Discovery moves forward at UMMC
LETTER FROM THE DEAN

I HOPE YOU ENJOY THIS 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.

This spring, we graduated 110 students from our M.S. programs, 16 from our Ph.D. programs, and one from our combined M.D.-Ph.D. track. They will be starting new phases of their training and careers. Some will be staying with us at the University of Mississippi Medical Center as students, postdoctoral fellows, staff and faculty, while others have moved to new positions at institutions such as the Mayo Clinic, Nationwide Children’s Hospital, University of Oregon, University of Texas at Houston, University of Washington and Western Michigan University. Congratulations to everyone!

It may be an understatement to say that this academic year ended quite differently than expected. Due to the ongoing COVID-19 pandemic, we moved classes to a remote format, limited laboratory research, did not attend conferences, cancelled the SURE program for the summer and substituted in-person commencement activities for online ceremonies. That said, the work that our trainees and faculty have done this semester to continue their studies as well as aid in UMMC’s pandemic response has been outstanding. Our faculty and alumni in microbiology and pathology were critical in getting the institution’s diagnostic testing running, our students have been all-star volunteers across campus, and our course instructors and SGSHS office team made the transition to online learning immediately after spring break.

COVID-19 aside, we had tremendous successes here in the SGSHS. Several of our researchers contributed a record-number of new inventions and patent filings for the Medical Center. We’ve started a new Ph.D. track aimed at boosting research capacity among radiologists. One of our faculty, Dr. Barbara Alexander, received the 2019 Distinguished Alumna award for the SGSHS. Dr. Jason Griggs, professor and chair of biomedical materials science and mentor to many of our students and alumni in that program, won the 2020 Regions Teach Prize. We are looking forward to what the rest of 2020 will bring.

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. I look forward to seeing you in person again soon.

Joey P. Granger (Ph.D., Physiology and Biophysics, 1983)
Dean, School of Graduate Studies in the Health Sciences
University of Mississippi Medical Center

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.

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The University of Mississippi Medical Center offers equal opportunity in education and employment, and in all its programs and services, M/F/D/V.
CONGRATULATIONS CLASS OF 2020

MASTER OF SCIENCE

Akeem Adekunle Adebayo
James Graham Ahlrich
Andrew Scott Anderson
Rhenius Brittoraj Antonyraj
Ellis Alexandra Armond
Natalie Danielle Badon
Cedar Hyangmok Baik
Daniel Robert Bamrick, Jr.
Edward Hunter Beene
Samuel Morris Berry
Michael Anthony Bierdeman
Blake Edwin Boleware
Piyush Sandesh Borse
Drew Matthew Bossier
Bailey Elizabeth Bounds
Meagan Elizabeth Buchanan
Kristen Taylor Carter
Ashton Christopher Castle
Ursula Rito Pessoa Cavalcanti
Bailey Johnson Christian
Nina Karyn Christian
Emily Kate Cobb
Charlie Glenn Cook II
Leah Margaret Cook
Darby Ann Donaho
Brelynn Alyssa DuBose
Matthew Jason Dubuisson
Lindsey Marie Duncan
Dallas Ryan Ederer
Joseph Daniel Edwards III
Adesuwa Osawaru Ekunwe
Maria Hope Enger
Jaclyn Suzanne Evans
Erin Lane Farmer
Christopher Chance Farris
Lauren Ashley Fassero
Mason Kelly Francis
Roman Marcus Fratesi
HeLEN Denise Gipson
William Christopher Glasgow
Hannah Lael Glenn
Celine Natasha Godfrey
Yessenia Gonzalez
John TRE LaDarriyon Goudy
Amber Kathleen Halaby
Robert Connor Harris
QuaNiya Nechelle Head
Annalee Hunter Hendrick
Sarah Ann Hillhouse
Keaurna Shundrea Hilton
Latasha Maria Hinton
Patrick Thomas Hudson
Conner Neal Hughey
Erin Audrey Marie Jackson
Deepti Amol Janorkar
Aswathi Jayaram
Taylor Cecile Illyana Jefferson
Ashley Rollins Johnson
Teleshia Danielle Johnson
Dion Armstrong Kevin III
Sai Karthik Kota
Adam Emilian Kral
HATTEN Alexandra Livingston
Danny JoVon Lumpkin
Rachel Marie Macmurdor
Ariana LaShawn Martin
Austin Alexander Medders
Shelby Dawn Moore
Jaharah Khalilah Muhammad
Holland Jane Murphee
Thomas Beatty Murphee IV
Melody Abboud Narmour
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John Stewart Overton
Roshni Utpal Patel
Judy Phan
Holly Chamberlyn Pruitt
Jessica Lee Purvis
Tyrone Reese II
Austin Charles Robbins
Garrhet Bishop Roebuck
Spencer Clinton Rushing
Jessica Michelle Seaborn
Dalton Michael Sheffield
Luke Yunkeun Shin
William Tigrett Simpson
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STEVEN Brian Smith
Sumit Prakash Sontakke
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Annie Catherine Strauss
Jamie Lynn Szczepanski
Parker Reid Taylor
Woodrow Preston Taylor
Kirby Neill Thomas
Sara Katherine Tucker
Tyler Lamar Tunell
Michael Lee Volk
Xi Wang
Elizabeth Caroline Ward
Connie Noel Watson
Stephen Scott Weathersby, Jr.
Richard Elliott Wells
Delisia Lauren Wicks
Meagan Nicole Wier
Marquita Dominique Wilkerson
Haley Bianca Williams
David Landon Zepponi

DOCTOR OF PHILOSOPHY

Karen Rolen Arrant
Laura Elizabeth Blackmon
Elena Lauren Dent
Sonja Dragojovic
Adrian Christine Eddy
Mamomad Hasibul Hasan
Ngoc Hieu Hoang
Mary Darby Jackson
Sara Marie Klender
James Michael Parnell
Danielle Tiffany Porter
Kathleen Ann Rhodes
Katherine Louise Rigdon
JAMES Michael Parnell
Roshni Utpal Patel
Ngooc Hieu Hoang
Mary Darby Jackson
Sara Marie Klender

MEDICAL DOCTOR/DOCTOR OF PHILOSOPHY

James Walker Wiggins
OUR PH.D. GRADUATES ARE GOING PLACES!
SGSHS graduate motivates herself, others

BY KAREN BASCOM

Meagan Wier keeps a collection of postcards at her Brandon home. Each is a record of a historical journey. There’s one sent to Buffalo, New York in 1906 and another written in French from 1901. Yet another comes from Italy after World War Two, where the writer tells her friend about riding scooters with local boys.

Wier, who grew up in Louisville, has collected another sort of record that is a testament to her own journey to the University of Mississippi Medical Center.

“I have transcripts from six schools,” said Wier, 32, who will graduate with a Master of Science in Biomedical Sciences from the School of Graduate Studies in the Health Sciences.

Wier spent a lot of time wondering if she had what it would take to attend medical school and become a doctor. A first-generation college graduate, she first studied at a community college, then spent time in the workforce. She completed her bachelor’s degree in psychology from Jackson State University in 2014 and took pre-requisite courses at Belhaven University prior to starting at the SGSHS.

And this fall, she will add another transcript to her collection: the School of Medicine at UMMC.

Wier’s motivation for pursuing medicine comes from wanting to help people at their greatest time of need.

“In what position is someone more vulnerable than when they are sick?” she said.

As a student in the SGSHS, she was also adept at spotting when her classmates might be at their most vulnerable: exam day.

“Tension is really high on test days and I thought it would be nice to have some positivity and encouragement,” Wier said. “I was thinking of people who might have just pulled an all-nighter, or didn’t eat breakfast and were hungry, or who live alone and need a source of encouragement right before the test.”

She started a “Motivation Station” for fellow students before one of the cohort’s first physiology exams last fall. She set up a table outside of the auditorium, providing a few snacks and pieces of paper with inspirational quotes outside of the auditorium. Soon, other students volunteered to help by donating snacks or printing off some of the quotes before class.

It became a ritual for the graduate and dental students who shared basic science course this year.

“People would say, ‘Hey, Meg’s got the motivation station going!’” she said.

When Wier approached Dr. Hanna Broome (Biochemistry, 2013), director of the MS-BMS program and assistant dean for graduate education in the SGSHS about creating the station, Broome encouraged her to pursue the idea and helped her with the logistics.

“I’ve never had a student think of something like this,” Broome said. “It speaks volumes to Meagan’s character.”

Broome said Wier is a great candidate to continue on to medical school in the fall.

“She’s a team player who isn’t going to pursue something just because it benefits her,” Broome said.

Wier is already starting to think about what specialties she may want to pursue after medical school. After shadowing the physician who treated her grandfather’s blood disorder years ago, Wier thinks she may want to practice hematology and oncology for another age group: pediatrics.

She wants to be both healer and cheerleader for these future patients by keeping an eye out for patients’ accomplishments -- school honor rolls, mentions in the news -- so that she can congratulate and celebrate them.

Weir spent the summer working in the laboratory of Dr. Jorge Vidal, associate professor of microbiology and immunology. She says it’s been fascinating to watch as the COVID-19 pandemic unfold as she studies microbiology in her coursework. She’s also enjoyed many of the professors she had this year in other courses.

“I have learned so much as a person this year, and being in the BMS program has confirmed that I really do want to go on to medical school. It was a great decision to enroll,” she said. “It was a fantastic way to get my feet wet.”

As she prepares for what’s coming this fall, Wier wants aspiring doctors who might doubt their ability to make it to medical school -- or anyone with a dream or a goal -- to know that the roadblocks in their past don’t have to be the end of the journey.

“Becoming a physician and getting into medical school is more than an achievement and a career choice for me. This is what I want to show people: nothing about you excludes you from doing what you want to do and from believing in yourself. Not where you came from, where you live, mistakes you’ve made, your age or your background,” Wier said.

“The path doesn’t always have to be pretty. It can curve and detour and might even stop for a while. There will be moments of self-doubt, but they eventually get replaced with self-confidence.”
Meagan Wier, who earned her MS-BMS from UMMC, worked in the Department of Microbiology and Immunology this summer before entering the School of Medicine.
Dr. Barbara Alexander says “It takes a village to raise a scientist,” and she certainly has found her village at the University of Mississippi Medical Center.

Alexander, a professor of physiology and biophysics, is the School of Graduate Studies in the Health Sciences’ 2019 Distinguished Alumna.

Alexander, who graduated with a Ph.D. in biochemistry in 1997, knew that she wanted to be a scientist since high school thanks to a “demanding” teacher at Starkville High School, Jane Lusk. If you liked Mrs. Lusk, and few students did, you were likely to end up really liking science, Alexander said.

“I was one of the few who liked her,” Alexander told trainees at the SGSHS’s annual Research Day luncheon October 31, 2019 in the Norman C. Nelson Student Union.

