



DEPARTMENT OF MEDICINE

Annual Report 2020



Acknowledgments:

The Department of Medicine would like to thank the many individuals, especially our leadership, including our division directors and division administrators, for their collective efforts in helping to complete this year's annual progress report. Additionally, we would like to thank those who are featured within these pages for their continued service to MUSC and contributions to this publication.

Editor, Creative and Production Manager: Natalie Wilson

Photographers: Elizabeth Anne Thompson, Sarah Pack, Natalie Wilson

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COVER:

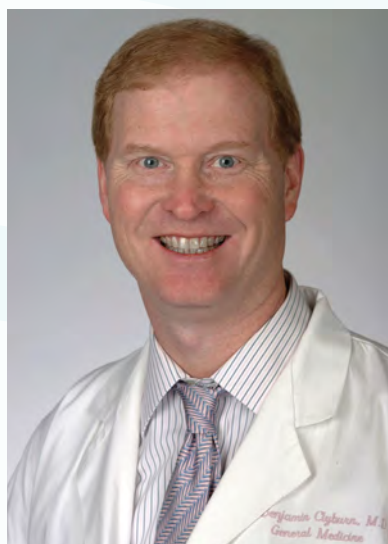
Left Image: Harsha Karanchi, M.D., assistant professor, Division of Endocrinology.

Middle Image: Chief Resident Laurel Branch, M.D., and medical student.

Right Image: Betty Tsao, Ph.D., SmartState and Richard M. Silver Endowed Chair for Inflammation Research, Division of Rheumatology & Immunology.



MESSAGE FROM THE INTERIM CHAIR



E. B. Clyburn, M.D.

Benjamin Clyburn, M.D.
Professor and Interim Chair
Department of Medicine
Medical University of South Carolina

As I write this letter we are in the midst of unprecedented times, a global pandemic due to COVID-19. Since taking on the role of interim department chair in March 2020, I have been inspired daily by my team's ingenuity, creativity, and commitment to excellence in the face of this pandemic, as they continue to find innovative solutions to care for our patients, conduct research, and educate our residents.

During this crisis, the Department of Medicine has continued to flourish over the past year. In fact, in spite of the many challenges COVID-19 has presented in academic medicine, we have continued to provide health care services using best-practices to protect the health of our patients and care teams. The clinical care team rapidly transitioned from in-clinic visits to telehealth visits, with our providers now seeing over 750 patients a day via virtual visits. Our faculty members with extensive expertise in public and global health assisted leadership with disaster management, infectious disease policies, and operationalizing the many aspects of the new COVID-19 world in the operating rooms, ICUs, and clinics.

The current times stretch us, but the achievements presented in this report underscore our strength and commitment to meet the challenges of the pandemic in our mission to provide exceptional care for all.

Some particularly noteworthy departmental highlights from this past year include:

- Clinical growth prior to COVID-19 was up significantly. However, the pandemic rapidly disrupted the way we practiced ambulatory internal medicine leading to declines in outpatient visits. By implementing new, safe and innovative care models, the department quickly rebounded to meet the needs of patients as you will see in the pages that follow.
- We completed funding for one new endowed chair: Richard M. Silver, M.D., Endowed Chair in Rheumatology and Immunology – [James Oates, M.D.](#); and one new endowed professorship: Jay Brzezinski, M.D., Clinician Educator Endowed Professorship – [Andrew Schreiner, M.D., MSCR](#).
- The creation of a new Division of Hospital Medicine led by Interim Division Director [Marc Heincelman, M.D., MPH](#).
- Three Department of Medicine specialty programs placed among the top 10% in the country by U.S. News & World Report: gastroenterology, nephrology, and rheumatology.
- The MUSC Susan Pearlstine Sarcoidosis Center of Excellence was formally recognized by the World Association for Sarcoidosis and Other Granulomatous Diseases (WASOG) as a Sarcoidosis Center of Excellence.
- MUSC became the only institution in the country to house both a Digestive Disease Research Core Center, which supports the research of established scholars, and a Center for Biomedical Research Excellence in Digestive and Liver Disease, which mentors early-career investigators to become independent scholars.
- Researchers in the Department of Medicine have been leading efforts, including a variety of clinical trials, to identify effective therapeutics and vaccines to treat and mitigate COVID-19.
- On the educational front, our newly appointed internal medicine residency program director, [Ashley Duckett, M.D.](#), led the successful deployment of our residents to meet the challenges of caring for COVID patients, and oversaw the transition of our didactic curriculum into an online format.

I have never been prouder of our work or our department. I am in awe of what we have achieved and extend my deepest appreciation to the dedicated faculty, fellows, residents, and staff who have contributed to our success.

BY THE NUMBERS

Our achievements in education, research, and clinical care are far-reaching as we deliver the university's mission: changing what's possible.



FY20 Research Activity



78
NEW
AWARDS



OVER
\$43
MILLION
in Research Awards

51

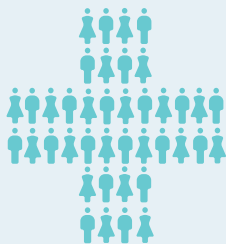
PI's with Active Corporate
Clinical Research

52

PI's with Active Federal Awards
and Clinical Research



Faculty, Staff, and Trainees



262
Faculty



219
Trainees
106 Residents
95 Fellows
18 Post Docs & Trainees



112 Research Staff



96 Management &
Support Staff



67 APPs



FY20 Clinical Activity



26,984
NEW
PATIENTS



815,963
wRVU
GENERATION



281,421
OUTPATIENT
ENCOUNTERS

AWARDS & DISTINCTIONS

The 2020 Department of Medicine Awards Ceremony honors outstanding achievements by medicine faculty, staff and trainees during the past year. In the COVID-19 era, we held our first virtual awards ceremony on June 4, 2020.



Brad Keith, M.D., and Samuel Schumann, M.D.

2020 Department of Medicine Awards:

FELLOW AWARDS

Fellow of the Year:

George Carter, M.D.
Travis Ferguson, M.D.

DIVISION AWARDS

Division of the Year:

Division of Infectious Diseases

FACULTY AWARDS - CLINICAL CARE AND EDUCATION

Attending of the Year (Dr. Michael Assey Award):

Jennifer Bracey, M.D.

Ambulatory Teacher of the Year:

Brad Keith, M.D.

Consult Teacher of the Year:

Blaithin McMahon, MB BCh BAO, Ph.D.

Education Mentoring Award:

Val Fernandes, M.D.

Outstanding Junior Faculty Clinician Educator of the Year Award:

Samuel Schumann, M.D.

Outstanding Mid-Career Clinician Educator of the Year Award:

Ashley Duckett, M.D.

Outstanding Established Faculty Clinician Educator of the Year Award:

Cassandra Salgado, M.D., MS

Excellence in Medical Student Teaching:

Kathryn Anderson, M.D., *Winner*
Andrew Goodwin, M.D., *Winner*
William Shelley, M.D., *1st Runner Up*
Samuel Schumann, M.D., *1st Runner Up*
Roger Kyle, M.D., *2nd Runner Up*
Maggie Thomas, M.D., *2nd Runner Up*

Excellence in Patient Satisfaction:

Ellen Baldino, PA-C
Elisha Brownfield, M.D.
Amanda Friedlander Fowler, NP
Faye Hant, D.O.
Daniel Judge, M.D.
Chris Nielsen, M.D.
Lauren Pearce, FNP
Eric Powers, M.D.
Richard Rissmiller, M.D.
Andrew Schreiner, M.D.
Carol Sherman, M.D.

The Doctor's Doctor Award:

Ben Clyburn, M.D.

Professionalism Award:

Richard Silver, M.D.

Hidden Gem Award:

Aundrea Loftley, M.D.

DOM Lifetime Clinician Educator Achievement Award:

Patrick Flume, M.D.

FACULTY AWARDS - RESEARCH

Research Faculty Mentoring Award:

Gerard Silvestri, M.D.

2020 Department of Medicine Awards:

Active K Awards:

Bryan Garcia, M.D.

Elizabeth Kirkland, M.D.

Outstanding Scientific Publication Award:

Daniel Judge, M.D.

Outstanding Research Program:

Pulmonary Clinical Trials Program

Best Mentored Paper Award:

Carol Feghali-Bostwick, Ph.D. (mentor)

Paula Ramos, Ph.D. (mentee)

MilliPub Club Award:

Diane Kamen, M.D.

Xian-Kui Zhang, Ph.D.

John Gnann, M.D.

Michael Gold, M.D., Ph.D.

Michael Zile, M.D.

Catalin Baicu, Ph.D.

Top Ten Publishers Club Award (CY19):

Michael Zile, M.D.

Diane Kamen, M.D.

Carol Feghali-Bostwick, Ph.D.

Don Rockey, M.D.

Charlie Strange, M.D.

Michael Gold, M.D., Ph.D.

Gregory Cote, M.D.

Sheldon Litwin, M.D.

Joseph Elmunzer, M.D.

J. Terrill Huggins, M.D.

Outstanding Achievement in Early Career

Research Award:

John Wrangle, M.D.

RESEARCH STAFF AWARDS

Outstanding Research Staff Member Award:

Kate Taylor

Ashley Warden

RESIDENT AWARDS

General Internal Medicine Ambulatory

Resident of the Year:

Ricky Lueking, M.D.



Awards Day virtual celebration.

General Internal Medicine Ambulatory Intern of the Year:

Meg Scott, M.D.

General Internal Medicine Hospitalist Resident of the Year:

Nishant Trivedi, M.D.

General Internal Medicine Hospitalist Intern of the Year:

Dena Blanding, M.D.

Resident Research Award:

Brett Tomashitis, M.D.

Teaching and Education Award:

Isaac Jaben, M.D.

Leadership Award:

Jessica English, M.D.

Triple Threat Award:

Milad El Hajj, M.D.

Doctor's Doctor Award:

Ricky Lueking, M.D.

Professionalism Award:

William Harvey, M.D.

Intern of the Year:

Meg Scott, M.D.

Resident of the Year:

Megan Veglia, M.D.

FACULTY AND TRAINEE AWARDS

Community Service Award:

Ashley Waring, M.D.

Todd Gandy, M.D.

AWARDS & DISTINCTIONS

MUSC 2020 Annual Faculty Awards



D. Ford



B. Houston

Dee Ford, M.D., MSCR, received the Population Health Award for her outstanding contributions that impact the health of the population by means other than direct patient care.

Brian Houston, M.D., received the Developing Teacher Award in the Teaching Excellence category for his outstanding contributions to the university's teaching mission.



E. Meissner



C. Salgado

Eric Meissner, M.D., Ph.D., received the Developing Scholar Award for his outstanding contributions to the university's research mission and capacity to compete for extramural funding.

Cassandra Salgado, M.D., MS, received the Distinguished Faculty Service Award for her exceptional and sustained service and contributions to the teaching, patient care, and research missions of the university.

2020 Golden Apple Excellence in Teaching Awards

Congratulations to the following Golden Apple Award winners from the Department of Medicine who were honored for their outstanding teaching, mentorship, and contributions to medical student education:

Pre-Clerkship Teaching Excellence Award:

Paul McDermott, Ph.D.

Clinical Preceptor Excellence in Teaching Award (Faculty):

Marc Heincelman, M.D., MPH
Benjamin Kalivas, M.D.

Clinical Preceptor Excellence in Teaching Award (Resident):

Isaac Jaben, M.D.
Mason Walgrave, M.D.

Medical Student Advisor Award Winner:

Ashley Duckett, M.D.



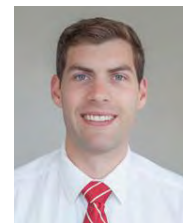
P. McDermott



M. Heincelman



B. Kalivas



I. Jaben



M. Walgrave



A. Duckett

EMPLOYEE RECOGNITION

The Department of Medicine Employee of the Quarter program was established to showcase employees who have shown exemplary strides in contributing to the Department of Medicine and to the MUSC community.



Nominees consistently demonstrate exceptional service, commitment to job excellence, innovation and initiative, and go above and beyond the call of duty. At the end of the year, an Employee of the Year winner and a Medicine Excellence Winner (runner-up) are selected from the pool of quarterly winners. The department would like to recognize all of our Employee of the Quarter winners from FY2020.

