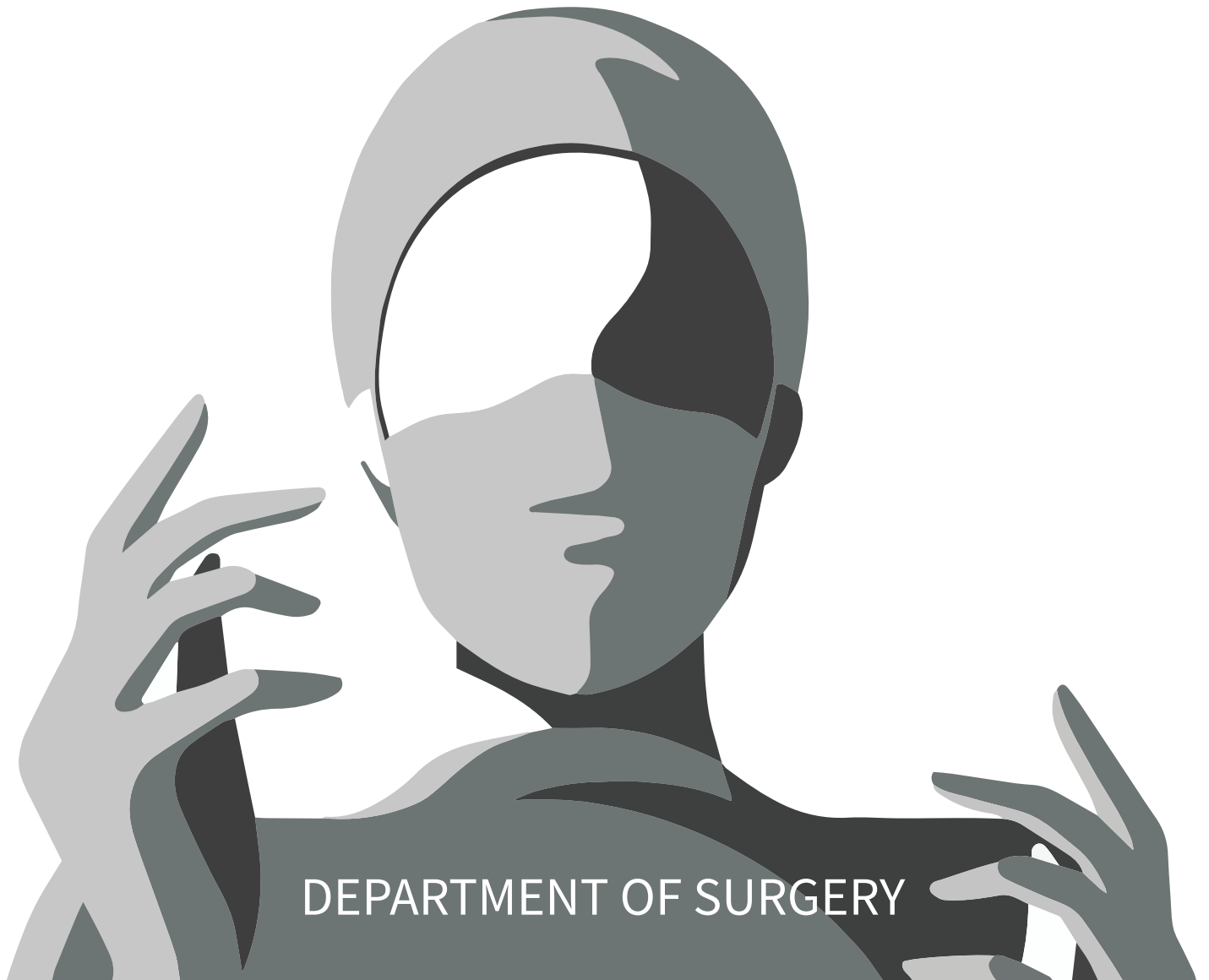




Washington  
University in St. Louis  
SCHOOL OF MEDICINE

OUR MISSION IN ACTION

# 2021 | ANNUAL REPORT



DEPARTMENT OF SURGERY



"I would suggest that all of us in the Department of Surgery have a fourth mission: to improve the diversity of our specialty as well as to improve the health equity of all the patients we serve."

Timothy J. Eberlein, MD



# Table of Contents

<b>Letter from the Chair</b>	5
<b>A Year in Review</b>	6
<b>Our Department at a Glance</b>	8
<b>Division of Cardiothoracic Surgery</b>	10
Section of Cardiac Surgery	10
Section of Thoracic Surgery	14
Section of Pediatric Cardiothoracic Surgery	18
<b>Division of General Surgery</b>	22
Section of Acute and Critical Care Surgery	22
Section of Colon and Rectal Surgery	26
Section of Hepatobiliary-Pancreatic & GI Surgery	30
Section of Minimally Invasive Surgery	34
Section of Surgical Oncology	38
Section of Transplant Surgery	42
Section of Vascular Surgery	46
<b>Division of Pediatric Surgery</b>	50
<b>Division of Plastic and Reconstructive Surgery</b>	54
<b>Division of Public Health Sciences</b>	58
<b>Division of Urologic Surgery</b>	62
<b>Commitment to Diversity, Equity and Inclusion</b>	66
<b>Our Mission in Action</b>	68
<b>Society of Black Academic Surgeons</b>	70
<b>Research</b>	72
<b>New Research Awards</b>	73
<b>Education</b>	74
<b>Residents and Fellows</b>	76
<b>Mary Klingensmith</b>	78
<b>Washington University Medical Campus</b>	80
<b>St. Louis</b>	81
<b>Faculty</b>	82
<b>New Faculty</b>	86
<b>New Endowed Professorships</b>	89
<b>Leadership</b>	90
<b>Giving</b>	92



## Letter from the Chair

### Timothy Eberlein, MD

*William K. Bixby Professor and Chair, Department of Surgery  
Spencer T. and Ann W. Olin Distinguished Professor  
Washington University School of Medicine  
Director, Alvin J. Siteman Cancer Center*

When I came to Washington University School of Medicine in St. Louis as Chair of the Department of Surgery in 1998, this was already a surgical department of distinction. Each department chair has made significant contributions throughout the years: Fred Murphy established the department in 1914; Evarts Graham set an ambitious course in surgery and surgical education; Carl Moyer was a superb and visionary educator; Walter Ballinger achieved great success in training young academic surgeons; and Samuel Wells firmly established the full-time model and propelled the department to a position of national clinical and research prominence. Our department also played a major role in training African American surgeons and caring for Black patients at Homer G. Phillips Hospital throughout much of the last century.

Most academic departments of surgery have a tripartite mission focused on clinical care, research and education. The mission of the Department of Surgery at Washington University has four pillars: clinical, research, education, and diversity and health equity.

Over the last 24 years, the number of full-time faculty in the department has more than doubled. This has had a significant positive impact on clinical activity, which has increased over fivefold since 1998. Not only have we become more busy, we have emphasized the patient experience, quality improvement, fiscal responsibility and measuring success. Washington University surgeons now practice at 21 different locations throughout the region, providing the most advanced, highest quality care to patients in our communities and from across the nation. In recent years we have made significant investments in North St. Louis County, where Washington University surgeons staff Christian

Hospital and the Siteman Cancer Center satellite facility at Northwest HealthCare. We are also committed to caring for patients from rural areas of southern Missouri and Illinois, which have the highest prevalence of certain cancers within Siteman's catchment.

Patient care is supported and advanced through our innovative research programs. We have diversified our research portfolio, which includes novel basic research, translational studies, clinical trials, population health sciences, comparative effectiveness investigations and disparities research. Our faculty have received \$37 million in research grants and 169 peer-reviewed research awards, which is more than seven times the number in 1998. Importantly, this research emphasizes inclusion of minority patients and underserved populations in our region. A recent \$17 million NIH grant, funded through the NCI's Cancer Moonshot Program, will focus on colorectal cancer, multiple myeloma and cholangiocarcinoma, sequencing the genomes of African American patients, who historically have not had their genomes sequenced. Developing research studies of this kind with diverse populations in mind from the start will improve participant engagement and optimization, implementation science, and genomic-driven clinical care for our patients.

We have had a lot of firsts in surgical education at Washington University School of Medicine: entrustable professional activities, the first duty hour trial, procedural learning and safety collaboration, the Capstone Course, developing a curriculum which has led to the SCORE program from the American Board of Surgery, simulation education in the Washington University Institute for Surgical Education, early specialization and flexibility in surgical training. At every level of our educational programs we have seen an increase in trainees from groups underrepresented in medicine. As we continue to train more diverse medical students, residents and fellows, we are shaping the future of academic surgery to better reflect our patient populations, which we recognize is vital to our mission.

As you can see, diversity and health equity are deeply engrained in the mission of our department. As academic surgeons, we spend a great deal of our time taking care of patients, performing research and developing innovative educational programs. I would suggest that all of us in the Department of Surgery actually have a fourth mission: to improve the diversity of our specialty as well as to improve the health equity of all the patients we serve.

*\*For the safety of our faculty and campus community, all photos included were taken either pre-COVID or following social distancing guidelines.*

*\*\*Clinical services in Illinois are provided by Washington University Physicians in Illinois Inc.*



# Department of Surgery A YEAR IN REVIEW

2021

**Faculty and staff receive COVID-19 vaccine**  
Department of Surgery faculty and staff receive the Pfizer COVID-19 vaccine. The Washington University School of Medicine community share their vaccine photos and experiences on social media with the hashtag #WashUMyBestShot.

*Tiffany Osborn, MD, MPH, receives the COVID-19 vaccine.*



**Resident match days**  
Medical students match with the General Surgery, Plastic and Reconstructive Surgery, Vascular Surgery and Urology residency programs. The Department of Surgery celebrates and welcomes these new residents to the WashU family.

*Steven Tohmasi, MD, and Ariana Naaseh, MD, on Match Day.*



**101st AATS Annual Meeting**  
Cardiac surgeon and 101st President of the American Association for Thoracic Surgery (AATS) Marc Moon, MD, leads the 2021 AATS Annual Meeting. This virtual meeting features a conversation between Moon and the 66th United States Secretary of State, Condoleezza Rice.

*Marc Moon, MD, during the AATS Annual Meeting.*



**1,900 lung transplants**  
The Lung Transplant Program performs its 1,900th lung transplant since its establishment over three decades ago. In recent years, the program has excelled under the leadership of Daniel Kreisel, MD, PhD, and Ramsey Hachem, MD.

*Daniel Kreisel, MD, left and Varun Puri, MD, performing surgery.*



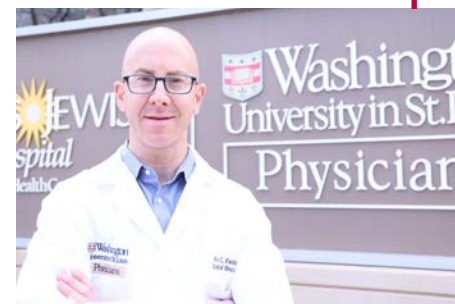
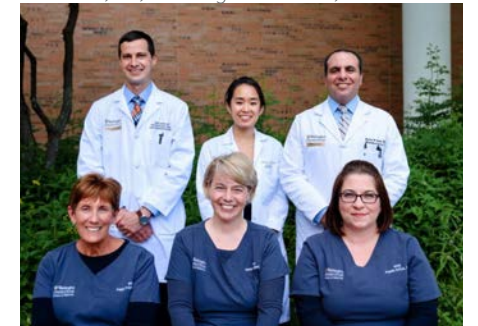
**Society of Black Academic Surgeons 31st Annual Meeting**  
Washington University School of Medicine hosts the 31st Annual Meeting of the Society of Black Academic Surgeons. Multiple faculty members present and host discussions on diversity at the hybrid meeting.

*SBAS President-elect Carla Pugh, MD, PhD, right, shakes hands with Dean David Perlmutter, MD.*



**WISE Center**  
The Washington University Institute for Surgical Education (WISE) Center facilitates over 700 surgical simulation labs for residents across all specialties in 2021. These ongoing educational efforts provide them training and skills acquisition outside of the operating room.