Alexander, whose parents both taught at Mississippi State University, had her first job at the university working in a zoology laboratory washing glass test tubes and rat cages. After graduating with a B.S. in zoology a few years later, she started work as a research assistant in the Department of Biochemistry at UMMC. She paused her plans to complete a Ph.D. in order to care for her children.

But one of her mentors at Mississippi State, Dr. Jan Chambers, made sure Alexander kept looking towards the future, asking her, “When are you going to go back?”

“She always encouraged me to not lose sight of my long-term goals,” Alexander said. “I spent so many years working in laboratories that I already had a good grasp of what it would take to be successful.”
By the time Alexander decided to start her Ph.D. studies her children were in elementary and middle school, and they were not interested in moving. They stayed in the biochemistry department in Jackson, where she studied histone biology under the mentorship of Dr. Donald Sittman, professor emeritus, and Dr. David Brown, then a postdoctoral fellow and now a professor of cell and molecular biology at UMMC.

“Dr. Sittman would tell us that your graduate school years should be your most productive ever,” Alexander said.

When Alexander joined the Department of Physiology and Biophysics as a postdoctoral fellow in Dr. Joey Granger’s lab, he suggested that they could learn new skills from each other.

“He said, ‘I can teach you about the kidneys, and you can teach me molecular biology,’” Alexander said.

One of the greatest gifts she received as a postdoc, she said, was the opportunity to write a single-author paper based on research funded by her mentor’s grant. In that research, she showed that restricted blood flow to the placenta in pregnant rats led their offspring to be both low birth weight and predisposed to developing high blood pressure.

This work formed the basis for her eventual research focus as a faculty member, understanding how a mother’s health during pregnancy can set the stage for their children’s health after birth.

“Developmental programming was a new field when she started this line of research,” said Granger, who serves as dean of the SGSHS. “Dr. Alexander has made outstanding contributions to this field, and we are proud to call her one of our own.”

Alexander, who received the Medical Center’s platinum award for extramural research funding in 2015, is one of the main contributors to UMMC’s stature as a top institution for women’s health research. She noted that UMMC leads the nation in National Institutes of Health funding for research related to preeclampsia, a disease during pregnancy that includes maternal hypertension.

In 2018, Alexander received the Harriet Dustan award from the American Heart Association, which recognizes female scientists who have made outstanding contributions in the field of hypertension.

Alexander is the basic science director for the Mississippi Center for Excellence in Perinatal Research, an NIH-funded program to understand the diseases that affect women and their offspring during and shortly after pregnancy.

The grant’s leaders, all women faculty, regularly meet to work on future research proposals and refine their ideas, Alexander said. It’s a form of mentorship, one of Alexander’s favorite parts of being a researcher.

“You’re never too old or too experienced to be mentored,” Alexander said. “Always be willing to accept advice.”

The keys to being a good mentor are perseverance and patience, especially knowing when to step back and let trainees do their own projects and make decisions. Alexander recalled one mentee who came to her with a pen and paper, working through a pros and cons list for different postdoctoral fellowship options. When the list was done, the mentee turned to Alexander and asked, “So, what do I do?” Alexander simply said it wasn’t her career, it was the mentee’s.

“Dr. Alexander is an exemplary role model for young scientists, especially young women who seek to become

Dr. Joey Granger, dean of the SGSHS, and Dr. Barbara Alexander, the 2019 SGSHS Distinguished Alumna.
highly accomplished scientist-educators in an academic setting,” said Dr. John Hall, Arthur C. Guyton Professor and Chair of Physiology and Biophysics.

“I would not be where I am today without the trainees and young people that I have worked with,” Alexander said.

Alexander shared her pearls of wisdom with graduate students and postdoctoral fellows. The key to being a good scientist isn’t necessarily brilliance, but rather “hard work and perseverance,” Alexander said.

She also noted a measure of good luck. If you had asked her 20 years ago if she thought she would spend her whole career at UMMC, she would have said no. However, starting her career at an institution with a big village of mentors, a department chair who is a “champion” for scientists and strong research programs made the Medical Center the best place to be.

Academic science is hard work but very rewarding, she told the students, encouraging them to keep their “passion for science.”

“I know people who have retired from science because the good was out of sight,” Alexander said. “For me, the bad is under the table and the good is still up high.”

And while she plans to spend more time with her growing grandchildren, Alexander does not plan to leave science behind.

“I feel like I haven’t even reached my peak yet,” she said.
Biomedical Materials Science professor earns top educator honor

BY KATHRYN ROYALS

Dr. Jason Griggs, a professor in the Department of Biomedical Materials Science, has come a long way in 22 years.

“I didn’t set out to be a teacher,” said Griggs, whose father, mother and grandfather were all educators. “I’m an introverted personality, and I had stage fright when I started teaching.”

When he began as an instructor at Baylor College of Dentistry in 1999, he was, in his own words, an “awful” teacher.

Math, chemistry, computer programming and every other subject in biomaterials science come naturally to him. But teaching and speaking in front of groups of people was not originally his forte. Teaching was a means to an end and a way to support his research.

Eventually, though, teaching grew on him. And when he came to the University of Mississippi Medical Center 12 years ago, he took advantage of opportunities to improve his skills as an educator, like learning from educational psychologists the school brought in during his second year at the Medical Center.

Now part of the graduate faculty in the School of Graduate Studies in the Health Sciences and the School of Dentistry, Griggs was awarded the Regions Bank TEACH (Toward Educational Advancement in Care and Health) Prize this year, and he has taught, mentored and positively impacted hundreds of students over the years. Regions Bank sponsors the prize, which includes a cash award of $10,000.
The prize, which Griggs says is the “most meaningful honor” he’s received in his career, celebrates an outstanding educator who demonstrates excellence in delivering innovative teaching methods; engaging and inspiring students; conveying accurate, contemporary knowledge; setting clear, appropriate expectations for professional behaviors; and guiding and mentoring students.

Griggs checks off every box.

His personal teaching philosophy is to make his subject matter easy to learn, and he does this by distilling complicated topics into simple language. For example, when asked what he researches, he responds: “In a nutshell, I break things.”

While he does indeed break dental materials in addition to studying their resilience over time, his research can be complicated. Terms such as “fractal geometry” are used, but he makes the information more accessible by giving students a simple baseline to follow first.

He learned the technique, he said, from two former professors who made a huge impact on him.

The first is University of Florida professor Dr. Rolf Hummel, who taught Griggs in his Electronic Properties of Materials class.

“Dr. Hummel had a way of taking a topic that was one of the most complicated topics I had to learn, and describing it in simple, easy to understand terms,” said Griggs of Hummel, who wrote his own textbook that is translated into five languages. “He also had this casual, friendly nature. He really got to know the students and wasn’t pretentious at all.”

The second professor who embodied the same traits that made such an impression on Griggs as a Ph.D. student was Dr. Ronald Marks, a biostatistics professor.

Marks did a unique thing: he also wrote his own textbook, and it included no equations.

“He managed to take a topic like statistics and explain it without equations,” said Griggs, who still loans a copy of that book to his own students who struggle with the subject.

Griggs, who teaches students in the SGSHS and the SOD and advises Ph.D. students and postdoctoral fellows, has clearly achieved the same easy-to-learn-from and approachable qualities he so admired in his professors.

Ph.D. student Kartikeya Singh Jodha said Griggs is “dynamic and engaging” in his teaching, and his top priority is that students “firmly grasp even the most complex subject matter.”

He also noted Griggs’ personality and kindness.

“One of the things that struck me when I joined his lab was that he would acknowledge your efforts and time but also care about your personal well-being,” he said. “Over the years, he has had multiple collaborations and students from across the globe who worked with him, and for some, English was not their first language. He was always patient, understanding and supportive of them.”

Griggs manages to keep a down-to-earth, approachable reputation around campus despite his vast knowledge and experience in his field. He is a Fellow and former President of the Academy of Dental Materials, has served as principal investigator of five National Institutes of Health R01 grants and three industry grants.

He has also served as a member of the editorial boards for the Journal of Dental Research, Dental Materials and the Journal of Prosthetic Dentistry, as well as authored over 70 peer-reviewed articles, six book chapters and two patents.

Griggs is known around the School of Dentistry for his unique classroom approaches which involved an inverted classroom and active learning. The “inverted classroom” involves students first watching an online lecture, broken up in to 10 to 15 minute bits, followed by a recall quiz.

Recall-based testing, Griggs says, has been proven to result in better retention than other methods.

Then, students come to the classroom to do an activity together based on the knowledge learned at home, which also involves active learning.

Dr. Amol Janorkar, professor of biomedical materials science and the graduate program director, said he considers himself fortunate to be in a department led by Griggs.

“He spearheaded the department’s efforts and encouraged all faculty to move to a ‘flipped’ classroom method for our dental curriculum three years ago,” said Janorkar, who took over Griggs’ role when he stepped down as department chair July 1. “This move not only increased student engagement in the dental materials topics over the past few years but proved vital for us to seamlessly deliver our lectures in an online format this year during the COVID-19 pandemic.”

Dr. Susana Salazar Marocho, an assistant professor in the department and a former student of Griggs’, said Griggs is involved with students and has a unique ability to identify students’ strengths and weaknesses. He then helps them build on those strengths and improve any shortcomings.

“He left a legacy in everything he did (as department chair),” said Salazar Marocho. “His energy, effort and love for what he does is contagious, and it inspires me.”
Dr. Jason Griggs loads specimens into a vacuum furnace in his lab at UMMC.

Griggs’ has a virtual meeting with a colleague in Brazil discussing a ceramic dental crown cemented into a simulated tooth.
Basic science lays the foundation for health care advances. During the COVID-19 pandemic, SGSHS faculty have been helping build the platforms the University of Mississippi Medical Center needs at record speed.

UMMC started testing people for the novel coronavirus on March 26, just two weeks after the Mississippi State Department of Health reported the state’s first case. Now, the Medical Center has completed tens of thousands of in-house tests.

This spring, a multidisciplinary team including members of the Department of Microbiology and Immunology, Department of Pathology and the Vice Chancellor’s office started meeting twice a day to hash out the ways the Medical Center could start its own in-house testing.

“There had been a lot of concern about a national shortage of COVID-19 tests,” said Dr. Richard Summers, associate vice chancellor for research. “We looked at using a variety of approaches to testing, including tests that could run on our own platforms or use methods developed by commercial laboratories.”

The Medical Center’s pathology laboratory finished validating its ability to use a commercially available kit to test for the novel coronavirus March 26. Dr. Timothy Allen, professor and chair of pathology, said that the group worked extremely hard to get the protocol fully functional at UMMC.

“The pathology laboratory team has done a phenomenal job under great pressure. It typically takes about four months to do what they did in
two weeks,” Allen said. Since then, the Medical Center has added a second commercial test and an approved Laboratory Developed Test designed by UMMC faculty. It has been a race to start up and optimize as many RNA extraction and PCR test platforms as possible.

