has taught undergraduate and graduate courses, served as a research mentor, participated in assessment initiatives, managed grants, supervised student workers and served on university, departmental and professional society committees. Combined with his dedication to mentoring, his strength in the classroom has resulted in awards including the President’s Teaching Award, five Chancellor’s Teaching Excellence Awards and the Faculty of the Year Award in the Department of Biology.

Dr. Christy Morgan (Ph.D. Clinical Health Sciences, 2009) is the chair of the Department of Occupational Therapy in the School of Health Related Professions at UMMC. She resides in Flora, Mississippi.

Dr. Christopher Price (Ph.D. Clinical Health Sciences, 2009) decided to finish his research at the UMMC ACT Center on tobacco adherence. He applied to dental school and graduated in 2016. He currently practices with his father in their clinic in Summit, Mississippi. He serves on the Rural Scholars Board for Dentistry, and he is an advocate for rural dentistry. He is a member of the American Dental Association and Mississippi Dental Association, and also serves on the board for MDA. UMMC and the state of Mississippi prepared him in a great way to treat his patients and educate himself on a daily basis.

2010s

Dr. Zarata Mann Banks (Ph.D. Clinical Health Science, 2010) is a VISN 16 Acute Care Specialist in the U.S. Department of Veteran Affairs – South Central VA Health Care Network and a consultant for eight medical centers in the states of Texas, Mississippi, Louisiana and Arkansas.

Dr. Lakshman Varanasi (Ph.D. Biochemistry, 2010) worked in the Cancer Institute at UMMC in cancer cell biology from 2010 to 2013. In May 2013, he moved to the Institute of Molecular and Translational Medicine, Palacky University, Olomouc, in the Czech Republic, initially as a postdoctoral fellow and then as a faculty member. He trained in proteomic mass spectrometry and was involved in the development of glycosylated protein markers of pancreatic cancer. His responsibilities included the mentoring of doctoral and masters’ students at the institute. His life took another turn in late 2018, and he moved back to his home city of Hyderabad, India, where he works now. He is employed in an advisory capacity in an IT company, Srikaalika Technologies Pvt., Ltd, in their planned biomedical venture. He applies his knowledge and experience in oncology and translational medicine in the development of software solutions for cancer diagnosis and in business development.
Dr. Renee Wilkins (Ph.D. Clinical Health Sciences, 2010) is an associate professor of medical laboratory science and director of the histotechnology program in the School of Health Related Professions at UMMC. In this role, she is responsible for maintaining the program’s accreditation and general effectiveness. Her primary teaching responsibility is in medical laboratory science immunohematology, coagulation and bacteriology courses, and is a guest lecturer for microbiology and immunology for dental hygiene students. She serves on several committees and is in her second term as board member for the national Alpha Eta Society. A member of the American Society for Clinical Laboratory Science, she has received honors for her involvement on the state, regional and national level, including induction into the Alpha Mu Tau fraternity. She has contributed to educational resources for two medical laboratory science textbooks and is a faculty advisor for student research projects. Her research focus is in medical laboratory science with an emphasis on alternative and complementary medicine.

Dr. Justin Cobb (Ph.D. Neuroscience, 2012) is an instructor in the Department of Natural Sciences at John Wood Community College in Quincy, Illinois. He teaches courses in general biology and anatomy and physiology on both the JWCC main campus in Quincy and the JWCC Southeast Education Center in Pittsfield, Illinois. He is active in the Faculty Senate, where he serves on the committees on Professional Development and Academic Assessment. He is currently working on a "Bronze Level" project through the college’s Center for Excellence in Teaching and Learning that he hopes will produce quantifiable and statistically significant improvement in scientific reasoning skills over standard instruction.

Dr. Denise Cornelius (Ph.D. Microbiology and Immunology, 2012) is an assistant professor and director of pre-clinical research in the Department of Emergency Medicine at UMMC. She is performing basic science research investigating mechanisms of immune dysfunction that contribute to the development of cardiovascular and metabolic diseases. Dr. Cornelius currently has funding from the NIH and has previous support from the NIH, AHA and pharmaceutical industry. In addition to research, Dr. Cornelius teaches in medical school and graduate courses. She trains undergraduate and graduate students, as well as clinical residents and fellows, in performing basic and translational research.

