DEPARTMENT OF SURGERY | ANNUAL REPORT 2016

Insight to Action

EMORY UNIVERSITY SCHOOL OF MEDICINE

Department of Surgery

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On the cover
Illustration by Satyen Tripathi, MA, CMI, medical illustrator, Department of Surgery

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FROM THE CHAIR

In 2001, six years after my residency, I left the Ann Arbor VA Medical Center to be chief of minimally invasive surgery at Baylor College of Medicine. Minimally invasive surgery was still proving itself and Baylor's program was only a few years old, so I was ready to hit the ground running.

Hoping for fresh guidance, I scheduled a meeting with Michael DeBakey, the father of modern cardiovascular surgery and Baylor's former chair of surgery for 45 years. Minutes after sitting down in his office, I cut to the chase.

"What advice would you give a young surgeon about building a great program?" I asked.

"You need to have a good product," he said. Before I could press him for more, he changed the subject, and then the meeting was over. His prescription was in my head for weeks afterwards.

As my colleagues and I expanded the minimally invasive fellowship, vetted and integrated more laparoscopic procedures into our practice, and began focusing on quality and safety issues, I realized we had organically achieved Dr. DeBakey's advice. Our product was delivering the best care possible, and our patient volume had increased, research funding had grown, and innovation was being translated into new therapies and protocols.

I met with Dr. DeBakey again when I was appointed Baylor's chief of general surgery in 2004, and asked how I could live up to my new role.

"Leaders deliver," he said. This time, I asked for clarification.

"Just because someone gives you a title, doesn't mean they'll automatically follow you," he responded. "You have to earn it."

That simple maxim is as relevant today as it was then, particularly when related to the theme of this report. "Insight to action" is seeing what needs to be done on behalf of our patients, and making it happen. This report provides evidence to that effect.

John F. Sweeney, MD
Joseph Brown Whitehead Professor of Surgery and Chair
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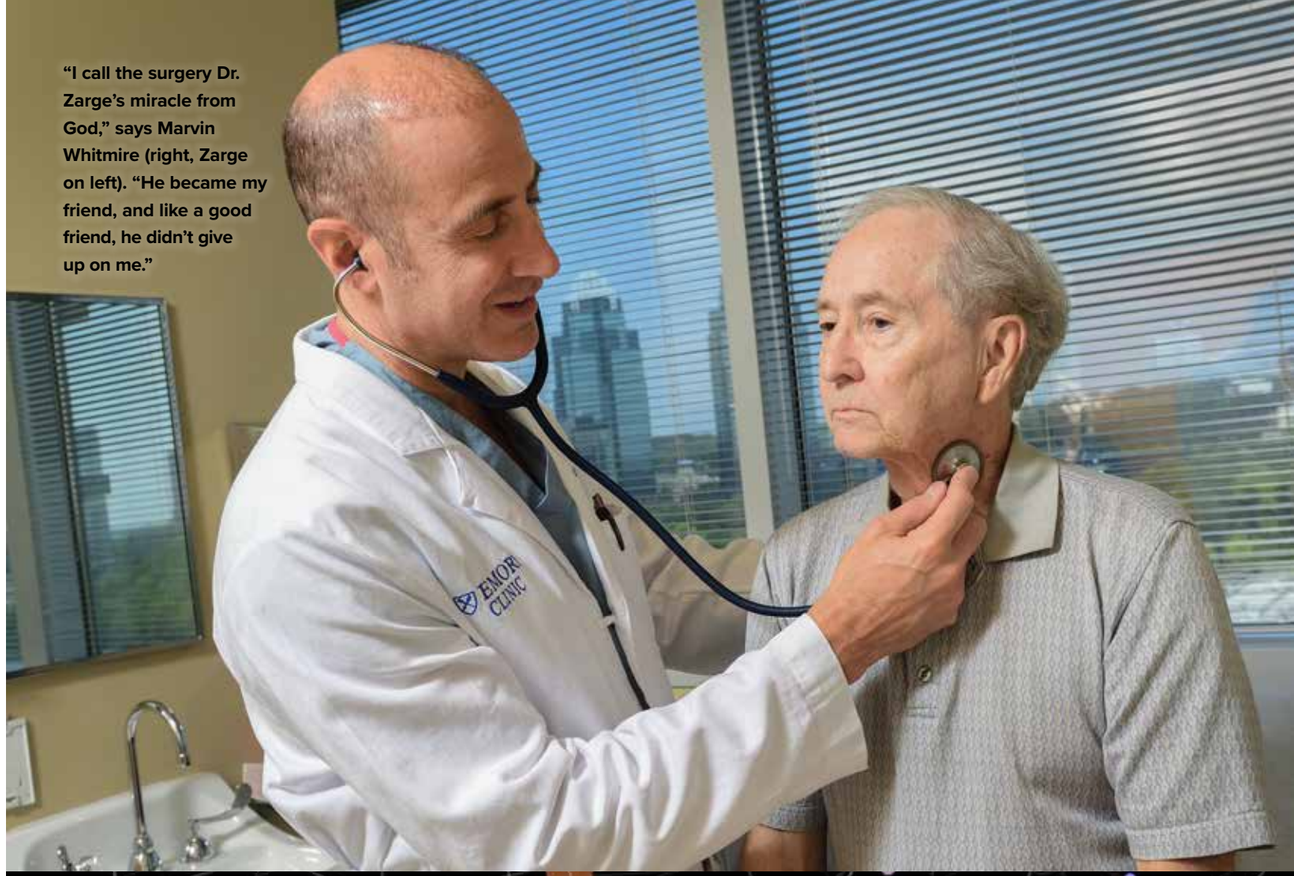


"I call the surgery Dr. Zarge's miracle from God," says Marvin Whitmire (right, Zarge on left). "He became my friend, and like a good friend, he didn't give up on me."

