CURATING CARE
[Machine Learning's Deep Dive into Big Data]
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On the cover:
In the operating room and emergency room, data can serve to make sense of the chaos. Illustration by Lauren Halligan and Megan Llewellyn, CMI.

AT A GLANCE

Curating Care
Machine Learning’s Deep Dive into Big Data

Resilience in Surgery
Improving Provider Well-Being

Transplant Firsts in NC
Looking to the Future, Together

Duke Surgery Pilots National Curriculum for Medical Students

Training Surgeons in Immunobiology
Surgeons have a direct, personal relationship with their patients, combined with a truly tactile experience with their patients' illnesses. This unique access to both the patient experience and associated biological processes puts our department in a position to define the entire spectrum of health, disease/injury, and recovery—access so compelling, it demands that we do so, “for all patients.” In this issue of the Duke Surgery newsletter, we examine the means by which we are curating the experiences of our patients, providers, and trainees to build a foundation for clinical excellence, innovative research, and formative education for the future of surgery.

Duke surgeons are actively engaged in a university-wide “+DS” drive to harness the power of data science, wielding big data to augment provider decision-making and enhance the quality and value of clinical care. In collaboration with the Duke School of Engineering, our faculty are gathering clinical and mechanistic data for use as ground truth in artificial intelligence and machine learning algorithms. These new approaches to data analysis aim to optimize the delivery of care and reduce surgical complications, length of hospital stay, and wait times in the Emergency Department.

Importantly, improving our patient experience goes hand in hand with improving the experience of our care providers. By focusing on the well-being of our faculty and trainees, we aspire to cultivate an atmosphere of trust and support. The department now offers peer support groups for faculty and trainees to promote resilience. Prioritizing the health of our faculty and staff is vital to providing high-quality care to our patients.

Duke Surgery has been at the vanguard of scientific discovery as demonstrated by this year’s number 1 ranking in NIH funding among departments of surgery. Two recent advances in transplantation highlight our translational discovery work. In fall 2018, Duke surgeons were the first in the state of North Carolina to perform an abdominal wall transplant (done with a simultaneous small bowel transplant!), and our hand transplant team performed the first bilateral hand transplant in the state: remarkable technical achievements made all the more impactful by their association with cutting-edge immune investigational protocols. These novel surgical procedures offer new options to patients while providing insight into the safe and efficacious application of these transplants in future patients.

Finally, a significant part of our mission is to develop the next generation of leaders in surgery. We are working with the American College of Surgeons to enhance the trainee experience by implementing a standard curriculum for medical students in the surgery clerkship. This new curriculum bolsters our surgical program for medical students to foster their success in medical school while establishing a clear pathway for their future careers as surgeons.

By working to improve the experience of our patients, providers, and trainees, the Department of Surgery strives to blend excellence into all aspects of our mission.

Sincerely,
Allan D. Kirk, MD, PhD, FACS
David C. Sabiston, Jr. Distinguished Professor and Chair
Department of Surgery
Duke University School of Medicine
Surgeon-in-Chief
Duke University Health System
CURATING CARE
[Machine Learning's Deep Dive into Big Data]

By Scott Behm

Dr. Jason Theiling, right, discusses recent Emergency Medicine data output with Strategic Services Associate Elizabeth Stacks, Division Chief Dr. Charles Gerardo, and Associate Professor Dr. Lauren Siewny (left to right). Photo by Colin Huth/Photo C4.
Consider the sheer volume of data your brain processes in making one decision. Something as simple as your choice of breakfast is the culmination of data analysis—decades of zeroing in on personal taste, allergic reactions, nutrition, health considerations, and other factors.

The use of data to make decisions, then, is not profound—it is an innate aspect of the human condition. In the surgical field, historically this data processing took place through the lens of personal experience. Consider why a senior surgeon is typically more trusted than an intern. More time in practice constructs a robust dataset to make sound surgical decisions.

For today’s surgeons, however, the dataset has expanded exponentially. To start, electronic health records (EHRs) create massive datasets—a resource often untapped due to the lack of processing power needed to leverage terabytes of data in a way that human brains can comprehend and make practical. As the capabilities of machine learning expand, big data from EHR and other sources has the potential to inform decisions in monumental ways—creating a detailed roadmap to improve quality and efficiency of care and to minimize potential complications.