Employee of the Year:

Valerie Assey, RN, MSN

Nurse Administrator, Infectious Diseases

Medicine Excellence Winner:

Michelle Kubat

Social Worker, Infectious Diseases

FY20 EMPLOYEE OF THE QUARTER WINNERS

Anna Adams, MBA
Cardiology

Austin Ambrose, MHA
Medicine Administration

Valerie Assey, RN, MSN
Infectious Diseases

Traeannah Brown
Rheumatology & Immunology

Renee Dunn
Endocrinology

Michelle Kubat
Infectious Diseases

Seniorita Lucas
Pulmonary and Critical Care

Wendy Nixon
Endocrinology

Hannah Pate, PA-C
Hematology/Oncology

Kristine Ritenour, BSN, RN, CNRN
Pulmonary and Critical Care

Kathy Saunier
Gastroenterology & Hepatology

Andrea Semler
Endocrinology

Rebecca Spitzer
Gastroenterology & Hepatology

Aisha Vanderhorst
Infectious Diseases

Linda Walker
Nephrology

Sophia Zimmermann
Pulmonary and Critical Care

NEW FACULTY



Praneeth Baratam, M.B.B.S.
Assistant Professor
Hematology/Oncology



Anup Bhushan, M.D.
Assistant Professor
General Internal Medicine



Gregory Compton, M.D.
Assistant Professor
General Internal Medicine



Natalie Freidin, M.D.
Assistant Professor
Nephrology



Michael Madaio, M.D.
Professor
Nephrology



Amanda Northup, M.D.
Assistant Professor
Cardiology



Caroline Osborne, M.D.
Assistant Professor
General Internal Medicine



Brad Petkovich, M.D.
Assistant Professor
Pulmonary & Critical Care



Katherine Rittner, M.D.
Assistant Professor
General Internal Medicine



Thomas Werth, M.D.
Associate Professor
Gastroenterology & Hepatology

NEW FACULTY RECRUITS

Hired in FY21



Ruth Adekunle, M.D.
Assistant Professor
Infectious Diseases



Rahoul Ahuja, M.D.
Assistant Professor
Hospital Medicine



Mariam Alexander, M.D., Ph.D.
Assistant Professor
Hematology/Oncology



Gilbert Bader, M.D.
Assistant Professor
Hematology/Oncology



Grace Berlin, D.O.
Assistant Professor
Rheumatology & Immunology



Toros Dincman, M.D., Ph.D.
Assistant Professor
Hematology/Oncology



Hamza Hashmi, M.D.
Assistant Professor
Hematology/Oncology



Chakradhari Inampudi, M.B.B.S.
Assistant Professor, Cardiology



Anne Kroman, D.O., Ph.D.
Assistant Professor
Cardiology



Krutika Kuppalli, M.D.
Assistant Professor
Infectious Diseases

NEW FACULTY RECRUITS

Hired in FY21



Oleksandra Lupak, M.D.
Assistant Professor
Hematology/Oncology



Nathalie Malcolm, M.D.
Instructor
General Internal Medicine



William McManigle, M.D.
Assistant Professor
Pulmonary & Critical Care



Andrew McNulty, M.D.
Assistant Professor
Hospital Medicine



Joshua Payne, M.D., MPH
Assistant Professor
Cardiology



Chelsey Petz, M.D., FACP
Assistant Professor
General Internal Medicine



Jeffrey Pu, M.D., Ph.D.
Associate Professor
Hematology/Oncology



Maggie Thomas, M.D.
Assistant Professor
General Internal Medicine



Willy Valencia-Rodrigo, M.D., MSc
Associate Professor
Endocrinology



Ashley Waring, M.D.
Assistant Professor
Cardiology



Rodney Williams, M.D.
Assistant Professor
Hematology/Oncology



Jeffrey Yourshaw, M.D.
Assistant Professor
Cardiology



Alexei Zhadkevich, M.D.
Assistant Professor
Hospital Medicine

PROMOTIONS

Promotions July 1, 2019:

Rahul Argula, M.B.B.S., MPH
Associate Professor, Pulmonary & Critical Care
Melissa Cunningham, M.D., Ph.D.
Associate Professor, Rheumatology & Immunology
Soon Ho Kwon, M.D.
Professor, Endocrinology
Anbukarasi Maran, M.B.B.S.
Associate Professor, Cardiology
Nicholas Pastis, M.D.
Professor, Pulmonary & Critical Care
Danielle Scheurer, M.D., MSCR
Professor, Hospital Medicine
Andrew Schreiner, M.D., MSCR
Associate Professor, Internal Medicine
Carol Sherman, M.D.
Professor, Hematology/Oncology

Promotions January 1, 2020:

Amit Agrawal, M.D.
Associate Professor, Gastroenterology & Hepatology
Richard Bayer, M.D.
Associate Professor, Cardiology
Amy Bradshaw, M.D.
Professor, Cardiology
Kimberly Davis, M.D.
Professor, General Internal Medicine
Federica del Monte, M.D., Ph.D.
Professor, Cardiology
Ashley Duckett, M.D.
Associate Professor, Hospital Medicine
Michael Field, M.D.
Professor, Cardiology
David Gregg, M.D.
Professor, Cardiology
Zipporah Krishnasami, M.D.
Professor, Nephrology
Heather Simpson, M.D.
Associate Professor, Gastroenterology & Hepatology
Wing-Kin Syn, M.D., Ph.D.
Professor, Gastroenterology & Hepatology

Promotions July 1, 2020:

Stacey Blecher, M.D.
Assistant Professor, Hospital Medicine
David Koch, M.D.
Professor, Gastroenterology & Hepatology
Mara Lennard Richard, Ph.D.
Assistant Professor, Rheumatology & Immunology
Ernest Murray, M.D.
Assistant Professor, Hospital Medicine
Cheryl Neal, M.D.
Assistant Professor, Hospital Medicine
Manasi Singh, M.D.
Assistant Professor, Hospital Medicine
Nicoleta Sora, M.D.
Associate Professor, Endocrinology
Ryan Tedford, M.D.
Professor, Cardiology
Leon Walthall, M.D.
Assistant Professor, Hospital Medicine
John Wrangle, M.D.
Associate Professor, Hematology/Oncology

RESPONSE TO COVID-19



Andrew Goodwin, M.D., pictured back row, third from left, and care team members in the COVID-19 ICU unit at MUSC.

LEADERSHIP:

Leadership was the key to the Department of Medicine's COVID-19 response. Conditions changed almost daily, three new ICUs and one new hospital medicine service were opened, residents and fellows were redeployed, and many of our clinical faculty members were recruited from our practices to serve as ward attendings. Their collective efforts were a model of selflessness, courage, and efficiency. So many dedicated individuals were involved that calling out a small number by necessity overlooks the contributions of others.

That said, we could not have worked through the COVID pandemic without the extraordinary leadership of **Cassandra D. Salgado, M.D., MS**, division director of Infectious Diseases, medical director of infection control, and MUSC hospital epidemiologist, and **Scott Curry, M.D.**, assistant professor and associate hospital epidemiologist—who were at the helm making daily decisions critical to the institution's response; as well as the collective efforts of the entire Infectious Diseases Division. The ICUs, in the eye of the storm, were led superbly by **Dee Ford, M.D.**, interim division director of Pulmonary and Critical Care, and **Andrew Goodwin, M.D.**, medical director of the MICU; and the **chief residents** worked assiduously to identify and redeploy both house staff and attendings as part of the COVID army.

Our team of hospitalists, led by Division of Hospital Medicine Interim Director **Marc Heincelman, M.D., MPH**, worked the frontlines at the height of the crisis,

admitting and caring for all patients that were COVID rule-outs or COVID-positive.

Each **division director** displayed extraordinary leadership overseeing their division's response to COVID-19 – working with faculty and staff to coordinate and implement innovative care models to safely maintain urgent clinical operations while transitioning to telehealth whenever possible. **Researchers** in the department have led efforts, including a variety of clinical trials, to identify effective therapeutics and vaccines to treat and mitigate COVID-19. And we should not forget the remarkable **APPs, nurses, and administrative leadership and staff** who worked tirelessly on the frontlines and behind-the-scenes to stop the spread of the virus and to minimize this pandemic's impact throughout our state.

The state of South Carolina confirmed its first COVID-19 case in March 2020. In the months that followed, the number of confirmed cases in the state soared to more than 143,000 (as of Sept. 2020). MUSC Health has been getting many direct and transferred patients since mid-March.

RAPID RESPONSE:

When the COVID-19 pandemic arrived in South Carolina in March, our faculty and staff quickly implemented new workflows and protocols so that we could safely maintain clinical operations for our patients, including easy-to-use virtual visits, strict and comprehensive safety measures, and drive-in labs for routine blood work and blood pressure checks. As part of these efforts, our team rapidly transitioned from in-clinic



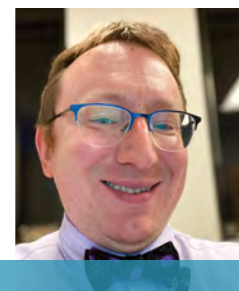
Deeksha Jandhyala, M.D., (second from left), with infectious diseases rounding team.



Cassandra Salgado, M.D., MS



Scott Curry, M.D.



visits to telehealth visits, with our providers seeing over 750 patients a day via virtual visits at the height of the pandemic (compared to almost no virtual visits pre-COVID-19). Additionally, our faculty were instrumental in helping MUSC to set in motion plans for the state's first drive-through specimen collection site for people suspected of being infected with the virus.

PROTOCOLS, PPE, AND INFECTIOUS DISEASE POLICIES:

Our infectious disease and critical care specialists worked around the clock to build and update guidelines for clinical decisions on diagnostic testing, personal protective equipment, and treatments for those critically ill with COVID-19. Our hospital medicine team designed systems to dramatically expand the number of inpatients for which we could provide care. Faculty members with extensive expertise in global health and epidemiology assisted leadership with disaster management, hospital preparedness, and infectious disease policies, procedures, and protocols to ensure the safety of patients and health care workers in the new COVID-19 world.

MUSC COVID-19 EPIDEMIOLOGY PROJECT:

In a transparent effort to keep the public informed, the hospital system created the MUSC COVID-19 Epidemiology Project to analyze the latest trends in the disease's spread and to understand the status of transmission. With this data, MUSC has been able to guide and support decision making by policymakers and community and business leaders as well as predict the critical needs of our hospitals and the people who need them.

VIRTUAL LEARNING IN THE COVID-19 ERA:

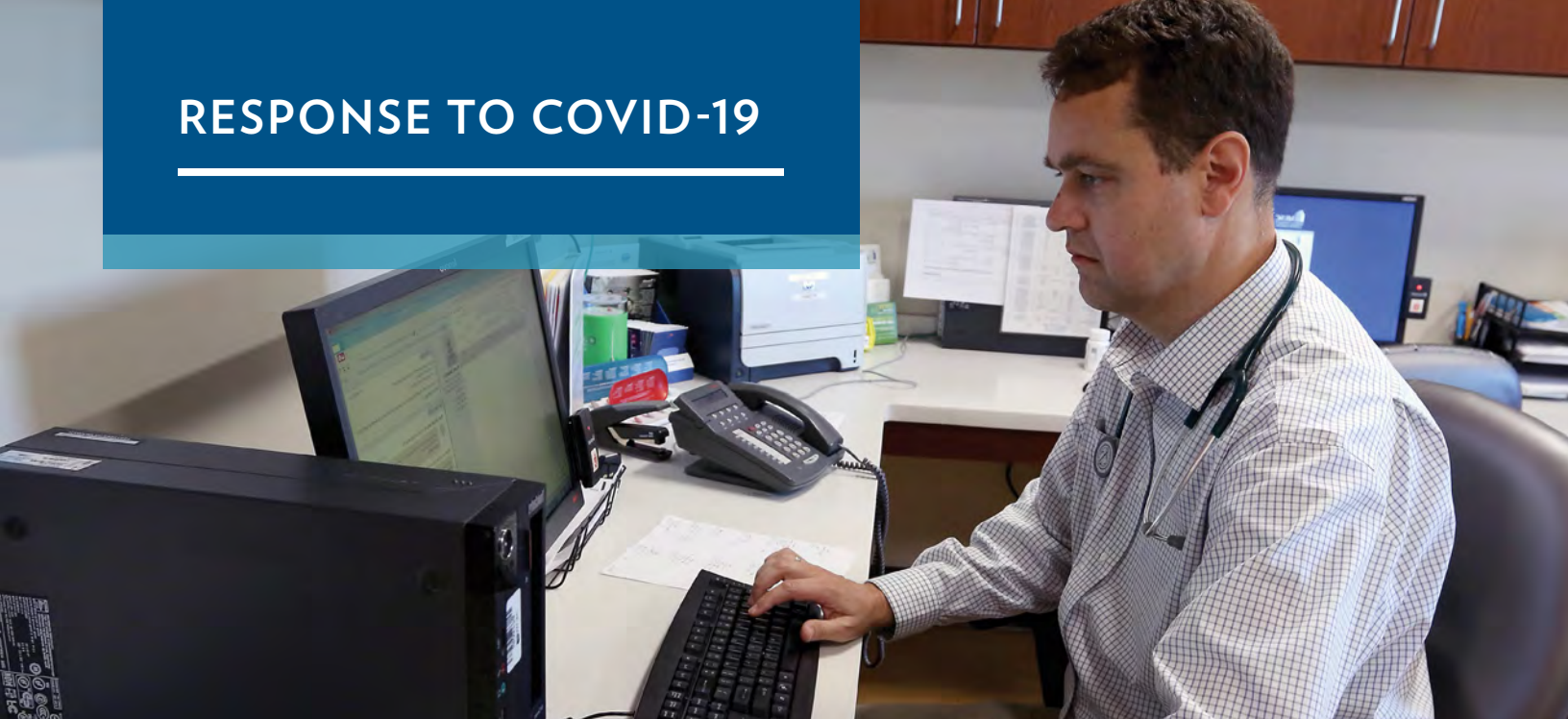
While our educational programs never stopped, new social distancing measures had our internal medicine residency team seeking creative online solutions to continue didactics and education for residents, medical students, and fellows. Beginning in mid-March, all in-person resident didactics were canceled. Creativity and resourcefulness at the hands of our team of residents, faculty, and staff ensured that residents continued their education despite these changes. Lessons learned during our time of social distancing have given the department new virtual tools and experiences to continue to improve learning opportunities in the future for residents and staff.