“Initially, these tests were being prioritized for patients in our intensive care units, other inpatients at UMMC and UMMC employees,” Dr. Patrick Kyle (Pharmacology and Toxicology, 2006), professor of pathology.

“This is truly an interdisciplinary effort, and people are eager to help. When we put up a request for help on the research list-serv, we receive responses almost instantly from people all over campus offering their supplies or expertise,” said Dr. John Bates, assistant professor of microbiology and immunology.

As the daily testing capabilities ramped up from 180 per day to more than 1,000, UMMC was able to assist in COVID-19 at other locations. In collaboration with the Mississippi State Department of Health, the Medical Center conducted COVID-19 testing in long-term care facilities in May.

“Now that the state is reopening and emerging at some level, we need to provide assurances as quickly as possible that it is safe to do so,” Allen said. “We wanted to get a picture of the situation in these facilities, both for their health care workers and their residents.”

Because of UMMC’s contributions to the state’s testing infrastructure, the MSDH will be able to devote more resources toward testing patients from other locations.

UMMC also needed to gather the physical infrastructure and human capital needed to conduct large-scale testing. The Department of Pathology’s molecular lab has borrowed an RNA extraction machine from the Molecular and Genomics Core Facility led by Dr. Michael Garrett, professor of pharmacology and toxicology, as well as a pipetting machine from another group to make testing more efficient.

Bates, who helped create the Laboratory Developed Test, said, “There have been several changes from CDC and FDA regarding this process,” adding that the FDA is working on ways to help labs test more samples per day without sacrificing quality control. Private industry is working on ways to make the testing more efficient as well. Companies that made the needed products for these lab tests are now producing them in much higher volumes, he added.

In response to the demand for testing, the U.S. Food and Drug Administration has changed some of its standards for Laboratory Developed Tests, or LDT, making it easier for institutions like UMMC to start independent testing.

“For example, we can now use saline solution to store swabs if viral transport media isn’t available,” Bates said.

Meanwhile, Bates and other Microbiology and Immunology faculty have been working on another aspect of the COVID-19 pandemic: understanding if the antibodies humans produce in response to the infection are actually protective.

“There is still a lot we do not know about the antibodies humans make in response to SARS-CoV-2. Tandon, who studies viruses, says that the antibodies our immune system makes against other coronaviruses can be detected for one to three years in blood. Since COVID-19 has been circulating for less than six months so far, we do not know where it falls in that range.

Furthermore, not all antibodies are created equal. Some viruses, such as HIV, elicit an immune response but the antibodies we make are not particularly effective at neutralizing this virus, Tandon said. We do not know enough yet about the characteristics of the COVID-19-related antibodies we produce. Immune response will also vary from person to person.

For instance, “Antibody levels are maintained through repeated exposure to their particular antigen,” Tandon said. “What I am seeing from the available data tells me that if you had severe symptoms after exposure to SARS-CoV-2, you may also have higher levels of neutralizing antibodies.”

Tandon and others at UMMC are studying the qualities and quantities of these antibodies in order to support a convalescent plasma clinical trial and develop useful biosurveillance assay profiles. They recently finished a test of the latter, evaluating the University of Mississippi football team for the presence of SARS-CoV-2 antibodies.

Tandon describes the testing scheme as a “pyramid,” analyzing a subset of samples at each step to find the effective neutralizers. It starts with a commercially available test that UMMC uses to show if antibodies are present or not. Next, the positive samples undergo an enzyme-linked immunosorbent assay, or ELISA, designed by Bates.
Have shelter-in-place orders helped prevent coronavirus spread? UMMC research suggests yes.

Jared Cobb, a Ph.D. student in biomedical materials science, published his paper online April 28 in the journal *Public Health*. This is one of the first studies to show the benefit of stay-at-home orders in the United States during the COVID-19 pandemic.

“Early on in the pandemic, news reports claimed that shelter-in-place orders would be helpful, but we did not know yet if they were actually working to stop the spread of COVID-19,” he said. “I wanted to make myself useful during the pandemic response, but I don’t have clinical experience.”

What Cobb does have is some experience in data analysis, machine learning and artificial intelligence, and as a collaborator at the U.S. Army Corps of Engineers Center in Vicksburg to help create and test a model.

This study aligns with one of the most valuable uses of antibody testing at this stage of the pandemic, as “a way to assess SARS-CoV-2 infection within a population,” Dr. Larry McDaniel, professor and chair of the Department of Microbiology and Immunology, said in May. For instance, a health department could identify a community or group that may be spreading COVID-19 amongst themselves, then test a subset of those people for the antibodies to determine the extent of transmission.

Finally, Tandon tests a subset of the ELISA-ed samples in a neutralization assay. He tests the antibodies against a pseudotype virus, which has proteins from the outside of SARS-CoV-2 coated over a different, non-pathogenic virus. Using the pseudotype limits the need for advanced biosafety measures and limits the risk of disease to investigators.

So far, “The assay is working and has been validated to some extent,” Tandon said. The team has been working on it for months, largely in-house and without outside contracts that would drive up costs.

Now, they are going to use the assay to test for neutralizing antibodies in a subset of UMMC’s clinical and non-clinical staff.

This study aligns with one of the most valuable uses of antibody testing at this stage of the pandemic, as “a way to assess SARS-CoV-2 infection within a population,” Dr. Larry McDaniel, professor and chair of the Department of Microbiology and Immunology, said in May. For instance, a health department could identify a community or group that may be spreading COVID-19 amongst themselves, then test a subset of those people for the antibodies to determine the extent of transmission.
SGSHS students join, lead campus COVID-19 response

BY KAREN BASCOM, GARY PETTUS AND KATE ROYALS

School of Graduate Studies in the Health Sciences students stepped up to the COVID-19 challenge, joining an army of health professionals-in-training from across University of Mississippi Medical Center to volunteer in ways big and small.

In March, UMMC officials emailed students looking for volunteers to help work various mission-connected activities. Since then, hundreds of students from all seven schools have deployed to different areas on and off campus: handling COVID-19 hotlines, staffing testing sites on campus and at the fairgrounds, providing logistical support to hospital’s management of the new visitor’s policy and countless other needed jobs.

The commander of the student brigade was M.D.-Ph.D. student Ezekiel “Zeke” Gonzalez Fernandez, an “Energizer Bunny” according to Dr. Ralph Didlake, associate vice chancellor for academic affairs and chief academic officer.

As chair of the COVID-19 Student Response Coordination Team, Gonzalez Fernandez has spent time writing symptom screening call scripts, emails, organizing with more than a dozen team leaders, and volunteering at the Medical Center’s student and employee testing site in Jackson.

“It’s almost like a small business popped up in 24 hours. I’m busier than I’ve ever been,” said Gonzalez Fernandez, a student in the SGSHS’s experimental therapeutics and pharmacology program.

Dr. Jerry Clark, former chief student affairs officer said Gonzalez Fernandez and the other student volunteer coordinators took “an idea and a tiny bit of guidance and built an army that’s making a difference.”

“It’s made me proud to be a Mississippian, proud to work for this institution, proud of the caliber of students we produce,” Clark added.

Among the SGSHS students, many became involved in efforts to assemble COVID-19 test collection kits.

Initially, access to COVID-19 tests was limited primarily because of the strain the pandemic put on the national and global supply chain. The hardest supply to acquire has been the one needed to get the test started: nasal swabs to collect samples from those potentially infected with COVID-19. It was also difficult to purchase viral transport media.

“Demand for tests has skyrocketed in the United States, and everyone is trying to order materials at the same time,” said Dr. John Bates, assistant professor of microbiology and immunology. “Companies have ramped up production of different supplies to help meet the demand.”

Putting together enough tests to meet demand required a lot of labor. To meet that need, volunteers from the SGSHS and other UMMC schools gathered in teaching and research labs to put together the kits. Since March, the team has prepared tens of thousands of test collection kits. The kits, which include swabs, viral media, collection tubes and plastic bags, are used at UMMC and mobile testing sites across the state.

As a thank you for students, some may also be able to qualify for UMMC classroom credit for their volunteer work through a speedily designed Disaster Management Course.

“[This effort] highlights the students’ energy, Dr. LouAnn Woodward’s thoughtful leadership and the ability of our faculty to pull a rabbit out of a hat,” Didlake said.
After Mississippi announced its first case of COVID-19 on March 11, it took only days to know that education in the state would not be the same for the rest of the semester.

By good fortune, the initial spread of the virus in Mississippi coincided with spring break, giving an opportunity for the SGHS to decide how to move forward before classes resumed.

“It gave us time to transition,” said Dr. Joey Granger, dean of the SGHS.

Doctoral students were encouraged to catch up on reading and work on dissertation manuscripts while they were kept out of the lab during a shutdown of on-campus research activity. However, the SGHS needed a new plan for students in the lecture-heavy portions of their programs, particularly for the Master of Science in Biomedical Sciences (MS-BMS).

Thanks to the faculty’s quick work, the students could resume their classes, even if it was not in the classroom.

“The Monday after spring break [March 23], our classes were all online. We didn’t miss a beat. We didn’t have a delay in any of our courses,” he said.

Dr. Greg Chinchar, professor of microbiology and immunology, is co-director for the microbiology course that students take during the spring semester. He says some of the already-existing learning materials made the transition easier.

“In some cases, we were able to use the podcasts that the second-year medical students used for the graduate students as well,” he said.

Student Lauren Fassero said she listened to the podcasts on repeat to help keep on track.

“In-person lectures work best for me because I can record and transcribe later to help study,” she said. “I wouldn’t ever sign up for an online class because sometimes expectations can be more ambiguous, but the instructors did a wonderful job,” she said, referring to Dr. Roy Duhe, professor of pathology and other faculty as “angels.”
for how they handled the new format and student concerns about learning and test taking.

“We’re literally in the pandemic and I’ve emailed professors so many times,” thanking them and asking for help when needed, Fassero said.

For example, she and other students wanted to use scrap paper for at-home exams. During regular in-person exams, students receive blank sheets they can use for notes, lists and formulas as they work through questions. With students taking exams at home, the instructors could not ensure that the paper was being used appropriately. When students asked for a way to use scrap paper, the instructors added a blank “open essay” question to the end of the computerized exam where they could type their thoughts.

Another challenge for both faculty and students was the lack of face-to-face interaction.

“One thing that’s lacking is the ability to ask questions in real time,” Chinchar said. “We can use message boards or post the questions we receive to announcement boards, but a group video session might be a better way to do it if we had to go on.”

Dr. Bela Kanyicska, associate professor of neurobiology and anatomical sciences, said that being out of the classroom created some psychological challenges to teaching as well.

“It was hard at first to get excited to talk to my computer screens. There are certain aspects of live lecturing – the atmosphere of the classroom, immediate feedback, body language – that cannot be simulated when the instructor and students are disconnected in time and space,” said Kanyicska, director of the fundamental histology and cell biology course.