Dr. Carlos Zgheib (Ph.D. Medical Pharmacology, 2012) is an assistant professor of surgery at the University of Colorado Denver – Anschutz Medical Campus. His research focuses on wound healing and regenerative medicine, with an emphasis on the mechanisms involved in response to injury in the fetus and the correction of abnormal healing in the adult. He has developed an interest in understanding the deficiencies associated with diabetic skin before and after injury, how these impairments contribute to delayed wound healing and identifying therapeutics and preventive approaches. He oversees the pre-investigational new drug studies on "CNP-miR146a" for diabetic foot ulcers. He has been developing a strategy that protects the skin against injury and prevents the development of pressure ulcers. He has received the American College of Surgeons’ Owen H. Wangenstein Excellence in Research Award and was selected as a finalist for the Wound Healing Society Shark Tank.

Dr. Shemeka Hamlin-Parker, MPH (Ph.D. Clinical Health Sciences, 2013) is a clinical assistant professor at the University of Memphis. Her community outreach partnership is with St. Jude’s Children’s Research Hospital Department of Infectious Disease Connect 2 Protect HIV Coalition. In addition to teaching, she has dedicated over 15 years to working, partnering and collaborating with CBOs, FBOs, health care organizations and other academic institutions to reduce the impact of health disparities, including HIV/AIDS, substance abuse, mental health, cardiovascular disease, obesity and cancer in minority populations throughout the United States and developing countries. She has researched and taught abroad in Gaborone, Botswana; Salvador Da Bahia, Brazil; and Santo Domingo, Dominican Republic.

Dr. Clayton Newell (M.S. Biomedical Sciences, 2013) is a second-year resident in the Department of Anesthesiology at UMMC.

Dr. Jennifer H. Price (Ph.D. Clinical Health Sciences, 2014) is the chemistry instructor on the Wesson Campus of Copiah-Lincoln Community College. She teaches general chemistry, organic chemistry and the associated labs. She is also the co-sponsor for the Alpha Omega Science Club.

Jackson Browning (M.S. Biomedical Sciences, 2015) entered his fourth year of medical school at UMMC in June 2019. He plans to apply for internal medicine-pediatrics residency positions in fall 2019.

Dr. Jessica Faulkner (Ph.D. Medical Pharmacology, 2015) is a postdoctoral fellow in the laboratory of Dr. Eric Belin de Chantemele at the Vascular Biology Center in the Medical College of Georgia at Augusta University. Her research interests include the study of sex-specific mechanisms of hypertension both in response to dietary salt and to obesity, with a focus on the role of leptin, aldosterone and progesterone to hypertension in females. These projects are...
supported by an NIH Postdoctoral Fellowship. She is also the chair of the Augusta University Postdoctoral Association and chair of the American Physiological Society Cardiovascular Section Trainee Committee. She is currently applying for funding to transition to an independent research faculty position.

**Dr. Jianguo Huang (Ph.D. Biochemistry, 2015)** joined David Kirsch's lab at Duke as a postdoctoral research fellow where he developed novel CRISPR/Cas9 mediated primary sarcoma mouse models that are currently used for studying sarcoma biology and preclinical trials. His long-term career goals are to understand the molecular mechanisms by which sarcoma develops and metastasizes, and to utilize this knowledge to develop novel therapeutic approaches to treat this unmet clinical problem.

**Dr. Ram Kuwar (Ph.D. Anatomy, 2015)** is a postdoctoral fellow at Virginia Commonwealth University, researching traumatic brain injury and related therapeutics. His most recent work focuses on creating induced pluripotent stem cells for therapeutic use in rodent models of traumatic brain injury.

**Dr. Lauren “Nikki” Beloate (Ph.D. Neuroscience, 2016)** completed a postdoctoral fellowship studying the neural mechanisms of drug addiction with Dr. Peter Kalivas at the Medical University of South Carolina. She is currently part of the behavior core within St. Jude’s Developmental Neurobiology department in Memphis, Tennessee. In this position, she uses her rodent behavioral expertise and neuroscience background to consult with labs that utilize various models of human disease, including social, motor, learning and memory disorders. She has also continued the community outreach work that she began during her time at UMMC, mentoring and speaking about careers in neuroscience with students in mostly underserved school districts.

**Dr. Martin Bohlen (Ph.D. Neuroscience, 2016)** is a postdoctoral fellow in the Department of Biomedical Engineering at Duke University. He is developing and validating optogenetics for use in animal models. More broadly, this work has direct clinical relevance for gene therapies targeting neuropsychiatric disorders. The success of this will result in the ability to modulate the activity in select neuronal populations. He has received a Hartwell Fellowship in support of this work, and his team has received an R21 to support further development of this research.