Clerkship Director **Marc Heincelman, M.D., MPH**, coordinated the transition of the internal medicine clerkship didactic sessions to virtual, conducting clinical reasoning and lectures for third-year medical students who were removed from the clinical environment to ensure they did not experience a gap in education.

Ashley Duckett, M.D., assumed the role of program director for the Internal Medicine Residency Program for the Department of Medicine's 106 residents at the onset of emergency operations on March 16, 2020. She subsequently helped organize and oversee the deployment of our residents to meet the challenges of caring for COVID patients while maintaining care for our other patients. She has also led the transition to virtual residency recruitment and interviews in the fall.

Fellowship directors across the department's subspecialties redesigned their entire fellowship educational curriculum to virtual platforms and led the transition to virtual interviews in the fall.

RESPONSE TO COVID-19



Eric Meissner, M.D., Ph.D., is the principal investigator on a research study centered on hundreds of MUSC's own health care workers. Photo by Sarah Pack

ON THE FOREFRONT OF DISCOVERY

Researchers in the Department of Medicine Launch Clinical Trials and Other Exploratory Research in COVID-19:

Clinical researchers, as well as patients, their families, and all Americans, are hoping for effective treatments and, ultimately, a vaccine for COVID-19. To that end, physicians and scientists in the Department of Medicine are forging much-needed clinical trials for the treatment and diagnosis of COVID-19. The department is happy to announce that several lines of research are underway at MUSC and in collaboration with partners across South Carolina.

Among other studies in the Department of Medicine, faculty in the Divisions of Infectious Diseases, Pulmonary and Critical Care, and Hematology/Oncology are carrying out novel research using Remdesivir and immunomodulators, in addition to a collection initiative for the use of convalescent plasma. These and other efforts are highlighted below.

COVID-19 Biorepository

Patrick Flume, M.D., pulmonologist and co-principal investigator of the South Carolina Clinical & Translational Research (SCTR) Institute, led a project to develop a biorepository of COVID-19 samples for

research. The biorepository, housed in the SCTR-funded Research Nexus laboratory, is a collection of patient blood and saliva samples that researchers across the state and nation can study to learn more about the virus once they have obtained the necessary approvals. Since it opened in April, the biorepository has enrolled 144 unique patients, collected 6,586 aliquoted – or portioned – samples and supported 12 investigator-led research projects, including two at Clemson.

Immunity Study

MUSC researchers hope to learn more about the COVID-19 pandemic from their colleagues on the frontlines. Principal investigator, **Eric Meissner, M.D., Ph.D.**, assistant professor in the Division of Infectious Diseases, is conducting a study that focuses on MUSC's frontline health care workers and their immune responses to potential virus exposure.

The study uses a point-of-care serologic test, a blood-based test that can be used to suggest whether people have been exposed to a particular pathogen by looking at their immune response. Enrollees are mailed a kit that allows them to prick their finger, draw blood and then mix it with a reagent and apply it to a test strip. They then use their cellphones to take pictures of their results and upload them to a secure site. Once every 30 days, for up to four months, the participants do this same type of finger prick. Researchers observe the data



Patients like Mount Pleasant's Rory Silverman have recovered from COVID-19 and met criteria to donate plasma at the Blood Connection in North Charleston. Photo by Sarah Pack

COVID-19 in people who don't have symptoms but who live with patients who have recently gotten sick from the virus.

Innovative Plasma Transfusion to Treat COVID-19

People who've recovered from COVID-19 have antibodies to the disease in their blood. Doctors call this convalescent plasma. A recovered COVID-19 patient's plasma can be transfused into a current COVID-19 patient, which might provide some relief for the patient during the course of the disease or reduce complications.

in real-time to see how numbers change over time. The team hopes its findings will help to identify changes in antibodies over time in this group, which will help to contribute to a greater understanding of the virus and how we can better combat it.

MUSC Tests Possible COVID-19 Antibody Treatment in Outpatient Clinical Trial

A national clinical trial led by **Eric Meissner, M.D., Ph.D.**, is testing a possible antibody treatment for COVID-19 in people who have been infected with the coronavirus but aren't sick enough to be in the hospital. MUSC, which won the chance to be part of the study through a competitive process, is the only participating site in South Carolina. The study tests a cocktail of two antibodies, REGN10933 and REGN10987, created by Regeneron Pharmaceuticals.

According to Meissner, sending in two antibodies is a tactical move. "All viruses have the ability to mutate or to escape antibody pressure. Hitting the virus in two different places with two different antibodies could make it less likely the virus could get around both of them."

The trial, "Safety, Tolerability and Efficacy of Anti-Spike (S) SARS-CoV-2 Monoclonal Antibodies for the Treatment of Ambulatory Adult Patients With COVID-19," is one of several studies sponsored by Regeneron testing the antibody cocktail in the fight against COVID-19. MUSC is participating in another one looking at whether the antibodies can prevent or treat

MUSC Health doctors successfully infused their first COVID-19 patient with convalescent plasma on April 18. MUSC's involvement is part of a multidisciplinary effort led by **John Wrangle, M.D.**, associate professor in the Department of Medicine's Division of Hematology and Oncology. Wrangle worked closely with pulmonologists and other physicians on the frontline of care, researchers and regulatory experts, telemedicine staff and other specialists to establish this program quickly. MUSC is partnering with the American Red Cross and the Blood Connection, a statewide blood bank, to collect and process plasma from approved COVID-19-recovered patients for this FDA-authorized treatment.

Clinical Research in the Time of the COVID-19 Pandemic

Testing potential new tests and therapies for COVID-19 in clinical trials ensures that only those that are effective and safe make it to the clinic. The South Carolina Clinical & Translational Research (SCTR) Institute is playing a central role in fast-tracking clinical trials at MUSC. As one of more than 60 Clinical and Translational Research Award (CTSA) hubs nationwide, SCTR has been working for over a decade to streamline clinical trials so that patients can benefit sooner from research breakthroughs.

Although it can typically take months to get a trial up and running, SCTR managed to activate a trial of an at-home COVID-19 antibody test for health

RESPONSE TO COVID-19



Pulmonary and Critical Care Clinical Research Team

care workers in just 14 days working with researchers in the Division of Infectious Diseases.

In June, with the support of SCTR's Research Nexus Laboratory, MUSC Health expanded its COVID-19 clinical trials to its regional hospitals, some of which were among the hardest hit by this pandemic. The Pulmonary and Critical Care Clinical Research program, led by SCTR co-principal investigator **Patrick Flume, M.D.**, has been charged with running many of these clinical trials.

"Our team is staffing these trials seven days a week to make this happen," said Ashley Warden, clinical research manager for the MUSC Pulmonary and Critical Care Clinical Research program. "We are helping regional sites to enroll patients into the trials while also providing support to the physicians in Charleston, both pulmonologists and specialists in other fields, who are running the trials here."

Currently, three COVID-19 trials are open at MUSC Health Florence and another is close to opening. In addition to the convalescent plasma study, the open studies include the ORCHID trial that is looking at COVID-19 outcomes for inpatients with symptomatic disease who are taking hydroxychloroquine and the SCTR COVID-19 biorepository, which is collecting specimens from patients tested for COVID-19 in Florence and Charleston. Efforts are underway to bring additional trials to Marion and Lancaster as well. A website has been created to provide information on all active COVID-19 trials.



Patrick Flume, M.D.

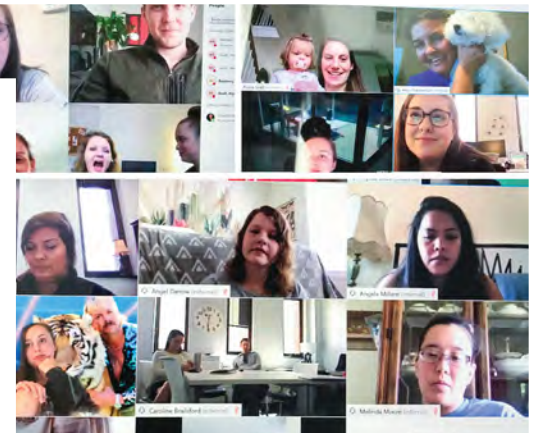
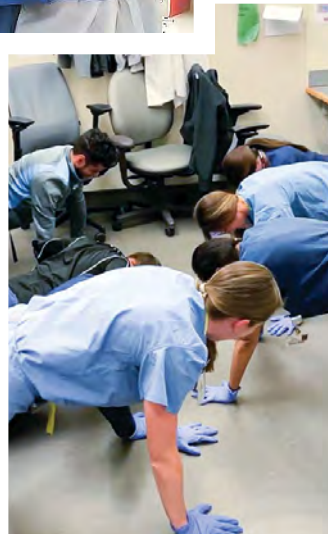
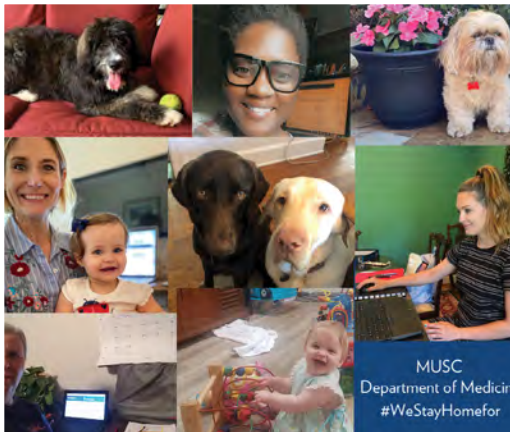
COVID Vaccine Trial

In August, MUSC joined in the race to find a COVID-19 vaccine. Along with AstraZeneca and IQVIA, MUSC was selected to be part of a Phase III trial of a vaccine that has shown promise in battling COVID-19.

MUSC and Charleston were part of the first wave of locations across the United States to test the vaccine. In total, manufacturers and researchers hope to enroll and collect data on 30,000 people across 20 cities in the U.S., with as many as 1,500 of those being from right here in Charleston. The study being conducted by **Patrick Flume, M.D., and the Pulmonary and Critical Care Clinical Research team**, is designed to last for two years. Flume said they had more than 3,000 people sign up to participate in the trial, which got underway in September. MUSC was able to enroll 126 people during the first week, but then there was a bump in the road. After a brief pause in enrollment, the U.S. Food and Drug Administration gave AstraZeneca the green light to resume testing of the vaccine at sites around the U.S., including MUSC, in October.

RESPONSE TO COVID-19

DOM Faculty, trainees, and staff on the front lines and behind-the-scenes during COVID.



GLOBAL HEALTH

The most pressing health challenges and emerging diseases know no boundaries. In an interconnected world, the health problems affecting populations around the globe also affect us here at home. Featured below are some of the current global health initiatives that DOM faculty are leading.

CARDIOLOGY

Federica del Monte, M.D., Ph.D.