**Curating Existing Data**

For a system as large as Duke Health, curating EHR datasets to creating meaningful, useful data can take years. Kristin Corey, a medical student at Duke and scholar at the Duke Institute for Health Innovation (DIHI), has spent 2 years working as part of the DIHI team to build PYTHIA, a data pipeline that has wide application potential across Duke Health and beyond.

As part of the Perioperative Risk Optimization with Machine Learning for an Improved Surgical Experience (PROMISE) program, Corey’s original focus was predicting outcomes for geriatric patients. “Because DIHI IS is an innovations group, it is really creative,” Corey says. “They gave us the free range and flexibility to think...
big. When we got into the data, we started asking questions. What if we did this for all surgical patients, and not just geriatric?”

Corey, along with fellow students Sehj Kashyap and Elizabeth Lorenzi, spent their research year with DIHI mining and curating EHR data to create an initial repository of 99,755 procedures from 66,370 patients. When the project received attention at the Machine Learning in Healthcare Conference, the group decided to commit to another year of research with Allan D. Kirk, MD, PhD, David C. Sabiston, Jr. Professor of Surgery and Chair of Duke Surgery, as the clinical primary investigator.

“The DIHI team has built out our EHR data pipeline, now covering 550,000 procedures and spanning 4 years,” Corey says. “Patient features include all inpatient and outpatient encounters, med administrations, vitals, diagnosis codes, demographics, orders, labs, and more.”

As the repository expands, so does its variety of application, far beyond the initial models used to predict postoperative complications. Currently, the team is building a model to predict 30-day readmission rates. Over time, training computer models with data increases their usefulness in making decisions and predicting outcomes.

The broadest application of the repository could come from generalizability. The team is currently testing the success of models trained with Duke University Hospital data at other centers, such as Duke Regional Hospital, Duke Raleigh Hospital, and in the future, those outside the Duke University Health System.

Creating New Data

EHR data capture several important snapshots of the patient experience, but are far from complete and mostly administrative. Intentional and systematic data collection is needed to broaden the strokes and create a fuller picture. Collaborations between the Department of Surgery and experts in data science at Duke are foundational to this approach.

A valuable partner in this initiative is Erich Huang, MD, PhD, Assistant Professor of Surgery and in Biostatistics and Bioinformatics, as well as Co-Director of Forge, Duke’s Center for Actionable Health Data Science. Dr. Huang is the founding advisor of KelaHealth, a company that originated from Duke Surgery around a machine learning platform that uses algorithms from data points to reduce surgical complications and objectively inform decision-making.

“When a human makes a judgment, do they have formal confidence intervals, or is it subjective?” Huang asks. “The main reason we want to use machine learning is that it will help us measure our performance. If we can objectively measure, then we can also improve.”

Dr. Huang is a collaborator on the Department of Surgery’s 1000 Patient Project, which collects biosamples from consenting patients before, during, and after surgery. This data collection is unique, and therefore requires something the EHR cannot provide.

“We are using surgery as a perturbation event to collect information from the patients before and after surgery,” Huang says. “We need a lot of structured information about the patients, and it doesn’t live natively in the EHR. We are collecting microbiome data and next-generation sequencing data. We need to have a separate data system to store that information.”

The genomic information collected in the 1000 Patient Project can be used to help answer several questions, including who
should have surgery and how they will respond to it. Lawrence Carin, Professor of Electrical and Computer Engineering at Duke, has worked with Duke Surgery in its data collection and analysis.

“Artificial intelligence (AI), machine learning, and data science affects the entire process, from beginning to end of the surgical process,” Carin says. “All sources of data that we have—from radiology, pathology, genomics, the clinical record itself—how can we pull in all of this information to better understand who should go into surgery and then understand how the body will go through the healing process after?”

The AI created by machine learning and data training has the potential to work collaboratively with “natural intelligence”—that of the clinicians and surgeons making decisions. This collaboration of intelligences combine the subjective and well-rounded experience of the clinician, with the objective and well-defined trends of data sets.