For Dr. Stanley Smith (Biochemistry, 1995), associate professor of pharmacology and toxicology, the most difficult part of the transition was not moving the lecture material online, but creating a new environment for exam taking.

Typically, students take proctored exams in an amphitheatre using their laptops and a lockdown software. With students at home, they needed a way to monitor the session remotely, said Smith, course director for fundamental pharmacology. Instead, the instructors transitioned to an alternative proctoring software that used web cameras to observe the students as they completed the tests.

Dr. Hanna Broome (Biochemistry, 2013), assistant dean in the SGSHS and director of the MS-BMS program, said that the transition wouldn’t have been possible without the cooperation of faculty and students, the SGSHS office staff and support offices across campus.

“We reached out to Department of Information Services for assistance in getting webcams for students who needed them, and they came up with about 10 that we could loan out,” Broome said.

Part of the challenge with distance learning was the necessity to set up designated study spaces. For Fassero, it meant staying in her Jackson apartment instead of her family’s home in Oxford, where she initially planned to ride out the shelter-in-place recommendation. She also bought a new desk chair.

“There’s a new appreciation now for the obligation to come to the physical campus. Without it, there can be a lack of structure that you need for educational success and for work success,” Broome said.

In other ways, the shift from classroom to computer provided flexibility.

“Time became elastic. The schedule was no longer chiseled in stone and I could post a pre-recorded lecture or a quiz when they were ready to go,” Kanyicska said. “It was not like something that had to be done on Tuesdays and Thursdays from 3 to 5 p.m.”

Chinchar said that through conversations with relatives who work in K-12 education, he noted that the challenges faced by UMMC instructors were not quite as steep as theirs were.

“One thing about working with students at the graduate level is that they know what they need to know and learn at the end of the class,” Chinchar said. “However, it’s trickier if you need a one-on-one interaction or need to have a hands-on lesson.”

Chinchar, who helped create the MS-BMS program in 2010, always kept the end goal in sight.

“The bottom line is how this change affects students and their learning,” Chinchar said. “It’s not so important the grade they receive in the courses. It’s that they are prepared for medical school, graduate school or dental school.”

Smith says watching out for the students’ personal wellbeing was as important as taking care of academic needs.

“I tried to tell students in every email how proud I am of the work they were doing,” Smith said. “Stress does not allow for the best performance in an educational setting, but they did the best they possibly could have given the situation.”
Dr. Joey Granger, dean of the School of Graduate Studies in the Health Sciences, listens to Akia Sherrod, SURE student in neuroscience, at the Summer Undergraduate Research Symposium.

GRADUATE REPORT

Without an in-person 2020 Commencement ceremony, UMMC still found ways to celebrate its graduates publicly.

UMMC opened a new zebrafish laboratory facility, led by Dr. Yann Gibert, center, associate professor of cell and molecular biology. Other attendees, from left, included Associate Vice Chancellor Dr. Richard Summers, Vice Chancellor LouAnn Woodward, Chair of the Department of Cell and Molecular Biology Dr. Jane Reckelhoff, and Cancer Center and Research Institute Director Dr. John Ruckdeschel.

Neuroscience student Ashley Griffin receives her lab coat from Dr. Joey Granger at School of Graduate Studies in the Health Sciences’ first Lab Coat Ceremony.

Subhi Talal Younes, an M.D.-Ph.D. student, volunteers at the Mississippi State Fairgrounds COVID-19 testing site in Spring 2020.

M.D.-Ph.D. student Jamarius Waller assembles a nasal swab to use for COVID-19 testing. Student volunteers have been making testing kits for multiple days.
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.

Active members contributing annually help sustain and ensure the future of research and education in the School of Graduate Studies in the Health Sciences. We are grateful to our Guardian Society members for their leadership and generosity.

All alumni and friends of the School of Graduate Studies in the Health Sciences are invited to join the Guardian Society by giving annually to the school. Guardian Society members will receive special benefits based upon the amount of their annual donation and corresponding membership level.

To learn more about how you can become a member of the Guardian Society, call the Office of Development at (601) 984-2300 or email dev-info@umc.edu. To join online, visit umc.edu/guardian-society.
Just as physicians are often recognized by their white jackets, scientists also have their own marker: the lab coat.

The School of Graduate Studies in the Health Sciences held its first Lab Coat Ceremony Thursday, August 15, 2019 in the Norman C. Nelson Student Union.

The SGSHS started giving lab laboratory coats to incoming Ph.D. students in 2016, but this is the first year they held a formal ceremony. The coats, which have the student’s names and the school’s patch on them, serve purposes, said Dr. Joey Granger, SGSHS dean.

“We wanted to start holding this ceremony in order to honor our incoming students,” Granger said. “The lab coats symbolize both pride in our school and promote professionalism as students and future biomedical researchers.”

At the ceremony, Granger congratulated the new students and encouraged them to use the resources that the Dean’s office, their program directors and Graduate Student Body officers offer as they transition into this new phase of professional training.

Twenty-one incoming Ph.D. students received their coats. They represent all eight SGSHS doctoral programs, seven countries and nine states.

Ashley Griffin, a Ph.D. student from Greenwood, said she first became interested in studying neuroscience while watching and caring for her grandparents who experienced dementia.

“There’s so much we know about the brain, but there’s also so much we don’t know,” Griffin said. “I’m a curious person, and I want to find answers to these questions.”

While an undergraduate at Delta State University, she participated in summer research at UMMC through INBRE, short for IDeA Networks of Biomedical Research Excellence, working with Dr. Kedra Wallace, associate professor of obstetrics and gynecology in the School of Medicine.

Griffin said after just a couple of weeks in the lab, “I knew that this is what I wanted to do for the rest of my life. The experience really solidified my interest in neuroscience.”

Dr. Michael Ryan, graduate school associate dean for student affairs, ran a slide show during the ceremony to introduce the students to each other. He said he was glad to see that the most common interests among the incoming students were reading and traveling, which will serve them well in the SGSHS.

“The grad school pays for you to go to scientific meetings, and you will be doing a lot of reading here,” Ryan said. The presentation served another purpose: to show students areas where they can learn from each other outside of the classroom and laboratory.

“We have a strong community at UMMC and want you to take advantage of it, because your classmates here will become your colleagues for the rest of your career,” Ryan said.

The welcome dinner also included 107 M.S. students: 101 in the M.S. in biomedical sciences and six in the M.S. in clinical investigation tracks. Biomedical sciences graduates make up about a third of the current School of Dentistry classes and about 10 percent of the School of Medicine classes at UMMC.

However, Ryan said, the program is also great preparation for the SGSHS’s doctoral degree programs.

“If you want to discover new things and really impact the biomedical field through research, our Ph.D. programs are a place that you can do that,” he said.
Postdocs drive research, training at UMMC

Dr. Jessica Bradshaw (Microbiology and Immunology, 2018) knows she wants to pursue a career as a faculty member at a research-intensive university. So after she earned her Ph.D., she knew her next step: a postdoctoral fellowship.

Postdoctoral fellows, or postdocs, have finished their terminal degree and continue training under the mentorship of an independent scientist. A fellowship is a virtual requirement for scientists who apply for tenure-track positions and provides valuable experience for other career opportunities. UMMC has about 27 postdocs in research-intensive fellowships, with additional postdocs across campus with more clinical and teaching-focused roles.

“I wanted to receive additional training that would help me become a better researcher,” said Bradshaw, who became a postdoctoral fellow in the Department of Physiology and Biophysics in the School of Medicine. “I wanted to learn new techniques, but also get the best training available in physiology.”

Fellowships allow postdocs to engage in new fields of research and apply their previous skills to new scientific questions. For instance, Bradshaw applied her knowledge of immunology to study the causes of hypertension in pregnancy in the lab of Dr. Joey Granger (she has since joined a laboratory in Texas).

“Postdoctoral fellows play an integral role in the research and training missions at UMMC,” said Granger, dean of the School of Graduate Studies in the Health Sciences and director of the Office of Postdoctoral Studies. “They are responsible for the high level of productivity of our research programs. They are also at the front line in training our graduate students in state-of-the-art laboratory skills.”

Dr. Edgar Torres Fernandez, a former postdoc in the Department of Cell and Molecular Biology with Dr. Licy Yanes Cardozo, compares postdoctoral training to a medical residency.

“It’s a period of transition from formal schooling into full independent scientists,” said Torres Fernandez, an M.D. who studies polycystic ovary syndrome. “Postdocs do the day to day work in laboratories, from mentoring to conducting experiments to writing and reading manuscripts.”

Like Bradshaw, Torres Fernandez also plans to pursue faculty positions, but focus more on clinical and human research projects.

UMMC welcomes postdocs from around the world. Torres Fernandez, who completed his medical training in Paraguay, is also passionate about helping other postdocs from abroad get settled into life and work in the United States.

“It can be a bit of a culture shock, not just in terms of learning the language or the food, but differences in cultural expectations and training,” he said. “If you can accelerate the process of making them comfortable, then they can be more productive in their research.”

During their time at UMMC, Bradshaw and Torres Fernandez were both members of the UMMC Postdoctoral Advisory Committee, a group of current and recent postdocs who advise and aide the SGSHS’s Office of Postdoctoral Studies in generating innovative ideas to enrich the training experience for all postdocs at UMMC.

“Our goal is to build an encouraging community for postdocs and provide them with the resources they need to be successful while they are here at UMMC,” Bradshaw said.

The Office of Postdoctoral Studies supports trainees through scholarships to the Business Advantage Program at Millsaps College, hosting guest speakers on career opportunities and professional development topics, and courses on responsible conduct of research and educator training.

“Going forward, we’re also interested in creating more opportunities for postdocs to attend conferences and web-based resources for postdoctoral fellows,” said Dr. Evangeline Deer, a postdoc in the Department of Pharmacology and Toxicology and member of the advisory committee.

Deer, who earned a Ph.D. in environmental science at Jackson State University, is interested in pursuing scientific publishing and a faculty position after her postdoc. She has been submitting grant applications to study preeclampsia, which strengthened her writing skills.

“In order to write an effective grant, you have to understand what you’re doing and explain your research well,” she said.

Another experience that has helped Deer learn to communicate science better is through mentoring undergraduate and graduate students.

“If you can teach it to someone else, then you know it,” Deer said.

Deer, who joined Dr. Babette LaMarca’s (Microbiology and Immunology, 2003) laboratory in April 2019, says she is getting to know and work with the other postdoctoral fellows at UMMC, particularly through the advisory committee.

“It’s been an awesome experience working with everyone and finding ways to learn from each other,” she said.
For years, the University of Mississippi Medical Center produced a small crop of inventions. Now, the garden is flourishing.

Between January 1, 2018 and June 30, 2019, UMMC inventors submitted 37 invention disclosures, 19 patent applications and four patents, said Dr. James Petell, director of the intellectual property and commercialization office.

To mark the occasion, the Medical Center recognized 51 faculty, staff and students November 19, 2019 for their innovative spirit at the institution’s first intellectual property ceremony.