London, UK and Trieste and Florence, Italy: Dr. del Monte is conducting a clinical trial to enroll patients with heart failure and patients with Alzheimer's to define the prevalence of the combination of the two diseases. Her team's research has shown that these two conditions, which affect millions of people, share in some cases the same cause. Through this study, del Monte and her team are trying to determine how many people belong to this subgroup and once identified, learn more of the mechanisms. They need to enroll a large number of patients from across the world, and have agreements with several universities in Italy and the United Kingdom to participate in the study.

Thomas G. Di Salvo, M.D., MPH, MBA

Germany: Siemens Healthineers MUSC partnership

Michael R. Gold, M.D., Ph.D.

China: Dr. Gold is a visiting professor representing the Heart Rhythm Society (HRS). An international nonprofit organization, the HRS is a leading resource on cardiac pacing and electrophysiology. This specialty organization represents medical, allied health, and science professionals from more than 70 countries who specialize in cardiac rhythm disorders.

Aomori, Japan: Dr. Gold has been collaborating with Yuji Ishida, Ph.D., a cardiac electrophysiology research fellow from Hirosaki University in Japan, who came to train at MUSC through a partnership with the university.

Eric R. Powers, M.D., Peter L. Zwerner, M.D., Adrian Van Bakel, M.D., Rich Bayer, M.D.

Dar es Salaam, Tanzania: MUSC cardiologists Drs. Zwerner, Powers, Van Bakel and Bayer are part of a team of U.S. cardiologists who have traveled to Tanzania



Physicians in the cardiac catheterization lab at the Jakaya Kikwete Cardiac Institute, Dar es Salaam, Tanzania

for many years as part of an ongoing program to train local physicians to build capacity in caring for patients with cardiovascular disease. The team assisted in the establishment of an advanced training program and clinical services in cardiovascular disease at Muhimbili National Hospital—the first advanced cardiac and catheterization center in the country.

Daniel P. Judge, M.D.

Dar es Salaam, Tanzania: The cardiology fellowship program directed by Dr. Judge offers a global health elective rotation. Last year, the program accepted one fellow, **Ishan Shah, M.D.**, now one of MUSC's chief cardiology fellows. Dr. Shah completed a four-week rotation at the advanced cardiac care center in Tanzania focusing on cardiovascular care and teaching, working closely with local health officers and MUSC faculty.

Now more than ever, students pursuing a career in health care are looking for rotations or experiences in developing countries that allow them to interact with other health systems.

"In addition to enhancing clinical and scholarly work, surveys have shown that many resident and fellow physicians select their training program at least partly based on availability of global health training opportunities," says Judge. "And trainees who participate in international clinical rotations are more likely to later practice medicine among underserved and multicultural populations in the United States."

Jeffrey Winterfield, M.D.

Bordeaux, France: Imaging

Tel Aviv, Israel: Biosense Webster, 3D heart mapping/imaging

GENERAL INTERNAL MEDICINE

Patrick J. Coyne, MSN

India: Implementation of home-based palliative care for cancer patients.

INFECTIOUS DISEASES

Susan Dorman, M.D.

MUSC Center for Global Health (CGH): Dr. Dorman has been working to expand the infectious diseases research portfolio related to global health, with initial emphasis on tuberculosis as well as divisional strengths of HIV, infection control, and antimicrobial resistance. Another focus of the division's collaborative effort with the CGH is the expansion of international research and clinical opportunities for MUSC trainees.

NEPHROLOGY

David Ploth, M.D. and Zipporah Krishnasami, M.D.

Kisarawe District, Tanzania: Drs. Ploth and Krishnasami are working on a study assessing the prevalence and uptake of referrals for chronic kidney disease (CKD), diabetes, hypertension, and HIV/AIDS infection to be able to inform government health centers on the demand for care of HIV/AIDS, diabetes, hypertension and CKD.

RHEUMATOLOGY & IMMUNOLOGY

Gary Gilkeson M.D.

Nanjing, China: Dr. Gilkeson assessed the efficacy of mesenchymal stem cell transplantation as a treatment for lupus.

Bo, Sierra Leone: Dr. Gilkeson and his team are currently studying lupus in African Americans from the Sea Island communities of South Carolina and Georgia. The main purpose of the study is to identify and characterize genes as well as factors from the environment that result in the development of systemic lupus erythematosus. The people of Sierra Leone look to the Gullah of South Carolina and Georgia as a kindred people sharing many common elements of speech, custom, culture, and cuisine.

Haiti: MUSC Service Learners International (SLI) is a student-led organization focused on delivering health care to the Central Plateau region of Haiti. As part of this initiative, Dr. Gilkeson accessed the health needs of the patient population, trained and collaborated with local health care workers, assisted in the improvement of local health care infrastructure, and promoted awareness of health care.



Where you may find us...

Bo, Sierra Leone
Bordeaux, France
Florence, Italy
Haiti

India
Japan
London, UK
Munich, Germany

Nanjing, China
Naples, Italy
Tanzania
Tel Aviv, Israel

CLINICAL HIGHLIGHTS

The Department of Medicine's clinical programs are recognized for excellence across a broad spectrum of subspecialty patient care services for the treatment of highly complex diseases and are comprised of dedicated clinical innovators who are committed to advancing discoveries that transform patient care and health outcomes.



Ennis James, M.D., conducting telehealth visit with patient.

Dramatic Expansion of Telehealth Activities:

In response to the challenges of COVID-19, our faculty and staff across all 10 subspecialties rapidly transitioned from in-person outpatient visits to telehealth visits, with our providers seeing over 750 patients a day via virtual visits at the height of the pandemic (compared to almost no virtual visits pre-COVID-19).

Expansion of Clinical Services:

The department is committed to working with our community partners to provide access to high-quality clinical services, develop innovative care models, and improve the quality and value of the care to support the health ecosystem.

Over the past year, the department has focused on partnering to strategically recruit in clinical specialties of high need to serve the community and build our growing clinical practice within the department.

Despite the hurdles posed by COVID-19, MUSC Health and the Department of Medicine have continued to expand access to high-quality clinical services across South Carolina, including the following:

- MUSC Health Florence Medical Center opened in 2020

- MUSC Health West Ashley Medical Pavilion and MUSC Dantzler opened in 2019 offering the following services: cardiology, endocrinology, gastroenterology, nephrology, primary care, and rheumatology
- MUSC Health Grove Road (Greenville) opened in May 2020
- MUSC Nexton opened in September 2020, offering cardiology, nephrology, infectious diseases, and rheumatology services
- The MUSC Shawn Jenkins Children's Hospital and Pearl Tourville Women's Pavilion opened in February 2020

MUSC Ranked No. 1 Hospital in South Carolina by U.S. News and World Report:

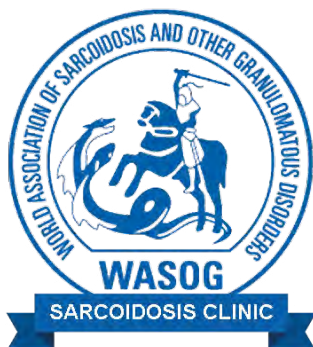
MUSC was named for the sixth year in a row as the No. 1 hospital in South Carolina by U.S. News and World Report. In addition, three Department of Medicine programs ranked among the top 10% in the country: nephrology, rheumatology, and gastroenterology.

MUSC Receives Pulmonary Hypertension Care Center (PHCC) Accreditation

The MUSC Pulmonary Hypertension (PH) program directed by **Rahul Argula, M.D.**, received Pulmonary Hypertension Care Center (PHCC) accreditation from the Pulmonary Hypertension Association. This designation recognizes the ability to deliver the highest level of inpatient and outpatient care in a multidisciplinary fashion, as well as participating in cutting edge clinical and translational research in the field.



MUSC's Sarcoidosis Program Receives International Recognition



The MUSC Susan Pearlstine Sarcoidosis Center of Excellence, directed by **Ennis James, M.D.**, was internationally certified by the World Association for Sarcoidosis and Other Granulomatous Diseases (WASOG) and recognized by the

Foundation for Sarcoidosis Research (FSR) as a Sarcoidosis Clinic and Center of Excellence. Both designations provide a formal recognition of our team's commitment to striving for positive outcomes by meeting the needs of sarcoidosis patients through compassionate, quality and informative care.

NEW HOSPITAL MEDICINE DIVISION REFLECTS EXPERTISE



The Department of Medicine established a new Division of Hospital Medicine to reflect its expert capacity to provide comprehensive 24/7 care for acutely ill hospitalized patients from admission through discharge. This represents an

important event in the evolution of the MUSC Hospital Medicine program that previously found a home in the Division of General Internal Medicine. With the growing footprint of hospitalists at MUSC and expanding roles of faculty, department leaders saw a need for an additional academic structure responsible for faculty development and administration in hospital medicine. **Marc Heincelman, M.D., MPH**, who joined the department in 2014, was appointed the interim division director by Interim Chair Ben Clyburn, M.D.

The division's interdisciplinary team of 40 physicians and advanced practice providers care for hospitalized patients on five teaching and six non-teaching inpatient services at University Hospital and Ashley River Tower. Additionally, the division provides coverage for services including orthopedic co-management, hospital medicine inpatient consultation, and preoperative clinic with plans to open two observation units by January 2021.

Hospital medicine faculty serve important leadership roles within the College of Medicine and are actively involved in the education of medical students and residents at MUSC. In addition, division faculty lead quality improvement efforts throughout the hospital system to improve the value of care and patient experience at MUSC.

Now separate, the Divisions of Hospital Medicine and General Internal Medicine will have the academic resources necessary to prosper, while continuing scientific collaborations that have already proven successful.

RESEARCH HIGHLIGHTS

Fostering Innovation

The Department of Medicine has a long tradition of conducting original and rigorous biomedical and clinical research of fundamental significance. Over the past year, medicine investigators continued to connect bench research to clinical practice with many seminal discoveries.



Mark Domondon and Ryan Schibalski, research technicians in the Ilatovskaya lab, performing spectrofluorimetry of mitochondria isolated from the kidneys of rats with high blood pressure.

RESEARCH IN THE COVID-19 ERA

The coronavirus pandemic posed significant challenges for research progress this past year. Many clinical trials were temporarily halted as well as some animal studies. In order to safely reopen, our laboratories had to significantly change their workflows and researchers had to stagger work hours to maintain social distancing.

Despite these challenges, the investigators and staff members in the Department of Medicine did an incredible job of adapting and finding innovative solutions to conduct research during this crisis. By August, many of our clinical trials reopened with patients once again being allowed access to the most innovative research trials across all disciplines.

We did not build our robust research infrastructure in anticipation of fighting a pandemic; but our long commitment to fostering research, and to developing clinician-scientists, combined with new tools and connectivity platforms, enabled our researchers to quickly pivot to the “new normal” and tackle COVID-19 research head-on.

-Jim Oates, M.D., Vice Chair for Research, DOM

RESEARCH FUNDING

FY20 was an outstanding year due to the success of the faculty who competed for \$43M in external research funding and published over 260 articles to further advance that goal.

During the past academic year, the Department of Medicine’s research portfolio totaled nearly \$21.6 million in federal awards, \$57.9 million in industry funded grants/clinical trial earnings, and over \$7.3 million in non-federal awards. In FY20, research expenses reached over \$47 million, a 55% increase compared to the previous year.

RESEARCH MENTOR DATABASE

The Department of Medicine has a strong commitment to and culture of mentoring. One of our core values is to provide opportunities for all MUSC trainees (students, residents, fellows, and others) to work with outstanding researchers to receive guidance and mentorship during their training. As part of this commitment, the Department of Medicine created a new Research Mentor website. This DOM database currently lists 47 mentors who have a demonstrated track record of successful mentoring. It includes faculty members who do clinical, translational, and/or basic research – by subspecialty. The goal is to increase engagement in research and mentorship by providing students, residents, and trainees a way to easily identify potential faculty members for research projects, presentations, and innovations.

RESEARCH MILESTONE

MUSC emerges as a national leader in digestive and liver disease research

This spring marked a seismic shift for digestive and liver disease research at MUSC with the award of more than \$16.5 million in National Institutes of Health funding to open two new tightly integrated centers.

MUSC became the only institution in the country to house both a Digestive Disease Research Core Center (DDRCC), which supports the research of established scholars, and a Center for Biomedical Research Excellence in Digestive and Liver Disease (CDLD), which mentors early-career investigators to become independent scholars.

MUSC is now one of only 17 DDRCCs in the nation. Department of Medicine investigator **Don C. Rockey, M.D.**, a gastroenterologist, serves as the MUSC DDRCC's director. Department of Regenerative Medicine and Cell Biology chair **Stephen A. Duncan, D.Phil.**, a basic scientist specializing in liver disease research, serves as associate director.

