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MESSAGE FROM THE CHAIR

Prabhakar Baliga, M.D.

This fall, the Department of Surgery had several opportunities to highlight and celebrate our outstanding faculty, innovative research and accomplished trainees.

In September, surgical leaders from around the country attended the annual meeting of the Halsted Society, hosted by the Department, bringing great prestige to our University and providing an opportunity to showcase our faculty, research and innovation to national leaders.

The Eric R. Frykberg, M.D. Lecture and Surgery Research Recognition Day highlighted the exceptional research work in which our residents, medical students and graduate students participate. In addition, the annual Horace G. Smithy, M.D. Lecture provided an opportunity for our trainees to learn from experts in the field of cardiothoracic surgery.

In October, we honored three newly named Endowed Chairs in Cardiothoracic Surgery during an Investiture Ceremony in the presence of more than 100 guests and donors. Chadrick Denlinger, M.D., Marc R. Katz, M.D., MPH, and Lucian Lozonschi, M.D., all newly named endowed chairs in the division of Cardiothoracic Surgery, were recognized during the ceremony as superb servants to our medical community who are broadening the scope and level of care through their innovation and expertise in minimally invasive and robotic approaches to complex cardiothoracic surgeries.

In the cover story, "Breaking through the Barricade," colorectal surgeon Virgilio George and surgical oncologist E. Ramsay Camp, M.D. join forces to treat hard-to-reach cancers in the abdomen,

first by surgically removing all the disease visible; then by performing hyperthermic intraperitoneal chemotherapy (HIPEC) to treat the residual cells they cannot see through the abdomen. HIPEC in conjunction with surgery involves a coordinated effort between multiple teams to remove the tumors and administer the heated chemotherapy.

This issue highlights some of the latest research and innovations, including significant NIH funding in the Wang Lab. Hongjun Wang, Ph.D. and her collaborators are moving forward with a new clinical trial to study a new therapeutic for early onset type 1 diabetes.

With the much anticipated opening of the new MUSC Shawn Jenkins Children's Hospital, we provide a brief overview of the new facility as well as the Summey Medical Pavilion in North Charleston that complements the new Children's Hospital and provides regional outpatient pediatric care throughout the tri-county area.

I feel fortunate to have so much important progress from the Department of Surgery to report in this issue and my thoughts turn gratefully to those who have made our progress possible. I wish you and your loved ones a happy and healthy holiday season.

Prabhakar Baliga, M.D., FACS
Chair, MUSC Department of Surgery

SAVE THE DATES

DECEMBER 9, 2019

MUSC Faculty and Alumni Dinner
Southern Surgical Association
The Omni Homestead
Hot Springs, VA

FEBRUARY 8-11, 2020

Southeastern Surgical Congress
New Orleans, LA

MARCH 28-29, 2020

Reunion Weekend
MUSC Campus

MARCH 31, 2020

Marion Anderson Lecture
MUSC Campus

APRIL 29 - MAY 2, 2020

49th Annual Postgraduate
Course in Surgery
Hyatt Place, Charleston, SC

JUNE 30, 2020

Kredel Springs Lecture
MUSC Campus

CME COURSES

Up-to-date CME Course
information can be found at
www.musc.edu/surgery/events

COVER: *Virgilio George, M.D. and E. Ramsay Camp, M.D. performing HIPEC Surgery. Photo by Brennan Wesley.*

SURGICAL ONCOLOGISTS

IN THE NEWS



A. Abbott

During the month of October, surgical oncologists **Andrea Abbott, M.D. MSCR** and **Nancy DeMore, M.D.** spent time away from the OR to educate our community on the importance of breast cancer screening and early detection.



N. DeMore

In an interview with *The Moultrie News*, Dr. Andrea Abbott noted how designating October as Breast Cancer Awareness Month allows us as a society to open up a conversation about breast cancer risk, breast health and screening. “We have created a way to advocate for our mothers, sisters, and friends to have mammograms and talk about any concerns or struggles they are having,” said Abbott. She added

that although October is a month of awareness, breast cancer is an issue that people should be concerned about all year long.

Dr. Nancy DeMore, Medical Director of the Breast Center at MUSC, echoed that message in her interview with Bobbi Conner on South Carolina Public Radio show *All Things Considered*.

“About 260,000 women develop breast cancer each year,” said DeMore. “And early detection can improve survival.” For women at an average risk of developing breast cancer, the most effective way to screen for breast cancer is through yearly mammograms, starting at age 40, according to DeMore.

BETTER OUTCOMES

MUSC Transplant Program, the only solid organ transplant center in South Carolina, recently partnered with Sharing Hope, SC, the Organ Procurement Organization for the state of SC, to improve outcomes for patients in need of organs.

“Recent changes in the methods for organ allocation have increased the complexity and distance traveled to recover organs,” said Daniel Stanton, division of Transplant Surgery Integrated Center of Clinical Excellence administrator. “These changes add time necessary to complete the procurement of organs, which has a negative impact on the overall outcome of these grafts once transplanted. We needed to find a better solution.”

The novel approach includes transferring organ donor patients to MUSC from an external hospital. Often times, trauma happens in the middle of the night in remote areas of the state. The new protocol of transferring patients to MUSC is safer. It also provides a better outcome for the recipient since MUSC has the highest level of care for organ donation.

“We have the equipment and the staff,” said Stanton. “We have more organ donors here than most other South Carolina hospitals, and therefore we are more experienced to care for these donors.” In fact, studies show that donors who are managed at high volume centers like MUSC have better outcomes and a higher yield, providing more opportunities to save lives.

It also provides an opportunity to honor the donor. MUSC has an honor walk, a way for staff to show their support for an organ donor and his or her family during an incredibly difficult time.

“Staff line the hallway in silent tribute as nurses and doctors transport the donor from the ICU to the operating room,” said Stanton. “It means a lot to us and more importantly to the donor’s family.”



KATY MORGAN, M.D. SELECTED TO SERVE ON THE ACS ADVISORY COUNCIL FOR GENERAL SURGERY

Katy Morgan, M.D., chief in the division of Gastrointestinal Surgery, has been confirmed by the American College of Surgeons as the SESC Representative to the ACS Advisory Council for General Surgery. By serving on this role, Morgan will also have a seat at the SESC Council.

TO READ MORE NEWS AND ANNOUNCEMENTS, VISIT [MUSC.EDU/SURGERY](https://www.musc.edu/surgery)

NEWS & ANNOUNCEMENTS

SAFETY EDUCATION for South Carolina's fire fighters



On November 1, MUSC held a Fire Safety and Burn Injury Symposium for local fire fighters to learn about the importance of a regional burn center to both the citizens of South Carolina and fire fighters who serve to protect them.

More than 35 fire fighters from the Midlands, Low Country, and Horry County attended the symposium where they learned from industry leaders about fire safety and the significance of a burn center, helping raise awareness of their new

roles as community partners with a regional burn center. **Steven Kahn, M.D.**, Chief of Burn Surgery organized the symposium. Kahn has been a medical advisor for the International Association of Fire Fighters for several years and was recently appointed as a Medical Advisor for the South Carolina Professional Firefighters Association. He is recognized as one of the nation's leading experts regarding firefighter burn injury and has received several awards for his contributions to the field.

Patients with complex burn injuries treated at a burn center experience better outcomes. This is particularly important for fire fighters who return to work in a high-heat environment. Medical, surgical, and return-to-work decision-making is very important in this patient population - as is screening for and treating post-traumatic stress disorder. The symposium also included topics on resources for firefighters and burn survivors and the specialized care and resources found at a burn center.