“The increase in intellectual property metrics compared to previous years is impressive and demonstrates a vibrant, inventive culture at UMMC,” Petell said. “Your accomplishments are truly impressive and show a lot of potential, and I’m looking forward to more innovation in the future.”

During the three years prior to the 18-month boom, the Medical Center reported just 14 disclosures, 11 applications and six issued patents. That amounts to a six-fold increase in the average number of inventions per year.
What’s most impressive, Petell told the ceremony attendees, is the diversity of the inventors themselves. They include faculty and staff from four schools and 21 departments, as well as three inventors who were Ph.D. students at the time of disclosure.

When Petell joined the Medical Center in late 2017 to direct the then-Technology Transfer Office, he aimed to build a foundation for IP development and commercialization. He was “completely surprised” by the productivity that resulted.

“There’s a brand new chapter opening at UMMC,” Petell said.

The disclosed inventions represent a wide range of biomedical applications. They include diagnostic techniques for neurodegenerative diseases and heart failure and potential therapeutics for diabetes and substance use disorders. Others describe devices and methods to use during surgery or keeping an airway open.

Notably, UMMC has received four U.S. patents since the start of 2018: one for drug delivery in pregnancy, another for drug delivery to the kidney, markers for sepsis treatment, and a technique for the detection of liver fibrosis. Two of these were issued in June 2019, in addition to an allowed trademark for TeleER.

Dr. Richard Summers, associate vice chancellor for research, said that in past years the Medical Center recognized U.S. patent recipients during the Excellence in Research Awards.

“We’ve had this groundswell of activity,” Summers said, prompting the Medical Center to find new ways to recognize these accomplishments. “Intellectual property is separate for what it is, and what it means for the university and for Mississippi.”

Inventions and creations can generate revenue for a university through either licensing agreements or spin-off companies, Petell said. That’s the next big step for UMMC.

“It’s great to receive a patent, but what are you going to do with it?” he said.

UMMC recently reported its first licensing royalties for the products of research conducted here. Dr. Elise Gomez-Sanchez and Dr. Celso Gomez-Sanchez, professors of pharmacology and toxicology, developed several kinds of monoclonal antibodies that they licensed to biotech company Millipore. The antibodies are used in diagnostic tests for primary aldosteronism, Celso Gomez-Sanchez said, a hormone imbalance that can cause hard-to-manage high blood pressure.

“(The licensing revenue) allows us to be able to send students and postdoctoral fellows to meetings and conferences, which allows them to connect with other researchers,” Elise Gomez-Sanchez said. If they receive additional revenue, she says, it can fund future research projects.

The ceremony also recognized three spin-off companies based on UMMC research, including two focused on elastin-like polypeptide applications and a third on physiology teaching and research tools.

Whether they are spin-offs or joint ventures with existing companies, new companies can have an added benefit beyond increasing revenue, Petell said.

“Companies tend to stay in-state and create new jobs and that drives economic development.”

SGSHS-associated patents and non-provisional patent applications recognized at the ceremony included:

"Composition and Method for Therapeutic Agent Delivery during Pregnancy," invented by Dr. Eric George (Biochemistry, 2009) and Dr. Gene L. Bidwell (Biochemistry, 2007), associate professor of neurology

"Kidney-Targeted Drug Delivery Systems," invented by Dr. Alejandro Chade, professor of physiology and biophysics, and Dr. Gene L. Bidwell

"Method for the Production of Precisely Sized Macro- and Micro-ELP Containing Particles for the Delivery of Therapeutic Agents," invented by Dr. Amol Janorkar, professor of biomedical materials science, Jared Cobb (Biomedical Materials Science, 2020), Dr. John Correia, professor of cell of molecular biology, and Dr. Valeria Zai-Rose (Biochemistry, 2018)
When he was a medical student deciding where to train as a specialist, Dr. Elliot Varney had his eye on Texas, but his heart in Mississippi.

A 2019 graduate of the School of Medicine at the University of Mississippi Medical Center, Varney was determined to do his residency in radiology, but hoped, at the same time, to earn his Ph.D. in radiology research, an option not available at UMMC then.

“I wanted to stay at UMMC,” said Varney, who grew up in the Gluckstadt/Madison area near Jackson, “because of my relationships here – the personal ones, but also the ones with the faculty and the ones I had throughout medical school.

“But I had interviewed at the University of Texas at San Antonio, which had the only radiology residency/Ph.D. program in the country.”

In mid-December, that changed, and Varney is now the first-ever trainee in a new program at UMMC: the biomedical imaging track of the biomedical sciences Ph.D.

“When we started the program, I thought he was the perfect inaugural candidate for it,” said Dr. Candace Howard-Claudio, associate professor of radiology, vice chair of research in radiology and director of the new program.

Varney is a “known entity in the department,” said Dr. Timothy McCowan, professor and former chair of radiology. “He was one of our top choices for our residency program. This is a great fit for him and for us.”

Varney is now fusing his training in radiology – the use of radiation, including X-rays and ultrasound, to diagnose and treat disease – with research: He is exploring the applications of biomedical imaging/engineering in the cause of helping doctors, therapists and others develop ways and equipment to better serve their patients.

“As an undergraduate, I fell in love with the research surrounding nanotechnology,” said Varney, who attended Mississippi State University before graduating from Millsaps College. In particular, radiology lit him up once he discovered how the field had started using microparticles and nanotechnology to treat and diagnose cancer.

Radiology is also wielded to treat and/or uncover liver and kidney problems, heart disease, back pain and more.

“A big reason I wanted to do the Ph.D. is that I have a fascination with the possibility of changing the status quo,” Varney said. “That’s where my love of research is. Instead of reading someone else’s work about patient
care, why not be a part of that work, no matter how big or small your contribution may be?

“At one time, I had thought I would do surgery, but I became interested in radiology and imaging,” he said, meaning such technologies as MRI and CT. “So this program was a no-brainer choice.”

The choice had existed before, but not officially, or at least formally, said Dr. Richard Summers, associate vice chancellor for research and Billy S. Guyton Professor of Emergency Medicine.

“The concept for the program started a few years ago with Dr. Andrew Smith,” said Summers, referring to the former UMMC associate professor of radiology and director of radiology research who is now at the University of Alabama at Birmingham.

As a faculty member, Smith gave radiology residents an opportunity to do additional years of research in their specialty. “But there was no formal degree attached to it,” Summers said.

Dr. Kevin Zand was the first to perform such research, which he finished recently before joining the University of California, San Francisco, in the Department of Radiology and Biomedical Engineering as a clinical fellow.

But Dr. Howard-Claudio is responsible for integrating a formal Ph.D. program into radiology, Summers said. “Through her, it’s even more substantial now; it has legs and I have great hopes for it.”

Those hopes lie in the potential of the biomedical imaging track – the second track in the biomedical sciences Ph.D. program, which had a pathology track in place already. In fact, Varney set out on that track in August before switching to the new one after its official approval in December.

That approval came about after Howard-Claudio discussed it with Summers and Dr. Joey Granger, Billy S. Guyton Distinguished Professor and dean of the School of Graduate Studies in the Health Sciences.

“Dr. Howard has done a fantastic job,” McCowan said. “This program goes beyond radiology because, in order for it to be successful, it will require the collaboration of other departments, such as neurology or biostatistics, depending on the trainees’ research.”

“We believe it will significantly add to our growing pipeline of programs to enhance clinical investigation at UMMC,” Granger said.

As McCowan put it: “This is good for our department and for our institution.”

Varney, too, had lobbied for a program similar to the one in Texas. “At the beginning of my fourth year of medical school, I asked if there was anything like it or the chance to start it here,” he said.

Before all this, he had considered entering UMMC’s M.D.-Ph.D. program, which trains medical students to become physician-scientists. But it’s a seven-year pursuit that the learner must begin in medical school.

“Part of me regretted not doing that,” Varney said.

He had done research as a medical student and thought he could do it as a physician; but, as he realized toward the end of medical student years, with a graduate degree in research “the opportunities would be broader.”

He looked for a way to stay at UMMC because, among other reasons, “the leadership is super supportive,” he said. “I can’t say enough about them. I couldn’t go anywhere else because of that support.”

In turn, Varney and the learners who join him in pursuit of the Ph.D. will be supporting radiology, which Howard-Claudio describes as “the most technologically advanced field of medicine.” Among its high-tech trimmings are artificial intelligence and deep learning – a technique that teaches computers to learn by example, the way humans do.

“Radiologists need to be drivers of the technology, not driven by it,” Howard-Claudio said. “It’s critical that we are well-versed in research, particularly in biomedical engineering. It’s a burgeoning field. We need this program so academic radiologists can be more competitive when searching for funding opportunities.

“I want [Varney] to be the strongest candidate when he applies for funding; so, it would be a shame for him not to have that [degree] behind his name.”

The price of achieving greater competitiveness is an extra year or two tacked onto the radiology residency, which is normally five years. Candidates for the degree will set out on the Holman Research Pathway, a model that ensures the program meets certain standards, and one supported by the American Board of Radiology.

The length of the journey down that research road depends on the pace of the learner, Howard-Claudio said.

More learners are on the way. At least two have asked her about the Ph.D., and one has applied to the program. “I would love to have at least two students per year,” Howard-Claudio said.

The number will depend on the funds available to support the research portion of the program; Summers’ office is providing the funding.

“This program presents us with a good strategy for recruiting and creating physician-scientists,” Summers said. “Rather than trying to recruit them to UMMC from, say, Harvard or Duke, we’re trying to grow our own.

“These are usually native Mississippians who have family here, so we hope they stay for a long career.”
Biobank builds up new leadership, research efforts

There’s a wealth of information stored in the University of Mississippi Medical Center’s Biobank. Its value? In the hands of a scientist with research questions in mind, it could help secure a new grant or help find a novel treatment for a disease.

A biobank is like a reference library. Instead of books and journals, it contains blood and tissue specimens. UMMC’s collection has samples from more than 3,500 participants, each with accompanying information from the donor. And like a library, the Biobank needs to make acquisitions regularly to stay up-to-date.

Since last summer, the Biobank has reshaped its leadership team and refocused its specimen-collection efforts. Three UMMC scientists are at the helm: Dr. Gouri Mahajan (Clinical Health Sciences, 2018) is the research laboratory director, Dr. Christina Jordan (Clinical Health Sciences, 2018) is director of operations, and Dr. Christian Gomez is the interim executive director.

“We are looking for ways to enhance and broaden our recruitment efforts,” said Gomez, an associate professor of pathology and radiation oncology. “Strategies for enrollment are key for our success.”

One way to do that is by looking for help from UMMC doctors, Jordan said.

“Physicians have established relationships with their patients, which puts them in a better position to share information with patients who may be interested in becoming participants,” Jordan said.

In 2011, the Biobank started as the University Biospecimen Repository, collecting cancer-related surgical specimens such as tumor resections. Since then, it has expanded to include blood, gastrointestinal, heart, transplant and other tissue types. Medical Center researchers can request access to biobank specimens for their own independent studies.