To be chosen as a DDRCC by the National Institute of Diabetes and Digestive and Kidney Diseases, an institution must have a strong core of investigators who are recognized as leaders in an area of digestive disease research. DDRCCs are also led by nationally and internationally prominent investigators. The funds from the NIDDK help to support efforts to build the center into a national resource on the topic.

The MUSC DDRCC will provide stable funding to support some 30 basic science and clinician-scientist investigators working in the field of digestive and liver disease. They all work in areas related to the theme of the DDRCC, which covers the area of inflammation, fibrosis and organ dysfunction throughout the gastrointestinal tract. The center will also help to attract



Don Rockey, M.D.



Stephen Duncan, D.Phil.

luminaries and promising mid-career investigators in gastrointestinal disease to MUSC.

"We're excited to be able to recruit people right now who would never consider us without these kinds of resources," said Rockey.

But, according to Rockey, great programs not only recruit successful researchers, they help create them. Only by developing a pipeline to produce the next generation of researchers can a program achieve sustained excellence.

And it is the goal of the CDLD to create such a pipeline.

"The CDLD really aims to take very new, inexperienced investigators and give them the tools, the research resources, as well as the environment that will allow them to transition to be superstar independent researchers who focus on digestive disease," said Duncan, who in addition to his role with the DDRCC also serves as director of the CDLD. Rockey serves as associate director.

Made possible by a grant from the National Institute of General Medical Sciences, the CDLD provides junior investigators with a robust grant and offers them the mentorship and other resources they need to obtain independent grant funding. Once they do, they will transition to the DDRCC, opening a slot for another junior investigator.

Adapted from original article by Kimberly McGhee.

FY20 EXTRAMURAL RESEARCH FUNDING HIGHLIGHTS

RESEARCH GRANT TITLE	PRINCIPAL INVESTIGATORS	EXTRAMURAL SPONSORS
Cardiology		
Targeting the Misshapen Pathogenic Tau Protein in Tauopathies	Onder Albayram, Ph.D.	Alzheimers Association
Open-Label Exploratory Study of MYK-491 in Stable Ambulatory Patients with Primary Dilated Cardiomyopathy Due to MYH7 Mutation	Daniel Judge, M.D.	MyoKardia, Inc.
RELIEVE-HF TRIAL: Reducing Lung Congestion Symptoms using the V-Wave Shunt in Advanced Heart Failure	Sheldon Litwin, M.D.	V-Wave Ltd.
Superior Vena Caval Occlusion in Subjects with Acute Decompensated Heart Failure - An Early Feasibility Study	Ryan Tedford, M.D.	preCARDIA, Inc.
Building a Repository of Cardiac Phase Signals for Algorithm Development Recruiting Mostly Female Subjects	Thomas Todoran, M.D.	A4L US, Inc.
Repository of Phase Signals for Pulmonary Hypertension Algorithm Development	Thomas Todoran, M.D.	A4L US, Inc.
A Pivotal, Multi-Center, Blinded, Sham Procedure-Controlled Trial of Renal Denervation by the Peregrine System Kit in Subjects with Hypertension	Thomas Todoran, M.D.	Ablative Solutions Inc.
Endocrinology		
Translational Research in Pediatric and Obstetric Pharmacology and Therapeutics	Jeremy Yu, M.D., Ph.D.	NIH/NICH
Telemedicine to Provide Joint Obstetric-Diabetes/Endocrinology-Nutrition Care to Women in Underserved Areas of South Carolina	Timothy Lyons, M.D.	Duke Endowment
Gastroenterology & Hepatology		
Pancreatic Endotherapy for Refractory Chronic Pancreatitis	Gregory Cote, M.D.	DOD
A Phase 2 Randomized, Double-Blind, Placebo-Controlled Study of the Safety and Efficacy of BMS-986165 in Subjects with Moderate to Severe Ulcerative Colitis	Erin Forster, M.D.	Pharmaceutical Research Associates
A Multicenter, Randomized, Double-Blind, Placebo-Controlled Induction Study to Assess the Efficacy and Safety of Risankizumab in Subjects with Moderately to Severely Active Crohn's Disease Who Failed Prior Biologic Treatment M15-991	Brenda Hoffman, M.D.	AbbVie, Inc
A Multicenter, Randomized, Double-Blind, Placebo-Controlled Induction Study of the Efficacy and Safety of Risankizumab in Subjects with Moderately to Severely Active Crohn's Disease Clinical Study Protocol M16-006	Brenda Hoffman, M.D.	AbbVie, Inc
A Multicenter, Randomized, Double-Blind, Placebo-Controlled 52-Week Maintenance and an Open-Label Extension Study of the Efficacy and Safety of Risankizumab in Subjects with Crohn's Disease Who Responded to Induction Treatment in M16-006 or M15-991	Brenda Hoffman, M.D.	AbbVie, Inc
Alfapump System in the Treatment of Refractory or Recurrent Ascites: A Multi-Center Single Arm Within Subject Crossover Design Pivotal Study (The Poseidon Study)	Don Rockey, M.D.	Sequana Medical NV
MUSC Digestive Disease Research Core Center	Don Rockey, M.D.	NIH/NIDDK

FY20 EXTRAMURAL RESEARCH FUNDING HIGHLIGHTS

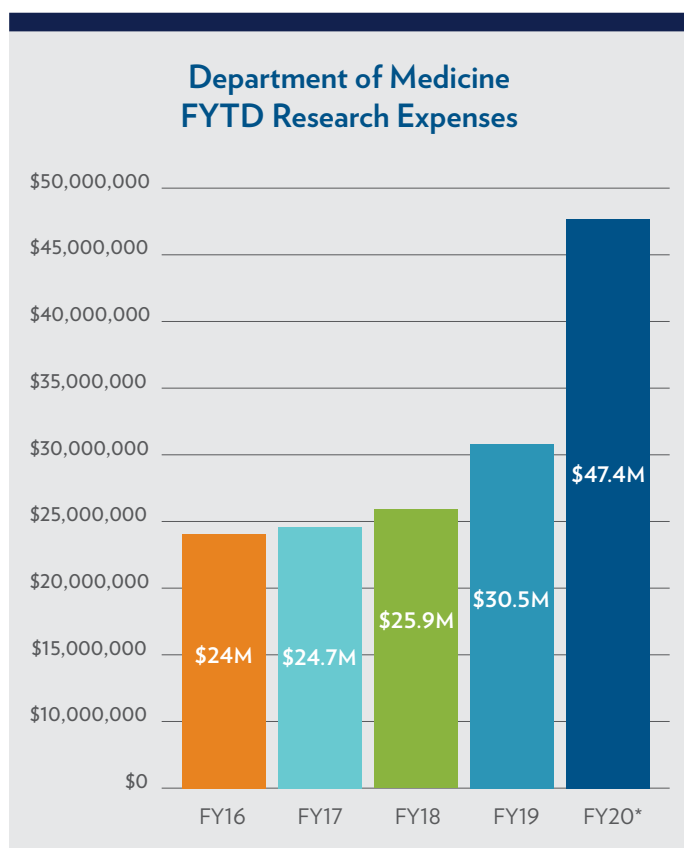
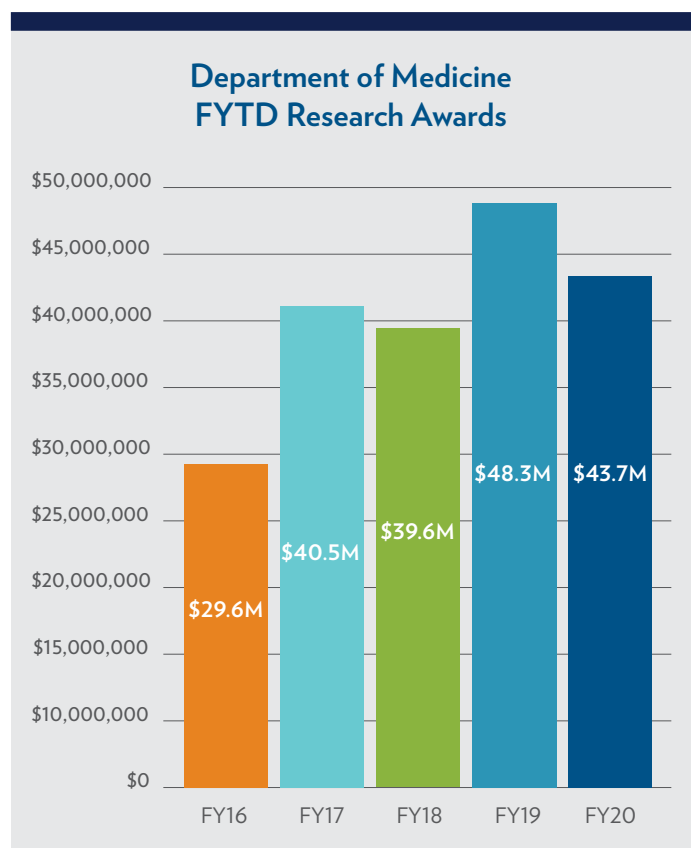
RESEARCH GRANT TITLE	PRINCIPAL INVESTIGATORS	EXTRAMURAL SPONSORS
Gastroenterology & Hepatology		
Understanding the Mechanisms of Tissue Fibrosis	Wing-Kyn Syn, M.D., Ph.D.	Charleston Research Institute - CRI
Hematology & Oncology		
A Phase 3, Multi-Center, Randomized, Double-Blind, Placebo-Controlled, Study of Fostamatinib Disodium in the Treatment of Warm Antibody Autoimmune Hemolytic Anemia	Charles Greenberg, M.D.	Rigel Pharmaceuticals, Inc.
A Phase 3 Open Label Extension Study of Fostamatinib Disodium in the Treatment of Warm Antibody Autoimmune Hemolytic Anemia	Charles Greenberg, M.D.	Rigel Pharmaceuticals, Inc.
An Open-Label, Randomized, Active-Controlled, Multi-Center Phase 3 Study to Evaluate the Safety and Efficacy of Danaparoid vs. Argatroban in Treatment of Subjects with Acute HIT	Charles Greenberg, M.D.	Ergomed Clinical Research Inc.
Carcinoma-Associated Fibroblasts From African-American Prostate Cancer Promote Aggressive Tumors: Implications for Developing Novel Therapy	Michael Lilly, M.D.	University of California, Irvine - UC Irvine
Infectious Diseases		
Natural History of C. Difficile Colonization and Infection	Scott Curry, M.D.	Louis Stokes Cleveland Veterans Hospital
A Phase 3 Open-Label Clinical Study to Evaluate the Safety and Tolerability of Rebiotix RBX2660 (Microbiota Suspension) in Subjects with Recurrent Clostridium Difficile Infection	Scott Curry, M.D.	Rebiotix Inc.
FEND for TB	Susan Dorman, M.D.	Rutgers University
Nephrology		
Treatment of Drug-Resistant Adult and Pediatric Primary Focal Segmental Glomerulosclerosis Using the LIPOSORBER® LA-15 System	Milos Budisavljevic, M.D.	Kaneka Americas Holding Inc.
Regulation of Sodium Transport in Hypertension	Daria Ilatovskaya, Ph.D.	Dialysis Clinics, Inc. - DCI
The Exocyst in Ciliogenesis and Acute Kidney Injury	Josh Lipschutz, M.D.	VAMC
Pulmonary, Critical Care, Allergy, & Sleep Medicine		
An Open-Label Extension Study of Inhaled Treprostinil in Patients with Pulmonary Hypertension due to Chronic Obstructive Pulmonary Disease (PH-COPD)	Rahul Argula, M.D.	United Therapeutics
A Multi-Center, Randomized, Double-Blind, Chronic-Dosing, Parallel-Group, Placebo-Controlled Phase 3 Study to Evaluate the Efficacy and Safety of Benralizumab in Patients with Moderate to Very Severe Chronic Obstructive Pulmonary Disease (COPD)...	Tatsiana Beiko, M.D.	Astrazeneca
An Open-Label, Multi-Center Study to Evaluate the Long-Term Safety of Weekly Intravenous Alpha1-Proteinase Inhibitor (Human), Modified Process 60 mg/kg in Subjects With Pulmonary Emphysema Due to Alpha1-Antitrypsin Deficiency	Tatsiana Beiko, M.D.	Grifols Therapeutics, Inc.
Pulmonary-Focused Foundations in Innovation and Scholarship (PuFFInS)	Carol Feghali-Bostwick, Ph.D.	NIH/NHLBI