*Top row: Jeffrey Blatnik, MD, Britta Han, MD, MEd, and Michael Awad, MD, PhD. Bottom row: Peggy Frisella, BSN, Karen Schubert, BS, and Angelia DeClue, CST.*



*Ryan Fields, MD.*

**Fields named inaugural recipient of the Kim and Tim Eberlein Distinguished Professorship**

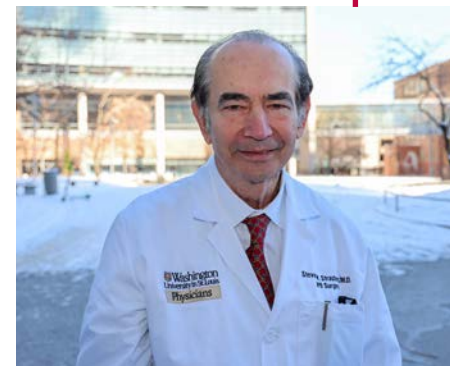
Chief of Surgical Oncology Ryan Fields, MD, is named the inaugural recipient of the Kim and Tim Eberlein Distinguished Professorship. Paul and Elke Koch established the professorship, which honors contributions of Chairman Timothy Eberlein, MD.



*Timothy Eberlein, MD.*

**DEI Training mandate from Eberlein**

All Department of Surgery staff attend mandatory training sessions led by the Office of Diversity, Equity and Inclusion focused building a community where all are welcomed, respected and supported.



*Steven Strasberg, MD.*

**Strasberg retires**

Steven Strasberg, MD, the Pruett Family Professor of Surgery and Carl Moyer Departmental Teaching Coordinator, retires from Washington University School of Medicine in St. Louis after a 50-year career in hepatobiliary-pancreatic and GI (HPB-GI) surgery.



*Chet Hammill, MD, MCR, performing surgery.*

**SPAR Program**

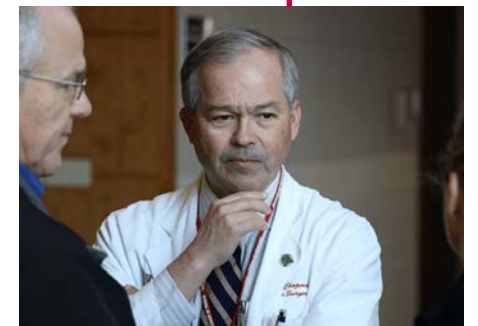
Department of Surgery divisions and sections launch the SPAR (Surgical Prehabilitation and Readiness) program to help patients be healthy and strong before surgery and improve recovery afterward.



*Michael Brunt, MD.*

**Brunt inducted into Academy of Educators**

Chief of Minimally Invasive Surgery Michael Brunt, MD, is inducted into the Washington University Academy of Educators. Brunt joins six other Department of Surgery faculty who have been recognized as dedicated and accomplished educators.



*William Chapman, MD.*

**133rd Southern Surgical Association Annual Meeting**

William Chapman, MD, serves as President of the Southern Surgical Association, a fellowship of more than 800 professionals actively practicing in surgery or one of its sub-specialties, during the organization's 133rd annual meeting in Virginia.





## Our Department at a Glance

The Department of Surgery at Washington University School of Medicine is a multidisciplinary and collaborative organization. Faculty, staff, residents and fellows from various specialties work together to achieve excellence in patient care, research and education.

The department's wide range of specialties is represented by its divisions and sections.

As clinicians, Washington University surgeons provide care within five divisions: Cardiothoracic Surgery, General Surgery, Pediatric Surgery, Plastic and Reconstructive Surgery and Urologic Surgery.

Within the Division of Cardiothoracic Surgery, there are three sections: Cardiac Surgery, Thoracic Surgery and Pediatric Cardiothoracic Surgery.

The Division of General Surgery has seven sections:

- Acute and Critical Care

- Surgery, Colon and Rectal Surgery, Hepatobiliary-Pancreatic & GI Surgery, Minimally Invasive Surgery, Surgical Oncology, Transplant Surgery and Vascular Surgery.

These divisions also serve as referral centers for their respective specialties. Surgeons treat patients at five Barnes-Jewish Hospital locations, St. Louis Children's Hospital, six Siteman Cancer Center locations, Christian Hospital, Memorial Hospital East, Progress West Hospital and Alton Memorial Hospital. Clinicians within the department are dedicated to serving the St. Louis community and beyond.

Another division, dedicated to Public Health Sciences, contributes to research, education and outreach in its field with the goals of preventing disease, promoting health and improving quality and access to health care.

Faculty members train residents and fellows in every surgical specialty represented in the department. In research, the department consistently ranks among the top academic surgery departments in annual NIH, non-federal and corporate-supported grants.

The department is led by Timothy Eberlein, MD, the William K. Bixby Professor of Surgery and chairman, who also directs the Alvin J. Siteman Cancer Center at Barnes-Jewish Hospital and Washington University School of Medicine.

Washington University Surgery provides comprehensive surgical and medical care. Patients receive the expertise and personalized treatment to achieve their best outcomes, and residents and fellows receive world-class training that prepares them for a successful career in medicine.



# Department of Surgery

## Division of Cardiothoracic Surgery

Section of Cardiac Surgery

Section of Thoracic Surgery

Section of Pediatric Cardiothoracic Surgery

## Division of General Surgery

Section of Acute and Critical Care Surgery

Section of Colon and Rectal Surgery

Section of Hepatobiliary-Pancreatic & GI Surgery

Section of Minimally Invasive Surgery

Section of Surgical Oncology

Section of Transplant Surgery

Section of Vascular Surgery

## Division of Pediatric Surgery

## Division of Plastic and Reconstructive Surgery

## Division of Public Health Sciences

## Division of Urologic Surgery

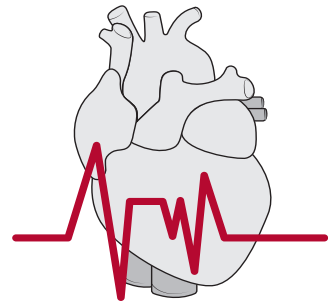
*From top: Residents train in the WISE Center. From left: Ramakrishna Venkatesh, MD, Charles Nottingham, MD, and Christopher Arett, MD. Bryan Meyers, MD, MPH. From left: Rachel Anolik, MD, and Justin Sacks, MD, MBA. Ida Fox, MD. From left: Jessica Lindenmann, MD, PhD, Paul Wise, MD, and erin Andrale, MD, MPH. From left: Linda Schulte, MD, and Muhammad Faraz Masood, MD.*




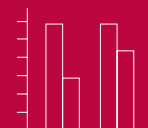





Section of  
**Cardiac Surgery**

*Puja Kachroo, MD.*



Washington University cardiac surgeons, as part of the highest-ranked heart program in Missouri by U.S. News & World Report, have a long history of performing a spectrum of adult cardiac surgeries and are widely recognized as surgical leaders. Working with cardiologists, vascular surgeons, anesthesiologists, intensivists, and a highly qualified, experienced nursing staff, cardiac surgeons offer the latest advances in technology and innovative therapies. They also employ practices supported by scientific evidence as they strive to achieve the best possible outcomes for their patients.

	<b>2,895</b> operating room cases		<b>82</b> clinical research studies
	<b>5,996</b> visits		<b>\$2,350,974</b> research funding
	<b>10</b> faculty		

**Leading the Charge in Transcatheter Therapies**



*Shuddhadeb Ray, MD, MPH.*

Washington University cardiac surgeons continue to advance the most innovative techniques in transcatheter therapies for valvular diseases. Transcatheter therapies are minimally invasive procedures with shorter recovery times than open surgery and rewarding patient outcomes. Over the last decade, industry developers have put forward numerous devices for clinical study.

“One of the unique things about Washington University is that our high clinical volume and surgical expertise allow us to participate in almost all studies of new devices,” says Cardiac Surgery Section Chief **Marc Moon, MD**, the John M. Shoenberg Professor of Surgery. “Some of these devices will prove to be excellent replacements for more invasive techniques. Some may create opportunities for patients who presently have few therapeutic options.”

Leading the charge in these investigations of transcatheter therapies is cardiac surgeon **Puja Kachroo, MD**. This year, Kachroo and the team at the Washington University and

Barnes-Jewish Heart & Vascular Center performed one of the first transcatheter interventions for tricuspid valve disease.

“Our goal is to evaluate and treat patients with valvular heart disease expeditiously, in a multidisciplinary fashion, offering state of the art diagnostic and novel therapeutic surgical or catheter-based interventions, in order to provide exceptional care,” says Kachroo.

Transcatheter valve therapies originated with TAVR (transcatheter aortic valve replacement). TAVR is a treatment option for patients with aortic stenosis, one of the most common, insidious valve diseases in the United States. Many patients with aortic stenosis are considered too high-risk for invasive surgery because of their age, heart function or other comorbidities. TAVR provides a minimally invasive option for valve replacement. Led by **Spencer Melby, MD**, Washington University cardiac surgeons were among the first in the country to participate in TAVR clinical trials, and continue to

innovate with the procedure today.

Christian Hospital in North St. Louis provides leading-edge heart procedures in a hybrid room equipped with advanced imaging technology and surgical capabilities. Cardiothoracic surgeon **Shuddhadeb Ray, MD, MPH**, recently performed one of the first planned TAVR in TAVR procedures in the St. Louis area. For a TAVR patient whose original replacement valve has deteriorated over time, TAVR in TAVR is an option that utilizes additional prostheses for a second valve replacement. This procedure, for a patient with renal failure, was the first at Christian Hospital to use the carotid artery as an alternative access site for TAVR.

As the section continues to innovate in transcatheter therapies, patient care is at the forefront for Washington University cardiac surgeons. Through advanced multidisciplinary care, the Cardiac Surgery Section expands therapeutic options for patients with even the most challenging valvular diseases.



# Cardiac Surgery Highlights



Kunal Kotkar, MD.

## Clinical

Hypertrophic obstructive cardiomyopathy (HOCM) is a genetic disorder that causes thickening of the heart muscles and obstructs blood flow from the heart. Septal myectomy surgery, the treatment of choice for HOCM, provides long-term symptom relief and survival. Cardiothoracic Surgery Division Chief **Ralph Damiano, Jr., MD**, has performed minimally invasive HOCM procedures for nearly two decades. The minimally invasive procedure has resulted in less blood loss, shorter ICU length of stay and better postoperative pulmonary function for patients. Cardiac surgeon **Kunal Kotkar, MD**, joins Damiano in performing septal myectomies at the Washington University Hypertrophic Cardiomyopathy Center, the only National Hypertrophic Cardiomyopathy Association Center of Excellence in the region.

## Research

The 2021 St. Louis Shock Symposium, led by Director of the Extracorporeal Life Support Program at Barnes-Jewish Hospital **Muhammad Faraz Masood, MD**, focused on critical conditions such as cardiogenic shock, COVID-19 related acute respiratory distress syndrome and pulmonary embolism. Washington University surgeons, including Masood, **Kunal Kotkar, MD**, and **Varun Puri, MD**, who have played a vital role in treating the most critically ill patients during the COVID-19 pandemic, presented research and clinical experience with these conditions. Health care professionals from across the region attended the conference to learn from leading experts and understand the optimal treatments for patients with cardiogenic shock and severe respiratory distress.