"Our goal is to provide the highest level of care here in South Carolina so fire fighters and other citizens do not have to go far away from home if they are injured," said Kahn. "In addition to providing some education on fire fighter safety, burn injury and smoke inhalation, the the program provided advanced education pertaining to protective gear."

Katie Hollowed, RN, MSN, recognized as one of the most highly regarded and well-known burn nurses in the country, was an invited speaker. Hollowed joins MUSC as Burn Program Manager on December 9. She is the recipient of the 2019 Curtis P. Artz Distinguished Service Award, given annually to a non-physician member of the American Burn Association for outstanding contributions in the burn field. **Curtis P. Artz, M.D.**, an internationally renowned burn surgeon, was chair of the MUSC Department of Surgery from 1965 - 1977.

To build on the momentum created by the symposium, Kahn said there will be talks and education at individual fire departments across the state along with collaborative community fire-safety efforts.

To support the MUSC Burn Fund visit, connect2.musc.edu/surgery

DEPARTMENT OF SURGERY

Announces new division



The Department of Surgery formed a new division in Colorectal Surgery to reflect its expert capacity to provide comprehensive care for benign

and malignant diseases of the lower gastrointestinal tract. **Virgilio George, M.D.**, who joined the department in 2015, was appointed the new division chief by Chair Prabhakar Baliga, M.D.

"Our dedication to improving the lives of patients with colon and rectal disorders extends to a robust research program," said George.

"We are developing new types of minimally invasive surgery, improving post-operative recovery, and maintaining our commitment to excellence in patient care."

The division's colon and rectal surgical staff includes **Thomas Curran, M.D., MPH, Pinckney Johnstone Maxwell IV, M.D.**, and **Karen Anderson PA-C**.

These surgeons are double board certified in General Surgery and Colorectal Surgery, lending a unique depth and breadth of experience to a wide range of benign and malignant diseases of the lower gastrointestinal tract.

The division is nationally and internationally recognized for its pioneering efforts and extensive experience in minimally invasive surgery and state-of-the-art laparoscopic technologies for colorectal cancer, Crohn's Disease and other inflammatory bowel diseases.

HUMAN CENTERED DESIGNER

Joins Department of Surgery

Joshua Kim, MS joined the Department of Surgery as a senior designer and program coordinator in the Human Centered Design initiative, led by **David Mahvi, M.D.**, Alice Ruth Folk Endowed Chair in Clinical Oncology and Chief, Oncology Integrated Center of Clinical Excellence, and **Mike Yost, Ph.D.**, Vice Chair of Research in the Department of Surgery. The institute's goal is to develop a new culture at MUSC based on design thinking, develop new products or processes that use a human-centered approach, and educate students in the art of human centered design.

The institute is uniquely positioned for success through partnerships with MUSC Health, Clemson University College of Engineering, and MUSC, a research based medical school. Kim will work with students to explore human-centered design in medicine, relating it to medical entrepreneurship and innovation. He will lead design teams of surgeons, residents, engineers and business development trainees based on design initiatives presented by surgeons and residents. Through this program, students and residents will use this knowledge to become medical innovators who are unafraid of pushing the boundaries of medicine today.

Prior to joining MUSC, Kim completed a Master of Science in Engineering Design Innovation program (EDI) at the Segal Design Institute, McCormick School of Engineering at Northwestern University, known for educating students to lead the design of future innovative products, services, and technologies.



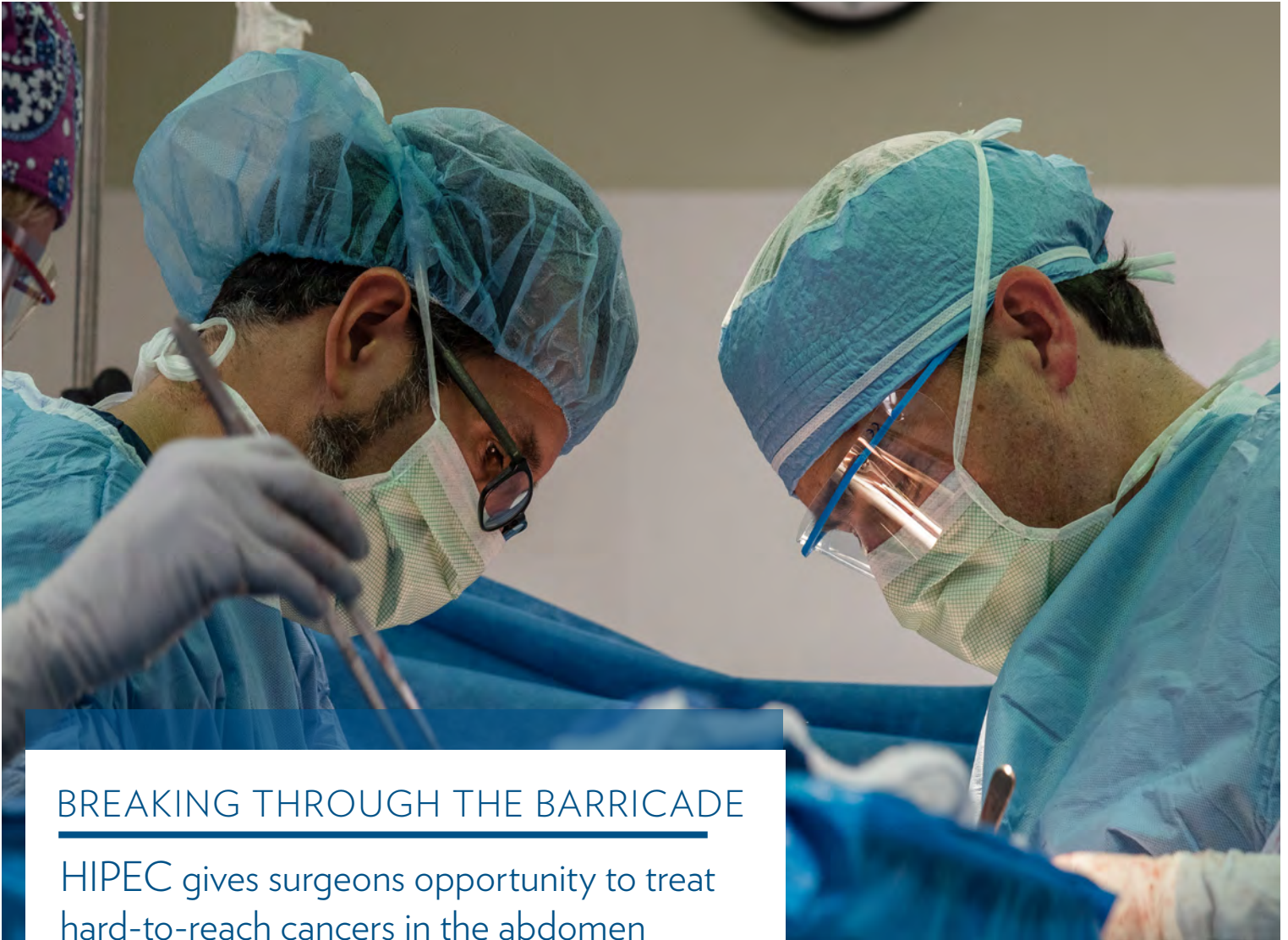
Kim's master's thesis titled Plus+ identified and created a new way to mechanically facilitate patient alignment during proton therapy cancer radiation treatment. The new couch-top he designed was made to dramatically reduce clinical time for cancer patients, thus reducing their exposure to x-ray radiation and reducing time immobilized on the couch-top during treatment.