Collaborating on Real-Time Data

There's no better test case for the benefits of real-time use of machine learning than in the Division of Emergency Medicine, where data can be used to analyze trends from the often unpredictable ebb and flow of the ER. Assistant Professors of Surgery Neel Kapadia, MD, and Brent Jason Theiling, MD, work with a team to analyze incoming data, streamline processes, and improve care.

“Our goal is that we want to see and take care of every patient that presents to the hospital for care, and we want to do so efficiently and to make sure that the care is high-quality,” Theiling says. “Once we started with that core, it is just a matter of breaking it down. What are the patient demographics and other data that can inform operational decisions and impact for the better the quality and efficiency of the care that is provided?”

“When we originally looked at the data, it was more an executive summary,” Kapadia says. “Performance services is continually updating it. It has since evolved to our utilization per hour of the day, and now subsequently we can get into the data patient by patient, how long they stayed, why did they stay that long. We can break it down by bed utilization, and all these individual pieces can be put together.”

Theiling and Kapadia add that because the emergency division collaborates with many outside entities, including labs, radiology, consultants, and transport, real-time data allows the division to objectively pinpoint weaknesses and direct improvement strategies accordingly.

Machine learning can be used to expedite care and stratify a variety of risks. A Sepsis Watch tool uses historical and real-time data, including medical history, medications, vitals, and lab and radiology results, to predict sepsis probability.

“What is interesting is not only does the mode generate a single probability, but it generates multiple iterations adjusting as time and new data goes along,” Theiling says. “In fact, if you look at the time when the probability jumps, say from 15% to 90%, in many patients it is not tied to any discrete data point. This just shows the power of a machine learning model and how it differs from a purely algorithmic program.”

This tool is being piloted in the Emergency Medicine division, and if successful, will roll out across the hospital.

Data as a Tool, Not a Takeover

Machine learning possibilities are vast, though not limitless. Deeper analysis of data, analyzing algorithms, and training predictive models will offer insight, but are not a substitute for the knowledge and intuition of a master clinician. Pairing the two intelligences—both natural and artificial—offers both subjective and objective means of improving care for all patients.

With data, you can identify the necessary pinpoints—it helps us to have valuable conversations, to look at what we are doing and to collaborate and work together for the betterment of our patient population.”

Neel Kapadia, MD
Assistant Professor of Surgery
A 2008 survey from the American College of Surgeons found that 40% of surgeons reported burnout\(^1\). Burnout manifests as emotional exhaustion, depersonalization, and a low sense of personal achievement due to chronic occupational stress. This highly stressful state affects surgeons at all points in their careers. In a 2016 survey of general surgery residents, 70% reported burnout\(^2\).

The effects of burnout are widespread. Studies have shown that burnout is associated with poor patient outcomes, increased risk of medical errors, and increased risk of surgeon injury. The evidence is clear: Providers who take care of themselves take better care of their patients.

“Burnout has very far-reaching implications so it’s really important that we address this,” says Cynthia Shortell, MD, Professor of Surgery and Chief of Staff for the Department. “I think in surgery we have this culture that really values hard work and dedication and that’s necessary and important, but there is a line, that once passed is not helpful to anyone anymore. Teaching surgeons how to take care of their patients and loved ones by taking care of themselves is a hard one, but it’s something that we’re going to have to figure out.”

A Culture of Support

The Duke Department of Surgery recently introduced several programs to prevent burnout among faculty and trainees by promoting resilience, or the ability to bounce back quickly from adversity. These programs teach resilience by encouraging the development of mindfulness and coping skills. The department plans to incorporate this message into ongoing training for providers.

“I think that part of promoting resilience and preventing burnout will also come in our efforts with continuing education,” says Peter Smith, Ed.D, a clinical psychologist affiliated with the Department of Surgery. “We’re developing training modules now for different work groups around our department that will be highly interactive in topics that they help shape. This will provide a deliberate committed

Led by Dr. Linda Cendales, the transplant team performs the first bilateral hand transplant in North Carolina. Extended procedures like this 14-hour event present unique challenges for maintaining focus and resilience.
opportunity to talk about things in the workplace, including how to keep oneself strong that we often just take for granted.