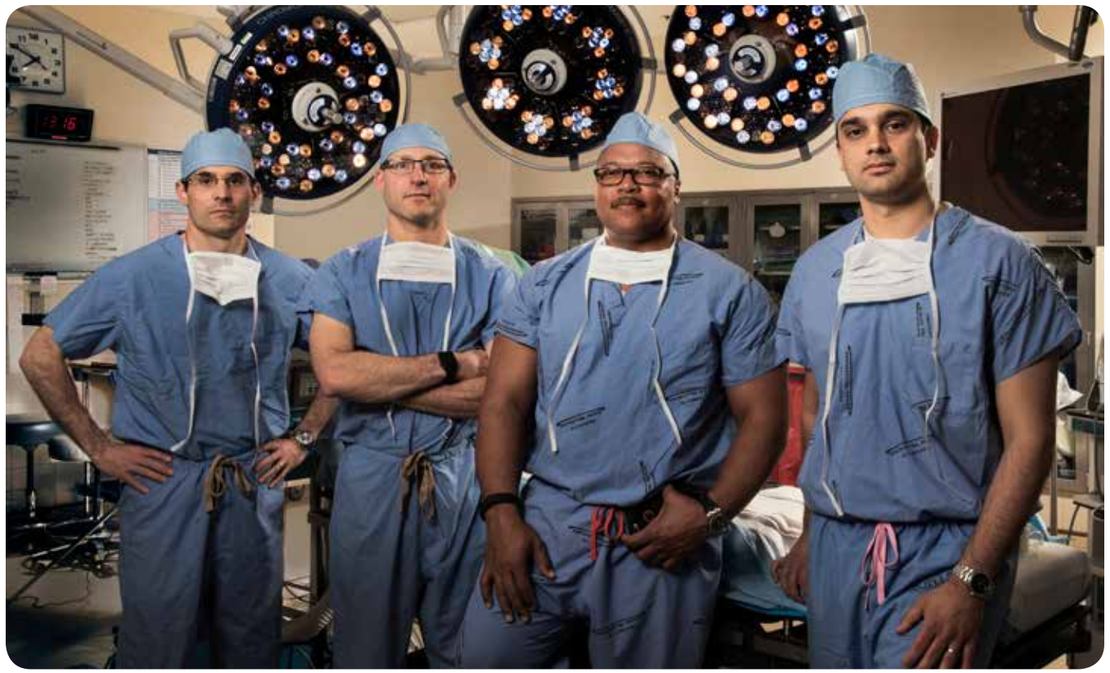
New Patient, New Procedure, New Friends

When Marvin Whitmire answered Joseph Zarge's phone call in late February, the 73 year old was at the crest of a critical stage in a protracted medical journey. "I was down to the last straw in my bucket," he says. "But right away, I could tell Dr. Zarge was excited. He said, 'Marvin, I've found something that I'm pretty sure will fix you up.'"

Whitmire had been referred to Zarge, an Emory vascular surgeon based at Emory Saint Joseph's Hospital (ESJH), when his cardiologist discovered that he had carotid stenosis, a dangerous buildup of plaque inside the carotid arteries that can lead to a potentially disabling stroke. In addition to this diagnosis, Whitmire was recovering from a series of illnesses and interventions, including bypass surgery and treatment for head and neck cancer.

Whitmire's history and the severe degree of his stenosis placed him in the high risk category for complications from carotid endarterectomy (CEA), the open procedure which scrapes out the plaque that is most commonly used to treat the disease. "Primarily, the possibility of stroke and heart attack heightens for patients in Mr. Whitmire's precarious state," says Zarge.

PATIENT CARE



(Left to right) **Felix Fernandez, Seth Force, Allan Pickens,** and **Manu Sancheti** agree that advances in lung screening will increase the identification of patients with early-stage cancer who may be surgical candidates.

Zarge regularly tracks novel treatments and leads clinical trials of promising new technologies. Just days after confirming Whitmire's diagnosis, he learned that the FDA had approved the ENROUTE® neuroprotection and stenting tools used during transcarotid artery revascularization (TCAR) to treat carotid stenosis. The recently published multi-center ROADSTER clinical study had evaluated the endovascular TCAR procedure in patients at high risk for complications from surgery, and reported a low 30-day stroke rate similar to results seen with CEA, but with shorter hospital stays and less incidence of heart attack and cranial nerve injury.

"TCAR's advantages intrigued me, particularly for patients like Mr. Whitmire," says Zarge. "It uses local anesthesia, is less invasive than CEA, involves a much smaller incision above the collarbone, and avoids the aortic arch, which is a major obstacle in carotid stenting. I was as certain as I could be that this was the way to go."

Another unique feature of TCAR is its deployment of a novel system that reverses blood flow away from the brain, preventing any particles released during surgery to float toward it.

A week after their phone conversation, Zarge's team performed the first TCAR procedure done in the state of Georgia on Whitmire, who experienced no complications and went home the next day.

To work further towards substantiating TCAR's value as a dependable tool in impacting stroke prevention, Zarge is the Emory principal investigator for the multi-site ROADSTER 2 trial, which is now enrolling patients. The prospective study will include a minimum of 600 patients at up to 100 sites across the nation. "I hope to see that TCAR has the same excellent long-term outcomes as CEA," he says.

As of September, Zarge and his Emory colleagues Yazan Duwayri, William Jordan, Peter H'Doubler, and Charles Lewinstein have performed 20 TCAR surgeries. ESJH and Emory University Hospital are the only facilities in the state currently offering TCAR.

MAXIMIZING FOREWARNING

Allan Pickens, director of minimally invasive thoracic surgery and thoracic oncology at Emory University Hospital Midtown, and Felix Fernandez, chief of cardiothoracic surgery at the Atlanta VA Medical Center, have been performing video assisted thoracoscopic surgery (VATS) for early stage lung cancers at Emory since joining us in 2008 and 2009, respectively. In particular, Pickens was at the forefront of reducing incision sizes to only one to two inches.

With the normalization of proactive, early screening for those at higher risk of lung cancer performed with sophisticated imaging technologies like CT and PET scans, VATS has the more frequent potential of being the first and perhaps only necessary step in battling the disease.

"Better screening is changing the outcomes for lung cancer patients by allowing us to accurately find these tumors early in the game," Pickens says. "They are generally of a smaller size, totally contained in the lung, and have not had the chance to spread to other parts of the body, lymph nodes, or other organs."

In cases of early detection, the lung cancers are often small and amenable to complete surgical removal, thereby eliminating the need for chemotherapy and radiation. Typically, the surgeons extract a small section of the lung containing the suspicious nodule and send it to pathology to be tested. If cancer is confirmed, a slightly larger piece of lung is removed through the same small incisions to ensure negative margins. Adjacent lymph nodes are also taken out and examined for cancer spread.

"The earlier we know what's going on, the better the chance that we can eradicate the cancer before it has progressed," Fernandez says.

HIDE AND SEEK

While more powerful scanning has made it possible to identify smaller pulmonary nodules, the scans have minimal value as guides for thoracoscopic procedures. Nodule locations shift when the lungs are collapsed during surgery, and small incisions don't permit surgeons to feel for nodules as they can during open procedures.

Emory cardiothoracic surgeons Manu Sancheti, Seth Force, and their colleagues have devised an ingenious solution to this problem: using gold-plated markers, called fiducials, to label small nodules.

Likened to tiny gold seeds about the size of a grain of rice, fiducials are inserted by radiologists into any nodules encountered during scanning. In the operating room, the surgeons then use fluoroscopy, which passes a continuous x-ray beam through the lung, to project an image of the operative field in which the marked fiducials are clearly visible. This enables the surgeons to find the nodules and precisely cut out the appropriate wedges of lung tissue. The markers can even designate so-called ground glass opacities, which appear as hazy areas on CT, are caused by partial filling of air spaces in the lungs, and are difficult to diagnose.