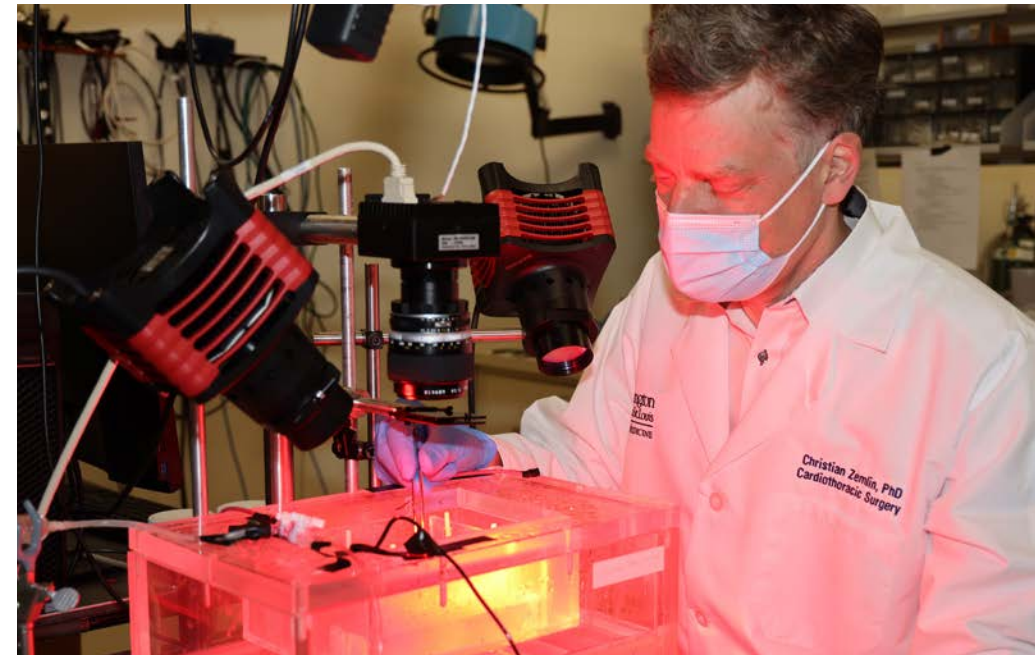
Muhammad Faraz Masood, MD, at the 2021 St. Louis Shock Symposium.

## Education

While cardiac surgeons nationwide are trending towards private practice following their training, the Washington University cardiothoracic training programs continue to produce cardiac surgeons with an interest in academic surgery. Cardiothoracic Surgery Residency Program Director **Varun Puri, MD, MSCI**, provides advanced training while also maintaining an emphasis on wellness in the training program. “Because of the environment they have been part of at Washington University, our cardiothoracic trainees do not consider their training to be an end point, but rather the beginning to their academic career educating future generations of surgeons,” says Cardiac Surgery Section Chief **Marc Moon, MD**.



Varun Puri, MD, MSCI.



Christian Zemlin, PhD, MSc.

“I am excited to continue the lab’s groundbreaking work on the surgical treatment of arrhythmias and to build new collaborations with WashU’s outstanding groups in biomedical engineering and cardiovascular research.”

—Christian Zemlin, PhD, MSc

## Shaping the Future of Cardiac Research

**Christian Zemlin, PhD, MSc**, has been named director of the Cardiac Surgical Research Laboratory in the Division of Cardiothoracic Surgery at Washington University School of Medicine in St. Louis. Zemlin, whose work focuses on the mechanisms and treatment of arrhythmias, was recruited from Old Dominion University in Norfolk, VA, where he served as graduate program director of the Biomedical Engineering Program.

“Christian will not only continue the exceptional work historically produced by our laboratory, but he will also put his own unique stamp on future productivity with his expertise in cardiac electrophysiology and biomedical engineering,” says Chief of Cardiothoracic Surgery **Ralph Damiano, Jr., MD**, the Evarts Graham Professor of Surgery.

In 2020, **Richard Schuessler, PhD**, retired after leading the research program for 20 years. A world-renowned scientist, Schuessler collaborated with a team of Washington University investigators and cardiac surgeons to rigorously evaluate ablation devices. Together, Schuessler and Damiano developed clinical innovations in the treatment of atrial fibrillation.

The mission of the Cardiac Surgical Research Laboratory is to solve the clinical problems that face cardiac surgeons. Among the many accomplishments of the continuously NIH-funded laboratory is the development of the

Cox-Maze IV procedure—the first cure for atrial fibrillation. The laboratory also trains future scientists from around the world who will lead the field of cardiac surgery for generations to come. Zemlin will continue this tradition of academic excellence by offering a formal training program for biomedical engineering students from the McKelvey School of Engineering.

“I am excited to continue the lab’s groundbreaking work on the surgical treatment of arrhythmias and to build new collaborations with WashU’s outstanding groups in biomedical engineering and cardiovascular research,” says Zemlin.

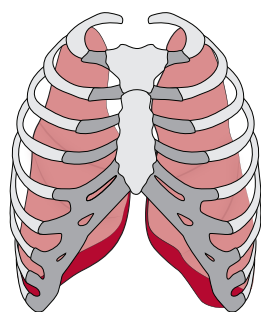
Zemlin earned a master’s degree in physics from the Technical University of Berlin in 1998 and a doctorate in theoretical physics from Humboldt University in Berlin in 2002. He completed his postdoctoral research in cardiac electrophysiology at SUNY Upstate Medical University in Syracuse. His research uses voltage-sensitive fluorescent probes to experimentally study cardiac activity, and computer modeling to understand how arrhythmias are initiated and maintained. Zemlin developed a new ablation modality for cardiac tissue based on ultrashort electric pulses that cause irreversible electroporation. His research has been funded by the American Heart Association, the NIH, intramural funding and industry.






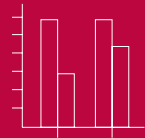




Section of  
**Thoracic Surgery**

From left: Bryan Meyers, MD, MPH, and Benjamin Kozower, MD, MPH.



Board-certified, internationally recognized thoracic surgeons provide leading-edge respiratory medical and critical care, research and training. Treatments offered by Washington University general thoracic surgeons include airway surgery, procedures for benign esophageal disease, esophageal and lung cancer, and lung transplantation. The Lung Transplant Program at Barnes-Jewish Hospital is among the most active transplant centers in the world. These surgeons also train the next generation of thoracic surgeons through multiple fellowships.

	<b>1,677</b> operating room cases		<b>110</b> office procedures
	<b>8,542</b> visits		<b>50</b> clinical research studies
	<b>9</b> faculty		<b>\$4,022,430</b> research funding



**Editors with Expertise**

From left: Ruben Nava, MD, and Varun Puri, MD, MSCI.

The Thoracic Surgery Section at Washington University School of Medicine in St. Louis has an established tradition of leading the major publications in cardiothoracic surgery.

This year, **G. Alexander Patterson, MD**, the Joseph C. Bancroft Professor of Surgery, was appointed the new Editor-in-Chief of the Journal of Thoracic and Cardiovascular Surgery (JTCVS). Patterson, a surgical innovator with a prolific career in cardiothoracic surgery, has served as Editor-in-Chief of the Annals of Thoracic Surgery since 2015. He was part of the team that performed the first successful long-term single-lung transplant in 1983, as well as the first successful long-term double-lung transplant for cystic fibrosis in 1988. A former associate editor of JTCVS, the American Journal of Lung Transplantation, and the Journal of Heart and Lung Transplantation, Patterson joined the School of Medicine in 1991.

“One of the things that makes Alec such a good role model to us all is his ability to draw us in and motivate us to become involved,” says Thoracic Surgery Chief **Bryan Meyers, MD, MPH**, the Patrick and Joy Williamson Professor of Surgery.

Multiple faculty hold leadership positions at the JTCVS. Meyers is a member of the Editorial Board. Cardiothoracic Surgery Residency Program Director **Varun Puri, MD, MSCI**, is Associate Statistical Editor, and Professor of Surgery **Benjamin Kozower, MD, MPH**, is

Deputy Statistical Editor. Thoracic surgeon **Ruben Nava, MD**, is the recipient of a 2021 Surgical Investigator Award from the American Association for Thoracic Surgery, which publishes JTCVS. Surgical Director of the Lung Transplant Program **Daniel Kreisel, MD, PhD**, is a member of the Editorial Board of Transplantation Proceedings. He is also Deputy Editor of the American Journal of Transplantation.

Meyers notes that the division has a rich history of leadership in editing cardiothoracic surgical journals. The late Thomas Ferguson, MD, professor emeritus of cardiothoracic surgery, served as editor of the Annals of Thoracic Surgery for 17 years, and other past and present cardiothoracic faculty have held numerous editorial positions over the years.

This tradition of excellence extends to cardiothoracic trainees. Thoracic Surgery Fellow **Kathryn Engelhardt, MD**, was named a 2020 Reviewer of the Year by the Annals of Thoracic Surgery. This award recognizes peer reviewers who consistently provide a combination of high-quality, thorough and professional reviews in a timely manner.

“We are contributing to the selection of current and future literature in thoracic surgery,” says Meyers. “Our editorial presence shows that there is a high density of expertise in thoracic surgery at Washington University. It is also a sign of our willingness to give back to the field as a whole by contributing time and expertise.”



# Thoracic Surgery Highlights



From left: Varun Puri, MD, MSCI, and Ruben Nava, MD.

## Clinical

Washington University cardiothoracic surgeons have expanded their services to a new lung and esophageal cancer clinic in Illinois. The clinic is located at the Siteman Cancer Center facility at Memorial Hospital Shiloh. The facility marks the sixth and newest Siteman location overall. Cardiothoracic surgeons **Varun Puri, MD, MSCI**, and **Ruben Nava, MD**, have begun surgical consultations at the lung and esophageal cancer clinic, led by Section Chief **Bryan Meyers, MD**, the Patrick and Joy Williamson Endowed Chair in Cardiothoracic Surgery. The clinic provides the latest advances in cancer care in a convenient location for patients in southern Illinois.

## Research

Research programs in the Division of Cardiothoracic Surgery provide excellent opportunities for trainees interested in pursuing a career in academic medicine to establish a robust curriculum vitae during residency training. General surgery resident **Brendan Heiden, MD, MPH**, has had an exemplary experience as a research resident in the division. This year Heiden published research in collaboration with Professor of Surgery **Varun Puri, MD, MSCI**, on the risks of delaying lung cancer surgery. He has also studied cost-effectiveness of robotic lung cancer surgery, lung cancer screening guidelines and readmissions following pulmonary lobectomy, leading to numerous publications and presentations.



Brendan Heiden, MD, MPH.

## Education

Training programs in the Division of Cardiothoracic Surgery offer complex cardiothoracic surgical experience and opportunities in established basic science and clinical research programs. General surgery resident **Hailey Shepherd, MD**, recently joined the laboratory of **Daniel Kreisel, MD, PhD**, the G. Alexander Patterson, MD/Mid-America Transplant Endowed Distinguished Chair in Lung Transplantation. Shepherd is collaborating with Cardiothoracic Surgery Residency Program Director **Varun Puri, MD, MSCI**, and thoracic surgeon **Ruben Nava, MD**, on lung transplant outcomes research. Her collaborative research, including a study of donor selection published this year in the *Journal of Thoracic Disease*, aims to expand the lung donor pool and improve lung transplant survival.



Hailey Shepherd, MD.



## Collaborative Care in Lung Transplantation

Daniel Kreisel, MD, PhD.

The Lung Transplant Program at Washington University School of Medicine in St. Louis excels due to its emphasis on multidisciplinary collaboration, clinical expertise and innovative research. As part of the Lung Center at Barnes-Jewish Hospital, the program is ranked among the best in the country by U.S. News & World Report.

The program has reached new milestones under the leadership of Surgical Program Director **Daniel Kreisel, MD, PhD**, and Medical Program Director Ramsey Hachem, MD. In 2021, the Lung Transplant Program performed its 1,900th lung transplant.

“Our team is highly collaborative,” says Kreisel, Chief of Cardiothoracic Transplantation. “Our thoracic surgeons and colleagues in pulmonary medicine work

closely together to achieve the best outcomes for our patients.”

The team, which includes transplant coordinators, transplant pharmacists, respiratory therapists, dietitians, social workers and financial coordinators, partners to deliver world-class care for lung transplant recipients.

“The internal partnerships established within Washington University School of Medicine consistently allow patients to receive genuine tailored care,” says Hachem, the Tracey C. Marshall–Dr. Elbert P. Trulock Distinguished Professor of Pulmonary and Critical Care Medicine.