With the recent introduction of peer support groups for faculty and trainees, the department is poised to foster a culture of openness and trust. The group meetings provide an open forum to discuss topics that contribute to burnout. This year, the support groups will focus on harassment training. So far, Drs. Shortell and Smith believe these meetings have been tremendously successful with much participation from faculty.

“We’re working with the Diversity and Inclusion Committee to develop focus groups to introduce discussions around workplace well-being and burnout,” says Dr. Shortell. “People can share stories and listen to a speaker discussing a brief topic. Those groups would continue to get together to have this trusting group where people could share with each other.”

**Expressions of Gratitude**

The department recently introduced a new initiative to provide thank you cards to all work groups to encourage employees to recognize and appreciate their coworkers. Whether acknowledging a coworker’s quick-thinking decision to save a patient’s life or appreciating someone who went above and beyond at work, the simple act of expressing thanks helps to cultivate a supportive environment.

“My hope is that this will provide a reminder that gratitude and recognition are foundational qualities of respect, and respect is at the core of all successful cultures,” says Dr. Allan D. Kirk, David C. Sabiston, Jr. Professor of Surgery and Chair, Department of Surgery.

**References**


Looking to the Future, Together

By Renee Dubois

Since its inception, Duke Surgery has always placed a high emphasis on better patient care through innovation. David Sabiston, Jr, MD, FACS, who was the Chairman of the Department of Surgery for 32 years, pioneered coronary bypass graft surgery and pushed for clinical excellence in all things. Duke continues to be at the forefront of new surgical techniques, most recently with the first abdominal wall transplant and the first bilateral hand transplant performed in North Carolina.

Both of these procedures are unique because two teams of surgeons needed to work together in the same operating room to perform different procedures at the same time. Procedures of this complexity require not only a cohesive team of skilled medical professionals, but also dedicated administrators, transplant coordinators, and partnerships outside the hospital with donor services organizations.

The abdominal wall transplant was led by Detlev Erdmann, MD, PhD, MHS, Professor of Surgery, Division of Plastic, Maxillofacial, and Oral Surgery, and Kadiyala Venkata Ravindra, MBBS, Director, Abdominal Transplant Surgical Fellowship, Associate Professor of Surgery. The small bowel transplant, performed at the same time as the abdominal wall transplant, was led by Debra L. Sudan, MD, Chief of the Division of Abdominal Transplant Surgery.

Intestine transplants are incredibly rare, and due to the high risk of rejection and infection, are often considered to be one of the most difficult types of allograft transplants. Duke is one of fewer than 15 centers nationwide that have an active intestinal transplant program.

In the press conference held on November 15, 2018, Dr. Erdmann said procedures such as these “require a major infrastructure – a team of 25 or more people working in the operating room and really everything has to come together.” Dr. Sudan chimed in, “It takes a multitude of people to care for patients through organ donation and transplantation.” Dr. Erdmann spent 15 years preparing for abdominal wall transplantation, practicing the procedure in the fresh tissue lab, where he and his team discovered an innovative way to create a vascular loop at the thigh level to reconnect the blood supply to the abdominal wall, allowing surgeons to perform both transplantation procedures.
without interfering with each other’s work. This technique will benefit many patients in the same situation as Johnathan Nauta, the transplant recipient. Mr. Nauta needed an intestinal transplant, but had too much scar tissue on his abdomen for proper coverage. Mr. Nauta is thriving after the transplant and is now able to eat unassisted. This procedure will benefit many other transplant candidates waiting for kidney, liver, or intestine transplants who might otherwise be rejected due to the condition of their abdomens.

Much of this research was made possible by the Vascularized Composite Tissue Allotransplantation (VCA) program, founded by Linda Cendales, MD, the director of the program and the surgeon who lead the team that performed the first hand transplant in North Carolina. Dr. Cendales is the principal investigator of a clinical trial designed to lessen the risk of immunosuppression and evaluates the patients’ ability to use the transplanted limb in daily activities (Clinicaltrials.gov NCT02310867).