"This is a great example of how design research, brainstorming and ideation, iterative prototyping, and testing allow human-centered designers to generate innovative solutions to complex problems," said Kim. "I am excited about the opportunity to use my experience to lead learning groups composed of clinicians, engineers and students to find human-centered solutions for complex problems."



CARLOS ZAYAS, M.D. Joins Transplant Surgery

Carlos F. Zayas, M.D. joins the MUSC Department of Surgery as clinical professor in the division of Transplant Surgery, effective January 1, 2020. Zayas is an Emory University trained internist, nephrologist and transplant nephrologist; Fellow of the American College of Physicians, the American Society of Nephrology and the American Society of Transplantation. Zayas has served as medical director of the Emory Transplant Center, Piedmont Transplant Institute and Medical College of Georgia Renal and Pancreas Programs in Georgia and will now lead transplant outreach efforts in South Carolina and Georgia to increase the number of renal and pancreas transplant recipients. He is a regional leader in the area of transplant accessibility, care of minorities, living donation and pair donation. As a transplant physician, he will support the evaluation of pre-transplant patients and the care and management of post-transplant patients. His areas of interest and research include care of post renal and pancreas patients, transplantation of Sickle Cell Anemia patients, management of transplant rejections, transplant infections, skin conditions, weight management issues and recurrent glomerulonephritis after transplantation.



BREAKING THROUGH THE BARRICADE

HIPEC gives surgeons opportunity to treat hard-to-reach cancers in the abdomen

“Our goal is to surgically remove all of the disease that we can,” explained **Ramsay Camp, M.D., FACS**, a surgical oncologist who performs hyperthermic intraperitoneal chemotherapy (HIPEC) with **Virgilio George, M.D.**, a gastrointestinal surgeon, in a recent discussion with *Progressnotes*, MUSC’s medical magazine.

“And then we use HIPEC to treat residual cells that we can’t see throughout the whole abdomen.”

Walls are designed to do one of two things: contain or keep out. And the peritoneum is no exception. As the lining of the abdominal cavity covering the organs within, the peritoneum provides protection from infection as well as storing fat. It keeps the organs in place while allowing blood vessels, lymph vessels and nerves to pass through.

It is also extraordinarily effective at keeping everything else out, which makes treating cancer in the abdominal cavity difficult to target with systemic chemotherapy. To get around the “plasma-peritoneal barrier,” physicians like George and Camp turn to HIPEC to help patients with an otherwise poor prognosis.

By combining both tumor removal surgery and HIPEC, researchers studying colorectal cancer found the percentage of patients who were free of disease rose from 3-12% to 55-74%, and their 10-year survival rate rose from 21-32% to 60-80%.

Primary colorectal cancer, ovarian cancer, gastric cancer, appendiceal cancer, mesothelioma and peritoneal carcinomatosis can be treated with HIPEC as long as they are contained in the peritoneum. “The combination approach provides the only chance for long-term survival in patients with these diseases,” said George.

After surgically removing as much of a patient’s tumor as they can, George and Camp treat the abdomen with a heated chemotherapy



When Bernadette Mouzon was diagnosed with *pseudomyxoma peritonei*, a rare disease characterized by the accumulation of mucus-secreting tumor cells in the abdominal cavity, she found out her treatment would include surgery and HIPEC, a unique type of chemotherapy. Mouzon learned about HIPEC from colon and rectal surgeon [Virgilio George, M.D.](#) George says the combination of the temperature and the chemotherapy allows the tumor cells to break and the chemotherapy to attack the cancerous cells.

READ THE FULL STORY

To learn more about Bernadette's journey, visit musc.edu/catalyst. Story by Emma Vought; photo by Sarah Pack

solution. Administered via catheters, the solution is heated to just above the patient's body temperature in an effort to destroy any remaining microscopic cancer cells. The heat helps with absorption while also degrading proteins in these cells and increasing their pH levels. These changes activate lysosomes within the cancer cells and encourage cell death.

Using a HIPEC perfusion system to maintain a consistent temperature and push the solution through the catheters into the abdomen, chemotherapy is circulated throughout the patient's peritoneum for 90 minutes. The physician team also keeps cooling blankets, ice and cool IV fluids on hand to control the patient's body temperature during the procedure.

HIPEC offers a solution for patients with peritoneal metastasis by delivering a higher concentration of the drug while also being less toxic to the rest of the body.

The plasma-peritoneal barrier confines chemotherapy to that specific area, allowing HIPEC doses that are more concentrated than those for traditional systemic chemotherapy. Side effects from the procedure usually stem from the duration of the tumor removal surgery rather than the exposure to the solution.

HIPEC in conjunction with surgery involves a coordinated effort between multiple teams to remove the tumors and administer the heated chemotherapy. Because of the complex nature of this treatment, HIPEC is usually only performed at tertiary care centers in the U.S.

"We are excited to no longer have to send patients outside the state," said Camp. "We can perform it right here at MUSC."

WATCH THE VIDEO

To view surgical footage of a HIPEC procedure performed by Dr. Camp and Dr. George, see the MUSC Health Medical Video Center.

READ THE FULL STORY

To read the full version of this article, see the Summer 2019 issue of *Progressnotes*
Article by: Celia Spell; Photo by: Brennan Wesley



COLLABORATION AND INNOVATION

saves life of mom-to-be and baby

Obstetricians. Obstetric anesthesiologists. Trauma surgeons. Neonatologists. Urologists. Oncologists.

A small army awaited a terrified Emrys Hamidi as she was wheeled into a trauma operating room at MUSC for a C-section that would hopefully save her and her baby from a life-threatening condition, placenta accreta - a condition where the placenta attaches too deeply to the uterine wall and can actually grow through the uterus and attach to a nearby organ, often causing the mother to hemorrhage during delivery. It can be deadly, and there haven't been many options for obstetricians who confront a massive hemorrhage during C-section.

But in a fortuitous bit of timing, Trauma surgeon **Evert Eriksson, M.D.** and Trauma program manager **Shawn Crowley, RN, MSN** had recently introduced REBOA (Resuscitative Endovascular Balloon Occlusion of the Aorta) at MUSC Health to use in the Emergency Department for patients bleeding in the abdomen.

The device cuts off blood flow from the aorta into the lower portion of the body, giving doctors time to track down and repair the source of the hemorrhage. After success in the Emergency Department, they decided to call their colleagues in OB-GYN to see if they might be interested in using the new device for pregnant women who hemorrhage during C-sections.

Dr. Scott Sullivan, director of the Division of Maternal Fetal Medicine, and his team began to research the use of REBOA during C-sections to deliver patients with placenta accreta. After several months, they were ready to move forward, and Emrys was one of the first patients to benefit. The Trauma team preps the patient with the hope that the REBOA won't need to be deployed. But after Emrys' son Abbas was delivered, her blood pressure began to drop dramatically. The Trauma

team quickly stepped in to deploy the REBOA, stabilizing her blood pressure and allowing surgeons to repair the damage.

All of that was forethought as much as it was medical prowess," said her husband, Amid Hamidi, who was in the room during delivery. "Had they tried to place it emergently, once things were going sideways, it would have been too late. She would have probably bled out in two minutes. There wouldn't have been enough time to place it."



(left to right) Shawn Crowley, RN, MSN and Evert Eriksson, M.D.

READ THE FULL STORY

visit MUSC Catalyst Article by: Leslie Cantu



AN MUSC FIRST

Patient treated with recently FDA approved endovascular system

Following the recent FDA approval of Cook Medical's Zenith Dissection Endovascular System, the Medical University of South Carolina has treated the first patient in the state with the device.