"Some nodules are so small that it's difficult to feel them at all," Force says. "Rather than take as long as 45 minutes to hunt around for a nodule during surgery, this is an attractive and accurate alternative, and we have found it to be dependable and efficient."

"Since the fiducial markers are constructed of gold, which is an inert element, the risk of allergic reaction is negligible," says **Manu Sancheti** (center). "Also, no specialized equipment is required for resection, just routine thoracoscopic instruments."

JOINING FORCES

As friends and teammates, Patrick Sullivan and Virginia Shaffer finished their Emory general surgery residencies in 2010. One year later, they returned to Emory after doing their colorectal fellowships, his at the Mayo Clinic, hers at the Cleveland Clinic. Sullivan joined the division of surgical oncology, and Shaffer became a member of the division of general and GI surgery.

"We worked well together, and it was always in the back of our minds that we should start a freestanding division of colorectal surgery," says Sullivan. "It made perfect sense, particularly since colorectal surgery has always been evenly divided between general surgery and surgical oncology. In the past, surgical oncologists cared for patients with colon and rectal cancers, while general surgeons treated such non-cancerous conditions as inflammatory bowel disease, diverticulitis, and anorectal disease."

Sullivan and Shaffer's mutual ambition picked up steam when colorectal surgeon Seth Rosen joined Emory in 2014, bringing his expertise in robotic-assisted colectomy and such recently developed minimally invasive approaches as the Procedure for Prolapsing Hemorrhoids (PPH), Doppler-assisted hemorrhoid artery ligation, Transanal Endoscopic Microsurgery (TEMS), and Stapled Transanal Resection of the Rectum (STARR). The linchpin that made the program official was Glen Balch's agreement to lead the new division.

Balch hails from the University of Texas Southwestern Medical Center in Dallas, where he directed the surgical oncology program as well as Parkland Memorial Hospital's Surgical Oncology Clinic. Prior to that he was at Feinberg School of Medicine and Memorial Sloan Kettering Cancer Center. His specialties include surgical robotics, honed by supervising the surgical oncology robotics program at UT Southwestern for seven years, and hyperthermic intraperitoneal chemoperfusion (HIPEC), an innovative cancer treatment that delivers highly concentrated, heated chemotherapy directly to the abdomen, allowing for higher doses of chemotherapy than systemic chemotherapy.

The division has branches at Emory University Hospital, Emory University Hospital Midtown, Emory Saint Joseph's Hospital, and Emory Johns Creek Hospital. Multidisciplinary teams of surgeons, medical and radiation oncologists, oncology nurses, and other oncology providers staff the facilities, and all are dedicated to following the colorectal surgery protocols of the Enhanced Recovery After Surgery (ERAS) treatment pathway. Sullivan is the medical director of the Emory-based ERAS group, which incorporates evidence-based best practices that have been shown to decrease length of stay and perioperative complications for colorectal surgery patients.

(Left to right) **Patrick Sullivan, Seth Rosen, Virgina Shaffer,** and **Glenn Balch** are dedicated to working with their medical oncology and radiation oncology colleagues to enroll patients in national trials investigating treatment therapies for colon cancer patients.

In admiration of his passion for healing, teaching, and mentorship, **Kamal Mansour** was affectionately dubbed "The Professor" by generations of Emory residents.

LEGACY OF AN INTERNATIONAL SURGEON: KAMAL MANSOUR, 1929-2016

Kamal Mansour, a beloved and renowned cardiothoracic surgeon of the Emory Department of Surgery for 48 years, passed away on June 6, 2016.

"He taught his residents to be fearless and uphold the highest standards of patient care when dealing with complex surgical problems," says Edward Chen, who trained with Mansour and later became his colleague at Emory. "His technical skills in the operating room were both powerful and elegant. The only thing that exceeded his grace as a surgeon was his gentle and humble nature."

Mansour graduated from Tewfik College in Cairo in 1947 and earned his master's degree from Ein Shams University Medical School in 1954. He trained at several institutions in Egypt and Jordan before coming to the United States and finishing his surgical training at Emory University Hospital in 1968. Charles Hatcher, former director of the Emory Clinic and later director of the Woodruff Health Sciences Center, immediately invited Mansour to join Emory's then three-member section of cardiothoracic surgery.

Mansour's significant perfection of a technique that replaces the esophagus with a section of bowel is still identified with Emory. In 2001, he was awarded the Shield of Medicine by the Medical Society of Egypt for being one of the 10 most outstanding Egyptian doctors in the world. He was also the 2008 recipient of the prestigious Emory Medal for distinguished service and notable achievements, honored with the Inspiration Award of the Southern Thoracic Surgical Association in 2010, and recognized as one of Emory University's Makers of History during its 175th anniversary in 2011.

Dr. Mansour retired in 2004, but remained active in the Emory community until his passing. Throughout his career, he also frequently traveled back to Egypt to teach and work.

After making a substantial gift to Emory in 2010 that established the Kamal A. Mansour Professorship of Thoracic Surgery, he said: "I am deeply indebted to Emory for my many years of association here, including the freedom to practice surgery, teach residents, and help establish the section of general thoracic surgery, in addition to training residents and assisting physicians in Egypt. I am proud to have my name associated with the general thoracic surgery section."

Omar Lattouf, another former trainee who joined Emory in 2000, recalls, "I first met Kamal when I was a third year medical student in 1978. Every time we met again after that, he would say the Egyptian words of greeting, 'Izayak ya habibi,' which translates as 'How are you, my beloved friend.' That was Kamal. I will always remember his smile and those words."

Mansour was survived by his wife Sylvia Cleopatra, daughter Sylvia, sister Widad Monsour, and numerous extended family members.

"The trainees' work ethic and devotion inspired me to really push for additional donations to grow this effort," says Ben Martin (in scrubs; Joe Sharma toward back, hands crossed).

Building DIY

Throughout his first Emory Medishare surgical trip to Haiti in 2012, Benjamin Martin, then an Emory general surgery resident, found himself discussing minimally invasive surgery with the Haitian physicians that staffed L'Hôpital Sainte-Thérèse de Hinche, the hospital that Medishare's teams had been visiting every summer since 2008 to offer free surgical care. It couldn't be any more plain that they wanted to be able to do what the American surgeons could do.

"Emory Medishare's efforts in Haiti are admirable, but the truth is that when we leave, the people have to get along as best they can in a resource-challenged environment beyond most westerners' imaginations. We can change that by training Haitian surgeons so they can be self-sufficient," Martin says.

When he returned stateside, Martin applied for a Global Surgery Research Fellowship Award from the Association for Academic Surgery. The grant funds mentored projects led by residents or fellows that hope to advance surgical education in impoverished areas. He received the $10,000 award in 2015, and with the assistance of faculty mentors and Emory Medishare veterans Jahnavi Srinivasan and Joe Sharma, he began developing a training program for Haitian surgeons in basic laparoscopic skills.