Under the VCA program, Dr. Cendales is collaborating with Dr. Erdmann and is co-principal investigator with Dr. Ravindra on a study of the efficacy of abdominal wall transplants to restore the function of the defective abdominal wall (Clinicaltrials.gov NCT03310905). It is therefore fitting that Dr. Cendales was the surgeon to lead the team that performed the first bilateral hand transplant in the state. The over 40-person team included professionals from different department and disciplines, including hand surgeons, anesthesiologists, nurses, operating room staff, and lab technicians. In addition to the expertise in the operating room, the team includes professionals from transplantation, neuropsychology, histocompatibility, internal medicine, occupational therapy, and pathology, to name a few. And just as important are the administrative and research infrastructures that make large-scale innovative procedures such as these possible. The 14-hour procedure took place on Thanksgiving Day, when the team demonstrated their dedication by spending a holiday taking care of the patient, Debra Kelly, instead of being at home with their families. Ms. Kelly continues to do well. A reception celebrating with her and her friends and family was held on February 26 on the Duke University Medical Center campus.

None of this would have been possible without the generous gift of the donor families, who chose to provide life and quality of life to the patients in the face of their grief.


*Journals with an Impact Factor greater than 10.0

**PUBLICATIONS IN HIGH IMPACT FACTOR JOURNALS***

**CLINICAL TRIALS**

**ABDOMINAL TRANSPLANT SURGERY**

Stuart Knechtle, MD
BMS Protocol # IM103-407
Bristol-Myers Squibb Company

Evaluation of patient outcomes from the kidney allograft outcomes allosure registry (KOAR) agreement CareDx, Inc.

Kadiyala V. Ravindra, MBBS
Medeor Therapeutics MDR-103-L2K
Medeor Therapeutics, Inc.

**CARDIOVASCULAR AND THORACIC SURGERY**

Matthew G. Hartwig, MD
OCS TOP Registry
TransMedics

George C. Hughes IV, MD
Bolton Medical Relay Pro A37
Bolton Medical, Inc.

Sure-AVR
LivaNova

Peter K. Smith, MD
Hybrid Coronary Revascularization Trial- DCC
Icahn School of Medicine at Mount Sinai

**EMERGENCY MEDICINE**

Bruce J. Derrick, MD
Forest Devices - EDGAR Study
Forest Devices, Inc.

Alexander T. Limkakeng Jr., MD
Capsule Endoscopy for HEmorrhage in the ER (CHEER)
The George Washington University

CCC for NHLBI Prevention and early Treatment of Acute Lung Injury PETAL Network – CLOVERS
Vanderbilt University Medical Center
SURGERY RESEARCH
GRANT ACTIVITY

EMERGENCY MEDICINE

Joshua S. Broder, MD
Identification of Abdominal/Pelvic Traumatic Shock Hemorrhage Sources, Active Bleeding, and Quantification of Hemorrhage by 3D Augmentation of 2D Ultrasound: A Comparison Study with Computed Tomography
Emergency Medicine Foundation

Bruce J. Derrick, MD
Ketogenic Diet for Reduction of CNS Oxygen Toxicity Symptoms in Working Divers
Naval Sea Systems Command

Alexander T. Limkakeng Jr., MD, and Jinny Ye, MD
Prehospital Termination of Resuscitation in Out-of-Hospital Cardiac Arrest
Society for Academic Emergency Medicine

Anjni P. Joiner, DO, MPH
Healthcare Access Barriers and an Evidence Based Solution in a Low-Income Country
Society for Academic Emergency Medicine

PLASTIC, MAXILLOFACIAL, AND ORAL SURGERY

David A. Brown, MD, PhD
A Point-of-care, Biomarker-based Test to Predict Non-healing in Chronic Wounds
The Plastic Surgery Foundation

SURGICAL ONCOLOGY

Shelley Hwang, MD, MPH
Breast Pre-Cancer Atlas Center
National Institutes of Health
Molecular and Radiologic Predictors of Invasion in a DCIS Active Surveillance Cohort
Breast Cancer Research Foundation

SURGICAL SCIENCES

Aravind Asokan, PhD
Evolving High Potency AAV Vectors for Neuromuscular Genome Editing
National Institutes of Health

Dawn E. Bowles, PhD
Cadaver Implant Studies of PABP 3R Life Sciences Taiwan, Ltd.