FY20 EXTRAMURAL RESEARCH FUNDING HIGHLIGHTS

RESEARCH GRANT TITLE	PRINCIPAL INVESTIGATORS	EXTRAMURAL SPONSORS
Pulmonary, Critical Care, Allergy, & Sleep Medicine		
A Phase 2 Study of ABBV-3067 Alone and in Combination with ABBV-2222 in Cystic Fibrosis Subjects Who are Homozygous for the F508del Mutation	Patrick Flume, M.D.	AbbVie, Inc
A Randomised, Double-Blind, Placebo-Controlled and Parallel Group Trial to Evaluate Efficacy and Safety of Twice-Daily Inhaled Doses of BI 1265162 Delivered by Respimat Inhaler as Add-On Therapy to Standard of Care over 4 Weeks in Patients with Cystic...	Patrick Flume, M.D.	Boehringer Ingelheim Pharmaceuticals
Prospective Phase 0 Study to Investigate Pseudomonas Aeruginosa and Staphylococcus Aureus Bacterial Load, Patient Characteristics, and Exploratory Biomarkers in Adult Patients with Cystic Fibrosis or Non-Cystic Fibrosis Bronchiectasis	Patrick Flume, M.D.	Janssen Research and Development, LLC
A Phase 3, Randomized, Double-Blind, Controlled Study Evaluating the Efficacy and Safety of VX-445 Combination Therapy in Subjects With Cystic Fibrosis Who Are Heterozygous for the F508del Mutation and a Gating or Residual Function Mutation	Patrick Flume, M.D.	Vertex Pharmaceuticals, Inc.
A Phase 3, Open-Label Study Evaluating the Long-Term Safety and Efficacy of VX-445 Combination Therapy in Subjects with Cystic Fibrosis who are Heterozygous for the F508del Mutation and a Gating or Residual Function Mutation (F/G and F/RF Genotypes)	Patrick Flume, M.D.	Vertex Pharmaceuticals, Inc.
Applaud: A Double-Blind, Randomized, Placebo-Controlled, Phase II Study of the Efficacy and Safety of LAU-7B in the Treatment of Cystic Fibrosis in Adults	Bryan Garcia, M.D.	Laurent Pharmaceuticals
A Phase 3, Randomized, Double-Blind, Placebo-Controlled Efficacy and Safety Study of Pamrevlumab in Subjects with Idiopathic Pulmonary Fibrosis (IPF)	John Huggins, M.D.	Worldwide Clinical Trials
A Phase 2, Randomized, Double-Blind, Placebo-Controlled Study to Evaluate the Safety and Efficacy of AT-527 in Subjects with Moderate COVID-19	Eric Meissner, M.D., Ph.D.	Iqvia
Second Year Clinical Fellowship	Christina Mingora, M.D.	Cystic Fibrosis Foundation - CFF
The Clinical, Economic and Psychological Impact of Inter-ICU Transfers	Nandita Nadig, M.D.	Francis Family Foundation
A Phase II, Open-Label, Randomized, Multi-Center Study to Investigate the Pharmacodynamics, Pharmacokinetics, Safety, and Efficacy of 8 MG/KG or 4MG/KG Intravenous Tocilizumab in Patients with Moderate to Severe COVID-19 Pneumonia	Nandita Nadig, M.D.	PPD Development
A Phase III, Randomized, Double-Blind, Multi-Center Study to Evaluate the Efficacy and Safety of Remdesivir Plus Tocilizumab Compared with Remdesivir Plus Placebo in Hospitalized Patients with Severe COVID-19 Pneumonia	Nandita Nadig, M.D.	Syneos Health, LLC
Transbronchial Biopsy Assisted by Robot Guidance in the Evaluation of Tumors of the Lung (TARGET Trial)	Nicholas Pastis, M.D.	Auris Health, Inc.
BDX-CD-003 A Multi-Center, Randomized, Controlled Trial Prospectively Evaluating the Clinical Utility of the Nodify XL2 Proteomic Classifier in Incidentally-Discovered Low to Moderate Risk Lung Nodules	Gerard Silvestri, M.D.	Biodesix Inc
A Prospective Blood Sample Collection Study to Develop and Validate a Panel of Protein-Based Biomarkers in Patients with Pulmonary Nodules	Gerard Silvestri, M.D.	Seer, Inc.
A Phase 2, Randomized, Double-Blind, Placebo-Controlled Study of the Efficacy and Safety of VX-814 in PIZZ Subjects	Charlton Strange, M.D.	Vertex Pharmaceuticals, Inc.
A Multicenter, Randomized Sham-controlled Study to Evaluate Safety and Efficacy After Treatment with the Nuvairsta Lung Denervation System in Patients with Chronic Obstructive Pulmonary Disease (COPD) (AIRFLOW-3)	Charlton Strange, M.D.	Nuvaira, Inc.

FY20 EXTRAMURAL RESEARCH FUNDING HIGHLIGHTS

RESEARCH GRANT TITLE	PRINCIPAL INVESTIGATORS	EXTRAMURAL SPONSORS
Pulmonary, Critical Care, Allergy, & Sleep Medicine		
A Sham-Controlled, Prospective, Randomized Clinical Trial of the RejuvenAir System for the Treatment of Moderate to Severe Chronic Obstructive Pulmonary Disease with Chronic Bronchitis (SPRAY-CB)	Charlton Strange, M.D.	CSA Medical Inc.
Prospective Treatment Efficacy in IPF Using Genotype for Nac Selection (PRECISIONS) Trial and Molecular Endophenotyping in Idiopathic Pulmonary Fibrosis and Interstitial Lung Diseases Study	Timothy Whelan, M.D.	University of Michigan
Rheumatology & Immunology		
Does Anti-IGF1R Antibody Block Fibrosis?	Carol Feghali-Bostwick, Ph.D.	Horizon Pharma Ireland Limited
IGF-II Regulates Lung Fibrosis in Scleroderma	Carol Feghali-Bostwick, Ph.D.	NIH/NHLBI
ALE09 - A Phase 2, Double-Blind, Randomized, Placebo-Controlled Multi-Center Study to Evaluate Efficacy, Safety, and Tolerability of JBT-101 in Systemic Lupus Erythematosus	Diane Kamen, M.D.	Emory University
A Phase 2, Randomized, Placebo-controlled, Double-blind, Open-label Extension Multicenter Study to Evaluate the Efficacy and Safety of KD025 in Subjects with Diffuse Cutaneous Systemic Sclerosis	Richard Silver, M.D.	Kadmon Corp. LLC
A Multi-Center, Double-Blind, Randomized, Placebo-Controlled, Phase 3 Study Evaluating the Safety and Efficacy of Intravenous Iloprost in Subjects with Systemic Sclerosis Experiencing Symptomatic Digital Ischemic Episodes	Edwin Smith, M.D.	Medpace, Inc.



*The significant increase in FY20 expenses was due to the addition of Ryan White expenses.

MEDICAL EDUCATION

The Department of Medicine is deeply committed to the education and training of skilled clinicians, researchers, and educators bound to become the health care leaders of tomorrow.



The Department of Medicine continues its intensive investment in advancing educational programs at both the graduate and undergraduate levels. Department faculty contribute extensively to medical student education in both the basic science and clinical clerkship years and directly supervise the training of over 200 house officers and fellows each year.

GRADUATE MEDICAL EDUCATION

In March 2020, **Ashley Duckett, M.D.**, was appointed as the new internal medicine residency program director, succeeding **Ben Clyburn, M.D.**, who successfully led the program for 21 years. In his role as program director, Clyburn expanded and modernized the curriculum to meet the needs of tomorrow's physician leaders in academic medicine and created a culture of excellence in post-graduate training at MUSC. Through his extraordinary service, commitment to mentorship, and unwavering leadership, Clyburn positioned the residency program for great future success.

Over the past year, the Department of Medicine has continued to pioneer evidence-based medicine training. With 106 internal medicine residents, including 14 medicine-pediatrics residents, and 9 medicine-psychiatry residents, outstanding training opportunities span the department, College of Medicine, and beyond. MUSC's Internal Medicine Residency program prioritizes collaboration, autonomy, and scholarship, and facilitates learning about highly diverse patients and diseases in a number of practice settings.

The department offers fellowship programs across nine divisions to provide extraordinary subspecialty training with a focus for clinical, clinician-educator, and research careers. Department faculty trained 95 fellows in 16 accredited fellowship programs in FY20.

Our residents continue to succeed in academic careers, successfully competing for the most prestigious and rigorous fellowships or preparing for life as general internists. Our fellows are trained as future opinion leaders who will advance clinical care and push the boundaries of scientific knowledge.

This past year's challenges that COVID-19 presented were met with innovation and commitment to continue our mission for medical education. We celebrate our successes over the past academic year and look forward to this year's new innovative programs.

2019-2020 Successes:

- Our 2019-20 graduates achieved a 100% percent pass rate on the American Board of Internal Medicine (ABIM) Certification Examination
- Excellence in Teaching Awards: 6 Department of Medicine faculty members were honored for their teaching excellence with 2020 Golden Apple Awards, including: **Ashley Duckett, M.D.**, **Marc Heincelman, M.D., MPH**, **Isaac Jaben, M.D.**, **Benjamin Kalivas, M.D.**, **Paul McDermott, Ph.D.**, and **Mason Walgrave, M.D.**
- Ambulatory modules from Johns Hopkins modules
- Telehealth modules
- Virtual morning report and virtual academic half-day during COVID



Maggie Thomas, M.D., using point-of-care ultrasound machine.

UNDERGRADUATE MEDICAL EDUCATION

The Department of Medicine faculty remain strongly engaged in medical student training and serve as mentors and teachers, contributing countless hours of teaching time to over 300 third- and fourth-year medical students each year. **Marc Heincelman, M.D., MPH**, interim director of Hospital Medicine, serves as the clerkship director, and **Kathryn Anderson, M.D.**, serves as associate clerkship director.

Despite the challenges of COVID-19, there were many notable successes over the past academic year in undergraduate medical education, including:

- In the past year, faculty within the department have been very successful recruiting students into internal medicine, med-peds, and med-psych residencies. In the 2019-2020 academic year, the department saw a large increase in the number of students interested in medicine specialties.
- The 2019-2020 match was one of the most successful in recent years, in which students matched into top programs throughout the entire U.S.

NEW INITIATIVES

Moving forward, the Department of Medicine has set goals to continue to increase the number of students entering internal medicine to meet the shortage of IM-trained physicians in primary care and certain subspecialties. To achieve this goal, the department plans to expand faculty participation in career advising. At the same time, inspired by recent events, the department will be participating in the MUSC College of Medicine Anti-Racism Action Committee by creating a curriculum that addresses racism in medicine. Lastly, there are plans to initiate and expand the point-of-care-ultrasound curriculum within the IM Clerkship.

MEDICAL EDUCATION LEADERSHIP

E. Benjamin Clyburn, M.D.
Program Director, IM Residency
(through March 2020)

Ashley Duckett, M.D.
Program Director, IM Residency
(appointed March 2020)

Kelly Barth, D.O.
*Program Director, Medicine/
Psychiatry Residency*

Sarah Mennito, M.D., MSCR
*Program Director, Medicine/
Pediatrics Residency*

Marc Heincelman, M.D., MPH
Clerkship Director

Kathryn Anderson, M.D.
Associate Clerkship Director

Brad Keith, M.D.
*Associate Vice Chair, Graduate
Medical Education*

Chelsey Petz, M.D., FACP
Associate Program Director

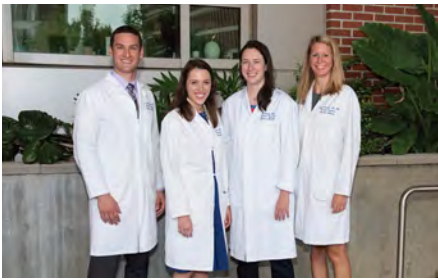
Samuel Schumann, M.D.
Associate Program Director

William Shelley, M.D.
Associate Program Director



2019-2020 graduating class.

2019-2020 INTERNAL MEDICINE HOUSESTAFF



Internal Medicine Chief Residents (left)

Devin Blankinship, M.D.
Carson Keck, M.D.
Jen Schmidt, M.D. (VA Chief)
Maggie Thomas, M.D.