After months of planning and preparation, Sharma, Srinivasan, and Martin, who had advanced to the Emory Endosurgery Fellowship, traveled to Justinian University Hospital in Cap-Haitien, Haiti, to deliver simulation tools and didactic and hands-on training to surgeons and trainees. Like most hospitals in the country, the government-sponsored facility lacked such seeming necessities as reliable electricity and running water, but featured several residency programs. From May 8 to May 10, 2016, the Emory trio set up shop and trained 11 general surgery, OB/GYN, and urology residents and five attending physicians.

The team brought several box trainers (devices that facilitate development of the psychomotor skills and dexterity required to perform laparoscopic surgery), laptops with simulation software, and a large monitor for displaying the particular training scenario. Upon completion of the didactic sessions and a skills test to set the pre-training benchmarks, the trainees worked through a series of exercises compiled and, in some instances, designed by Martin himself. Before leaving, he advised the Haitian physicians to practice these introductory exercises as part of their daily routine.

Martin accepts that the trip was just the beginning of what could easily become a decade or longer process. "There are so many forces in a country like Haiti that can trip up the timeline, from severe weather to political instability. Ideally, each step will gradually build to some type of milestone, then a new cycle will start, and eventually things will get to a sustainable level."

Martin is now a colorectal surgery fellow at the University of Minnesota, but is still invested in the venture. He is working with Sharma and Srinivasan on a comprehensive laparoscopic surgery training plan to submit to the Haitian government, applying for other grants, soliciting additional involvement and support, and investigating the feasibility of a tele-mentoring system and the possibility of Haitian residents and/or surgeons coming to Emory for face-to-face training.

Trainee Kudos

Michael Berger, MD, PhD, 2nd year abdominal transplant surgery fellow
Award | Richard Drachter Award for outstanding scientific work in pediatric surgery, German Association for Pediatric Surgery
Faculty Mentor | Kenneth Newell, MD, PhD

Ching-Wen Chen, 4th year immunology and molecular pathogenesis PhD student
Award | Travel Award, Shock Society
Faculty Mentors | Craig Coopersmith, MD, and Mandy Ford, PhD

Cecilia Ethun, MD, PGY2 general surgery resident on research sabbatical
Awards | Chester P. Rochfort Scholarship in Oncology, Winship Cancer institute; North American Travel Grant, Americas Hepato-Pancreato-Biliary Association
Faculty Mentor | Shishir Maithel, MD

Clara Farley, MD, PGY2 general surgery resident on research sabbatical
Award | William Elkin Cancer Research Fellowship Award, Winship Cancer institute
Faculty Mentor | Mandy Ford, PhD

John Lyons, MD, PGY3 general surgery resident, formerly on research sabbatical
Awards | NIH F32 Fellowship; Carol Wells Award, Shock Society
Faculty Mentor | Craig Coopersmith, MD

Lauren Postlewait, MD, PGY3 general surgery resident, formerly on research sabbatical
Award | North American Travel Grant, Americas Hepato-Pancreato-Biliary Association
Faculty Mentor | Shishir Maithel, MD

Kimberly Ramonell, MD, PGY2 general surgery resident, formerly on research sabbatical
Award | Travel Grant, Leadership and Advocacy Summit of the American College of Surgeons
Faculty Mentor | Kevin McConnell, MD, former faculty member

Giacomo Waller, 4th year medical student
Award | American Society of Colon and Rectal Surgeons Medical Student Research Initiation Grant
Faculty Mentor | Patrick Sullivan, MD

Nicholas Melvan is currently based at Emory Saint Joseph's Hospital and performs procedures with all of the facility's cardiothoracic surgery faculty attendings. Here he is shown (foreground) performing coronary artery bypass grafting with **Jeffrey Miller**.

"As we move forward, I suspect that we will accrue enough data documenting the Haitian physicians' dedication that other people and organizations will want to contribute," Martin says.

MIDWAY TO THE APEX

The only route to becoming a board certified cardiothoracic surgeon used to be five years of general surgery training followed by three more of concentrated cardiothoracic surgery residency. In 2007, the Residency Review Committee approved a second option: the integrated, six-year cardiothoracic surgery pathway. This new track permitted medical school graduates to move directly into programs that featured three years of exposure to cardiothoracic surgery, blended with training in the related fields of general surgery, critical care, interventional radiology, interventional cardiology, endovascular surgery, and surgical oncology, followed by three years devoted entirely to cardiothoracic surgery, its subspecialties, and developing technologies.

Nick Melvan was enrolled in the combined MD/PhD physiology program at Louisiana State University when the six-year option was affirmed, and he already had the bug. "LSU's program was small in a good way, and I learned a lot about CT surgery early on," he says. "I loved the idea that surgeons could work with their hands to fix tangible, complex medical issues. After seeing my first heart surgery, I was hooked. I was fascinated that you could take a beating heart, stop it, fix a problem, then restart the heart again."

As he neared completion of his MD/PhD in 2013, Melvan was most attracted to enrolling in an integrated program. "You get to practice CT surgery much earlier than in the standard model, and can stay at one institution for the duration of your training."

Since there were less than two dozen integrated programs in the country at the time and none had proven track records, Melvan only applied to those that had strong traditions of superior CT surgery training. He matched to Emory, and when he arrived in 2013 it was only the second year of Emory's integrated track.

Now, three years later, he has finished his integrated surgical rotations and advanced to complete immersion in CT surgery as a PGY4. In fact, 2016-2017 is the first time that Emory's program has had PGY4s and 5s focused entirely on CT surgery.

The one external discipline that will remain a constant throughout the remainder of Melvan's six-year residency is critical care management. "As our attendings say, the care of our patients doesn't end when they leave the OR. Critical care is always in the curriculum. Being experienced and knowledgeable of all components of the ICU is essential, from respirators to circulatory assist devices."

With half of the program behind him, Melvan welcomes what lies ahead and is ready to engage with the learning that will continue after he graduates. "You have to stay on top of the momentum to keep in play," he says. "One of the most exciting things about CT surgery, especially during the last 10 years, is that it is ever evolving. It didn't seem to change for decades, then suddenly there was an influx of technology and advances. And the Emory integrated residency is so young; it's also evolving and adapting to changes and progress. It's exhilarating to be part of it all."

RECRUIT, REDOUBLE, RETAIN

For Barbara Pettitt, all efforts are equal when it comes to inspiring fresh minds to pursue careers in surgery: purchasing pigs' feet at farmers markets for suturing instruction workshops; devising one new training module after another for the annual surgical anatomy and operative techniques course ("SURG 20") for fourth-year medical students (M4s), which she also directs; traveling to Haiti with Emory Medishare's summer surgical trips to the country's central plateau, where she supervises the participating medical students during the trips' week-long surgery follow-up clinics. The process is variable, but the goal of attracting new converts abides.