METABOLIC AND WEIGHT LOSS SURGERY

Jin Yoo, MD
Signia Stapling System
Medtronic

HEAD AND NECK SURGERY AND COMMUNICATION SCIENCES

Walter T. Lee, MD
Clinical Evaluation of the OncAlert™ RAPID in Subjects Presenting for Evaluation and/or Initial Biopsy
Vigilant Biosciences

UROLOGY

Brant A. Inman, MD
TAR-200 Study
TARIS Biomedical, LLC

VASCULAR AND ENDOVASCULAR SURGERY

Ellen Dillavou, MD
Laminate - VasQ Study
Laminate Medical Technologies, Inc.

VASCULAR AND ENDOVASCULAR SURGERY

Ellen Dillavou, MD, and Ehsan Benrashid, MD
The Effect of Bundled Measures to Reduce Surgical Site Infection (SSI) in Vascular Surgery Patients
Acelity
For close to 100 years, Duke Surgery has trained surgeons from the ground up, forging the path for medical students to become future leaders in surgery. Now the department will help drive the way surgical education evolves on a national level.

In June 2018, the department implemented a new pilot curriculum for medical students in the surgery clerkship under the leadership of the clerkship director Dr. John Haney and with enthusiastic support from the Duke University School of Medicine.

In contrast to other medical specialties, surgery currently lacks a standard curriculum for medical students on their surgery rotation. The Association for Surgical Education (ASE) in partnership with the American College of Surgeons (ACS) convened a committee 7 years ago to address this need.

Co-chaired by Dr. Ranjan Sudan, Professor of Surgery and Vice Chair of Education at Duke Surgery, and Dr. Marc A. de Moya, Medical College of Wisconsin, the ASE Curriculum Committee decided a national curriculum was necessary for all medical students regardless of whether they ultimately chose surgery for their career path.

“The faculty in the clerkship were pretty much trying to teach students to the exam as opposed to saying, ‘you know, this is what’s really important,’ so students were preparing for the exam, rather than studying what was important,” says Dr. Sudan.

The first of its kind in the country, the ACS/ASE curriculum aims to provide an essential set of topics to ensure that all medical students have a core understanding of surgery and are adequately prepared for the NBME® Surgery Shelf, a case-based exam that tests students’ ability to diagnose and manage surgical patients.

“What we wanted to do is figure out those topics that every medical student should have read through and gained a
good understanding of in medical school,” explains Dr. Sudan. “We said let’s survey all the stakeholders to find out what they think is important. We surveyed medical students who had completed their surgery clerkship, residents, and interns. Once we got the topics together, we then started putting down some very well-described goals and objectives.”

The committee developed content specific to each topic to meet those goals and objectives, which would be easily accessible on the ACS website by faculty and residents teaching in the clerkship as well as students. For each topic, the students learn relevant hands-on skills in the surgery simulation lab, such as how to start intravenous lines and insert a Foley catheter. At Duke, this learning is supplemented by several different index cases to help the students gain a broader understanding of common operations.

“We changed the structure of our clerkship around the curriculum in order to give our students more continuity,” says Dr. Sudan. “Rather than split the rotation into 3-week segments, we’ll give them 6 weeks on one rotation so that they can build some relationships with the residents and faculty who are working with them.”

Dr. Sudan will present the results of the needs assessment survey at the ASE annual conference in April. Duke plans to share student and faculty feedback with five or six other institutions across the country before those institutions implement the national curriculum. Following the multi-institutional phase, the ACS plans to disseminate the curriculum nationally to medical schools.

The Core Curriculum can be found online at https://www.facs.org/education/program/core-curriculum.
Understanding the immune system and its role in disease and wound healing has become increasingly relevant in surgical practice. Immunobiology influences a variety of surgical disciplines, including oncology, transplantation, inflammatory bowel disease, trauma, and critical care. However, surgical training often lacks this critical research training, leaving surgeons inadequately prepared to lead immune-related research as a surgeon–scientist.

This past fall, the Department of Surgery was awarded a T32 grant from the National Institutes of Health to create a formal training program specifically for surgical residents interested in immunobiological research. The five-year award provides funding opportunities for candidates with PhD and Master’s level degrees and aims to develop surgeon–scientists who will lead areas of immunobiological research relevant to surgical discovery.