PGY-1 Interns

Samuel Adams, M.D.
Hesham Alshaikh, M.D. (Prelim)
Jake Altier, M.D.
Emily Amador, D.O. (Med-Psych)
Fatmata Bah, M.D.
Dena Blanding, M.D.
Kimberly Bowerman, M.D. (Prelim)
John Bowman, IV, M.D. (Med-Peds)
Alexander Bray, M.D., Ph.D.
Matthew Bruner, M.D.
Avery Chisholm, M.D.
Kimberly Cichelli, M.D.
Anurag Deeconda, M.D.
Edward Duffy, M.D. (prelim)
Erin Fankhanel, M.D.
Rayphael Hardy, M.D.
Prarthana Jain, D.O.
Robert James, M.D. (Med-Psych)
Ethan Joseph, M.D.
Umakanthan Kavin, M.D. (Med-Peds)
Christina Kears, M.D.
Denise Kimbrough, M.D., Ph.D. (Med-Peds)
Cole Milliken, M.D. (prelim)
Ellen Nielsen, M.D.
Emily Nyers, M.D. (prelim)
Jacob Read, M.D.
Ashley Reluzco, M.D.
Scott Sands, M.D.
Meg Scott, M.D.
Shenia Singleton, M.D., Ph.D.
Abigail Southard, M.D.
Romik Srivastava, M.D.
Spenser Staub, M.D.
Michael Sutton, D.O.

PGY-1 Interns

Victoria Sweetnam, M.D.
Elena Vlachos, D.O.
Laurel Wolf, M.D. (Med-Peds)

PGY-2 Residents

Nnamdi Azih, M.D.
Keegan Bakos, M.D.
Emily Bay, M.D. (Med-Psych)
Kent Broussard, M.D.
Charish Buffa, M.D. (Med-Peds)
Jensie Burton, M.D.
Giordano Cittolin Santos, M.D., Ph.D.
Bradley Collins, M.D.
Kelly Engle, M.D.
Bianca Farley, M.D.
Erickson Galvan, M.D.
Mona Haj, M.D.
Sarah Huse, D.O.
Maya Malaab, M.D.
Kristen Miller, M.D.
Shaurya Prakash, M.D.
Jon Puchalla, M.D.
Taylor Remillard, M.D.
Regan Roat, M.D., Ph.D.
Colin Russell, M.D.
Hampton Sasser, M.D.
Daniel Schumacher, D.O.
Laura Smallcomb, M.D. (Med-Peds)
Jordan Spencer, D.O. (Med-Psych)
John Stewart, D.O.
Molly Stone, M.D. (Med-Peds)
Patrick Strickland, M.D.
Connor Sweetnam, M.D.
Sophia Urban, M.D. (Med-Peds)
Megan Veglia, M.D.
Haily Vora, M.D.

PGY-3 Residents

Poorva Apte, M.D.
Travis Benzing, M.D.
Laurel Branch, M.D.
Leah Broadhurst, M.D. (Med-Peds)
Laura Brown, M.D. (Med-Peds)
Zane Chiad, M.D.
Sam Dickey, M.D.
Milad El Hajj, M.D.
Lee Ellison, M.D.
Jessica English, M.D.
Susan Evenhouse, M.D. (Med-Peds)
Sam Friedman, M.D.
Joseph Golden, M.D.
Paterson Graham, M.D.
Allison Hajec, M.D.
William Harvey, M.D.
Isaac Jaben, M.D.
Abid Javed, M.D.
James Kalmuk, M.D.
Shadi Khalil, M.D.
Ricky Lueking, M.D.
Steven Maurides, M.D.
Margaret Morrison, M.D.
Tejas Nadig, M.D.
Karan Pandya, MD
Chelsea Shepard, D.O. (Med-Psych)
Patricia Smith, M.D. (Med-Peds)
Brett Tomashitis, M.D.
Nishant Trivedi, M.D.
Cameron Wilhoit, M.D.

PGY-4 Residents

Camilo Mateus, M.D. (Med-Psych)
Mike Norred, M.D. (Med-Psych)
Prashant Raghavendran, D.O. (Med-Peds)
Mason Walgrave, M.D. (Med-Peds)

PGY-5 Residents

Boris Kiselev, M.D. (Med-Psych)
Mary Stoemann, D.O. (Med-Psych)

2019-2020 SUBSPECIALTY FELLOWS

Cardiology

Mazahir Alimohamed, M.D.
Jessica Atkins, M.D.
Katrina Bidwell, M.D.
Amanda Cai, M.D.
Matthew Evans, M.D.
Daniel Hobbs, M.D.
Emily Hodskins, M.D.
Leah John, M.D.
Reza Karimianpour, D.O.
Jasjeet Khural, M.D.
John LeCluyse, M.D.
Prabodh Mishra, M.D.
William (Tripp) Mostertz, M.D.
Sam Powell, M.D.
Shane Reighard, M.D.
Ryan Sandoval, M.D.
Ishan Shah, M.D.
Shailee Shah, M.D.
Ashley Waring, M.D.

Adult Congenital Heart Disease

Stephanie Gaydos, M.D.

Advanced Heart Failure & Transplant Cardiology

Eric Bonno, M.D.
Michael Viray, M.D.

Electrophysiology Cardiology

Patrick Badertscher, M.D.
Adam Baine, D.O.
Joshua Payne, M.D.

Interventional Cardiology

Mohamed Almahmoud, M.D.
Christopher Capps, M.D.
Umair Malik, M.D.

Endocrinology

Faisal Aljehani, MBBS

Endocrinology

Katalina Funke, M.D., MSCR
Malek Mushref, M.D.
Rani Shayto, M.D.
Marianne Wilson, M.D.

Gastroenterology & Hepatology

Kevin Batte, M.D.
Kevin Douglass, M.D.
Nicolas LaBarre, M.D.
Briana Lewis, M.D.
Victoria Maldonado, M.D.
Lance McLeroy, M.D.
Tasnia Matin, M.D.
Sagar Patel, M.D.
Matthew Rolfsen, M.D.
John Romano, M.D.
Nelson Seabrook, M.D.
Charles Welden IV, M.D.

Geriatric Medicine

Natalie Christian, M.D.

Hematology/Oncology

Leonard "Clark" Alsfeld, M.D.
Toros Dincman, M.D., Ph.D.
Gregory Haidemenos, M.D.
Sara Matar, M.D.
Sandra Mazzoni, M.D.
Sarah Mushtaq, M.D.
Reena Patel, M.D.
Mal Prophet, M.D.
Christopher Rangel, M.D.
Shalin Shah, M.D.
Darion Showell, D.O.
Maggie Stafford, M.D.
Kiran Uppaluru, M.B.B.S.

Infectious Diseases

Caroline Osborne, M.D.
Henry Shiflett, D.O.
Cameron Selent, M.D.
Charles Teixeira, D.O.

Nephrology

Mohamed Ahmed, M.D.
Angela Dillon, M.D.
Camilia Makhoun, D.O.
Anna Marshall, D.O.
Samar Medani, M.D.
Sammy Nassri, M.D.
Keisuke Okamoto, M.D.
Hardik Patel, M.D.
Adam Price, M.D.
Syed Quadri, M.D.
Genta Uehara, M.D.
Harol Valenzuela, M.D.

Palliative Care

Julia West, M.D.
Susan Ezemenari, M.D.

Pulmonary & Critical Care

Jonathan Angotti, M.D.
Brent Bermingham, M.D.
George Carter, M.D.
Travis Ferguson, M.D.
Adam Fox, M.D.
Todd Gandy, M.D.
Nathan Hill, M.D.
Daniel Hynes, M.D.
Fredrik Jenssen, M.D.
Sarah Knapp, M.D.
Jessica Lozier, M.D.
Christina Mingora, M.D.
Michelle Spiegel, M.D.
Harrison Smith, M.D.
Angelina Somoracki, D.O., MPH
Nina Thomas, M.D.
Jeffrey Yourshaw, M.D.

Rheumatology & Immunology

Sarah Compton, M.D.
David Dillon, M.D.
Whitney Elg-Salsman, D.O.
Samantha Minkin, M.D.
Sonia Savani, M.D. (Med/Peds)
Jennifer Winslow, D.O.

James C. Oates, M.D. appointed endowed chair

James C. Oates, M.D., professor and director of the Division of Rheumatology and Immunology, has been appointed as the inaugural holder of the Richard M. Silver, M.D., Endowed Chair in Rheumatology & Immunology.

Oates was honored during an online investiture ceremony in the virtual presence of more than 75 family members, friends, colleagues, and donors on Thursday, November 19, 2020.

The Department of Medicine established the \$1 million endowed chair campaign in 2013 to support world-class autoimmune research and scholarship. The Silver chair is a tribute to the renowned career and contributions of former Rheumatology and Immunology Division Director **Richard Silver, M.D.**, distinguished university professor and active division member.

“To have my name, in some way, associated with Jim’s is a tremendous honor and I’m very humbled by it,” said Richard Silver, M.D., distinguished university professor and vice chair for development, Department of Medicine. “He is an outstanding clinician and researcher in the fields of systemic lupus erythematosus and lupus nephritis, and his work has been characterized by excellence and distinction as a physician, scientist and teacher.”

Interim Chair **Ben Clyburn, M.D.**, noted that Oates carries on work begun years ago by Silver. “He exemplifies Dr. Silver’s research attributes, his compassion for patients, and his unwavering dedication and commitment to training the next generation of physician-scientists,” said Clyburn. “Dr. Oates will further Dr. Silver’s work to unravel the complicated autoimmune diseases that affect our patients.”

“Holding the Silver chair is a great honor,” said Oates. “Dr. Silver is a distinguished university professor for a reason. He embodies what we call the triple threat, where he excels in all three of the academic missions in a way that we don’t see anymore. And he’s been an incredible role model in that way. He has created the culture in this division that has made my job easy as a new division director, a culture of dignity and respect that he has worked hard on.”



Ben Clyburn, M.D., Jim Oates, M.D., and Richard Silver, M.D.

Oates is a graduate of the Johns Hopkins School of Medicine. He completed an internal medicine residency and rheumatology fellowship at Duke University Medical Center, an additional year of research fellowship training at MUSC, and in 1997, he joined the MUSC Rheumatology faculty where he has had an illustrious career as a physician scientist. Oates succeeded Silver as director of the Division of Rheumatology & Immunology in 2018, and he also serves as vice chair for research in the Department of Medicine.

In addition to running the Division of Rheumatology and Immunology, Oates also leads a strong research lab focused on lupus nephritis and lupus atherosclerosis. In work funded through a VA Merit Award, the Oates lab is studying how endothelial dysfunction may link the accelerated atherosclerosis seen in lupus patients with the process of immune cells becoming attracted to and migrating into kidney tissues to cause local inflammation. Nitric oxide, a potent vasodilator, is highly expressed in the kidney and may be a key mediator and modulator of disease.

To help guide therapy, the Oates lab is also looking at biomarkers at baseline that predict one-year outcomes. Furthermore, they are using a type of machine learning, random forest analysis, to assess variables that are already in the electronic health record in an attempt to model patients who are at risk for poor outcomes.

Oates has supported clinical research at a regional and national level by serving as the President of the American Federation for Medical Research and President of the Southern Society for Clinical Investigation, where he now serves as an associate editor of its journal, the American Journal of Medical Sciences. He has been honored with numerous awards from institutions, including Johns Hopkins School of Medicine, the American College of Rheumatology, the Research Education Foundation, the MUSC Health Sciences Foundation, and others.



Jim Oates, M.D., and Richard Silver, M.D. at virtual celebration.

OATES APPOINTED ENDOWED CHAIR (continued)

An endowed chair is the highest academic award that the university can bestow on a faculty member, and it lasts as long as the university exists. Thus, it is an honor to the recipient, a legacy for those for whom the chair is named, and an enduring tribute to the donors who help establish it.

The Department of Medicine is deeply appreciative of the generosity of our many loyal donors who contributed \$1,000,000 over the past seven years to make this endowed chair a reality. Your support enables MUSC to grow and retain the highest caliber of talent and leadership necessary to propel the department and university to even greater heights.

#GIVINGTUESDAYNOW DONATIONS SUPPORT COVID-19 RESEARCH, TESTING



Patrick Flume, M.D.

When the COVID-19 pandemic started in March, respiratory disease expert **Patrick Flume, M.D.**, knew the road back to “normal” would begin by creating a biorepository to support research.

“For us to develop a saliva test or an antibody test, we needed to start getting specimens from people so that we could first begin to understand COVID-19,” Flume said.

Since then, Flume and his team have collected hundreds of samples of blood, saliva, and urine for the MUSC Health COVID-19 Biorepository. The samples are from patients who have been confirmed positive or negative for COVID-19. The lab also collects swabs that have been used to test for COVID-19. Samples are stored at the South Carolina Clinical & Translational Research (SCTR) Institute Nexus Laboratory and made available to researchers across the state.