The system provides surgeons a less invasive alternative to open surgery for repair of Type B aortic dissections of the descending thoracic aorta, which includes the thoracic and abdominal sections.

Moreover, dissections can be categorized as complicated or uncomplicated; examples of complicated dissections include those with rupture or impending rupture, severe aortic valve insufficiency, and limb or visceral malperfusion, where there is a loss of blood supply to a vital organ caused by branch arterial obstruction secondary to the dissection.

Traditionally, thoracic endovascular aortic repair (TEVAR) has been the treatment of choice for most complicated Type B aortic dissections, but has limitations when treating patients with visceral malperfusion. The recently FDA approved Cook Zenith Dissection Endovascular System is an improved treatment option and marks the beginning of a new treatment algorithm for these patients.

MUSC vascular surgeon **Mathew Wooster, M.D.** treated the first patient in South Carolina using the Zenith Dissection Endovascular System, the first operation of its kind in the state. His MUSC surgical colleague, **Elizabeth Genovese, M.D.**, assisted in the leading-edge procedure.

According to Wooster, the early aortic remodeling seen after treatment with this dissection stent was unprecedented.

"For patients with acute aortic dissection with complications, any other treatment modality would have minimal chance of improving spinal cord perfusion simultaneously with increasing flow to the lower extremities," said Wooster.

Added benefits to the Cook Zenith Dissection Endovascular System include the relative technical ease of deployment, off the shelf availability for acute emergent/urgent repairs, and minimal contraindications.

VASCULAR SURGERY SUPPORT FUND

To contribute to the Vascular Surgery Support Fund
visit connect2.musc.edu/surgery



MUSC CHILDREN'S HEALTH

CHANGING WHAT'S POSSIBLE

MUSC Shawn Jenkins Children's Hospital and the Summey Medical Pavilion offer state-of-the-art, specialized pediatric care to South Carolinians

The MUSC Shawn Jenkins Children's Hospital and the Pearl Tourville Women's Pavilion project continues as planned with opening scheduled in late 2019.

This state-of-the-art building will transform how care is delivered to children and women in the Lowcountry and seamlessly integrate children's care with obstetrical services.

The soon-to-open glass building totals 11 stories and 624,000 square feet, offering expansive views of the Ashley River. The new hospital includes state-of-the-art technology and surgical suites for our world-class pediatric sub-specialists and surgeons, allowing our team to provide the highest quality, patient-focused care.

Designed with the input of families and community members who had a connection to MUSC Children's Hospital, the new hospital will provide a seamless experience for both patients and their families. There's a game room for teens, playrooms for children, indoor and outdoor playgrounds, as well as Lowcountry themed hallways on each floor.



In an effort to complement the new children's hospital by simultaneously providing a regional outpatient pediatric subspecialty care presence, the Summey Medical Pavilion, a pediatric-dedicated, 100,000-square-foot facility, opened in spring 2019 in North Charleston.

Among its many amenities are a pediatric outpatient surgical facility and a pediatric multispecialty medical office building that will include an urgent care clinic, imaging facility and infusion rooms.

North Charleston Mayor Keith Summey and North Charleston City Council voted in 2016 to donate the land for the facility to MUSC, aligning with MUSC Children's Health's focus to provide more clinical access to patients and their families who live in communities throughout the tri-county area.

PEDIATRIC BURN PROGRAM offers 21st century, innovative burn care



Aaron Lesher, M.D.

The MUSC Children's Hospital pediatric burn program provides comprehensive burn care to South Carolina's children. Treating more than 200 patients a year, the program is the only tertiary burn program in the state. **Aaron Lesher, M.D.**, pediatric surgeon, leads the pediatric burn program. **Steven Kahn, M.D.**, a national leader in burn surgery, has been recruited to MUSC to build a comprehensive burn center that will expand the current services to provide care for patients of all ages.

The MUSC pediatric burn program continues to offer 21st century, innovative burn care to its patients. Lesher has led a significant effort in telemedicine to improve access to expert burn care for children from the far corners of the state. With support from the BlueCross BlueShield of SC Foundation, he developed a mobile health solution that connects burn-injured children to the burn surgeons at MUSC during the acute and chronic phases of burn injury.

MUSC has a long history of leadership in burn surgery, beginning with **Curtis P. Artz, M.D.**, an internationally renowned burn surgeon and chairman of the Department of Surgery from 1965 - 1977. As the newly appointed Burn Director, Kahn is charged with establishing the MUSC Burn Center with the vision of establishing an American Burn Association certified burn center to demonstrate the highest level of commitment to the treatment of burn injury.

CHEST WALL DEFORMITY video educates families and providers



Christian Streck, M.D.

The Center for Chest Wall Deformities at MUSC Children's Health offers the most advanced level of health care for chest wall deformities by some of the country's most experienced surgeons. Chest wall deformities often include conditions such as pectus excavatum, a congenital disorder which causes the chest to have a depressed or "caved in" appearance. This condition can worsen as the child ages and some children report chest pain, shortness of breath or limited tolerance for exercise. It is the most common congenital chest wall anomaly in children. Surgery is the primary treatment for moderate to severe pectus excavatum, particularly when there are associated symptoms.

A new video on the MUSC Health Medical Video Center website reviews each part of the surgery needed to correct the pectus deformity. Narrated by MUSC Chief of Pediatric Surgery, **Christian J. Streck, M.D.**, the video helps educate physicians and families about the procedure. "When you talk to patients post-operatively it's very clear in many cases that their ability to run and swim and do other sports is much improved," Streck said.

HEART CENTER continues to earn three-star rating for congenital heart surgery



Scott M. Bradley, M.D.
Professor of Surgery
Robert M. Sade, M.D. Endowed
Chair in Pediatric Cardiac Surgery

MUSC Children's Heart Center has once again earned a distinguished three-star rating from The Society of Thoracic Surgeons (STS) for its patient care and outcomes in congenital heart surgery. This represents the 8th consecutive semiannual report where the Heart Center has received this rating. The three-star rating denotes an operative mortality over four years which is significantly below expected. It was achieved by only 10 out of 118 programs nationally.

"**Dr. Kavarana** and I are excited to see MUSC Children's Heart Center has once again earned a three-star rating," said **Dr. Bradley**. "Our entire pediatric cardiac team is pleased with our group's achievement."



Mino N. Kavarana, M.D.
Professor of Surgery and
Pediatrics



Cindy Talley, M.D., Vice Chair of Education, leads the education team (from left to right:) Program Coordinators Jordan Toole, Kris Banks-Small, Sara Frampton, Diana Heyward, and Director of Education, June Cameron

EDUCATION CURRICULUM RETREAT

explores pathways to develop future generations of surgical leaders

In order to solidify common goals and discuss hot topics, an Education Team Retreat was held on August 24, 2019 at the home of **Chair Prabhakar Baliga, M.D.**

The ACGME program directors, associate program directors, student course directors, program coordinators and our resident representative were invited to attend. With 16 eager attendees on a Saturday morning, we served breakfast and started the discussion.

The program directors voiced what made the most significant impact on them during their residency was autonomy and mentorship. They recounted faculty interactions that positively influenced them including achieving trust and respect, demonstrating work-life balance, providing a family environment like asking residents to join for Thanksgiving, but also pushing their comfort level clinically. Each said they chose their residency because the chiefs seemed competent to practice, had good resident camaraderie, diversity, and reputation for hard work.