**Dr. Barak Gunter (Ph.D. Neuroscience, 2016)** is a study director 2 in the Surgery Department of Charles River Laboratories in Mattawan, Michigan. As the study director, he is responsible for the overall planning and conduct of non-clinical investigations in accordance with applicable regulatory guidelines and contemporary scientific practice. In this role he concentrates on external and internal communications, providing scientific expertise, regulatory compliance and other essential functions. His ultimate goal as a Study Director is to operate effectively within the essential functions of the role, particularly in client communication, while developing and maintaining a viable client base. His specific area of expertise is running animal neuroscience studies on targeted CNS delivery. He aids clients in attaining efficacy, safety and toxicological goals using a range of surgical and therapeutic strategies.

**Dr. Mike Schmidt (Ph.D. Neuroscience, 2016)** is doing post-doctoral work at the New York State Psychiatric Institute with Dr. Spiro Pantazatos, Assistant Professor of Clinical Neurobiology in Psychiatry at Columbia University. They are using public datasets and computational approaches to discover genes underlying normal human functional connectivity.

**Dr. Courtney Stewart (Ph.D. Neuroscience, 2016)** writes, “I am in my third year as a postdoctoral fellow at the University of Michigan. I have published some of my work in the Journal of Neurophysiology, showing that intense noise exposure can abolish vestibular responses to rapid head accelerations, associated with loss of a specific population of fibers that normally innervates vestibular sensory structures. I am finishing an F32-funded project studying the effects of my published continuous noise exposure paradigm on dynamic motor function. I am also using new noise exposure models to produce battlefield and veteran-relevant research as a next step in the evaluation and treatment of noise-induced peripheral vestibular injury and balance impairment.”

**Dr. Cassie Chandler (Ph.D. Neuroscience, 2018)** began a NIDA-funded postdoctoral fellowship in the laboratory of Dr. Michael Bardo at the University of Kentucky. There, she has had the opportunity to develop new skills in substance abuse research that complement her experiences at UMMC. She spent her first year at Kentucky adapting a model of alcohol and nicotine co-use to Sprague-Dawley rats, with the end goal of assessing the effects of adolescent alcohol exposure on alcohol and nicotine co-use in adulthood. Dr. Chandler was renewed for a second year of post-doctoral training, where she will be exploring the impact of adolescent alcohol exposure on impulsive behavior in adulthood.
Dr. Julius M. Cruse died Aug. 20, 2018 at UMMC following complications from a long battle with cancer. He was 81.

Cruse recently retired from UMMC after a professional tenure of almost 50 years. He served as Guyton Distinguished Professor of Pathology, Medicine and Microbiology and as Distinguished Professor of the History of Medicine. He formerly served as the first professor of immunology at the University of Mississippi in Oxford.

Cruse earned B.A. and B.S. degrees in chemistry from the University of Mississippi in 1958. He was a Fulbright Fellow at the University of Graz, Austria, where he received the D.Med. Sc. degree summa cum laude in 1960. He received his M.D./Ph.D. in pathology from the University of Tennessee College of Medicine. He also completed a postdoctoral fellowship at UT Memphis.

Cruse became one of the most eminent immunologists of his time. His research centered on transplantation and tumor immunology, autoimmunity, genetics in the pathogenesis of AIDS, and neuroendocrine-immune interactions. He received many research grants during his career and was an investigator of the Wilson Research Foundation at the Mississippi Methodist Rehabilitation Center.

He authored or co-authored more than 40 books and more than 300 scholarly articles in professional journals. Among his best-known works were the Illustrated Dictionary of Immunology and the Atlas of Immunology.

He was founding editor-in-chief of three international scientific journals: Immunologic Research, Pathobiology and Transgenics. He served as editor-in-chief of Experimental and Molecular Pathology and served on the editorial board of International Pathology and Human Immunology.

At UMMC, Cruse was valued for his contributions to the life of the institution. He was a lifetime member of the Friends of Rowland Medical Library. He founded the Billy S. Guyton Visiting Professorship in the History of Medicine and presented the fifth Guyton Lecture at the Medical Center.

In his role as historian, he produced and recorded almost 50 oral history interviews of major luminaries who played pivotal roles in the establishment of the Medical Center. This project, "History Speaking," serves as an extremely valuable resource for future historians of UMMC.
Dr. Scott Coffey, UMMC professor emeritus of psychiatry and human behavior, died April 9, 2019.

After receiving his B.S. in psychology from Arizona State University, Coffey earned his Ph.D. in clinical psychology at the University of Mississippi. He completed a postdoctoral research fellowship at the Medical University of South Carolina and, before coming to UMMC, was an assistant professor at the State University of New York at Buffalo.