Faculty advance the field of transplantation through collaborative basic science, translational research and

clinical studies. As Scientific Director of the Transplant Center, Kreisel led researchers to discover new clues as to why lung transplants are vulnerable to antibody-mediated rejection, a condition that leads to death for many transplant recipients. In an upcoming multicenter clinical study partnering with researchers from Harvard Medical School, Kreisel and Hachem will investigate a promising therapy for prevention of antibody-mediated rejection: a cytokine inhibitor targeting interleukin-6.

“The Lung Transplant Program has also made significant strides in optimizing the evaluation and management of lung donors, a critical step in ensuring good clinical outcomes,” says Associate Surgical Director **Varun Puri, MD, MSCI**. Puri is currently supported by an NIH grant to design optimal donor care pathways and leads a collaborative effort involving multiple organ procurement organizations nationwide. Puri and Professor of Surgery **Benjamin Kozower, MD, MPH**, are initiating additional collaborative research on the management of lung cancer patients.

“What differentiates the Lung Transplant Program at Washington University and Barnes-Jewish Hospital is that we combine excellence in clinical care, high clinical volume, and innovation in basic and translational research,” says Kreisel, the inaugural G. Alexander Patterson, MD/Mid-America Transplant Endowed Distinguished Chair in Lung Transplantation. “My vision is that within the next five years we will have personalized medicine for each lung transplant recipient that accounts for their unique characteristics.”

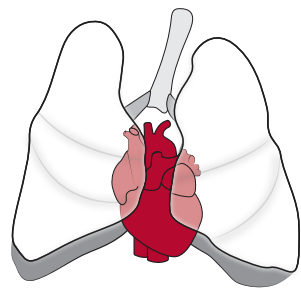




Section of

Red scrub cap: Pirooz Eghtesady, MD, PhD.

## Pediatric Cardiothoracic Surgery



Pediatric cardiothoracic surgeons treat children with congenital cardiac disorders. These surgeons treat a range of conditions, from atrial septal defects to complex single ventricle anomalies, neonatal surgery, surgery for congenital heart disease and tracheal reconstruction. The Lung Transplant Program at St. Louis Children's Hospital is the most active of its kind in the world, attracting patients with cystic fibrosis and other lethal lung diseases. The Pediatric Heart Transplant Program is considered one of the leaders in the United States.

	<b>1,345</b> operating room cases		<b>48</b> clinical research studies
	<b>1,511</b> visits		<b>\$1,474,538</b> research funding
	<b>3</b> faculty		



## We've Got Heart

From left: Jacob Miller, MD, and Dilip Nath, MD.

People born with congenital heart defects often require multiple interventions and lifelong management to ensure their hearts are pumping blood through the body properly. Heart defects can lead to chronic congestion, which can cause problems with both the heart and liver. When these problems progress to liver dysfunction and liver failure, transplant may be the best treatment option.

Congenital cardiac surgeons **Jacob Miller, MD**, and **Dilip Nath, MD**, combine clinical expertise and multidisciplinary care to achieve the best outcomes for heart-liver transplant patients at the Washington University and St. Louis Children's Hospital Heart Center.

"These are patients who may have had several previous surgeries to treat their heart defects," says Miller, who completed cardiothoracic and congenital cardiac fellowship training at the School of Medicine. "When their condition has worsened to the extent that they require heart-

liver transplant, they need to see a team with the coordination and capability to make them better."

The Heart Center, the first pediatric center in the Midwest to perform over 500 heart transplants, is nationally recognized as a top heart program by U.S. News & World Report. Miller and Nath partner with the Pediatric Liver and Transplant Center team at St. Louis Children's Hospital, led by Director of Liver Transplant and Mid-America Transplant/Department of Surgery Distinguished Endowed Chair in Abdominal Transplantation Maria B. Majella Doyle, MD, MBA, to coordinate care for heart-liver transplant procedures, which can take 12 or more hours to complete and require a large operating room staff.

"We have seen excellent results in these challenging cases," says Nath. "We have one of the leading pediatric heart transplant programs in the country. Our patients can see our track record of outstanding outcomes and know that they are in good hands."

**"I consider myself one of the most fortunate people alive to be working with such wonderful, talented individuals. Our team continues to grow and improve the health of our patients. We've got heart."**

*-Pirooz Eghtesady, MD, PhD*

The Heart Center is led by Section Chief of Pediatric Cardiothoracic Surgery **Pirooz Eghtesady, MD, PhD**, the Cardiothoracic Surgeon-in-Chief at St. Louis Children's Hospital, who has performed heart transplants in children, teens and adults at the School of Medicine.

"I consider myself one of the most fortunate people alive to be working with such wonderful, talented individuals," says Eghtesady, who is the Emerson Chair in Pediatric Cardiothoracic Surgery at St. Louis Children's Hospital. "Our team continues to grow and improve the health of our patients. We've got heart."



# Pediatric Cardiothoracic Surgery Highlights



St. Louis Children's Hospital.

## Clinical

Washington University pediatric cardiothoracic surgeons are international leaders in Potts shunt procedures for children with severe pulmonary hypertension. The procedure connects the left pulmonary artery to the descending aorta as a palliative treatment for children who may otherwise need lung transplantation. The Section of Pediatric Cardiothoracic Surgery is among the most clinically active in North America, receiving national and international referrals for this procedure. Midterm outcomes are comparable to lung transplant, according to a recent School of Medicine study published in the *Journal of Thoracic and Cardiovascular Surgery*. As data becomes available, the section will study long-term outcomes and refine the patient selection process.

## Research

Pregnant women with type 1 diabetes are at increased risk of having children with congenital heart defects. Researchers in the Section of Pediatric Cardiothoracic Surgery are investigating the role of certain pathogenic viruses in altering the maternal microbiome, which may play a role in causing congenital heart defects. In a recent study published in the *Journal of the American Heart Association*, the research team found an association between a virus and congenital heart defects in an animal model. An upcoming multidisciplinary clinical study will examine the gut virome of women to understand the link between viruses and congenital heart defects.



From left: Pirooz Eghtesady, MD, and Jacob Miller, MD.

## Education

In 2020, the Section of Pediatric Cardiothoracic Surgery at Washington University School of Medicine introduced an ACGME-accredited Congenital Cardiac Surgery Fellowship. The program became one of only 11 congenital cardiac fellowships in the United States. Accredited fellowship training in congenital cardiac surgery provides opportunities for cardiothoracic surgeons to develop the expertise necessary for subspecialization in these complex procedures. **Jacob Miller, MD**, the inaugural fellow, joins the section as Instructor of Cardiothoracic Surgery. Current fellow **Vinod Sebastian, MD**, completed cardiothoracic fellowship training at UT Southwestern Medical Center and has over a decade of experience as a practicing cardiothoracic surgeon.



Vinod Sebastian, MD.



## Growth Potential

Pirooz Eghtesady, MD, PhD.

Tetralogy of Fallot is a congenital heart defect that affects normal blood flow through the heart. It consists of pulmonary stenosis, ventricular septal defect, overriding aorta and right ventricular hypertrophy. Together, these defects can reduce the amount of oxygen in the blood that flows to the rest of the body. Congenital cardiac surgeons at Washington University School of Medicine combine clinical expertise with innovative research to solve the problems facing patients with congenital heart disease.

Treating tetralogy of Fallot requires surgery to widen or replace the pulmonary valve. Patients treated for the condition require lifelong monitoring. Blood flow may still be restricted after surgery. Deterioration of childhood heart repairs can lead to pulmonary valve regurgitation. Cardiac arrhythmias are common in patients after tetralogy of Fallot surgery. These problems lead many patients to require repeat interventions throughout their lifetime.

Chief of Pediatric Cardiothoracic Surgery **Pirooz Eghtesady, MD, PhD**, is developing a novel surgical technique using heart tissue to replace the pulmonary valve. Eghtesady, who is Cardiothoracic Surgeon-in-Chief at St. Louis Children's Hospital, takes tissue from the right atrial appendage and creates a replacement valve.

“Surgeons have done valve repairs for decades using other materials,” says Eghtesady, the Emerson Chair in Pediatric Cardiothoracic Surgery. “Specifically, the pericardium has good tensile strength. The problem is that the pericardium degenerates and does not have growth potential. I asked myself, ‘Is there something else a surgeon could use that has growth potential?’”

A replacement valve with the potential to grow with a patient, like a functional valve in a heart without congenital defect, might reduce the number of issues common to patients with tetralogy of Fallot and other congenital heart defects. From this initial idea, Eghtesady began collaborating with Washington University biomedical engineers to test atrial appendage tissue. He has now used the approach in select cases with positive results.

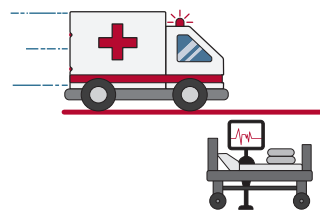
Eghtesady, who leads a research laboratory at the School of Medicine, is developing plans to further study the use of this tissue in valve repair. If proven effective, the technique could revolutionize the treatment of congenital heart disease, including common problems with few current treatment options, such as bicuspid aortic valve.



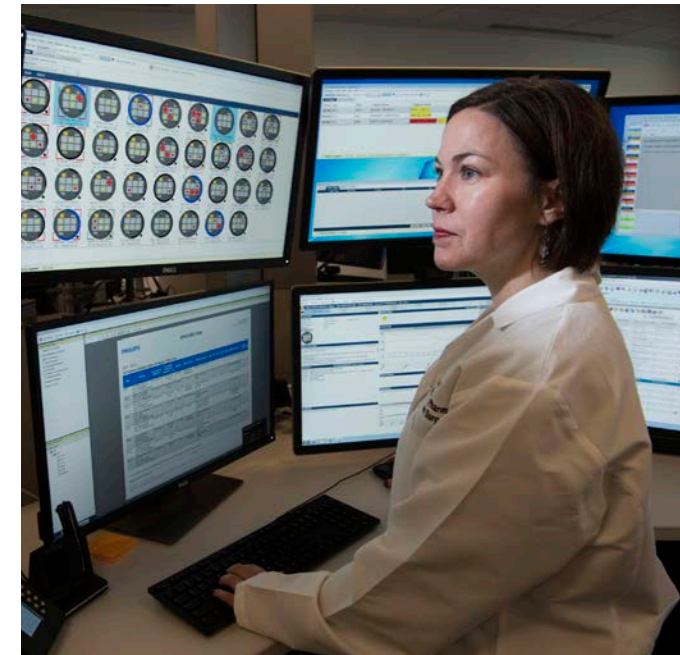
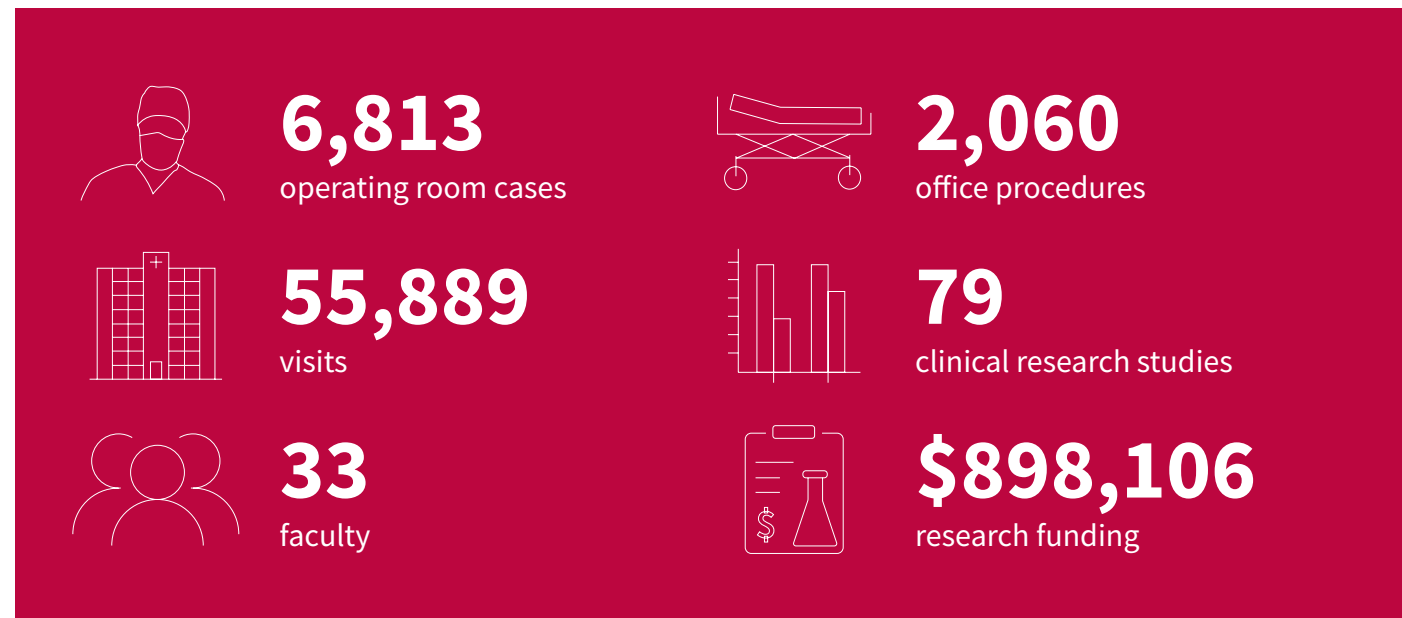


From left: Grant Bochicchio, MD, MPH, and Steve Jarman, RN, BSN.