Interested applicants can email Dr. Kent Weinhold, Professor and Chief, Division of Surgical Sciences, at kjw@duke.edu.

DUKE SURGERY ADVANCED EDUCATION COURSES

For a complete list of courses, please visit http://innovation.surgery.duke.edu/courses.

KURe Multidisciplinary Benign Urology Research Day
April 26, 2019, Durham, NC

Duke Tuesday in Urology
July 9, 2019, Durham, NC

Craniomaxillofacial Trauma Anatomy Course
July 19–21, 2019, Durham, NC

Fresh Cadaver Flap Dissection Course
August 2–4, 2019, Durham, NC

2019 Duke Masters of Minimally Invasive Thoracic Surgery
October 10–12, 2019, Orlando, FL

2019 Duke Solid Organ Transplant Summit
October 19, 2019, Durham, NC
NEW FACULTY

SHARON L. CLANCY, MD
Assistant Professor of Surgery, Division of Plastic, Maxillofacial, and Oral Surgery
Clinical interests include breast reconstruction, corrective surgery, and complex reconstructive surgery in women’s cancers, including breast cancer, single-stage, and postablative mammoplasty reconstruction. Research interests include outcomes research in breast reconstruction, surgical education, and breast microenvironment cell signaling pathways.

GARY J. FAERBER, MD
Professor of Surgery, Division of Urology
Clinical interests include urologic surgery. Research interests include urologic surgery clinical outcomes, medical and surgical management of urinary stone disease, and sleep deprivation and its effect on resident performance.

ANNETTE M. JACKSON, PhD
Associate Professor of Surgery, Division of Abdominal Transplant Surgery
Research interests include transplantation and related immunology, including HLA desensitization and the down-regulation of B cell responses to organ and tissue transplantation.

GEORGE KASOTAKIS, MD, MPH
Assistant Professor of Surgery, Division of Trauma and Critical Care Surgery
Clinical interests include surgical critical illness, acute respiratory distress syndrome, laparotomy for trauma, hernia repair, complex abdominal wall reconstruction, diverticulitis, gallbladder disease, chest wall injury, appendicitis, and peptic ulcer disease/intestinal perforation. Research interests include pulmonary inflammation in acute lung injury/acute respiratory distress syndrome, gallbladder disease, and more.

CAROLYN S. MENENDEZ, MD
Assistant Professor of Surgery, Division of Surgical Oncology
Clinical interests include breast surgical oncology. Dr. Menendez is the hereditary cancer clinic representative at the weekly molecular tumor board and the program leader for hereditary cancer counseling in Wake county. Research interests include cancer risk assessment and clinical cancer genomics and genetics.

SHERRI SMITH, PhD, AuD
Associate Professor of Surgery, Division of Head and Neck Surgery & Communication Sciences
Clinical interests include advanced-practice rehabilitative audiology, including auditory implants, individualized and group audioligic rehabilitation, amplification, and accessories for older adults with co-morbidities. Research interests include adult audiologic rehabilitation, outcome assessment, dual-sensory impairment, speech perception, auditory working memory for speech, service-delivery models for amplification.

FACULTY PROMOTIONS

JEFFREY CHENG, MD
Promoted to Associate Professor of Surgery, Division of Head and Neck Surgery & Communication Sciences

JOHN MIGALY, MD
Promoted to Associate Professor of Surgery with tenure, Division of Surgical Oncology

SCOTT T. HOLLENBECK, MD
Promoted to Associate Professor of Surgery with tenure, Division of Plastic, Maxillofacial, and Oral Surgery

KRISTAL M. RISKA, PhD, AuD, CCC-A
Promoted to Assistant Professor of Surgery, Division of Head and Neck Surgery & Communication Sciences
NATIONAL RANKINGS

1

in Blue Ridge National Rankings of NIH Funding for Surgery

“
This is a noteworthy recognition befitting the talents and accomplishments of Duke Surgery. I am particularly proud of the outstanding commitment of our faculty and staff who work every day to drive innovation and discovery in surgical care. We are all in when it comes to improving outcomes for future surgical patients!”