Coffey’s research interests included the treatment of PTSD, substance use disorders and the concurrent treatment of those conditions. In addition, he examined the role of emotion and impulsivity in substance dependence.

Dr. Susan Elizabeth Wellman, professor emeritus of pharmacology and toxicology, died on July 18, 2019.

She was born in Morganton, North Carolina to Sanford and Sue Wellman. Following her graduation from Salem High School, she attended the University of North Carolina at Chapel Hill, where she received a B.S. in zoology. Susan then earned a Ph.D. in chemistry from Florida State University. She was an NIH postdoctoral fellow at the University of Mississippi Medical Center and subsequently joined its faculty. She retired in 2010.

As a faculty member at UMMC, Wellman studied the DNA binding activity of organophosphates and the role on histones in DNA replication. Outside of the Medical Center, she was a locally recognized musician who performed with multiple choral ensembles. Wellman was also a fabric artist using her skills as a seamstress and knitter. Her flower garden was a special love and a source of inspiration for her other artistic endeavors. Whatever she did, she brought joy into the lives and hearts of her family and friends.

As a dedicated scientist and teacher during life, Susan donated her body to UMMC for the benefit of medical research.

Susan is survived by her husband, Dr. Donald Sittman, UMMC professor emeritus of cell and molecular biology, in addition to her sister, brothers, nieces and nephews.
Two professors in the Department of Physiology and Biophysics retired this year, with a combined total of more than 70 years of service to the University of Mississippi Medical Center.

**Dr. James Wilson**

Wilson is one of the few people at UMMC with a four-digit employee number on his badge: he graduated from the School of Medicine in 1975. After that, he completed residency and fellowship training in rheumatology at Duke University and the Brigham and Women’s Hospital of Harvard Medical School. He joined the Harvard faculty in 1982 and returned to UMMC as an assistant professor of medicine in 1986, achieving the ranking of full professor in 2004. He practiced medicine at the G.V. Sonny Montgomery VA Hospital in Jackson in addition to UMMC.

Since 2010, Wilson has been a member of the physiology and biophysics faculty, focusing his energy on population-level research. His interests include the genetics of cardiovascular disease and its risk factors, particularly in people with African ancestry. He has been a leading research figure in the Jackson Heart Study, which seeks to understand the reasons for disparately higher rates of cardiovascular disease among African Americans.

In 2016, he became principal investigator of the Mississippi Center for Clinical and Translation Research, a five-year, $19.8 million NIH-funded research enterprise aimed at reducing obesity and related conditions in the state. The program, which funds pilot grants, a mentoring academy and an annual community-engaged research summer institute for junior faculty in Mississippi, now has active components in 40 of Mississippi’s 82 counties.

He received the Platinum Excellence in Research Award from UMMC in 2016, the Medical Center’s honor recognizing faculty who attain more than $5 million in extramural funding during their career.

“We were delighted when he joined the Department of Physiology and Biophysics as a full-time professor in 2010 so that he could concentrate on his research program,” said Dr. John Hall, Arthur C. Guyton Professor and Chair of Physiology and Biophysics. “Jim has been a leader of clinical and population research and I can’t think of anyone who has done more in the recent years to advance [that research] at UMMC.”

**Dr. Thomas Adair**

Adair first joined UMMC as a postdoctoral fellow of Dr. Arthur Guyton in 1980. Since then, he has risen through the ranks of the department and built a reputation as a master teacher.

He has received numerous honors for his work across UMMC’s physiology courses, including the Carl G. Evers Teaching Award from the School of Medicine, the Hembree Teaching Award from the School of Dentistry, induction into the UMMC Teaching Hall of Fame, the Norman C. Nelson Order of Teaching Excellence and was a finalist for the Regions TEACH Prize.

Adair, who earned his Ph.D. at the University of Texas Medical Branch in Galveston, focused his research on vascular growth factors and angiogenesis.

“We are grateful for Tom’s contributions to the teaching, research and service mission of our department for the past 39 years,” Hall said. “Although he “retired” this year, we – and I am sure the students – are happy that he will continue to participate in our teaching programs.”
In 1975, the Guardian Society was created to honor the University of Mississippi Medical Center’s most generous individual donors. During the last four decades, UMMC alumni and other gracious benefactors have helped the School of Graduate Studies in the Health Sciences maintain its standard of excellence by giving to the Guardian Society. Founding members have helped UMMC achieve unparalleled success in its threefold mission of providing exceptional patient care, training the next generation of health care providers and engaging in innovative research.

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The Summer Undergraduate Research Experience (SURE) Program class of 2019 poses outside of the Translational Research Center at UMMC.