The Biobank is also stepping up collection efforts for two large-scale projects. The first is Biobank Mississippi. Formerly known as the UMMC 10K project, the program’s goal is to collect a health questionnaire and a blood sample from ten thousand UMMC adult patients.

Biobank Mississippi is an important piece of UMMC’s growing affiliation with the Mayo Clinic in Rochester, Minnesota. Researchers at both institutions will be able to use the specimens and related health information for their own studies.

Mahajan, who leads efforts on Biobank Mississippi, traveled to Mayo last fall to discuss opportunities for joint studies.

“The administration at both institutions is very supportive of the Biobank,” Mahajan said. “They are happy with the progress we’ve made so far and made a serious commitment.”

The UMMC Biobank is also coordinating local collection efforts with the University of Alabama at Birmingham for the National Institutes of Health-sponsored All of Us research study. Nationally, the project hopes to enroll one million participants across the United States by collecting health surveys, blood, biological metrics, and urine samples over the next three and a half years, with ten thousand of those in Mississippi.

“We are focusing on recruiting All of Us participants on UMMC’s campus first, then explore enrollment and engagement efforts in the Jackson community,” said Jordan, who leads the effort locally. Future events include local health fairs, gyms, and partnerships with other health-care organizations, she said.

The entire national dataset for All of Us will be available for researchers across the country to use for studies on human health and disease.

Although All of Us and Biobank Mississippi are separate programs and require separate enrollment, they have some similarities. Both are open to adults and want to recruit healthy individuals as well as those with health conditions. That’s because the projects have the same aim: to build a large data set which scientists can use to study nearly any disease.

Having tens of thousands of samples to study makes it possible for scientists to make valuable discoveries about rare diseases as well as common conditions such as type 2 diabetes that can have multiple contributing risk factors.

Through all of its projects, the UMMC Biobank’s goal is to help build a new, robust collection that can rival other large health studies, such as the National Health and Nutrition Examination Survey. Gomez said. But to do that, scientists need to propose studies that can use and validate the value of these datasets.

“Looking forward, we have to ask, ‘what can we do with the data?’” Gomez asked.

As interim executive director, Gomez said his role at the Biobank is “to provide scientific oversight, generate ideas for projects and grant applications and develop collaborations with other institutions.”

As it grows, the Biobank is also looking for ways to harness even more data from its collection.

“Eventually, we would like to be able to bring whole genome sequencing in-house,” Mahajan said.
The UMMC Biobank’s new leadership includes Dr. Gouri Mahajan, research lab director; Dr. Christina Jordan, director of operations; and Dr. Christian Gomez, associate professor of pathology.

Dr. Jim Shaffery, professor of psychiatry and human behavior, signs up for Biobank Mississippi with the help of participant recruiter Laquinta Clark.
Grants and Awards

The following SGSHS faculty received some of the largest new extramural grants and awards during the 2019-2020 academic year. The dollar values shown are for the first year of funding, unless otherwise indicated:

**Dr. Celso Gomez-Sanchez**, professor of pharmacology and toxicology, received a four-year, $1,275,000 grant from the National Institutes of Health for the project, “Adrenal cell ATP1A1 mutations and mechanisms of aldosterone biosynthesis.”

**Dr. Jussara do Carmo**, associate professor of physiology and biophysics, received a three-year, $817,500 grant from the NIH for the project, “Long-term consequences of parental obesity on developmental programming of cardiorenal diseases in offspring.”

**Dr. Jose Miguel-Hidalgo**, professor of psychiatry and human behavior, received a two-year, $426,250 grant from the NIH for the project, “Astrocytes and the pathology of nodes of Ranvier in depression.”

**Dr. Drazen Raucher**, professor of cell and molecular biology, received a two-year, $381,970 grant from the NIH for the project, “Defining the capacity of the lumbosacral network for neuromodulation in humans with SCI.”

**Dr. Matthias Krenn**, assistant professor of neurobiology and anatomical sciences, received a $225,000 grant from the Wings of Life Foundation for the project, “Sycamore: A real-time simulation for continuity of care training” and a $54,860 award from HC Simulation for the project, “Data collection from the published literature for validation of HumMod.”

**Dr. Kedra Wallace** (Neuroscience, 2009), associate professor of obstetrics and gynecology, received $118,827 for an industry-sponsored research agreement and a $103,186 subcontract from the NIH and Duke University for the project, “COMPARE-UF core.”

**Dr. Jorge Vidal**, associate professor of microbiology and immunology, received a $157,385 grant from the NIH for the project “Dissemination of macrolide resistance elements in Streptococcus pneumoniae.”

**Dr. Erin Taylor** (Microbiology and Immunology, 2015), instructor of physiology and biophysics, received a $101,529 grant from the NIH for the project, “Immune system dysfunction and gut dysbiosis in the pathogenesis of vascular dysfunction in autoimmunity.”

**Dr. Gene Bidwell** (Biochemistry, 2007) associate professor of neurology, received a $100,000 grant from the American Heart Association for the project, “A maternally sequestered, sFlt-1 targeted biologic for treatment of preeclampsia.”
Graduate Student Awards

Laura Coats (Physiology and Biophysics) Poster award for Council on Hypertension Scientific Sessions; 2020 Caroline tum Suden/ Frances Hellebrandt Professional Opportunity Award; 2019 Research Day Poster Award; American Heart Association predoctoral fellowship

Jared Cobb (Biomedical Materials Science) UMMC ASB Innovation Award; UMMC Research recognition for inventions, intellectual property and pending patents; Artwork selected for American Chemical Society omega journal cover; United States Department of Agriculture predoctoral fellowship

Meredith Cobb (M.D.-Ph.D. – Experimental Therapeutics and Pharmacology) Jackson Fund Scholarship Award for the 60th McKusick Short Course at The Jackson Laboratory; UMMC ASB President’s Award; Student delegate and reference committee member for the Mississippi State Medical Association Annual session of the House of Delegates; student event committee for the MSMA Women in Medicine event; Poster award for Council on Hypertension Scientific Sessions with the American Heart Association

Lauren Corby (Biomedical Materials Science) Graduate student representative on the UMMC Group for Women in Medicine and Science executive board; Travel award recipient from the Academy of Dental Materials Student in North America

Jonathan Crider (Microbiology and Immunology) Best overall poster presentation by a PhD student at the American Society for Microbiology South Central Branch Annual Meeting

Jacob Crouch (Nursing) 2019 Research Day Poster Award

Elena Dent (Physiology and Biophysics) Invited speaker at PAS/ASN Control of Renal Function in Health and Disease; American Society of Nephrology TREKS Travel Award; Caroline tum Suden/ Frances Hellebrandt Professional Opportunity Award; American Heart Association predoctoral fellowship

Kimberly Douglas (Nursing) Invited poster presenter at the 34th Annual Southern Nursing Research Society Conference

Sonja Dragojevic (Cell and Molecular Biology) 2019 Research Day Poster Award

Margaret Jeanne Fortenberry (Nursing) Phi Kappa Phi Inductee

Ezekiel Gonzalez-Fernandez (Experimental Therapeutics and Pharmacology) American Heart Association predoctoral fellowship; NIH predoctoral fellowship; 2019 Research Day Poster Award

Ashley Griffin (Neuroscience) 2019 Research Day Poster Award

Owen Herrock (Experimental Therapeutics and Pharmacology) 2019 Research Day Poster Award

John Aaron Howell (Neuroscience) 2019 Research Day Poster Award

Alexandra Huffman (Cell and Molecular Biology) 2019 Research Day Poster Award

Jeanne Ishimwe (Experimental Therapeutics and Pharmacology) American Heart Association predoctoral fellowship; Travel award and invited presenter at the Southern Regional Meeting; Caroline tum Suden/ Frances Hellebrandt Professional Opportunity Award; Martin Frank Diversity Travel Award

Kartikeya Jodha (Biomedical Materials Science) UMMC ASB Exemplar Award

Maria Jones-Muhammad (Neuroscience) New Investigator Travel Award to attend the Council on Hypertension Scientific Sessions Meeting; Caroline tum Suden/ Frances Hellebrandt Professional Opportunity Award

Sara Klender (Clinical Anatomy) Human Anatomy and Physiology Poster Award; American Association for Anatomy Student Travel Award

Tyler Lomax (Physiology and Biophysics) 2019 Research Day Poster Award

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Kenji Maeda (Experimental Therapeutics and Pharmacology) UMMC ASB Student Research Award; American Heart Association predoctoral fellowship

Ciara McKnight (Cell and Molecular Biology) Gordon Research Conference Poster Award

Dipanwita Mitra (Microbiology and Immunology) Poster selected as one of the 'future directions for herpesvirus research' at the International Herpesvirus Workshop; Invited oral talk at the American Society for Microbiology South Central Branch Meeting

Kyle Moore (Physiology and Biophysics) 2019 Research Day Poster Award

Stacee Naylor (Nursing) Selected by Jonas Philanthropies to be featured in "African Heritage & Health Week" article; 2019 Research Day Poster Award

Kadie Nobles (Biomedical Materials Science) Awarded 1st place in oral presentations at Mississippi Academy of Sciences in the Physics and Engineering Division

Danielle Porter (Neuroscience) Travel award to attend the Summer Program in Neuroscience Excellence and Success

Bibek Poudel (Experimental Therapeutics and Pharmacology) 2020 American Physiological Society Graduate Student Ambassador Award; Excellence Award in Graduate Research Day-2019 Poster Presentation; Top 10 abstracts for the 2020 APS Renal Section Predoctoral Excellence in Research Award; Invited poster presenter at the APS Renal Section Posters and Professors Session at Experimental Biology; 2020 APS Professional Skills Training participant; 2020 APS Graduate Student Ambassador Award; 2019 Research Day Poster Award

Jacob Pruett (M.D.-Ph.D. – Cell and Molecular Biology) AOA Honor Society; Gold Humanism Award; 1st place in oral presentations session at the Southeastern Medical Scientist Symposium; 2020 Virendra B. Mahesh Award of Excellence in Endocrinology; Invited abstract presenter at Experimental Biology 2020 Scientific Highlights

Iftekhar Rafiqullah (Microbiology and Immunology) Charles C. Shepard Science Award; Larry J Anderson Outstanding Public Health Science Award

Megha Satpathy (Biomedical Materials Science) 1st place in oral presentations at Mississippi Academy of Sciences in the Physics and Engineering Division

Redin Spann (Neuroscience) Joseph Erlanger Trainee Award at Experimental Biology

Courtney Thompson (Microbiology and Immunology) 1st Place Oral Presentation at the Mississippi Academy of Sciences in Health Sciences Division