The program coordinators discussed difficult situations and expressed they appreciated their program directors when they lead with humility, relate to others, and recognize that education is a team sport.

The more difficult part however was defining the MUSC Training Product. We found the most successful graduates are proactive, hard-working, empathetic and inquisitive among other characteristics.

In order to attract these candidates, we created a Social Media Task force led by **Andrea Abbott, M.D., MSCR** and General Surgery Program Coordinator **Sara Frampton** that will develop an Instagram account and collaborate with Lauren Hooker, communications manager, to optimize our online profiles.

We then created a Diversity and Inclusion Task force with **Lance Tavana, M.D., Andrea Abbott, M.D., Alicia Privette, M.D.,** and **Milton Armstrong, M.D.** They currently have several recommendations under review that will propel our programs forward.

The age-old question of recruitment for serious scientists versus community surgeons was concluded relatively easily. We want our graduates to have a wide range of career paths which we will create with varied faculty backgrounds, high case mix index, community surgeon engagement, resident-focused curriculum, and development of academic-professional pathways.

In other words, we accept all applicants and feel comfortable that we can create the experience and professional niche of their choosing.

Finally, during the session, we prepped for a budget retreat to prioritize budget items and ensure equality among programs. **Jean Marie Ruddy, M.D.** and the Research Council have revised the Travel Policy for Residents which will be finalized and dispersed after the budget retreat.

As always, send questions and suggestions our way. We strive to inspire, promote, and encourage our learners every day!



Cynthia Talley, M.D., FACS
Vice Chair of Education
MUSC Department of Surgery

RESIDENT AWARDS AND RECOGNITIONS



JEREC RICCI, M.D. PGY-3 RESEARCH AWARDED NIH POSTDOCTORAL FELLOW

Jerec Ricci, M.D., PGY - 3 Research has been awarded a Postdoctoral Fellowship in the T32 - Program in Immunology Research and Entrepreneurship (T32-PIRE) in the Department of Microbiology & Immunology, College of Medicine, Medical University of South Carolina (MUSC), under the supervision and mentorship of Carl Atkinson, Ph.D.



SEAN DIEFFENBAUGHER, M.D. PGY-6 ACUTE CARE FELLOW

BEST ABSTRACT/PODIUM PRESENTATION

Sean Dieffenbauger, M.D., PGY-6 Acute Care Fellow, received the award for Best Abstract/ Podium Presentation at the Southeastern Trauma Symposium, in Columbia, SC, on October 25, 2019. His presentation was “The Sooner the Better: “early” administration of venous thromboembolism prophylaxis in the acutely injured trauma patient.” Coauthors: Drs. Eriksson, Crookes, Privette, Leon, and Smith along with Shawn Crowley, MSN and Stephanie Chamberlain.



AHMED ALLAWI, M.D. MATCHES INTO MAYO CLINIC

Ahmed Allawi, M.D., PGY-5 matched into the Mayo Clinic for a one-year Colon and Rectal Surgery Residency at Mayo Clinic’s campus in Rochester, Minnesota. The Mayo Clinic is a referral center for a high volume of complex pelvic tumor management and IBD. Mayo Clinic’s favorable faculty ratio, large patient population and state-of-the-art diagnostic, therapeutic and research facilities combine to create a truly integrated educational experience.

TO LEARN MORE ABOUT
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VISIT, MUSC.EDU/SURGERY/EDUCATION

SURGICAL RESIDENT RESEARCH
AND EDUCATION FUND
To support the Surgical Resident Research and Education Fund
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SURGERY RESEARCH RECOGNITION DAY

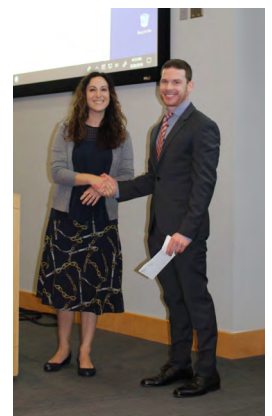
Surgery Research Recognition Day showcases the exceptional research work in which our residents, medical students and graduate students participate. The Department highlighted the top ten oral presentations and 16 poster presentations throughout the day. Following each presentation, an open forum was held where faculty and students ask questions and provide commentary.

“This day celebrates the clinical and basic science research conducted by faculty, residents, and students affiliated with the Department of Surgery” said **Jean Marie Ruddy, M.D.** Associate Program Director for Resident Research.

The afternoon began with the Annual Eric R. Frykberg, M.D. Lecture and was delivered by Gerard M. Doherty, M.D. Doherty is the Moseley Professor of Surgery at Harvard Medical School, Surgeon-in-Chief, Brigham Health & Dana-Farber Cancer Institute, and Crowley Family Distinguished Chair in the Department of Surgery at Brigham and Women’s Hospital. He provided an insightful and motivational presentation entitled “Surgery.” Dr. Doherty also served as guest judge for the day.



Gerard Doherty, M.D. (second from right) with judges Shikhar Mehrotra, Ph.D. and Steve Kahn, M.D., Prabhakar Baliga, M.D., Chair of the Department and Jean Marie Ruddy, M.D., Associate Program Director for Resident Research.



Once the scores were tallied, the winners were announced. For both the Basic Science Oral and Poster Presentations: **Kunal Patel, M.D.**, Clinical Science Poster Presentation: **Shelby Allen, M.D.**, and Clinical Science Oral Presentation: **Ryan King, M.D.** (pictured above from left to right.)



GATHERINGS

The Department of Surgery held the Curtis P. Artz MUSC Surgical Society SC ACS Chapter Reception in San Francisco during the ACS Clinical Congress at La Mar SF.