While serving as chief of pediatric surgical services at Hughes Spalding Hospital of Children's Healthcare of Atlanta, Pettitt became Emory Surgery's official representative to undergrads when she took over the surgical clerkship for third-year medical students (M3s) in 2002. She added supervision of the M4 surgical curriculum in 2004, and subsumed all duties related to both

Barbara Pettitt regularly leads vascular access labs, which acquaint medical students with the basics of central venous catheter placement for such purposes as blood transfusions, chemotherapy infusion, intravenous feeding, and antibiotic therapy.

classes under the title of director of medical student education in 2006. "For a long time after that, any time the words 'student' and 'surgery' were mentioned in the same sentence, all heads turned toward me," she says.

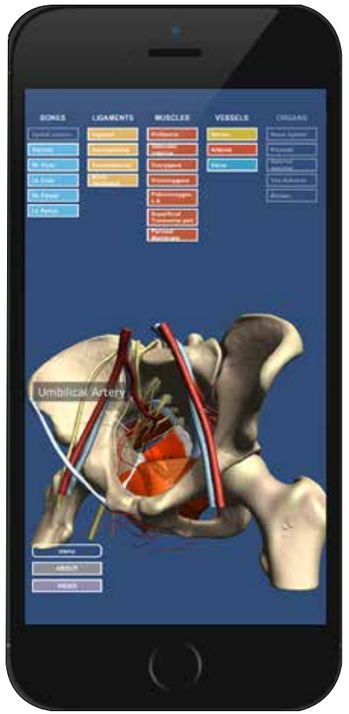
Her expansion of medical student education included introducing simulation scenarios into SURG 20, developing the M4 surgery applicant prep program and surgery sub-internship curriculums, and initiating advanced vascular access labs for the M3s. As her customization of the clerkship continued, the program began receiving consistently high rankings from medical students on the Association of American Medical Colleges' Graduation Questionnaire, and Emory's surgery and surgical subspecialty residencies started accruing their greatest number of applicants from Emory's medical graduates.

"None of this happens without a culture that supports education," she notes. "I've worked with four chairs, all of whom supported what I and several very hard-working coordinators do for medical students. The clincher, though, is that the students have great clinical experiences with our faculty and residents."

While having a conducive and encouraging learning environment is crucial for ambitions to flourish, Erica Ludi and Martha-Conley Ingram, two former med students that began their Emory Surgery residencies in July, view Pettitt as the heart of the department's efforts on behalf of medical students, and explain why she received the Best Clerkship Director Award in both 2012 and 2016.

"Dr. Pettitt has a passion for seeing all students succeed," says Ludi. "She took time out of her busy schedule to meet with all of us and review how our rotations were going, address concerns, and counsel us on future career directions. She was always very accessible and willing to provide support and guidance in any way she could."

Ingram adds, "Whether they are interested in pursuing a surgical field or not, Dr. Pettitt is clearly invested in the education of all medical students. In my case, her charisma, 'can do' attitude, and incredible attention to detail in crafting learning opportunities helped lead me to where I am now."



The design of the CSAT pelvic app allows users to move effortlessly through the entire network of structures that comprise the male pelvis.

MULTIPURPOSING

"Our work is most geared toward professionals and high-level trainees who know what they're looking for," says Andy Matlock, medical illustrator for the Carlos and Davis Center for Surgical Anatomy and Technique (CSAT), as he describes the design of CSAT's latest app, Anatomy of the Male Pelvis. "We aren't trying to fit a textbook format into a digital interface. Instead, we're translating a specific structure and all of its complexity into a variety of segments that let users determine which anatomic relationships they want to focus on."

Soon to be available for free for the iPad, iPhone, and Android, the new app is concise, visually engaging, and takes just a few swipes and taps for users to find what they're looking for. Time is precious, and the user could be prepping for a cadaver dissection. Or a pre-op discussion. Or an actual procedure.

The division of the app's color-coded menu into categories of bones, ligaments, muscles, vessels, and organs yields views of the bony pelvis, pelvic floor, musculature, and connective tissue. The relationships of these structures to the bladder, reproductive organs, colon, and rectum can be depicted and rotated in 3D, made transparent or invisible, and viewed at different magnifications, and the arteries and nerves that traverse the pelvis can be tapped to trigger identifying text.

Looking to expand its media arsenal for surgical anatomy education, CSAT recently acquired a 3D printer and a Microsoft HaloLens. The latter is essentially a wearable holographic computer—still in the development stage—that allows users to interact with high-definition holograms in real world settings. Matlock and the rest of the CSAT team are still devising specific uses for these new tools, though it is likely that much of what Matlock already does, such as building digital models that will be the DNA of future apps, will be recycled to these new formats.

Matlock collaborated with CSAT director Keith Delman, urologist Niall Galloway, cell biologist Edward Pettus, and programmer Timmy White on the production of the pelvic app.

Prolonged Suspense

According to 2014 data posted by the Blue Ridge Institute for Medical Research, Emory Surgery fell short of making the top ten in National Institutes of Health (NIH) awards for all departments of surgery nationwide by a startlingly narrow margin of just $630,000.

When these rankings were posted, the department was already into 2015, new grants had combined with renewals and ongoing projects, and our funding portfolio was as diverse as ever, from the NIH to the Centers for Disease Control and Prevention, Department of Defense, Food and Drug Administration, the Agency for Healthcare Research and Quality, AVON Foundation, Carlos and Marguerite Mason Trust, and others. Crossing 2014's slim divide in the next set of rankings seemed more than probable.

But we would have to wait longer than usual to find out.

Blue Ridge typically publishes ranking tables online of the prior year's annual NIH funding in December of the following year. In 2016, however, it was forced to delay posting 2015's figures because of errors found in the initial calculations. December passed with no final tally. Then January. Ditto February.

Finally, Blue Ridge published the revised rankings in March, and predictions became fact: Emory Surgery ranked 9th in NIH awards for 2015, based on a total of $8,938,514 million in funding (direct plus indirect costs were included, R & D contracts were not). Christian Larsen, Lily Yang,

Craig Coopersmith's mentoring of surgical residents on research sabbatical—in this case **Katherine Fay** and **Nathan Klingensmith**—exposes them to the complexity of sepsis while allowing them to play leading roles in his multifaceted studies of the disease.

Rachel Patzer, Craig Coopersmith, and Mandy Ford were listed in the top 100 PIs, and Luke Brewster and Michael Halkos were also highly ranked.

"The breadth of our research is ideally positioned to make seminal advances that will impact our patients' lives, both now and in the future," says Emory Surgery chair John Sweeney.

WORK IN PROGRESS

When the Society of Critical Care Medicine (SCCM) and the European Society of Intensive Care Medicine asked Craig Coopersmith to join the international taskforce charged with revising the terms "sepsis" and "septic shock," he was more than prepared for the two years of intensive consensus building to follow. As one of the top investigators of sepsis in the U.S., a distinction signified by his 2015-2016 presidential term for the SCCM, he was acutely aware of the shortcomings of the prior 2001 definition, especially its distinction between "sepsis" and "severe sepsis."