Section of  
**Acute and Critical Care Surgery**



Acute and Critical Care Surgeons at Barnes-Jewish Hospital, a regional referral center for critically ill patients and designated Level I Trauma Center by the State of Missouri, specialize in traumatic injuries, emergency surgeries, geriatric trauma, general surgeries, burn and wound care, and critical care. These surgeons collaborate with intensivists from the Washington University Department of Anesthesiology and Division of Emergency Medicine. Trainees are exposed to a large, diverse patient population, treating complicated cases on several intensive care units.



Sara Buckman, MD, PharmD.



Douglas Schuerer, MD.

Training Leaders in  
**Surgical Critical Care**

The Surgical Critical Care (SCC) Fellowship at Washington University School of Medicine and Barnes-Jewish Hospital, led by Program Director **Sara Buckman, MD, PharmD**, provides advanced training in the treatment of the most critically ill patients. Buckman became fellowship director in 2020, continuing the high level of training offered by Professor of Surgery **Douglas Schuerer, MD**, who was program director for 11 years. Schuerer and **Melissa Stewart, MD**, serve as associate program directors.

**Jordan Kirsch, DO**, completed the fellowship in 2021 and joins the faculty as an instructor of surgery while he continues his advanced training with an Acute Care Surgery fellowship.

“Our program’s goal is to train general and specialty surgeons as leaders in surgical critical care,” says Buckman. “Dr. Kirsch was very accomplished during his SCC fellowship. Despite his busy clinical schedule, he was able to work on several projects, publish papers and hold committee positions in national organizations.”

At Barnes-Jewish Hospital, Kirsch collaborated with Stewart and **Obeid Ilahi, MD**, on the development of the ACCS non-elective small and large bowel pathway. His abstract titled “ROTEM versus Conventional Assays in Prediction of Worsening Traumatic Intracranial Hemorrhage” was accepted for presentation at the Society of Critical Care Medicine. Another project, focused

on predicting the need for tracheostomy after cervical spinal cord injury, was accepted for presentation at the Western Surgical Association Annual Meeting in November 2021.

Kirsch is a member of the Guidelines Committee of the Eastern Association for the Surgery of Trauma (EAST), where he is currently involved in several clinical trials. He is also a member of the research and publications committees of the Chest Wall Injury Society. During fellowship, Kirsch published work in high impact journals including Injury and the Journal of Trauma and Acute Care Surgery.

“The opportunity to work with the renowned multidisciplinary faculty and the privilege to care for such a diverse patient population make this fellowship experience unparalleled,” says Kirsch. “Beyond the clinical realm, I was constantly challenged and mentored to develop my leadership, research and teaching skills.”

The Surgical Critical Care Fellowship continues to grow as a leader in acute and critical care surgical training. Beginning in the 2022-2023 academic year, the fellowship will offer two training options: a one-year Surgical Critical Care fellowship and a two-year Surgical Critical Care/Acute Care Surgery fellowship.



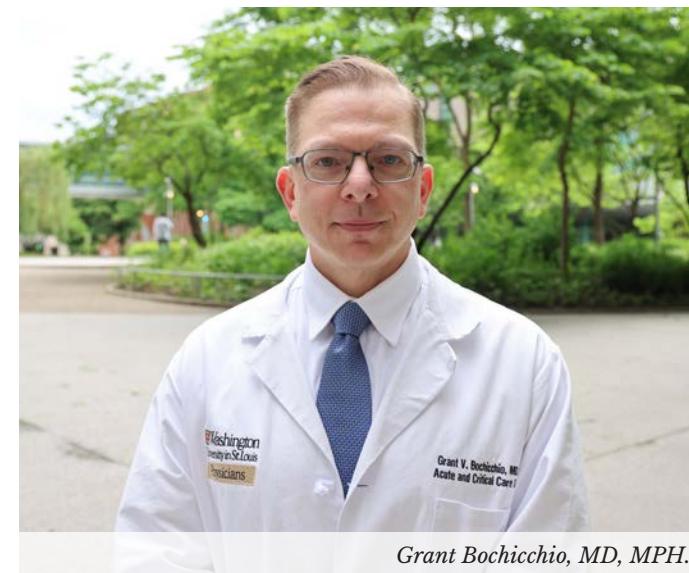
# Acute and Critical Care Surgery Highlights



Surgeon operating DaVinci robot.

## Clinical

The use of robotic surgery at Washington University has been on the rise in recent years. Specialties including bariatrics, hernia repair and urologic surgery have adopted the technology for its smaller incisions, enhanced visualization and range of motion. ACCS surgeons at the medical school are among the first in the country to investigate the role of robotics in acute and critical care surgery. **Obeid Ilahi, MD**, has introduced robotics for select surgeries, while **Kelly Vallar, MD**, pursues further fellowship training in robotic surgery. “If this cutting-edge technology ultimately proves beneficial to what we do as emergency surgeons, we will be at the forefront in adopting robotics to our practice,” says ACCS Section Chief **Grant Bochicchio, MD, MPH**.



Grant Bochicchio, MD, MPH.

## Research

The Prehospital Airway Control Trial (PACT) is now enrolling randomized patients to investigate two strategies for airway management. PACT is a clinical trial funded by the United States Department of Defense to study the use of endotracheal tubes and supraglottic airways to help trauma patients breathe. Chief of Acute and Critical Care Surgery **Grant Bochicchio, MD, MPH**, is the Washington University Principal Investigator for this national trial, which includes study sites across the LITES (Linking Investigations in Trauma and Emergency Services) Network. PACT began enrolling patients this year and will continue for four years.

## Education

The Washington University Center for Humanism and Ethics in Surgical Specialties (CHES) has introduced a new Surgical Ethics Fellowship. This year-long academic program, led by CHES and Surgical Ethics Fellowship Program Director **Piroska Kopar, MD**, prepares fellows for difficult situations in which they must determine what ought to be done for a patient. Inaugural fellow **Jessica Kramer, MD**, who is a member of the Barnes-Jewish Hospital ethics committee, received the 2020-21 Evarts A. Graham Teaching Award for her commitment to surgical residency education and training. Kramer is joined by CHES fellowship graduates **Kelly Vallar, MD**, **Leah Conant, MD**, and **Paul Kepper, MD**.



From left: Jessica Kramer, MD, and Piroska Kopar, MD.

“We are not defined by what occurred. We are defined by how we respond. Everyday people, in and out of medicine, creating good with what they have: strength, integrity, civility, kindness. People who were coming together and standing shoulder to shoulder to do what they needed to do for the community.”

-Tiffany Osborn, MD, MPH

## ACCS Steps Up for COVID Care

“Our faculty were in the trenches from day one,” Section Chief **Grant Bochicchio, MD, MPH**, says of Washington University acute and critical care surgeons treating COVID-19 patients at Barnes-Jewish Hospital.

In the early days of the pandemic, when elective surgical procedures were paused, leaders from every division and section came together to ensure that the Department of Surgery safely continued its mission as a national leader in surgical innovation, research, training and health equity. For ACCS surgeons, this meant stepping up to face the challenges of COVID patients and other emergency cases head-on.

“We were in the ICU and the trauma bay,” says Bochicchio. “We were staffing COVID ICUs in addition to our usual staffing model. Trauma cases increased. Little was known about the transmissibility of the virus when COVID first hit. It was an extremely stressful time, but our faculty faced these challenges with strength and dedication to our patients.”

Among those on the front lines of COVID care was Professor of Surgery and Emergency Medicine **Tiffany Osborn, MD, MPH**. While working in the ICU and emergency department, Osborn witnessed firsthand the devastating impact of COVID-19. In March 2020, Osborn purchased an RV, where she lived for an entire year to protect her family from risk of exposure to the virus.

Over the past year, Osborn has been featured on NPR and CNN, as well as in radio interviews and local media, where she educates the public and advocates for health-care workers. She co-directs the COVID Critical Care Committee, the Convalescent Plasma Program, and Contingency and Crisis Standard of Care at Barnes-Jewish Hospital. Earlier this year, Osborn wrote a feature for the Riverfront Times, reflecting on the experience of working in a COVID ICU during the January 6 Capitol insurrection.

“We are not defined by what occurred. We are defined by how we respond,” she wrote. In a conversation with St. Louis

Public Radio, Osborn described the response she saw to COVID and political unrest as “everyday people, in and out of medicine, creating good with what they have: strength, integrity, civility, kindness. People who were coming together and standing shoulder to shoulder to do what they needed to do for the community.”

The section continues its commitment to COVID care through innovative clinical investigations to improve outcomes for COVID-positive patients. Bochicchio, who is the Harry Edison Professor of Surgery, is Washington University Principal Investigator of the NIH-funded ACTIV-4 clinical trial comparing the effectiveness of antithrombotic strategies to prevent adverse outcomes in COVID patients. The School of Medicine is the only site in Missouri enrolling patients in the trial, which aims to improve COVID care through an evolving study of anticoagulation therapies.

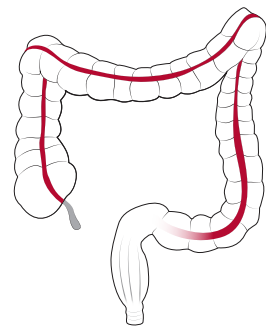
From left: Tiffany Osborn, MD, MPH, and Shawn Reynolds, MSPA, PA-C.





Section of  
**Colon and Rectal Surgery**

Sean Glasgow, MD.



Building on a successful history, this section continues its role as a leader in research and treatment in all aspects of colorectal surgery. Working with gastroenterologists, surgeons provide comprehensive care to patients with diseases of the colon, rectum and anus. Faculty have special expertise in laparoscopic colon surgery, offering this treatment for colon and rectal cancer, diverticulitis, ulcerative colitis, Crohn’s disease, colon polyps, rectal prolapse and chronic constipation. Surgeons apply basic science research to the clinical realm and offer several colorectal cancer clinical trials. This section also offers a one-year colorectal surgery fellowship.

	<b>2,787</b> operating room cases		<b>1,361</b> office procedures
	<b>19,268</b> visits		<b>35</b> clinical research studies
	<b>7</b> faculty		<b>\$416,002</b> research funding



From left: William Chapman Jr., MD, MPHS, Ebum Otegbeye, MD, MPHS, and Paul Wise, MD.