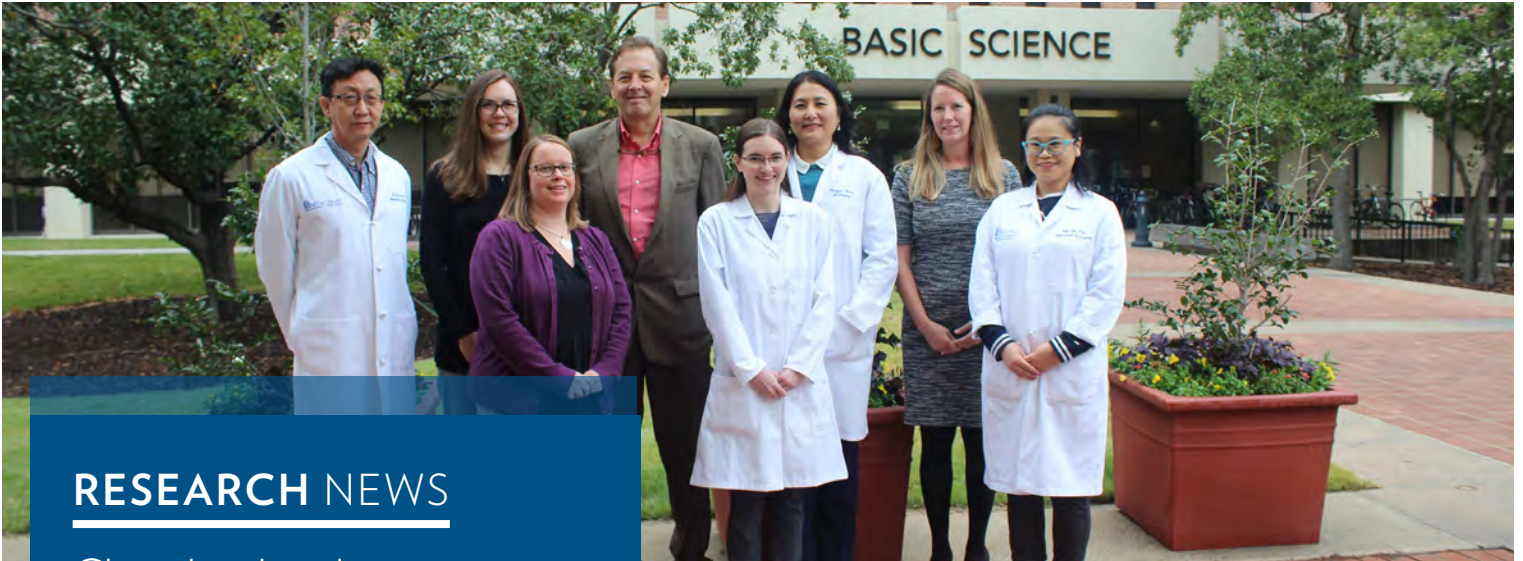


This year, the ACS Clinical Congress was held in San Francisco from October 27-31. The conference features outstanding education and training opportunities at the premier annual surgical meeting for surgeons, surgery residents, medical students, and members of surgical teams. The hallmarks of the Clinical Congress are a broad range of hands-on and didactic learning opportunities and timely discourse on the most relevant surgical practices and research, along with unparalleled access to peers.

Just as important is the opportunity for colleagues to gather socially and enjoy some down time with ACS leaders, faculty, residents and family. The Curtis P. Artz MUSC Surgical Society, along with the SC Chapter of the ACS and the Greenville and Columbia program hosted a gathering at La Mar on the Embarcadero to a “sell-out” crowd.

Prabhakar Baliga, M.D. shared with several members of the founding Artz Society leadership, “I left that night with the strongest and most satisfying heart that the Curtis Artz Society will not just survive but will thrive. The foundation that you built is paying off in many ways, particularly with such strong engagement of the new generation.”





RESEARCH NEWS

Clinical trial explores new therapeutic for type 1 diabetes

(top row: left to right) Dr. Wei Hua, Meghan Schneider, Dr. Charlie Strange, Dr. Hongjun Wang, Danielle Woodford (bottom row: left to right) Gwen Blanton, Lindsay Swaby, Dr. Wenyu Gou

Type 1 diabetes (T1D) is a chronic condition in which the body's own immune system attacks and destroys beta cells in the pancreas. Once the beta cells are destroyed, the pancreas can no longer produce insulin. Currently, there is no cure for T1D and treatment focuses on managing blood sugar levels. Researchers at MUSC, including **Hongjun Wang, Ph.D.**, tenured professor in the Department of Surgery, hope to offer patients a better alternative.

Wang joined MUSC eight years ago, believing the excellence in islet cell transplantation, a clean cell facility, and a focus on population health provided the perfect opportunity for her to conduct research that she hopes will lead to a cure for patients with T1D. "I am very grateful Dr. Baliga recruited me eight years ago," said Wang. "MUSC provides the resources to build on what I learned at Harvard under my mentor, Fritz Bach, M.D., a brilliant transplant immunologist, and apply it to my work in islet cell transplantation and T1D."

She adds the opportunity to work collaboratively with other investigators who are also passionate about translating the basic science to solutions for patients suffering from diabetes is important. "I am very lucky to work with such passionate people like **Charlie Strange, M.D., Deborah Bowlby, M.D. and Gary Gilkeson, M.D.**, among others," said Wang.

Strange serves as the co-investigator of a \$2M National Institutes of Health grant to explore novel treatments for patients with T1D using animal models, combining Wang's expertise in islet biology and immunology and Strange's expertise in AAT biology and genomics. This grant is part of a series of NIH funded grants in the Wang Lab, one of the most highly funded labs in the Department of Surgery.

Currently the Wang Lab has four NIH funded grants running concurrently as well as a Veterans Affairs Administration Merit Award

and private funding. "The beauty of our lab at MUSC is the ability to do translational research," said Wang. "We can study the mechanisms of the disease on the bench and then have the ability to move to the bedside in a clinical trial."

This fall, their effort in the lab moved the science forward and they are now enrolling patients in a clinical trial to study mesenchymal stem cells (MSCs) from umbilical cord (UC-MSCs) as a possible therapeutic for patients with early onset T1D. The use of mesenchymal stem cells (MSCs) as a therapeutic tool to reduce progression of T1D represents a promising new intervention. A pilot clinical trial in Sweden showed that a single infusion of autologous bone marrow derived MSCs preserved insulin secretion in adult patients with new onset T1D.

"MSCs derived from umbilical cord (UC-MSCs) show greater cell yield, a less invasive harvesting procedure with associated reduced morbidity, and stronger immunosuppressive and regenerative potential and are a popular source for cell therapy," said Wang. "Based on the above principles, MUSC is embarking on a randomized, double blind, placebo controlled single center clinical trial to determine the efficacy of UC-MSC therapy in patients with new onset T1D."

Contingent on enrollment of six newly diagnosed T1D adult patients, the NIH funded trial will be \$3.5M over a five year period. The clinical trial hypothesis is that systemic administration of MSCs freshly expanded ex vivo reduces progression of diabetes and preserves insulin secretion through restoring normal function of the immune system and preservation/improvement of pancreatic cells in patients with T1D.

LEARN MORE about the clinical trial, visit <http://www.stemcelldiabetes.com>



RESEARCHERS RECEIVE NOTIFICATION OF PATENT

Satish Nadig, M.D., Ph.D., Carl Atkinson, Ph.D., and Anne-Marie Broome, Ph.D., (not pictured) received notification by the US Patent Office that their novel invention of an immunosuppressant nanoparticle for use in transplantation has been issued a patent.

This technology is the first of its kind to target drug therapies to transplantable organs so that global anti-rejection medication can be minimized or avoided. With this technology the organs are pre-treated prior to implantation and the patient is protected from the side effects of these medications. MUSC's Lee Patterson Allen Transplant ImmunoBiology Laboratory has pioneered this technology which is now in large animal trials.

If successful in clinical trials, these nanotherapeutics would be paradigm shifting for the field of transplantation.

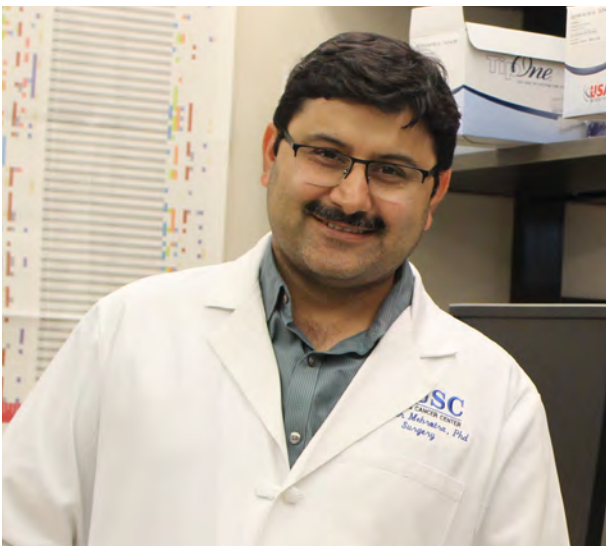
MICHAEL YOST, PH.D. AND CARL ATKINSON, PH.D. AWARDED \$1.6M NIH GRANT

Michael Yost, Ph.D. and Carl Atkinson, Ph.D. were awarded a four year \$1,623,324 NIH Multiple Principle Investigator Research Project Grant (R01) for their study; "Cell survival in engineered skeletal muscle: The role of complement." The study seeks to modulate the early inflammatory events that currently hamper the success of engineered transplanted tissues. Their novel studies will explore the role of the complement system in these processes with the aim to modulate complement signaling such that inflammation is reduced, leading to improved neovascularization and engineered tissue graft acceptance.