"Sepsis is already severe, and there is no such thing as mild or moderate sepsis," he says. "It has a mortality rate of 10 percent or higher, is the leading cause of death from infection, and we're encountering it more often. The taskforce knew that limiting the definitions to sepsis and septic shock and accurately delineating those conditions would help us treat patients in a more timely fashion, plus offer greater consistency for epidemiological studies and clinical trials."

The group reviewed large data sets of hospitalized patients with presumed infection and assessed the simplest and most precise ways to determine which ones had sepsis. Once the definitions were updated, they were circulated to international professional societies for peer review and endorsement. The recommendations were then published in the February 2016 issue of the *Journal of the American Medical Association* and highlighted for clinicians and media at the Society of Critical Care Medicine's 45th Critical Care Congress.

The new recommendations define sepsis as life-threatening organ dysfunction due to a dysregulated host response to infection, and describe septic shock as a subset of sepsis in which profound circulatory, cellular, and metabolic abnormalities substantially increase mortality. In order to assist physicians in more quickly identifying patients with or at risk of developing these conditions, the redefinitions offered more specificity and plotted a clear and consistent roadmap for diagnosing, reporting, and treating sepsis.

With organ dysfunction denoted as the primary threshold that elevates uncomplicated infection to sepsis, the task force devised a simple method to assess for organ disruption that relies on examining respiratory rate, mental status, and blood pressure. Named the Quick Sequential Organ Failure Assessment, or qSOFA, the diagnostic tool is now being used in physicians' offices, emergency departments, and hospital wards to quickly identify patients at risk for sepsis.

"These updated definitions and clinical criteria should clarify long-used descriptors and bring about earlier recognition of patients at risk of developing sepsis," explains Coopersmith. "But the process is ongoing, and new diagnostic approaches and enhanced collection of data will fuel their continued re-evaluation and revision."

ENGINEERING RENOVATION

Virginia Shaffer specializes in surgery for colorectal cancer, anal cancer, and other gastrointestinal diseases and their associated quality issues. Rachel Patzer investigates health disparities in access to transplantation. Each doctor is active in a distinct clinical area with specific treatment concerns and methods, but both display a common commitment to safeguarding patients and monitoring the treatment process for shortcomings that can be modified.

Shaffer set out to lower the 30-day readmission rate for ileostomy patients discharged from Emory University Hospital (EUH), which was ranging from 15%-33% in EUH reports to the University HealthSystem Consortium, a collective of academic health systems that compares data for quality improvement purposes. Shaffer and her team partnered with the home health program Visiting Nurse Health System (VNHS), and set their sights on reducing that rate by 15% in five months.

Shaffer's group and VNHS developed a set of standardized discharge orders that included red flags for conditions that, when observed, encouraged the VNHS nurses to contact Emory physicians so that corrective action could be taken before possible readmission. In addition, weekly 15 minute discussions were

Virginia Shaffer's home health pilot received a Top Scoring Abstract Award at the 3rd Annual Advancing Healthcare Quality Research Conference at Emory University.

Rachel Patzer publishes regularly in such high impact journals as the *American Journal of Transplantation*.

"Hybrid coronary revascularization could be considered as combining the best qualities of coronary artery bypass grafting and percutaneous coronary intervention while minimizing their limitations," says **Michael Halkos**.

implemented between the EUH and VNHS teams.

As a result, the readmission rate for VNHS ileostomy patients gradually decreased from 19% to 7%, and the study was extended. One year later, readmission costs for patients in the pilot decreased by 77.6%, while the sum cost of readmissions for non-VNHS patients increased by 58.3%. The study is now being expanded.

Rachel Patzer's original RaDIANT study (Reducing Disparities in Access to Kidney Transplantation) sought to reverse both the low numbers of Georgia dialysis patients being referred to transplant centers within a year of starting dialysis, and the even lower numbers of African Americans that were wait-listed for kidney transplant within one year of referral.

Patzer and her partners identified the dialysis centers in the state where patients were least likely to be referred for transplant, and initiated behavioral interventions that included educational seminars, transplant recipients visiting the centers as peer educators, and facility-specific feedback reports detailing referral data for the particular facility compared with the state average.

"Over time, it appears that our RaDIANT interventions in Georgia did indeed contribute to nearly doubling of referral for transplantation and reducing racial disparities," says Patzer.

On the strength of this success, RaDIANT received an additional $2.6 million over five years from the National Institutes of Minority Health and Health Disparities in 2016. The renewal widened the grant's Georgia boundaries to include South and North Carolina.

"The new grant will go a long way to helping us expand this work to additional dialysis facilities, and to test whether we find similar effects in a larger, regional population. We also want to ensure that the patients who were referred for transplant show up to start the transplant evaluation process."

INTERROGATING THE PREFERENCE

Cardiothoracic surgeon Michael Halkos is a national leader in hybrid coronary revascularization (HCR) and the robotic-assisted and traditional methods of coronary artery bypass grafting (CABG). Both procedures are considered strong options for treating multivessel coronary artery disease, though HCR has recently gained momentum. Ironically, considering his own advocacy of HCR, an aspect of this increase gives Halkos pause.

"HCR is being adopted across the country for what is perceived as lower in-hospital morbidity and mortality, excellent patency rates, higher patient satisfaction, and other reasons, but in fact, there has been no randomized trial data to demonstrate whether HCR indeed achieves these results over time," he says.

Halkos, along with other surgical and cardiology colleagues, plans to change that. With funding from a Graham Foundation Intuitive Surgical Investigator Award of the American Association for Thoracic Surgery, he will conduct a prospective observational study to determine whether HCR is indeed associated with more of a reduction in one-year major adverse coronary and cerebrovascular events in patients with multivessel coronary artery disease. Secondary objectives are to define the impact of HCR compared with CABG on hospital readmission, functional status, significant morbidity after surgery, and quality of life.

HCR capitalizes on blending the benefits of CABG and percutaneous coronary intervention (PCI). In HCR, the left anterior descending artery (LAD), the most important of the three coronary arteries, is grafted with the left internal mammary artery, while any remaining non-LAD coronary artery constrictions are treated with non-surgical PCI. PCI alone is generally considered to be less durable than CABG, while CABG by itself is associated with longer hospitalization and recovery time and a higher risk of stroke.

The initial focus of the study will be to generate pilot data for a randomized controlled trial. The patient population for the study will be tracked for one year after receiving either HCR or CABG. Follow-up will include comparing individual components of major adverse coronary and cerebrovascular events, ischemia-driven repeat revascularization, hospital readmission, and health status outcomes (angina, physical function, and quality of life).

"This type of study is long overdue, and ideally will begin providing the kind of hard data that can give physicians and patients the confidence to know that they are choosing the best surgical option for each patient," says Halkos.