Regional Leaders in  
**Colorectal Cancer Care**

Patient safety initiatives have long been a priority for the Section of Colon and Rectal Surgery. Recent efforts have reduced surgical site infections, improved recovery after surgery and shortened postoperative length of stay. As the section continues to lead in colorectal cancer care, Washington University colon and rectal surgeons aim to improve outcomes for patients across the region.

Preoperative interventions have the potential to improve outcomes for patients at risk for postoperative complications. A recent retrospective study led by general surgery residents **Ebum Otegbeye, MD**, and **William Chapman Jr., MD, MPHS**, examined PROMIS (Patient-Reported Outcomes Measurement Information System) physical function scores, finding that patients who reported severe disability were at an increased risk of complications. The ability to identify these patients before surgery, using PROMIS scores, enables surgeons to

provide targeted preoperative interventions to improve surgical outcomes.

The section, which has developed and refined patient education materials in recent years, is an early adopter of the Department of Surgery Surgical Prehabilitation and Readiness (SPAR) Program. SPAR helps patients improve their health before surgery by providing them with tools and resources—such as nutritional information, an incentive spirometer and exercise goals.

Other recent studies from the section have examined the impact of delayed treatment, travel time and fragmentation of care.

“Many of our patients come from over 100 miles away,” says Colon and Rectal Surgery Section Chief **Matthew Mutch, MD**, the Solon and Bettie Gershman Professor of Surgery. “We have a truly regional presence and are taking active steps to provide the best care for all patients, no matter where they come from.”

To best serve colorectal cancer patients region-wide, the section is building relationships in local communities and increasing its presence at locations across the St. Louis area. Mutch serves as chief of surgery at Barnes-Jewish West County Hospital, where **Matthew Silveira, MD, MS**, and **Radhika Smith, MD**, continue to grow their practices. Colorectal surgeons, including **Sean Glasgow, MD**, and **Steven Hunt, MD**, see patients at the Center for Advanced Medicine—South County. **Kerri Ohman, MD**, expands colorectal cancer care to patients in North St. Louis County at Christian Hospital. At the Center for Advanced Medicine, General Surgery Residency Program Director **Paul Wise, MD**, specializes in inherited colorectal cancer and hereditary colorectal cancer syndromes.

“In the coming years, we will continue to improve access to optimal, unified colorectal cancer care to patients across the region,” says Mutch.



# Colon and Rectal Surgery Highlights



Sean Glasglow, MD.

## Clinical

Washington University colon and rectal surgeon **Sean Glasglow, MD**, has established a successful peritoneal surface disease program that sees patients from across the Midwest. Peritoneal malignancy is a rare form of cancer that forms in the tissue lining, the abdominal wall and most organs in the abdomen. Glasglow offers the most advanced treatments for peritoneal cancer, including cytoreduction with HIPEC (heated intraperitoneal chemotherapy), which involves removing all visible tumors before applying chemotherapy directly to the peritoneal cavity to kill any remaining cancer. Glasglow has recently partnered with surgical oncologist **Beth Helmink, MD, PhD**, to continue growing the peritoneal disease program.

## Research

Over one million people in the United States have inflammatory bowel disease (IBD). For patients with these often-debilitating conditions, including ulcerative colitis, the goal of treatment is to return to a normal quality of life. The Section of Colon and Rectal Surgery is part of a multicenter American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) Collaborative focused on IBD. As part of the collaborative, Washington University colorectal surgeons are refining quality measurements for ulcerative colitis surgery and investigating the impact of immunosuppressive therapy on patient outcomes, to improve quality of life for all patients with IBD.



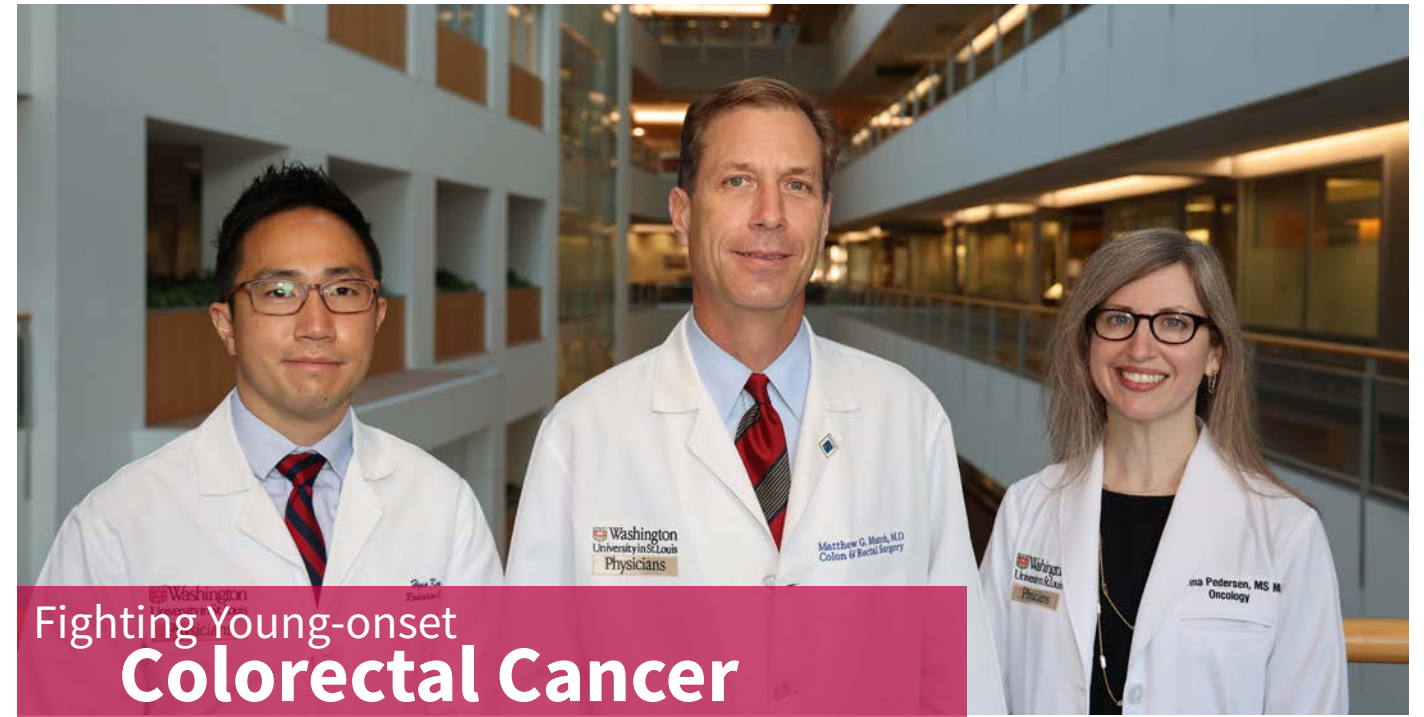
Matthew Silveira, MD, MS.

## Education

For over 40 years, the Washington University Colorectal Surgery Fellowship has offered advanced training in a high volume of complex cases. Led by Program Director **Matthew Silveira, MD, MS**, and Associate Program Director **Radhika Smith, MD**, the one-year fellowship provides experience in open, laparoscopic and robotic surgery. Fellows develop autonomy while working closely with seven board-certified colorectal surgeons, as well as gastroenterologists, pathologists, medical and radiation oncologists, enterostomal therapists, and other professionals. The program trains three fellows each year and includes in-depth exposure to all aspects of colorectal disease and surgery, including the latest treatments for colon and rectal cancer.



Radhika Smith, MD.



## Fighting Young-onset Colorectal Cancer

From left: Hyun Kim, MD, Matthew Mutch, MD, and Katrina Pederson, MS, M.

Young-onset colorectal cancer is a growing problem. Colorectal cancer is considered young onset if it starts before age 45. Colonoscopy and other prevention and detection methods have led to an overall decrease in colorectal cancer incidence since 1980, yet many patients are being diagnosed with the disease earlier in life. The rate of colorectal cancer in patients 49 and younger has increased by more than 50% in recent years. By 2030, cases of colorectal cancer in people under 50 are expected to nearly double.

“Patients with young-onset colorectal cancer face a unique set of social, biological and financial challenges,” says Chief of Colon and Rectal Surgery **Matthew Mutch, MD**. “From finding childcare and scheduling visits while working full time, to paying for treatment and understanding genetic factors, this patient population has specific biopsychosocial needs.”

Washington University colorectal surgeons, medical and radiation oncologists, and

other specialists are partnering with Barnes-Jewish Hospital and Siteman Cancer Center to meet the needs of young-onset colorectal cancer patients through multidisciplinary care.

The Section of Colon and Rectal Surgery has implemented a new standard of care for rectal cancer patients, using neoadjuvant short course radiation therapy, followed by either nonoperative management or surgery. This expertise, combined with similar advances in treatment and understanding of colon cancer, has established Washington University and Siteman Cancer Center as leaders in the treatment of colorectal cancer.

Mutch is collaborating with medical oncologist **Katrina Pedersen, MD**, and radiation oncologist **Hyun Kim, MD**, to formalize a program for young-onset colorectal cancer patients. The program will include top cancer care, access to social and genetic counseling resources, and patient education through community outreach, as well as

research to determine causes of young-onset colorectal cancer and potential markers for future therapies. Research partnerships between the section and faculty from the Division of Public Health Sciences aim to address the biopsychosocial issues particular to young-onset colorectal cancer.

“We have seen incredible progress in the fight against colorectal cancer overall,” says Mutch. “It’s time we do the same for younger patients as well.”

“We have seen incredible progress in the fight against colorectal cancer overall. It’s time we do the same for younger patients as well.”

-Matthew Mutch, MD

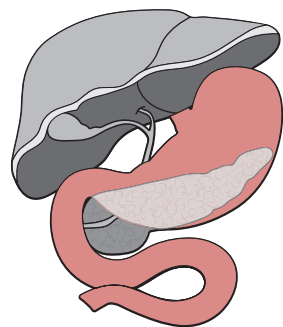




From left: Research Lab Supervisor Brett Knolhoff and David DeNardo, PhD.

Section of

## Hepatobiliary-Pancreatic & GI Surgery



HPB-GI surgeons have established themselves as a major midwestern referral center for disorders of the liver, pancreas and biliary tract. These surgeons treat patients with benign and malignant disorders of the liver, biliary tree, pancreas, stomach, small intestine and retroperitoneum. The section is a high-volume center for both open and laparoscopic surgical procedures. Faculty are at the forefront of research on new and improved therapies for HPB-GI disorders, with active research laboratories, pre-clinical studies and clinical trials. This section also offers a one-year HPB-GI surgery fellowship.