NEW LIPID SIGNALING TARGET MAY IMPROVE T CELL IMMUNOTHERAPY

MUSC cancer researchers **Shikhar Mehrotra, Ph.D.** and Besim Ogretmen, Ph.D., co-senior authors of Pro-Survival Lipid Sphingosine-1-Phosphate Metabolically Programs T Cells to Limit Anti-tumor Activity, unravel molecular processes regulating the fate of T cells in cancer, according to their recent study published in Cell Reports. Dr. Mehrotra's lab has shown that genetic ablation or pharmacological inhibition of SphK1 expression limits intrinsic S1P levels and improves the T cell mediated immunotherapeutic control of the tumor. In other words, targeting SphK1 allows the immune cells to stick around and kill cancer cells.





HALSTED SOCIETY MEETING

shines a light on MUSC surgical expertise

Surgical leaders from around the country attended the annual meeting of the Halsted Society in Charleston in September. The MUSC Department of Surgery served as the 2019 host, bringing great prestige to our University and providing an opportunity to showcase our faculty, research and innovation to national leaders.

The Society honors William Stewart Halsted, an American pioneer of scientific surgery who was an early champion of anesthetics, introduced new operations, and established the first surgical school in the U.S. Halsted is one of Johns Hopkins University's founding physicians and his impact to the discipline of surgery was great.

A year after his death in 1922, the Halsted Society was formed to honor Dr. Halsted by furthering the scientific ideals for which he stood. The Halsted Society is one of the most prestigious surgical organizations in the country; selected members are pillars of the surgical community and have reached the pinnacle of their success. The meeting format of having a day of presentations at a member's host institution provides opportunities to learn about what is new on the horizon at some of the most prominent institutions in the country.

"As a Halsted member, I can appreciate the unique opportunity that this annual meeting presents to deepen relationships, offer new cultural experiences, and highlight accolades of the host organization. I'm proud that we had an opportunity this year to showcase MUSC, as well as our beautiful city," said **David J. Cole, M.D., FACS**, MUSC President.

On Thursday of the event, the MUSC Department of Surgery held a full day of scientific sessions on the MUSC campus. More than 90 Halstedians attended, as well as faculty and leaders in the MUSC community. MUSC President **David Cole**, College of Medicine Dean **Ray DuBois**, and MUSC Health CEO **Pat Cawley** all provided welcome remarks that were insightful, illustrating where we are going as an institution -- driving change to allow for a better future for the patients we serve.

The academic sessions highlighted MUSC's academic excellence, surgical expertise, innovation and entrepreneurship, with panel discussions at the end of each section, allowing for optimal opportunities for MUSC faculty to engage with these national leaders.

“ The opportunity to host – and the subsequent success of the meeting - was a significant milestone in strengthening the national recognition of the MUSC Department of Surgery. ”

- Prabhakar Baliga, M.D.

Dr. DuBois commented how fortunate we were to have the opportunity to highlight MUSC and the work being done here to such a prestigious group of surgical leaders from some of the country's foremost institutions. "The members of this group are at the top of their field and they were duly impressed by the science and hospitality that they experienced here," said DuBois.

When **Prabhakar Baliga, M.D., FACS** was appointed chair of the Department of Surgery in 2015, he aspired to raise the department to a nationally recognized department of surgical excellence. "We consistently garner a lot of local and regional recognition for the work we do," said Baliga. "The opportunity to host – and the subsequent success of the meeting - was a significant milestone in strengthening the national recognition of the MUSC Department of Surgery."

A unique group of leaders who travel to host institutions each year to learn about the latest leading edge innovations and surgical procedures, Halsted Society members also look forward to learning about the culture and the arts of their host city, enjoying collegial time together after the daily scientific sessions. The three-day scientific meeting was complemented with insightful tours and customized receptions that highlighted our beautiful and historically significant city.

Although the impact of being the host institution is hard to measure in a tangible way, Baliga observed that the overwhelming number of complimentary emails and notes he received from the members of the Society for weeks after the meeting was astounding and offers insight into the success of the meeting.



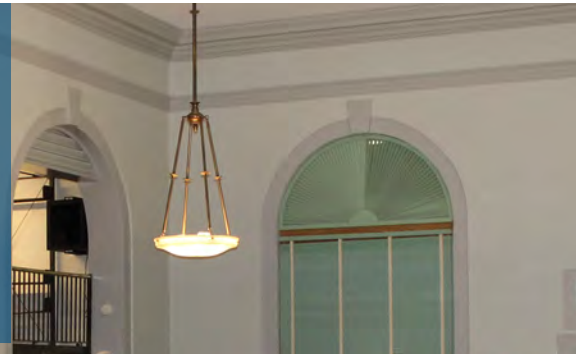
GULLAH-INSPIRED WALKING TOUR

A walking tour with Dr. Ade Ofunniyin, grandson of the legendary Charleston Blacksmith, Philip Simmons, and founder of the Gullah Society, provided an insightful conversation on the Gullah Geechee contributions to the Lowcountry.



CHARLESTON LIBRARY SOCIETY

A visit to the Charleston Library Society, where the treasures from the vault, including such gems as a handwritten letter from George Washington, were on display for our guests. As well as a visit to the Roper House, part of the American Classical Homes Preservation Trust.



DINNER AND RECEPTION AT THE GIBBES MUSEUM OF ART

The Gibbes Museum of Art is home to the foremost collection of American art that incorporates the story of Charleston.

During the cocktail reception, guests enjoyed a docent-led private tour of the galleries and entertainment by local harpist, Abigail Kent, named the February 2018 “New Artist of the Month” for Musical America International Magazine. Miss Kent is the 2017–19 touring “Concert Artist” of the American Harp Society after winning the prestigious Pan-American solo competition.





BLACK TIE RECEPTION AND DINNER

The Friday night Black Tie Dinner and Reception included a cocktail reception and special musical performance at Circular Congregational Church: *The Sound of Charleston from Gospel to Gershwin*, Charleston's longest running musical production. Guests experienced a special performance of *The Sound of Charleston*, including spirituals sung by Ann Caldwell, *Porgy & Bess's Summertime* performed by soprano Diamond Tyler, and *Rhapsody in Blue* performed by pianists Ghadi Shayban and Maida Libkin. Following the reception was the Black Tie Dinner in the Sottile Ballroom, part of the historic Riviera Theater.





MUSC HONORS THREE NEW ENDOWED CHAIRS

in Cardiothoracic Surgery

Chadrick Denlinger, M.D., Marc R. Katz, M.D., MPH, and Lucian Lozonschi, M.D., all newly named Endowed Chairs in the division of Cardiothoracic Surgery, were honored during an investiture ceremony and dinner in the presence of more than 100 family members, friends, colleagues, and donors at the Country Club of Charleston, on Saturday October 12, 2019.

Prabhakar Baliga, M.D., chair of the Department of Surgery, recognized these three honorees as superb servants to our medical community, broadening the scope and level of care through their innovation and expertise in minimally invasive and robotic approaches to complex surgeries.