EYES WIDE OPEN

Prostate cancer screening might not be automatically defined as dubious for male kidney transplant candidates, but for Nicole Turgeon, director of Emory's living donor kidney transplant program, the benefits of prostate-specific antigen (PSA) screening for these patients are ambiguous at best.

"No specific guidelines exist for screening recommendations in renal transplant candidates, though transplant centers generally screen candidates for potential malignancies to ensure that there are no contraindications to receiving a transplant," she says. "An elevated PSA level could be due to a variety of disease processes, not only prostate cancer, and could impact candidates' time to transplantation and subsequent outcomes."

"The ability to lead a normal life off dialysis is a privilege that many transplant candidates value most highly," says **Nicole Turgeon**.

To confirm one side or the other of the issue, Turgeon and a team of Emory kidney transplant and urology researchers retrospectively analyzed information on 3,782 male patients undergoing kidney transplant evaluations at Emory between January 1, 2000 and January 1, 2011. The data was primarily sourced from Emory's Organ Transplant Tracking Record.

The team's findings were published in the *Journal of the American Society of Nephrology*, and determined that PSA screening for prostate cancer in male kidney transplant candidates was not associated with improved patient survival after transplantation; that PSA screening increased the time to listing and transplantation for candidates under 70 years old whose PSA tests showed elevated levels; and that compared with candidates who were not screened, PSA-screened candidates had a reduced likelihood of receiving a transplant regardless of their PSA level.

The researchers also found that a positive PSA screening result led to a diagnosis of prostate cancer in only 26.4% of candidates, although 75.8% of candidates with a positive PSA screening result did not receive a transplant. Additionally, a false-positive result, which occurred 74.6% of the time, significantly delayed the listing for transplantation by nearly a year while candidates had further evaluation, without definite guidelines on how to manage an isolated elevated PSA level, and decreased the transplantation rate by approximately 50%.

"Delaying transplant by more than two years, in some cases, is a substantial effect, especially because two-thirds of patients die within five years of beginning dialysis," Turgeon concludes. "This is considerably higher than the 1.1% five-year mortality rate for prostate cancer."

NEW FACULTY

DINA AMIN, DDS, joins the oral and maxillofacial service at Grady Memorial Hospital with advanced skills in craniomaxillofacial trauma and oral cancer microvascular reconstruction. She received intensive trauma training during her OMS residency in Saudi Arabia and worked in a Level I Trauma Center. She completed her craniomaxillofacial and microvascular fellowships at UAB.

GLEN BALCH, MD, is the inaugural chief of the new Emory Division of Colorectal Surgery. He comes to us from the University of Texas Southwestern Medical Center, where he directed surgical oncology. His specialties include surgical robotics, honed by supervising the surgical oncology robotics program at UT Southwestern for seven years, and hyperthermic intraperitoneal chemoperfusion (HIPEC).

JAIME BENARROCH-GAMPEL, MD, MS, completed his general surgery residency at the University of Texas Medical Branch Galveston, where he also received an MS in health services. His vascular surgery fellowship was done at Washington University School of Medicine. He is primarily based at Grady Memorial Hospital.

HAKOB DAVTYAN, MD, has initiated Emory Surgery's partnership with St. Francis Hospital, Columbus, GA, as the medical director of its cardiothoracic surgery team. Dr. Davtyan completed his cardiothoracic surgery training at Emory under CT surgery division chief Dr. Robert Guyton. He returned to California, and by 1994 was a member and owner of Inland Cardiothoracic Surgical Associates Medical Group, Inc., in San Bernardino.

JEFFREY JAVIDFAR, MD, is the assistant surgical director of lung transplantation at Emory University Hospital. He received his MD from Stony Brook Medical School, completed his general surgery residency and cardiothoracic transplant procurement fellowship at Columbia University Medical Center, and did his cardiothoracic surgery fellowship at Duke University.

Before completing his Emory cardiothoracic surgery fellowship and joining our faculty, **ONKAR KHULLAR, MD,** did a two-year thoracic surgery research fellowship at Brigham and Women's Hospital. His specialties include video-assisted thoracoscopic surgery, robotic thoracic surgery, lung and esophageal cancer treatment, and thoracic quality and outcome improvements.

WILLIAM KITCHENS, MD, PhD, graduated from Harvard Medical School with honors. He did his surgery residency at Massachusetts General Hospital, obtained his PhD in transplant immunology at Emory under the mentorship of Dr. Mandy Ford and Dr. Christian Larsen, and completed a clinical fellowship in abdominal transplant surgery at Emory.

Within her clinical training period, **DENISE LO, MD,** completed an Emory research fellowship in transplant immunology under the mentorship of former faculty member Dr. Allan Kirk. She specializes in adult and pediatric liver transplantation, hepatobiliary surgery, and translational research in transplant immunology.

Surgical oncologist MICHAEL LOWE, MD, MA, received several awards during his training years, including the Young Investigator Award of the American Society of Transplant Surgeons in 2011 and 2012. His clinical practice and research interests focus on cutaneous malignancies, particularly melanoma and Merkel cell carcinoma.

While training at Emory, GABRIELE MIOTTO, MD, MEd, led new simulation workshops for general surgery and plastic surgery residents and taught basic surgery skills to medical students. In addition to practicing at the Emory Aesthetic Surgery Center at Paces, she will be a key educator for the Carlos and Davis Center for Surgical Anatomy and Technique.

DIPAN PATEL, MD, is a trauma surgeon, emergency/elective general surgeon, and surgical critical care intensivist based at Grady Memorial Hospital. His surgical research fellowship and general surgery residency were done at Rhode Island Hospital, and he completed his trauma surgery and critical care fellowships at Grady.

SNEHAL PATEL, MD, MS, received his MD at Morehouse School of Medicine, completed his general surgery residency at Emory, and did an endocrine surgery fellowship at the University of Pittsburgh. His clinical and research interests involve malignancies of the thyroid, parathyroid, and adrenal gland.

MARTY SELLERS, MD, MPH, is president and co-founder of the Georgia Liver Coalition, Inc., a non-profit organization dedicated to increasing awareness of hepatocellular carcinoma. Among his prior positions, he served as director of Piedmont Hospital's hepatobiliary service, and was surgical director of renal transplantation at the Children's Hospital of Philadelphia.

As a faculty surgeon at Mount Sinai Medical Center, VICTORIA TEODORESCU, MD, MBA, collaborated with plastic surgeons to develop innovative bypass techniques for patients with severely diseased distal vessels. She held several positions at the hospital, including co-director of the vascular diagnostic lab at the Zena and Michael Wiener Cardiovascular Institute.

RACHAEL WILLIAMS, MD, MHS, is a burn surgeon and critical care intensivist at Grady Memorial Hospital. While doing her burn and surgical critical care fellowships at Grady, she won three best oral presentation awards at annual meetings of the Southern Regional Burn Conference.