The first samples went to researchers at MUSC and Clemson University working on antibody test development. Since then, samples have supported at least eight researchers looking for answers to some of the biggest

questions about COVID-19. Like why some people get sicker than others, and who’s more likely to get infected.

By mid-October, 152 patients had donated thousands of samples to the COVID-19 Biorepository. Samples are collected from patients over a year to track changes over time. With Flume’s team already working on multiple COVID-19 clinical trials, they needed help managing the biorepository and finding space to store the growing collection of samples.

\$50,000 donated in May for #GivingTuesdayNow allowed them to buy a new freezer and helped support the salary of a new biorepository manager.

“Infrastructure is not sexy. But it is critical for the science to happen,” said Flume. The biorepository will be able to support even more COVID-19 research because of #GivingTuesdayNow donors.

“Research costs money, and that money has to come from somewhere,” Flume said. “We really depended on philanthropy to get some lifeblood into the development of our repository. So, a huge thank you to those people.”

Flume also extends his gratitude to everyone who has donated a sample to the biorepository. “We owe a huge debt to a lot of people.”

Adapted from original article by Melissa Varner.



Amyloidosis expert Daniel Judge, M.D., talks with Gordon Darby.

PHILANTHROPY NEWS

A heartfelt gift helps fund amyloidosis care at MUSC

In 2015, Gordon Darby was diagnosed with a rare and life-threatening condition that was completely out of his control. Amyloidosis. But Darby, never one to sit back and wait, educated himself on the disease and sought the finest care which turned out to be right in his backyard at MUSC Heath's Heart & Vascular Center. And earlier this year, he invested half a million dollars to fund the beginnings of the MUSC Amyloidosis Center of Excellence in hopes of helping to tackle a disease for which there is no cure.

In 2017, nationally renowned amyloidosis expert **Daniel Judge, M.D.**, was recruited and joined the cardiology team at MUSC Heath. His goal was to create a national center dedicated to the study and treatment of amyloidosis. It was at that time, Darby made the important decision to begin receiving care at MUSC as a patient of Dr. Judge.

Judge believes amyloidosis is much more prevalent than once thought. "There are a lot of amyloid cases out there; it's just not being recognized. We have a lot of work to do around this," said Judge.

Darby isn't leaving that responsibility to someone else. His recent \$500,000 commitment will help to coordinate amyloid care among specialists at MUSC Health and ensure better diagnosis, management, and research about this condition and facilitate outreach efforts nationally and internationally.

"There are no magic bullets out there. There is no cure. This center is really needed," said Darby. "If the money I'm giving doesn't help me, the people who follow me will benefit. That's what life is all about – isn't it?"

-Gordon Darby

Judge said that there are three major components to a successful amyloidosis center of excellence. First, making sure patients have not just proper diagnostic strategies, but better therapeutic strategies — things that are on the way. Second, research to understand demographics and why it happens. But it was the third part he couldn't emphasize enough - the educational aspect of it, both to providers and to communities — the Charleston community, the Southeast, the U.S. — building awareness.

"There are no magic bullets out there. There is no cure. This center is really needed," said Darby. "If the money I'm giving doesn't help me, the people who follow me will benefit. That's what life is all about – isn't it?"

Today, there is more to be hopeful about than ever before for people with amyloidosis. But with numbers on the rise, MUSC is eager to get the comprehensive center off the ground — and raising \$5 million to launch it will allow specialists to advance their research, develop better treatments, get the word out far and wide — and, hopefully, one day, find the cure.

Adapted from original article by Mikie Hayes.

\$2.5M GIFT TO DIRECTLY IMPACT PATIENT CARE

As a nurse, Chris Motamed cared for patients with serious cardiovascular problems. Now she and her husband, Tom, are helping to change what's possible in the care of these patients today.

Earlier this year, Chris and Tom Motamed made a \$2.5 million gift to help fast-track innovations in cardiovascular patient care at MUSC. The Charleston area couple made their gift following a tour of the MUSC Health Heart and Vascular Center, rated the #1 cardiovascular hospital in South Carolina.

During their visit, Chris and Tom were impressed by what they learned and struck by the doctors' sense of purpose, vision and determination.

"We were pretty impressed," said Tom. "But quite honestly, when we found out how long people were on the waiting list to get these various procedures done, we said, that's an awful long time to wait. And we left there thinking, if there was any way we could speed up the administration of that care, that would be meaningful to us. That was our sole motivation."



Chris and Tom Motamed

To that end, the Motameds decided to make an unrestricted gift to the center, meaning it can be used at the discretion of the hospital's leadership. Their only request: That it be invested in clinical innovations with a meaningful, direct impact on patient care. The Motameds' contribution also is expendable, meaning that any or all of it can be used immediately.

"That's an incredibly important aspect of this gift," said **Cardiology Chief Dr. Thomas DiSalvo**. "Innovations are coming so quickly now, especially in cardiovascular medicine. That's great, but it can be difficult to budget for," he explained. "This allows us to evaluate these innovations and bring the best ones quickly and directly to the care of our patients. It truly will change what's possible in their treatment and outcomes."

Adapted from original article by MUSC Foundation.



John Wrangle, M.D.

MUSC Hollings Cancer Center Awards New Endowed Chair in the Division of Hematology & Oncology

John Wrangle, M.D., associate professor in the Division of Hematology/Oncology with a dual appointment in the Department of Microbiology and Immunology, has been appointed to the Burtis SmartState Chair in Lung Cancer Research.

To be appointed as an endowed chair is the highest honor that the university can bestow upon a faculty member. This prestigious title extends further than just another line on a letterhead, but acts as a recognition of the important, and unique, contributions brought by the holder and namesake.

Wrangle is a physician-scientist whose laboratory focuses on epigenetic mechanisms of T-cell dysfunction. In addition, he develops combinatorial immunotherapeutic strategies based on cytokine/immune-checkpoint blockade combinations. Wrangle has gained national recognition for a national clinical trial that combined nivolumab with

ALT-803, an IL-15 superagonist. His research is particularly cutting edge, with his efforts focused on pushing novel therapeutic agents in patients with advanced malignancy. This work has led to substantial funding.

Wrangle's important contributions and achievements in lung cancer research, as well as his leadership, service, and scholarly activities reflect his abilities, dedication, commitment and loyalty. As the Burtis SmartState Chair, Wrangle will be able to continue to expand his efforts to develop research, education, and patient care at MUSC.

SELECTED PUBLICATIONS: FY20

Cardiology

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Field ME, Gold MR, Reynolds MR, Goldstein L, Lee SHY, Kalsekar I, Coplan P, Wong C, Khanna R, Winterfield JR. Real-world outcomes of ventricular tachycardia catheter ablation with versus without intracardiac echocardiography. *J Cardiovasc Electrophysiol.* 2020 Feb;31(2):417-422. doi: 10.1111/jce.14324. Epub 2019 Dec 27. PMID: 31868258.

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Pictured: Michael Zile, M.D.

Houston BA, Tedford RJ, Baxley RL, Sykes B, Powers ER, Nielsen CD, Steinberg DH, Maran A, Fernandes VLC, Todoran T, Jones JA, Zile MR. Relation of Lymphangiogenic Factor Vascular Endothelial Growth Factor-D to Elevated Pulmonary Artery Wedge Pressure. *Am J Cardiol.* 2019 Sep 1;124(5):756-762. doi: 10.1016/j.amjcard.2019.05.056. Epub 2019 Jun 6. PMID: 31296367.

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Endocrinology

Bonilha H, Hyer M, Krug E, Mauldin M, Edlund B, Martin-Harris B, Halushka P, McGinty J, Sullivan J, Brady K, Ranwala D, Hermayer K, Harvey J, Paranal R, Gough J, Silvestri G, Chimowitz M. An institution-wide faculty mentoring program at an academic health center with 6-year prospective outcome data. *J Clin Transl Sci.* 2019 Oct 7;3(6):308-315. doi: 10.1017/cts.2019.412. PMID: 31827904; PMCID: PMC6885994.

Kelly CB, Yu JY, Jenkins AJ, Nankervis AJ, Hanssen KF, Garg SK, Scardo JA, Basu A, Hammad SM, Aston CE, Lyons TJ. Haptoglobin Phenotype Modulates Lipoprotein-Associated Risk for Preeclampsia in Women With Type 1 Diabetes. *J Clin Endocrinol Metab.* 2019 Oct 1;104(10):4743-4755. doi: 10.1210/jc.2019-00723. PMID: 31219590.



Lu Z, Li Y, Syn WK, Wang Z, Lopes-Virella MF, Lyons TJ, Huang Y. Amitriptyline inhibits nonalcoholic steatohepatitis and atherosclerosis induced by high-fat diet and LPS through modulation of sphingolipid metabolism. *Am J Physiol Endocrinol Metab.* 2020 Feb 1;318(2):E131-E144. doi: 10.1152/ajpendo.00181.2019. Epub 2019 Dec 10. PMID: 31821039; PMCID: PMC7052581.

Pictured: Yan Huang, M.D., Ph.D.

Gastroenterology & Hepatology

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Pictured: Zengdun Shi, M.D.

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Pictured: Patrick Mauldin, Ph.D.

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Pictured: Marc Heincelman, M.D., MPH

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Pictured: Charles Greenberg, M.D.

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Pictured: Scott Curry, M.D.

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Pictured: Karim Soliman MBBCh, MSc

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Pictured: Dee Ford, M.D.

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Pictured: Melissa Cunningham, M.D., Ph.D.

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Roberto Pisoni, M.D.
David Ploth, M.D.*
Maria Aurora Posadas Salas, M.D.
Vinaya Rao, M.D.
Karim Soliman, MBBCh, MSc
Rachel Sturdivant, M.D.
Michael Ullian, M.D.
Xiaofeng Zuo, Ph.D.

Pulmonary & Critical Care

Jacqueline Angles, D.O.
Rahul Argula, M.D., MPH
Tatsiana Beiko, M.D.
Alice Boylan, M.D.
John Cox, M.D.
Patrick Flume, M.D.
Dee Ford, M.D., MSCR
Michael Frye, M.D.
Bryan Garcia, M.D.
Andrew Goodwin, M.D.
John Huggins, M.D.
Walter Ennis James, M.D.
Edward Kilb, M.D.
Rachana Krishna, M.B.B.S.
Chitra Lal, M.D., FACP
William McManigle, M.D.
Robert Miller, M.D.
Jessica Mullins, M.D.
Nandita Nadig, M.D., MSCR
Luca Paoletti, M.D.
Nicholas Pastis, M.D.
Bradley Petkovich, M.D.
Andrea Rinn, D.O.
Richard Rissmiller, M.D.
Gerard Silvestri, M.D., MS
Charlton Strange, M.D.
Nichole Tanner, M.D., MSCR
Robert Vorona, M.D.

Timothy Whelan, M.D.
David Zaas, M.D.

Rheumatology & Immunology

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Galina Bogatkevich, M.D., Ph.D.
Carol Feghali-Bostwick, Ph.D.
Melissa Cunningham, M.D., Ph.D.
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Faye Hant, D.O., MSCR
Stanley Hoffman, Ph.D.
Diane Kamen, M.D., MSCR
Mara Lennard Richard, Ph.D.
Margaret Markiewicz, M.D.
Tamara Nowling, Ph.D.
Jim Oates, M.D.
Paula Ramos, Ph.D.
Katherine Silver, M.D.
Richard Silver, M.D.*
Edwin Smith, M.D.
Betty Tsao, Ph.D.
Celine Ward, M.D.
Xian-Kui Zhang, D.V.M., Ph.D.

Emeritus Faculty

Cardiology:

Grady Hendrix, M.D.
William Spencer, M.D.
Charles Summerall, M.D.
Bruce Usher, M.D.

Endocrinology:

John Colwell, M.D., Ph.D.
Julius Sagel, MBChB

Gastroenterology:

Donald Castell, M.D.
Bernadette Marriott, Ph.D.
Fred Pittman, M.D., Ph.D.
Adrian Reuben, M.B.B.S.
Adam Smolka, Ph.D.

General Internal Medicine:

James Allen, M.D.
John Feussner, M.D., MPH*
Donald Fox, M.D.
Lawrence Mohr, M.D.*
Maria Wiley, M.D., MS

Hematology & Oncology:

Robert Fenning, M.D.
Robert Gemmill, Ph.D.

Infectious Diseases:

Victor Del Bene, M.D.

Rheumatology & Immunology

Alexander Awgulewitsch, Ph.D.

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