**393**

operating room cases



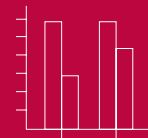
**75**

office procedures



**6,314**

visits



**38**

clinical research studies



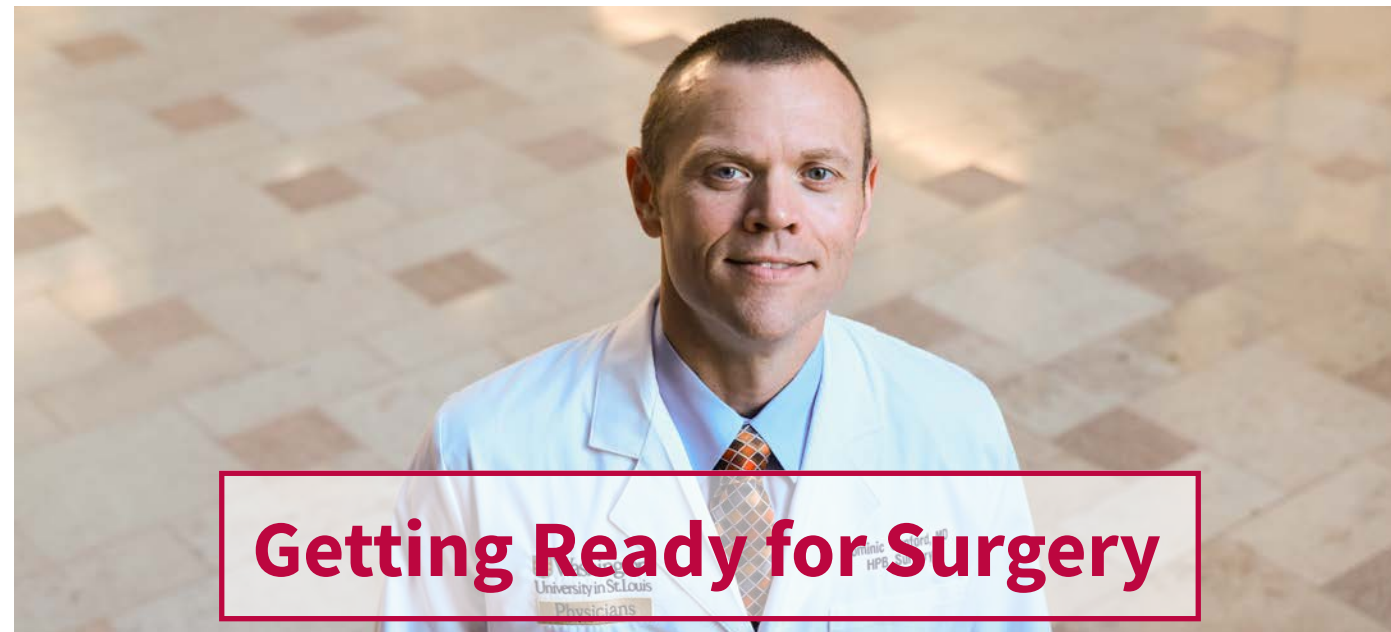
**4**

faculty



**\$3,024,793**

research funding



## Getting Ready for Surgery

Dominic Sanford, MD.

Healthy patients tend to have fewer complications and better overall recovery after surgery. For marginal patients, preoperative interventions have been shown to reduce the risk of postoperative complications. The Surgical Prehabilitation and Readiness (SPAR) Program uses this guiding principle to prepare patients for surgery by improving their health before their procedures.

Led by Washington University HPB-GI surgeons, SPAR is a multidisciplinary prehabilitation program designed to improve preoperative health in four main areas: physical activity, pulmonary function, nutrition and mindfulness. When a patient is enrolled in the program, they receive a fitness tracker and an incentive spirometer. A SPAR coordinator demonstrates how to use these devices, while print and digital patient education resources guide patients through the program. SPAR is designed with a focus on older adults, especially those over 70, who are the main patient population in HPB-GI surgery and are often at higher risk of postoperative complications.

“For me, the number one goal is for patients to get back to the kind of life they want to live after having a major operation,” says SPAR Program leader **Dominic Sanford, MD**. “Many HPB patients are older adults who may not be in the best health. We are all on their team. We’re here to work with them, not on them. SPAR is designed to address not just a patient’s surgical problem, but their overall health. Our aim is to return patients to normal life, or an even better life, after surgery.”

The SPAR team includes surgeons, coordinators, nursing staff, dietitians and smoking cessation specialists, as well as other experts and resources from across the School of Medicine and Barnes-Jewish Hospital. In its first year, SPAR has benefitted patients in HPB-GI, colon and rectal surgery, and abdominal transplant surgery, and will continue to roll out to other surgical specialties as the program grows. The Section of HPB-GI Surgery continues to refine prehabilitation strategies through ongoing research projects. HPB surgeon **Chet Hammill, MD, MCR**, is Principal Investigator on a

“For me, the number one goal is for patients to get back to the kind of life they want to live after having a major operation.”

-Dominic Sanford, MD

new clinical trial studying the efficacy of incentive spirometry to improve preoperative and postoperative pulmonary function. Hammill received a 2021-2022 Big Ideas Competition Grant from the Healthcare Innovation Lab to support the study. In another trial, Hammill uses fitness monitors to track patient activity prior to surgery.

“What’s become evident is that prehabilitation has the potential to improve outcomes,” says Hammill. “We want to optimize patient health before surgery, just like you would train for a marathon. I am excited to see prehabilitation empower patients to recover from surgery faster and return to even better quality of life.”



# Hepatobiliary-Pancreatic & GI Surgery Highlights



Chet Hammill, MD, MCR.

## Clinical

Washington University HPB-GI surgeons provide increased access to cutting-edge surgical care for patients by expanding minimally invasive services to multiple locations across the region. The section extends coordinated, high-quality care into local communities to improve health equity in St. Louis. Laparoscopic and robotic HPB surgeon **Chet Hammill, MD, MCR**, sees patients at the John Cochran Veterans Hospital. **Dominic Sanford, MD**, who completed a minimally invasive HPB fellowship, and Section Chief and Neidorff Family and Robert C. Packman Professor of Surgery **William Hawkins, MD**, have expanded minimally invasive HPB surgery to Missouri Baptist Medical Center, where Hawkins also serves as representative on the Missouri Baptist Tumor Board.

## Research

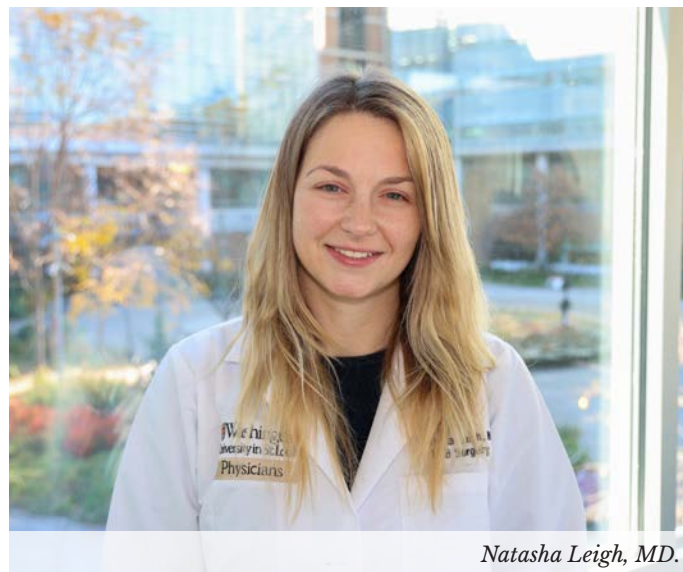
Eliminating disparities in patient outcomes is essential to the Department of Surgery's mission to improve the health equity of the community. A recent study from the Section of HPB-GI Surgery, published in the *American Journal of Surgery*, found that non-white patients are more likely than white patients to be readmitted for non-severe complications after pancreaticoduodenectomy. General surgery lab resident **Jorge Zárate Rodríguez, MD**, presented the research findings at the Annual Americas Hepato-Pancreato-Biliary Congress. To address this disparity in readmission rates, the section is implementing follow up protocols to identify avoidable readmissions and provide resources and support for under resourced patients.



Jorge Zárate Rodríguez, MD.

## Education

The Washington University Hepatobiliary-Pancreatic Surgery Fellowship provides advanced training in HPB-GI surgery, including laparoscopic and robotic procedures, as well as opportunities in clinical research. HPB fellow **Natasha Leigh, MD**, who completed general surgery residency at Mount Sinai Hospital, received an educational grant from the Fellowship Council, supporting her fellowship training activities and continuing the longstanding success of the program in obtaining extramural funding. "Natasha is a particularly gifted educator and technically skilled surgeon," says HPB-GI Section Chief and Fellowship Program Director **William Hawkins, MD**. "We are very fortunate to train such clinically and academically talented fellows in our program."



Natasha Leigh, MD.



## A Coordinated Attack on Pancreas Cancer

William Hawkins, MD.

Pancreas cancer is a devastating diagnosis with a five-year survival rate of less than 10 percent. Washington University HPB-GI surgeons and investigators are at the forefront of innovative research to improve the treatment and outcomes for patients with the deadliest form of pancreatic cancer, pancreatic ductal adenocarcinoma (PDAC).

"Pancreas cancer is notoriously resistant to immunotherapy, including our personalized vaccines," says HPB-GI Section Chief **William Hawkins, MD**. "This is likely due to the profoundly immune-suppressive environment in which pancreas tumors grow."

Hawkins, the Neidorff Family and Robert C. Packman Professor of Surgery, and **David DeNardo, PhD**, Professor of Medicine and Pathology/Immunology, are leading research to understand and combat the immunotherapy-resistant tumor environment in patients with PDAC.

"Our group has found a way to prime the immune system to attack the cancer even in its hostile home environment," says DeNardo. "We have done so by targeting one immune cell type, called dendritic cells. Dendritic cells act as field generals for the immune system, directing and coordinating attacks on cancer."

A new clinical trial—Restoring PDAC Responsiveness to Immunotherapy by Targeting Conventional Dendritic Cells—uses preoperative therapy in an attempt to increase the number of active dendritic cells in the tumor environment. Before pancreatic resection, patients in this trial receive injections of two hormone therapies: one to enrich the dendritic cell environment and the other to activate these cells. After surgery, the DeNardo Laboratory will study these tumors for indications of increased levels of dendritic cell activity.

"We have observed in laboratory models that this strategy results in coordinated immune attacks on cancer cells and in disease control," says Hawkins, who is Principal Investigator on the trial. "We now seek to employ this strategy in human PDAC patients by treating them with a combination of FLT3L and CD40-agonists therapeutics. These are the agents that we have shown can drive dendritic cells to coordinate immune attack on the tumor, and our belief is this will drive tumor-protective immunity during and after pancreas cancer surgery."

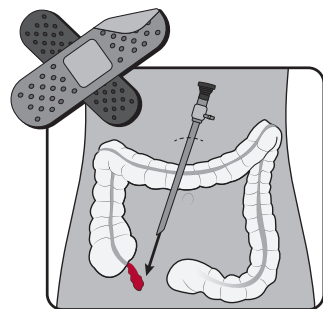
This trial is supported by R01 grant funding from the NIH and a Siteman Investment Program Research Development Award. The Siteman Investment Program supports pioneering cancer research to accelerate the pace of innovation in cancer research.



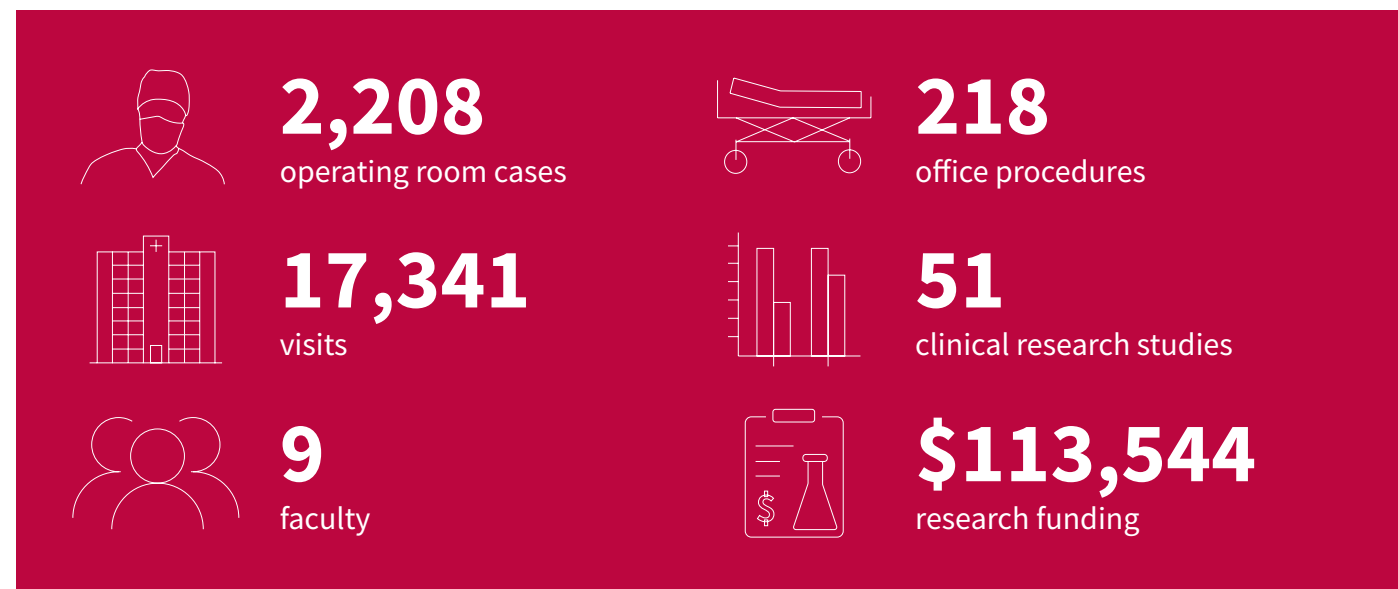


Michael Awad, MD, PhD, in the WISE Center.