FACULTY APPOINTMENTS & AWARDS

Shelly Abramowicz, DMD, MPH
- 1st Prize Poster Award, 98th Annual Meeting, American Association of Oral and Maxillofacial Surgeons

Bahaaldin Alsoufi, MD
- Editorial Boards: *Journal of Thoracic and Cardiovascular Surgery*, *Clinics in Surgery* (Transplant Surgery Section)

Cletus Arciero, MD
- Continuing Medical Education Committee, Breast Program Directors Subcommittee, Society of Surgical Oncology
- Continuing Medical Education Committee, Selected Readings Subcommittee, American Society of Breast Surgeons

Shipra Arya, MD
- Research and Education Committee, Society for Vascular Surgery

Gary Bouloux, DDS, MD, MDSc
- Examination Committee, Surgery Section, American Board of Oral and Maxillofacial Surgeons
- Site Visitor for OMFS Training Programs, Commission on Dental Accreditation
- Editorial Board, *Journal of Oral and Maxillofacial Surgery*

Luke Brewster, MD, PhD, MA
- Chair, Long-Term Planning Committee, International Society of Applied Cardiovascular Biology
- Vice Chair, Early Career Committee, Council on Peripheral Vascular Disease, American Heart Association

Kenneth Cardona, MD
- Grants Reviewer, Americas Hepato-Pancreato-Biliary Association

Edward Chen, MD
- Vice-Chair, Resident Symposium Planning Task Force, Society of Thoracic Surgeons
- Co-Chair, Residents Committee, American Association for Thoracic Surgery

Craig Coopersmith, MD
- Society of Critical Care Medicine Representative to Healthcare Infection Control Practices Advisory Committee, Centers for Disease Control and Prevention
- Center for Scientific Review, Global Injury and Trauma Research Training Program Special Study Section, NIH
- Editorial Board, *Critical Care*

Keith Delman, MD
- Chair, Training Committee, Society of Surgical Oncology
- International Melanoma Working Group

Thomas Dodson, MD
- 1st Vice President, Southern Surgical Association
- President-Elect, Massachusetts General Hospital Surgical Society

Megan Durham, MD
- Data and Sample Use Committee, Pediatric Colorectal and Pelvic Learning Consortium

Yazan Duwayri, MD
- Medical Director, Southeastern Vascular Study Group
- Research Committee, American Venous Forum

Felmont Eaves, III, MD
- Golden Provider Award, Emory Healthcare (Top 10% nationwide for patient satisfaction, Q1 and Q2, FY 2016)
- Trustee, American Society of Aesthetic Plastic Surgery

Felix Fernandez, MD
- Advisory Panel on Assessment of Prevention, Diagnosis, and Treatment Options, Patient-Centered Outcomes Research Institute
- Chair, Patient Reported Outcomes Task Force, Society of Thoracic Surgeons
- Editorial Board, *Annals of Thoracic Surgery*

Mandy Ford, PhD
- Transplantation, Tolerance, and Tumor Immunology Study Section, NIH/Center for Scientific Review

Rondi Gelbard, MD
- Emergency General Surgery Section Committee, Eastern Association for the Surgery of Trauma

Theresa Gillespie, PhD
- Scientist Reviewer, Breast Cancer Research Program, Clinical Trial-Preclinical Research-3 Peer Review Panel, Department of Defense
- Scientific Reviewer, Program Project Grants Study Section, National Cancer Institute

Robert Guyton, MD
- 2016 Distinguished Service Award, American College of Cardiology

Michael Halkos, MD
- Workforce on Coding and Reimbursement, Society of Thoracic Surgeons
- Cardiothoracic Residents Committee, American Association for Thoracic Surgery

Bradley Leshnower, MD
- SESATS 12 Question Writing Committee, American Board of Thoracic Surgery
- Vascular Surgery Editorial Board, *Clinics in Surgery*

Edward Lin, DO, MBA
- Associate Editor, *Surgery for Obesity and Related Diseases*
- Editorial Board, *Journal of Laparoendoscopic and Advanced Surgical Techniques*

Albert Losken, MD
- Executive Committee, Southeastern Society of Plastic and Reconstructive Surgeons

Kenneth Newell, MD, PhD
- Board of Directors, Donate Life America
- Assessing Long Term Outcomes in Living Kidney Donors (ALTOLD) External Expert Panel, National Institute of Diabetes and Digestive and Kidney Diseases

Muralidhar Padala, PhD
- Medical Devices Special Interest Group, Biomedical Engineering Society
- Editorial Board, *International Journal of Cardiology and Research*

Rachel Patzer, PhD, MPH
- National Kidney Disease and Transplant Education Task Force, Department of Health and Human Services
- Associate Editor, *American Journal of Transplantation*

Allan Pickens, MD
- Abstract Review Committee, Society of Thoracic Surgeons

Ravi Rajani, MD
- Associate Editor, *Annals of Vascular Surgery*
- Editorial Board, Vascular Education and Self-Assessment Program, Version 4

Maria Russell, MD
- Editorial Boards: *Journal of Surgical Oncology*, Gastric and Upper GI Section; *Journal of Surgery: Open Access*
- Membership Committee, Americas Hepato-Pancreato-Biliary Association

Virginia Shaffer, MD
- Chair, Practice Committee, Southeastern Surgical Congress
- Top Scoring Abstract Award, 3rd Annual Advancing Healthcare Quality Research at Emory University

Joe Sharma, MD
- Top Abstract Award, Spring 2016 Conference, Society for Healthcare Epidemiology of America

A.L. Jackson Slappy, MD
- Finance Committee, Southeastern Surgical Congress

Jahnavi Srinivasan, MD
- CME Committee, Southeastern Surgical Congress

Charles Staley, MD
- Surgical Steering Committee, Eastern Cooperative Oncology Group
- Quality Steering Committee, Comprehensive Cancer Center Consortium
- Associate Editor, GI Section, *Annals of Surgical Oncology*

Toncred Styblo, MD
- Surveyor, Commission on Cancer Integrated Network Cancer Program and National Accreditation Program for Breast Centers, American College of Surgeons

Preeti Subhedar, MD
- Training Committee, Breast Fellowship, Society of Surgical Oncology

Anuradha Subramanian, MD
- Advisory Board, LifeLink of Georgia

Victoria Teodorescu, MD, MBA
- Divisional and Medical Review Boards, IPRO End Stage Renal Disease Network

Vinod Thourani, MD
- Board of Directors, Society of Thoracic Surgeons
- Chair, Research and Publications Committee, U.S. Transcatheter Valve Therapies Database

Mark Wulkan, MD
- Pediatric Obesity Committee, American Pediatric Surgical Association

Lily Yang, MD, PhD
- Nano Study Section, NIH
- Innovative Research in Cancer Nanotechnology Study Section, NIH/NCI

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If you have found these pages inspirational, please consider giving to Emory Surgery.

Contact Steven Wagner, senior director of development, Emory University School of Medicine, steven.wagner@emory.edu, 404.727.9110.