Olivia Travis (Experimental Therapeutics and Pharmacology) New Investigator Travel Award Recipient for the AHA Hypertension 2019 Scientific Sessions; American Heart Association Council on Hypertension New Investigator Award; F31 Grant application scored 11th percentile; received the FASEB Dream Program Travel award to attend the APS Writing and Reviewing for Scientific Journals Workshop; 2020 Excellence in Pharmacology award

Hannah Turbeville (M.D.-Ph.D. – Experimental Therapeutics and Pharmacology) Millsaps College Business Advantage Program; First Place team for the Rural Interdisciplinary Case Experience Bowl; Selected for oral presentation and travel award at Emerging Kidney Physiologists: ASN Kidney Week 2019 pre-meeting; American Society of Nephrology Kidney STARS Program travel award; 2020 Caroline tum Suden/Frances Hellebrandt Professional Opportunity Award; 2019 Research Day Poster Award

Sydney Vita (Neuroscience) Dee S. and Patricia Osborne Endowed Scholarship in the Neurosciences

Jamarius Waller (M.D.-Ph.D. – Experimental Therapeutics and Pharmacology) NIH predoctoral fellowship; Graduate Student Ambassador Award; Martin Frank Diversity Travel Award

Shaoxun Wang (Experimental Therapeutics and Pharmacology) UMMC Research inventor; 18th International Winter Eicosanoid Conference for NIH/ NIEHS Travel Award; American Heart Association predoctoral fellowship

Erika Williams (Physiology and Biophysics) 2019 Water & Electrolyte Homeostasis Section Portland Press Predoctoral Research Recognition Award
**Postdoctoral Fellow and Instructor Awards**

**Dr. Bhavisha Bakrania** (Physiology and Biophysics) 2019
Juan Carlos Romero and Water and Electrolyte Homeostasis Section Postdoctoral Research Recognition Award

**Dr. Lais Berro** (Psychiatry and Human Behavior) NIH Advisory Committee to the Director Working Group on Rigor and Reproducibility in Animal Research; 2019 Research Day Poster Award

**Dr. Jessica Bradshaw** (Physiology and Biophysics) article featured in PLOS Antimicrobial Resistance Channel

**Dr. John Clemmer** (Physiology and Biophysics) Poster award at Council on Hypertension Scientific Sessions

**Dr. Gouri Mahajan** (Neuroscience) Travel award to attend the 7th Workshop on Biostatistics and Bioinformatics

**Dr. Alan Mouton** (Physiology and Biophysics) 2019 Research Day Poster Award; APS Cardiovascular Section Research Recognition Award to be presented at CV Section Banquet at Experimental Biology; American Physiological Society Cardiovascular Section Research Recognition Award

**Dr. Zoltan Nemeth** (Physiology and Biophysics) 2020 Caroline tum Suden/ Frances Hellebrandt Professional Opportunity Award

**Dr. Mary Roselin Nittala** (Radiation Oncology) AACR Scholar-in-Training Award in the Science of Cancer Health Disparities in Racial/Ethnic Minorities and the Medically Underserved at the AACR conference

**Dr. pallabi pal** (Biomedical Materials Science) 1st author of paper published in the Journal of Macromolecular Bioscience with featured image on the back cover of the journal

**Dr. Samar Rezq** (Cell and Molecular Biology) Endocrinology and Metabolism Section 2020 Research Recognition Research Award; Abstract selected for Experimental Biology 2020 Scientific Highlights

**Dr. Edgar Torres Fernandez** (Cell and Molecular Biology) Excellence Award from the 2020 Pillars: Recognition of Service & Inclusive Excellence; Honorable Mention from the UMMC Office of Diversity and Inclusion; 2020 Juan Carlos Romero and Water & Electrolyte Homeostasis Section Postdoctoral Research Recognition Award Finalist.

**Dr. Yunxi Zhang** (Data Science) 2019 Research Day Poster Award
New Faculty

Dr. Yingjie Chen
Professor
Physiology and Biophysics
After receiving his medical degree from Neimonggu Medical College, China, in 1986 and his M.S. from the National Research Institute of Sports Science, China, in 1991, Chen served as an assistant professor of physiology and as an associate director of the Physiology Department from 1993-95 at the Chinese National Research Institute of Sports Science.

He earned his Ph.D. in 1999 and had postdoctoral fellowship training from 1999-2001 at the University of Minnesota, where he joined the faculty as a research assistant professor in the Cardiology Division from 2001-03, assistant professor from 2003-2012 and associate professor with tenure from 2012-19. He also served as an adjunct professor at Tongji University, Shanghai, China, from 2016-19.

A Fellow of the American Physiological Society, Chen belongs to several professional organizations and was a founding member of the Academy of Cardiovascular Research Excellence. He is the author or coauthor of 94 articles, a reviewer for scientific journals and is on the advisory boards for international conferences. He has been funded by the National Institutes of Health and the American Heart Association for his cardiovascular research. He has patented two cardiovascular treatment methods.

Dr. Ellen Robertson
Assistant Professor
Neurobiology and Anatomical Sciences
After receiving her B.A. in exercise and sports science from the University of North Carolina in 2000, Robertson taught algebra and pre-algebra at the McLean School in Potomac, Maryland, for two years before earning her M.S. in occupational therapy at Spalding University, Louisville, Kentucky, in 2006.

Robertson served as an occupational therapist at Carolinas Rehabilitation in Charlotte, North Carolina, from 2006-10, serving inpatient populations and specializing in seating and mobility. She was an instructor in occupational therapy from 2012-14 and was an adjunct instructor in occupational therapy for several years at the University of Tennessee Health Sciences Center, Memphis, before coming to UMMC, where she earned her Ph.D in clinical anatomy in 2019.

An active member of the American Association of Anatomists, the American Occupational Therapy Association and the International Association of Medical Science Educators, Robertson has given invited presentations at scientific meetings nationally and is the author or coauthor of three articles and nine abstracts.

Dr. Jorge Vidal
Associate Professor
Microbiology and Immunology
After receiving his B.Sc. in chemistry, pharmacology and biology from the Autonomous University of Puebla, Mexico, in 1999 and his M.Sc. in microbiology from the National School of Biological Sciences, Mexico City, in 2001, Dr. Vidal earned his Ph.D. in cellular microbiology at the Center for Research and Advanced Studies in Mexico City in 2006. He then conducted postdoctoral training in the Department of Microbiology and Molecular Genetics at the University of Pittsburgh School of Medicine from 2006-09.

Vidal joined the Emory University faculty in 2009 as an assistant professor in the Rollins School of Public Health and was promoted to associate professor in 2018.

Vidal is a member of the American Society for Microbiology and the Infectious Diseases Society of America. He is the author on more than 75 articles, more than 80 abstracts and two book chapters, and has participated in 35 oral presentations at scientific meetings. He is an editorial board member for journals including Infection and Immunity and Pneumonia.

His research interests include studies of the molecular pathogenesis, epidemiology and development of antibiotic resistance of Streptococcus pneumoniae. His research programs and academic activities have been funded by the NIH, the Bill and Melinda Gates Foundation and multiple pharmaceutical companies.
Class Notes

1960s

Dr. L. Gabriel Navar (Physiology and Biophysics, 1966) is professor and Chair of the Department of Physiology at Tulane University School of Medicine. In October 2018, a symposium was held in his honor commemorating his 30th anniversary. The one-day event consisted of presentations by Navar’s former trainees and colleagues, many of whom traveled from various cities to attend and present at this symposium. Of those who were unable to attend, many sent in greetings, videos, letters and messages for the symposium. With over 40 years of experience in training medical students, graduate students, postdoctoral fellows and faculty, Navar has trained and supervised over 100 trainees in areas of renal physiology, renin-angiotensin system and pathophysiology of hypertension, many of them being from underrepresented minorities. His research has been recognized by the Gottschalk lectureship, the Robert W. Berliner Award for Excellence in Renal Physiology, the Ray G. Daggs Award and the Walter B. Cannon Award from the American Physiological Society and the Dahl and Corcoran Lectureships and the Excellence Award for Hypertension Research from the Council on Hypertension. This record of achievement was recognized by the Inaugural Distinguished Alumni Award in 2007 and the Robert M. Hearin Distinguished Award in 2014 from the University of Mississippi Medical Center. In 2019, he received the Albert Nelson Marquis Lifetime Achievement Award from Marquis Who’s Who.

1970s

Dr. A.P. “Pete” Shepherd (Physiology and Biophysics, 1971) worked at the University of Texas Health Science Center at San Antonio from 1974 to 2009 and during most of that time he had a company called Avox Systems, Inc. He retired in 2009. In 2010, the University of Texas System gave him the Chancellor’s Entrepreneurship and Innovation Award, and the San Antonio Business Journal gave him the Health Care Hero Award. In 2015, the University of Mississippi Medical Center gave him the Distinguished Alumnus Award. In 2016, he became a Fellow of the American Physiological Society. In 2019, he rejoined the University of Texas Health Science Center as a Professor Emeritus. During the last 11 years in retirement, one of his hobbies has been updating his computer programs for teaching physiology and submitting them to the Life Science Teaching Resource Community. Free Mac and Windows versions can be downloaded at http://www.lifescitrc.org. He designed the AVOXimeter for use in cardiac catheterization labs and he recently published another paper about it in a cardiology journal.

Dr. Wilton “Bo” Marsalis (Anatomy, 1972) finished medical school at UMMC in 1979 following graduate school and teaching anatomy. He completed a residency in anesthesiology at The University of Alabama and practiced anesthesiology for 35 years until his retirement in 2018. He is enjoying life in Oxford with his wife, children and grandchildren, spending time with his horses and playing tennis and pickle ball.

1980s

Dr. Richard C. Strachan (Microbiology and Immunology, 1981) practices dentistry in his hometown of Corinth, Mississippi and manages his family farm.

1990s

Dr. Bettye Sue Hennington (Biochemistry, 1995) is a professor in the Department of Cell and Molecular Biology at UMMC and is the current program director of the online post-baccalaureate certificate program in biochemistry at UMMC.
Dr. Christine Schnackenberg (Physiology and Biophysics, 1996) is a scientific director and GSK fellow at GlaxoSmithKline. Her research role includes leading projects for the discovery of new medicines to treat cardiovascular, metabolic or neurodegenerative diseases. As part of the Novel Human Genetics Research Unit, she also collaborates with 23andMe on drug discovery projects with human disease genetic associations. She leads a team of scientists who specialize in integrative physiology and pharmacology and translational preclinical studies for early drug discovery (i.e. target identification, target validation and lead optimization) through clinical trials. Similar to clinical trials, the use of blinding, randomization and power analysis are critical elements of a robust preclinical trial.

2000s

Dr. Teresa C. Carithers (Preventative Medicine, 2003) is affiliated with the School of Applied Sciences at the University of Mississippi. After serving in numerous administrative and academic positions, she is currently serving as interim chair of the newly established Department of Applied Gerontology. This is an inter-professional degree program with an online minor designed to provide baseline education to current and future generations to meet the needs of the growing adult population projections. The department's philosophy is that the study of aging is “everybody’s business.” Her future research will focus on healthy and successful aging models, addressing challenges with long-term care staff retention and gerontechnology.