Chadrick Denlinger, M.D. is the inaugural Flora McLeod Edwards Distinguished Endowed Chair in Cancer Research, Professor of Surgery and Surgical Director of the Lung Transplant Program at MUSC. He has grown the thoracic surgery program at MUSC through his minimally invasive approaches and serves as a resource to our community through outreach programs in Murrell's Inlet and Beaufort, impacting cancer care in those communities. His reputation has grown so significantly in the community that the volume of thoracic surgery has increased by nearly 90% in the past four years.

Marc R. Katz, M.D., MPH is the Fred A. Crawford, Jr. M.D. Endowed Chair in Cardiothoracic Surgery, Professor and Chief of Cardiothoracic Surgery, Associate Director, Heart and Vascular Integrated Center of Clinical Excellence, and Co-Director, South Carolina Heart Valve Center. Dr. Katz is the first person to be named to this chair.

“ The level of skill these three newly-named Endowed Chairs bring to our community and our institution is immeasurable. Their innovative minds, collaborative approaches, and leading-edge research is changing what’s possible in Cardiothoracic Surgery. ”

- Prabhakar Baliga, M.D.

During his career in adult cardiac surgery, he performed the first combined heart - kidney transplant in the eastern U.S., the first left ventricular assist device in Virginia, and has been a pioneer in minimally invasive and robotic heart surgery. He is recognized for his expertise by serving on the Society for Thoracic Surgery (STS) robotic surgery task force and teaching the STS robotic heart surgery symposium.

Lucian Lozonschi, M.D. is the inaugural John M. Kratz, M.D. Endowed Chair in Cardiac Surgery and Research, Professor of Surgery and Director of Surgical Heart Failure and Cardiac Transplantation.

Upon joining MUSC in 2017, Lozonschi started implanting left ventricular assist devices (LVADs) using a sternal sparing approach via two small thoracotomy incisions thus bringing MUSC into a small elite group of centers that performs this procedure nationally. Under his leadership, both heart transplant and mechanical-assist device programs have achieved ultimate outcomes.

In his opening comments, Dr. Baliga acknowledged the significant contributions of **Fred Crawford, M.D.**, Distinguished University Professor and Chair Emeritus.

Dr. Baliga also acknowledged the many other surgical leaders who have worked behind the scenes to advance the division as well as the countless philanthropic donors that have made the opportunity to present these distinguished faculty members with their Endowed Chairs.



WHAT'S YOUR WHY?

Bob Richards shares why he supports Transplant Surgery

In May 2012, Bob Richards learned he was in dire need of a kidney due to polycystic kidney disease, an inherited condition that eventually leads to organ failure.

Bob reached out to family and friends, sharing his need for a living donor. Ten people responded, and one was a perfect match.

Less than a year later, he was the fortunate recipient of a living donor kidney from his niece, Roseann Richards-Hines.

And since that day, he has not stopped demonstrating his gratitude in countless ways.

Among those efforts, following Bob's kidney transplant, he and his wife Kathy initiated "The Roseann Richards-Hines Education and Research Fund" in Transplant Surgery with a generous monetary pledge as a way to honor Roseann. The Fund has enabled the development and publication of numerous Living Donor education materials for both transplant patients and potential donors, in clinic I-pad registration functionality, development of a peer mentoring program and outreach education.

"It was when I met Vera Ford, the Director of Development, that I truly understood the potential of how a patient education and research fund could help advance the living donor program at MUSC," said Bob. "The research is superb. The surgeons and scientists are focusing on things that are transforming transplantation."

MUSC has a long history of surgical excellence in the field of solid organ transplants. For more than 50 years, the program has continued to innovate and grow.

By 2018, the kidney transplant volume ranked among the top 10 in the U.S. Part of this ranking is attributed to the significant growth of living donation over the past six years.

However, Bob and Kathy's initial gift did so much more than provide educational materials.

The initial support for The Roseann Richards-Hines Education and Research Fund, in conjunction with meaningful donations from a close-knit group of kidney transplant patients and living donors, helped launch **The MUSC Living Donor Institute**.

This small group of MUSC transplant recipients and their spouses wanted to streamline their support to ease some of the challenges transplant patients face: financial barriers, disparities in access to care/education, shortage of living donors, and systemic effects of the immunosuppressant drugs.

Their work has been transformative.

In a little over five years, this small force of determined, compassionate people individually and collectively started a patient education fund, hosted a golf tournament (2016-19) which raised more than \$500,000 in funds for transplant education, patient support, and have been instrumental in funding immunotherapy research.

This momentum and additional financial backing has helped increase awareness for living donations through media coverage, and complimented funding for a named immunobiology research laboratory.

Most recently, a transformational gift from the Patterson Barclay Memorial Foundation dedicating \$1,500,000 in memory of a family member. This gift created The **MUSC Transplant Research and Immunobiology Institute** (TRII), further investing in organ transplant research at MUSC and

helping to move an immunosuppression medication targeted delivery concept closer to clinical trials.

The initial pledge Bob and Kathy made has been paid in full. Several family members and friends supported them with additional donations that helped the initial Roseann Richards – Hines fund grow. Kathy and Bob have now initiated a second pledge with MUSC and have also included MUSC in their wills.

They are committed to supporting the Living Donor Institute through the Roseann Richards-Hines Education and Research Fund to drive more living donor transplants and support organ transplant research at MUSC with a personal long-term goal of providing a minimum of \$500,000 to the fund.

"There's always room for better research. There's always room for educating people," said Bob. "When you are privileged to see how the medical community is working towards solutions to help save lives, I firmly believe anything Kathy and I can do to provide resources is imperative."

Bob adds that it's not just about fixing people who are already sick. "It's the research side that I think is probably the hidden gem at MUSC," he said. "They are doing things that are cutting edge in a lot of fields. I think the biggest thing is that when you get involved at MUSC, you find out how good they are."

To date, contributions like Bob's to the Living Donor Institute have been invaluable. To enable this effort to continue, we must make new investments in the following areas:

- **ImmunoEngineering**
- **Epidemiological Research**
- **Improve Long-term Survival**
- **Expand Mobile Health Technology**

We invite you to partner with us in leading the charge at <https://connect2.musc.edu/surgery>.

For more information, please contact Vera Ford, Director of Development, MUSC Department of Surgery at **843-792-1840** or fordva@musc.edu.

Gratitude

Your generous support has made much possible.

In this season of giving thanks, we extend our deepest gratitude to each of you who has included the Department of Surgery in your charitable giving. Thanks to you, we raised over \$2.5 million in private philanthropic contributions this past year in support of dozens of meaningful initiatives.

These are just a few of the areas of most significant impact:

SURGICAL EDUCATION



Our donors completed the \$2 million Fred A. Crawford M.D. Endowed Chair in Cardiothoracic Surgery. Dr. Crawford (left) was recognized during the Investiture Ceremony. Dr. Katz (right) is the inaugural recipient of the Fred A. Crawford, M.D. Endowed Chair in Cardiothoracic Surgery.



David Moffat, M.D., PGY-5, Melissa Hite, M.D., PGY-4, and Ahmed Allawi, M.D., PGY-5 attended an advanced robotics course at the Intuitive Center in Atlanta. They also had the opportunity to attend didactic sessions to further their learning.



Development Leadership provided coaching to help residents advance beyond surgical technical skills.

PATIENT SUPPORT



Charlie Hanna, trauma survivor and patient advocate, shared his story with a large group gathered along the Charleston Medical District Greenway as a part of MUSC's Trauma Survivors Day. He explained why he was inspired to create the Trauma Survivors Patient Fund.

RESEARCH



Transplant patient, living donor and philanthropists Dan and Julie Allen gain insights from Carl Atkinson, Ph.D. into the advances currently taking place in immunosuppression research.