Shelley Hwang, MD, MPH
Vice Chair of Research

ONYE E. AKWARI, MD
Professor of Surgery, Division of Surgical Sciences

Received the Raymond Gavins Distinguished Faculty Award from the Samuel DuBois Cook Society.

2

in U.S. News & World Report's Graduate Surgical Education Programs

“We are very happy to see these rankings as it represents the very high quality of the students with whom we have the privilege of working everyday, the environment of discovery that exists at Duke, and the reputation that Duke Surgery is blessed to have among educational leadership. It also emphasizes that we have to keep working very hard to provide our students with an environment that will help them become competent and compassionate physicians.”

Ranjan Sudan, MD
Vice Chair of Education

PAUL J. MOSCA, MD, PhD, MBA
Associate Professor of Surgery, Division of Surgical Oncology

Inducted into the Southern Surgical Association.

Shelley Hwang, MD, MPH
Vice Chair of Research

Ranked 1st in 2018 NIH funding according to the Blue Ridge Institute for Medical Research, with more than $10 million in funding.

PETER K. SMITH, MD
Mary and Deryl Hart Professor of Surgery and Chief, Division of Cardiovascular and Thoracic Surgery

Appointed chair of the American Medical Association’s Specialty Society Relative Value Scale Update Committee. Received the American Association of Nurse Practitioner’s NC State Award for Excellence-Nurse Practitioner Advocate.
FACULTY AWARDS

**BRADLEY H. COLLINS, MD**
Associate Professor of Surgery, Division of Abdominal Transplant Surgery

Received the 2019 Leonard Palumbo Jr., MD Faculty Achievement Award, which honors a faculty member who displays a dedication to patient care and excellence in teaching and mentoring young physicians.

**GUIDO FERRARI, MD**
Associate Professor of Surgery, Division of Surgical Sciences

Listed among the most highly cited researchers in 2018 according to Clarivate Analytics.

**SCOTT T. HOLLENBECK, MD**
Associate Professor of Surgery, Division of Plastic, Maxillofacial, and Oral Surgery

Inducted into the Southern Surgical Association.

**GEORGE KASOTAKIS, MD, MPH**
Assistant Professor of Surgery, Division of Trauma and Critical Care Surgery

Received a 3-year scholarship to attend the Eastern Association for the Surgery of Trauma Leadership Development Workshop.

**STUART KNECHTLE, MD**
Mary and Deryl Hart Professor of Surgery, Division of Abdominal Transplant Surgery

Inducted into the Association of American Physicians. Ranked 7th in NIH funding received in 2018 according to the Blue Ridge Institute for Medical Research.

**DAVID C. MONTEFIORI, PhD**
Professor of Surgery, Division of Surgical Sciences

Among the most highly cited researchers in 2018 according to Clarivate Analytics.

**SREEJA M. NATESAN, MD**
Assistant Professor of Surgery, Division of Emergency Medicine

Named course director of the Emergency Medicine Board Review Redefined course.

**GLENN M. PREMINGER, MD**
James F. Glenn, M.D. Professor of Urology and Chief, Division of Urology

Received the Karl Storz Lifetime Achievement Award from the Endourological Society.

**JONATHAN C. ROUTH, MD**
Paul H. Sherman, M.D. Associate Professor of Surgery, Division of Urology

Named president-elect of the Pediatric Urologic Oncology Working Group.

**RANJAN SUDAN, MD**
Vice Chair of Education and Professor of Surgery, Division of Metabolic and Weight Loss Surgery

Will serve as consultant to the American College of Surgeons Division of Education. Began his second year serving on the Board of Trustees for the Society for the Surgery of the Alimentary Tract.

**BRUCE SULLENGER, PhD**
Joseph W. and Dorothy W. Beard Professor of Experimental Surgery, Division of Surgical Sciences

Elected a Fellow of the National Academy of Inventors.

**GEORGIA TOMARAS, PhD**
Professor of Surgery, Division of Surgical Sciences

Ranked 7th in NIH funding received in 2018 according to the Blue Ridge Institute for Medical Research. Among the most highly cited researchers in 2018 according to Clarivate Analytics.
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In memory of Jill White, Duke Surgery Director of Communications