2010s

Dr. Sai P. Majji (Microbiology and Immunology, 2010) joined the U.S. Navy malaria vaccine development program as a postdoctoral fellow after graduating from her Ph.D. program, subsequently becoming a staff scientist working on developing human monoclonal therapeutic antibodies for malaria and HIV. She was also part of the clinical trial safety, monitoring and regulatory affairs teams with the DOD. She is currently a general science administrator with focus on research areas of vaccines, immune-prophylactics and therapeutics research in HIV, tuberculosis, and malaria infections in infants, children, adolescents and pregnant and non-pregnant women at the NIH/Eunice Kennedy Shriver National Institute of Child Health and Human Development.

Dr. Sara Martin Parks (MS in Biomedical Sciences, 2016) graduated this May from medical school at the University of Mississippi Medical Center. She started her residency training in internal medicine at UMMC in July with plans to practice primary care in Mississippi in the future. She is also a Mississippi Rural Physician Scholar.

Dr. Courtney Stewart (Neuroscience, 2016) is affiliated with VA Ann Arbor Healthcare System and University of Michigan as a VA Investigator studying the effects of intense noise exposure on the vestibular periphery, including damage to vestibular end organs and changes in physiological responses arising from the vestibular periphery that provide information about gravity, motion and head position. She is connecting this information to changes in motor performance, including altered gait, slower walking speed and reduced control of the head in response to abrupt movements. She hopes to use the data collected through this work to develop restorative therapies for established vestibular deficits and preventative strategies to reduce age-related fall risk for future generations. Her work is funded by a CDA-2 through the VA Rehabilitation Research and Development Service.

Dr. Rana El Feghaly (MS in Clinical Investigation, 2017) is currently the infectious diseases clinic director and director of the outpatient antibiotic stewardship program at Children’s Mercy Kansas City and an associate professor at the University of Missouri Kansas City. She is leading efforts to improve antibiotic use and diagnostic tests in the emergency departments, urgent care clinics and outpatient clinics, and collaborating with front-line providers on multiple quality improvement and research projects.

Dr. Julia Sherriff (Clinical Health Sciences, 2017) is affiliated with UMMC and writes clinical appeals to insurance companies for the institution. This position allows her to mediate the frictions between healthcare provision and health insurance, caused by the lag in
healthcare system developments from Department of Health and Human Services and Center for Medicare and Medicaid Services expectations, communication breakdowns and the misbalances of power and accountability within the healthcare economic sector. Currently, she is reviewing quantitative analytical techniques used in business administration, aiming to improve population health analytics.

**Dr. Peyton W. Weems (Neuroscience, 2017)** is currently working as a Medical Science Liaison (MSL) within the Neuroscience business unit of Myriad Genetics, Inc. covering our Gulf Coast region. Myriad Genetics, Inc., is a molecular diagnostic company specializing in pharmacogenomic testing specific to Psychiatry. His job as a regional MSL is to provide clinical and scientific support and education to clinicians currently utilizing or interested in utilizing the product, GeneSight®. In addition to being a scientific resource in the field, he is also responsible for establishing and maintaining critical peer-to-peer relationships with Key Opinion Leaders, clinical researchers and regulatory bodies to ensure that the company maintains alignment with the current scientific landscape and continues to improve the lives of patients suffering from psychiatric disorders.

**Joshua Hunter Altman (MS in Biomedical Sciences, 2018)** has recently finished his second year of medical school at UMMC. He begins clinical rotations in June 2020 and plans to practice medicine in South-Central Mississippi after graduation.

**Dr. Jessica Bradshaw (Microbiology and Immunology, 2018)** is a postdoctoral research fellow in the laboratory of Dr. Stella Goulopoulou within the Department of Physiology and Anatomy at the University of Texas Health Science Center in Fort Worth. She is working on an NIH-funded project investigating the effects of circulating mitochondrial DNA on maternal vascular dysfunction during pregnancy while also developing independent projects in preparation for her next role in academia.

**Dr. Haley Pipkins (Microbiology and Immunology, 2018)** is an assistant professor in the School of Natural and Behavioral Sciences at William Carey University in Hattiesburg, MS. She teaches biological science courses, including cell physiology, medical microbiology, general microbiology, and two levels of biological research. This past year she was able to co-teach a two-week field biology course that covered identification, taxonomy and ecological relationships of naturally occurring organisms in the Mississippi Delta. She also serves as a mentor and advisor to pre-professional undergraduate students who aspire to attend medical, dental, pharmacy, graduate, PT or OT school. In addition to her job at William Carey, she recently served as a content editor for a medical terminology textbook that will be published later this year. Her biggest news since graduating is that she and her husband welcomed their first child, Scarlett Alyse Pipkins, this past November.

**Dr. Edgar R. Meyer (Clinical Anatomy, 2019)** currently serves as an assistant professor within the Department of Neurobiology and Developmental Sciences at the University of Arkansas for Medical Sciences. His primary appointment is in the College of Medicine where he teaches gross anatomy in the human structure module as well as neuroanatomy in the brain and behavior module. He also facilitates interactions between first- and second-year medical students and standardized patients in their ultrasound curriculum. In addition, he serves as an instructor in the physician assistant gross anatomy course. While his research efforts involve mentoring medical and graduate students in educational research projects, he also aims to expand research efforts into outreach endeavors that benefit underrepresented student groups seeking careers in the health sciences.

**Dr. David S. Sandlin (M.D.-Ph.D. Neuroscience, 2019)** completed the first year of the neurology residency program at Emory University School of Medicine in Atlanta, Georgia. His internship has been entirely clinical with medical duties at the Emory University Hospital, Emory Brain Health Center, Grady Memorial Hospital, Children’s Healthcare of Atlanta and the Atlanta VA Medical Center. He began his second year of residency training in July 2020 where he has been selected for the research track and will identify a mentor and research project to complement his clinical duties over the remaining three years of residency training. His current interests include neuro-ophthalmology, neuro-otology and critical care neurology.
Dr. Vernon Bishop

Dr. Vernon Bishop, a passionate and loving husband, father, grandfather, great-grandfather, follower of Christ, fisherman, and professor passed away on February 19, surrounded by family. Vernon is survived by his loving wife, Shirley Bishop; his four children, Vernon Bishop Jr., Steven Bishop, Baily Rodriguez, and Della Bishop; his eight grandchildren, and seven great-grandchildren.

Vernon was born on October 1, 1935 in McPherson, Kansas to Dr. Chester and Francis Bishop, and grew up alongside his two older brothers Chester Bishop and Melvin Bishop, who preceded him. Vernon grew up in Kansas and Mississippi, where he met his high school sweetheart and wife of 64 years, Shirley Bishop. They made San Antonio their home where they raised their four children, but his career took their family on many adventures around the country and world. He consistently reminded his family the importance of having a strong work ethic and loving the work that you do. His family respected and witnessed his passion for research and teaching throughout his long and distinguished career.

Dr. Bishop earned his undergraduate degree in physics from Mississippi College, his masters in Radiation Biophysics from the University of Kansas, and his Ph.D. and postdoctoral fellowship in Physiology and Biophysics at the University of Mississippi Medical Center. In 1968, Dr. Bishop started his 35-year career at the UTHSC San Antonio, where he retired in 2003 as professor and chair of the Physiology Department. Throughout his career, Dr. Bishop was revered by his students, trainees and colleagues. He was recognized with multiple distinguished positions, including editor of journals such as the American Journal of Physiology and served as President of the American Physiological Society from 1989-1990. Among the numerous awards and honors he received, three of the most prominent include the American Physiological Society’s Wiggers Award, Carl Ludwig Distinguished Lecturer Award in recognition for his academic achievements and contributions to cardiovascular research across his career, and the Alexander Von Humboldt-Stiftung Award for his scientific work with colleagues in Germany. He was author of over 130 scientific publications in peer-reviewed journals.

Vernon’s grandchildren and children will remember and cherish his love for sweets, sense of humor, passion for teasing and playing games, his constant reminder to “get paid to play,” the joy he felt fly-fishing, him insisting to enjoy the beauty around us, and the many songs and rhymes he taught on road trips. His loved ones will always carry the laughter he brought them, and the faith he had in them. However, his greatest legacy will forever be the love that he had for his wife Shirley.
Dr. Edgar Draper

Dr. Edgar Draper, who served as chair of the Department of Psychiatry and Human Behavior at UMMC for 20 years, died November 16, 2019.

A 1946 graduate of Washington University in St. Louis, Draper entered divinity school at Duke University and received his bachelor of divinity degree from Garrett Biblical Institute at Northwestern University in 1949. He was ordained a deacon and elder in the Methodist church before earning his M.D. at Washington University.

He interned at St. Louis City Hospital and completed his psychiatric training at Cincinnati General Hospital. In 1960, he began his psychoanalytic training and graduated from the Chicago Institute of Psychoanalysis in 1966. By 1968, he had risen to the rank of associate professor of psychiatry.

He served as professor and director of resident education at the University of Michigan before joining the Medical Center faculty in 1975 as professor and chair of psychiatry. He served in that role until becoming professor emeritus in 1994.

The Edgar Draper, M.D., Psychiatry Support Fund honors Draper, who as chair brought the department from three to 33 faculty members and from three residents to 22. The fund supports annual recognition, including a plaque and cash gift, of a senior psychiatry resident who shows excellence as a scholar and clinician.

Throughout his academic years, Draper became deeply involved in the study and research of the psychological functions of religion and beliefs, writing a number of scientific papers and books on the subject. He was a former president of the Mississippi Psychiatric Association and was a board member of the Mental Health Association of the greater Jackson area. He was a Life Fellow in the American Psychiatric Association and served on its board of directors.

Dr. Arthur Hume, Sr.

Dr. Arthur Hume Sr., a professor of pharmacology and toxicology at UMMC who directed the University of Mississippi Toxicology Laboratory, died Feb. 10, 2020

A native of Spring Hill, Tennessee, Hume served as a medic in the Korean War.

After returning to the United States, he continued his education, attending David Lipscomb College, Vanderbilt University and the University of Mississippi. He graduated from pharmacy school and worked as a pharmacist before obtaining his Ph.D. in pharmacology and toxicology from UMMC.

Hume was a researcher and teacher in the Department of Pharmacology and Toxicology at UMMC and served as director of the Mississippi state crime lab for 16 years. He then started the Mississippi Poison Control Center and served as its director for more than 20 years.

Hume returned to academic life as a professor of pharmacology and toxicology at UMMC and developed and directed the University of Mississippi Toxicology Laboratory. He was lead author and contributing author on multiple publications and research articles.
The University of Mississippi Medical Center offers an equal opportunity in education and employment, and in all its programs and services, M/F/D/V.

The SGHS Ph.D. students of the 2019-2020 school year pose in the Guyton Research Center.