## Section of Minimally Invasive Surgery



This section is dedicated to developing and adopting the latest technological advancements and advancing research on outcomes, techniques and biomaterials. Minimally invasive specialists perform a wide range of laparoscopic and open procedures for gastrointestinal conditions such as swallowing disorders, gastroesophageal reflux disease, adrenal gland tumors and morbid obesity. Their goal is to increase patient benefit by decreasing the size of surgical incisions, which result in less pain and faster recovery. This section is active on the frontiers of research and also offers a one-year fellowship.



## Clinical and Educational Leaders

From left: Jeffrey Blatnik, MD, Sara Holden, MD, and Arnab Majumder, MD.

Section Chief of Minimally Invasive Surgery **Michael Brunt**, MD, was named Pruett Family Professor of Surgery in July 2021. Brunt is a nationally recognized laparoscopic surgeon, researcher and educator. He received the Distinguished Clinician Award from the School of Medicine in 2009. His research has produced significant advances in patient outcomes, including the development of evidence-based recommendations for cholecystectomy and prevention of bile duct injuries. He has taught the Capstone Preparation for Internship Course for 4th year medical students, which he helped establish, since its inception in 2012.

“I am incredibly honored to have been named the next Pruett Family Professor of Surgery,” says Brunt. “Rather than an individual achievement, I consider this much more a recognition of the entire Section of Minimally Invasive Surgery faculty and the increasing role of the Section as a clinical and educational leader in the Department of Surgery.”

The Section of Minimally Invasive Surgery, established by the Department of Surgery in 2007, provides excellent clinical care using the latest technology and techniques. Clinical services in the section are divided into three components: foregut disease, bariatric surgery and abdominal wall surgery.

Brunt and **Michael Awad**, MD, PhD, who is Director of the Robotic Surgery Program for BJC HealthCare, lead the foregut surgery service. The Weight Loss Surgery Program is led by **J. Chris Eagon**, MD, **Shaina Eckhouse**, MD, and **Francesca Dimou**, MD, MS. **Jeffrey Blatnik**, MD, **Sara Holden**, MD, and **Arnab Majumder**, MD, deliver expert care in abdominal wall hernia

repair in the section. Establishing these service areas has allowed faculty to focus on their surgical specialties, increase clinical activity across the section, and formalize resident and fellow training in each area.

“Organizing our services by disease makes sense for our faculty and has clear advantages for our patients,” says Brunt. “We have established care pathways for each patient, whether you are on the foregut service, abdominal wall service or bariatric surgery service.”

The section continues to grow as a leader in education at the School of Medicine. Awad, Blatnik and **Bethany Sacks**, MD, MEd, serve as associate program directors for the General Surgery Residency. As Director of the Washington University Institute for Surgical Education (WISE), Awad leads the WISE ACS-AEI Education Fellowship. Sacks, who is implementing the Gateway Curriculum as Director of the Integrated Surgical Clerkship for medical students, was inducted to the Washington University Academy of Educators in 2020.

Brunt is a past president of the Society of Gastrointestinal and Endoscopic Surgeons (SAGES). He is immediate President of the Central Surgical Association and President of the Fellowship Council. Brunt received the 2021 Lifetime Achievement Award from the Barnes-Jewish Hospital Medical Staff Association. This award recognizes a surgeon who has made significant contributions over a long and accomplished career at Barnes-Jewish Hospital and Washington University School of Medicine in St. Louis. He also received the Distinguished Alumnus Award for Johns Hopkins University earlier this year.



# Minimally Invasive Surgery Highlights



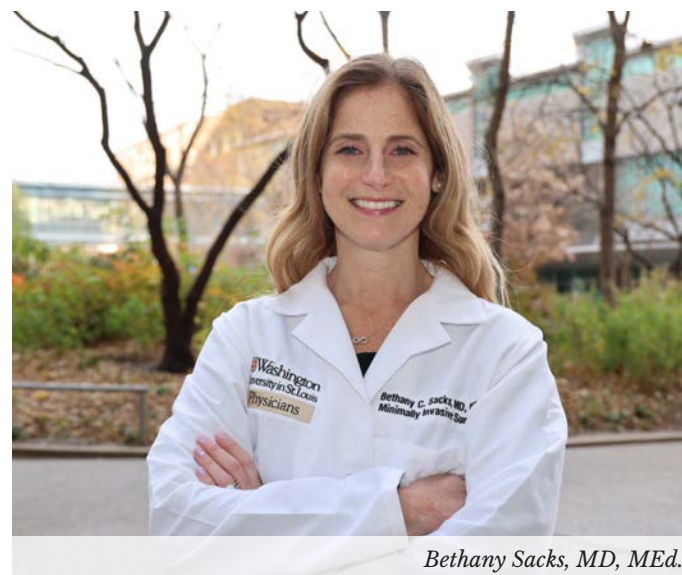
Michael Awad, MD, PhD.

## Clinical

Washington University minimally invasive surgeons have expertise in per oral endoscopic myotomy (POEM) for the treatment of achalasia, a rare swallowing disorder. **Michael Awad, MD, PhD**, who has offered therapeutic endoscopic procedures for achalasia and other conditions since 2012, has introduced a new device into the operating room to measure the success of achalasia surgery. The EndoFLIP system utilizes a balloon catheter to measure the distensibility of the lower esophagus sphincter during surgery, providing intraoperative assessment of treatment in real time. “Previously, we have only had subjective clues as to the adequacy of the surgery, such as the visual appearance of the esophagus sphincter before and after the treatment,” says Awad. “For the first time, we now have objective information to help guide us, hopefully resulting in even further improvements in outcomes for these patients.”

## Research

Eliminating unintentional bias in surgical clerkship grading is the focus of recent research from residents and faculty in the Section of Minimally Invasive Surgery. The research team, which included Director of the Integrated Surgical Clerkship for medical students **Bethany Sacks, MD, MEd**, and **Michael Awad, MD, PhD**, Director of the WISE Center, implemented a structured oral examination to assess third-year medical student knowledge of general surgery topics, which including taking patient histories and physical exams, diagnosis, laboratory and radiographic interpretation, and treatment planning. The structured examination created concrete grading criteria, eliminating unintentional bias in grading students underrepresented in medicine. General surgery resident **Katharine Caldwell, MD, MSCI**, presented the research at the 2021 Annual Meeting of the Central Surgical Association.



Bethany Sacks, MD, MEd.

## Education

The Fellowship Council has announced a new Foregut Fellowship designation, recognizing the increasing importance of specialized training in foregut disease. Washington University School of Medicine in St. Louis received this designation in the first year it was available. “The Advanced GI/MIS/Foregut Fellowship offers a strong, broad case mix and a diverse experience for our fellows,” says Program Director and Chief of Minimally Invasive Surgery **Michael Brunt, MD**, the Pruett Family Professor of Surgery. The program includes experience in benign foregut disease, bariatric and metabolic surgery, and abdominal wall procedures, including robotic approaches, in addition to clinical research, quality improvement and resident training opportunities.



Michael Brunt, MD.



## Quality Improvement in Bariatric Surgery

From left: Francesca Dimou, MD, MS, J. Chris Eagon, MD, Shaina Eckhouse, MD, Jayme Sparkman, ANP-BC.

When **Shaina Eckhouse, MD**, joined the Department of Surgery as a minimally invasive surgeon and patient safety officer in 2015, it was her goal to improve the quality of outcomes in bariatric surgery. Barnes-Jewish Hospital has been an accredited Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program (MBSAQIP) Center of Excellence since 2005. As patient safety officer, Eckhouse continued that tradition of excellence by formalizing the bariatric surgery quality improvement process in the Section of Minimally Invasive Surgery.

“Investing in quality improvement projects leads to improved patient outcomes, reduced gaps in care, increased return on investment and accountability to regulatory agencies,” says Eckhouse.

Eckhouse and Bariatric Surgery Program Director **J. Chris Eagon, MD**, have led initiatives to reduce surgical site infections, readmission rates and bariatric length of stay. A recent study by Eckhouse, Eagon, and other members of the Washington University Weight Loss Surgery Program,

published this year in *Surgical Endoscopy*, found that the team’s protocol for reducing surgical site infections is successful, safe and feasible. As part of the MBSAQIP BSTOP (Bariatric Surgery Targeting Opioid Prescriptions) program, the section has reduced opioid use in weight loss surgery and reduced length of stay for bariatric patients.

“We are invested in improving care and outcomes for our patients,” says Eckhouse, who is Surgery Liaison for the Barnes-Jewish Hospital Perioperative Services Leadership Team. “Each of these initiatives is a team effort, and they have led to multiple manuscripts and opportunities within the department and across the institution.”

In 2017, Barnes-Jewish West County Hospital received accreditation as an MBSAQIP Center of Excellence. Washington University weight loss surgeons have since migrated bariatric surgery outpatient clinics to the West County location.

More recently, Eckhouse, BJH Bariatric Coordinator **Beth Kramer**, Patient Safety

Coordinator **Deirdre Epstein**, and General surgery resident **Britta Han, MD, MEd**, have developed a project focused on driving early ambulation following weight loss surgery. Returning to physical activity after bariatric surgery is essential to achieving the best possible outcome. In partnership with hospital nursing staff and therapists, Washington University minimally invasive surgeons are encouraging patients to walk sooner and more frequently in the postoperative period.

“We are trying to build on the success of the early ambulation project by improving ambulation throughout the hospital stay and correlating these improvements with patient outcomes,” says Eckhouse.

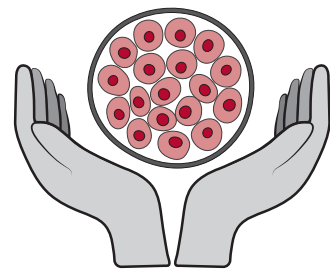
Another quality improvement project in the section, led by **Francesca Dimou, MD, MS**, culminated in the development of a bariatric surgery patient journey guide. The weight loss surgery team continues to collect data following the implementation of the journey guide, with hopes that it will improve outcomes and recovery.





Section of  
**Surgical Oncology**

*Julie Margenthaler, MD.*



Surgeons in this section provide the most up-to-date care for breast and endocrine system diseases, melanoma and sarcoma. Faculty seek to advance treatment through leading-edge research. With one of the largest endocrine surgery practices in the country, surgeons also offer expertise in thyroid cancer, adrenal tumors and hyperparathyroidism. Surgical oncologists provide care at Siteman Cancer Center, offering clinical trials that evaluate new therapies. The section also supports clinical and research opportunities for general surgery residents, and offers a breast disease fellowship.



**2,297**

operating room cases



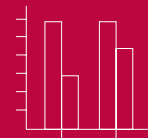
**222**

office procedures



**19,235**

visits



**74**

clinical research studies



**11**

faculty



**\$3,019,123**

research funding



**Cancer Moonshot**

*From left: Graham Colditz, MD, DrPH, Li Ding, PhD, Bettina Drake, PhD, MPH, and Ryan Fields, MD.*

Washington University School of Medicine in St. Louis has received a \$17 million grant from the National Institutes of Health (NIH) to address disparities in cancer research, treatment and outcomes in underrepresented populations. The research, funded through the National Cancer Institute's Cancer Moonshot program, will focus on African American patients with colorectal cancer and multiple myeloma, as well as patients of any race or ethnicity with cholangiocarcinoma, a rare cancer of the bile ducts.

The goal of the research program, called the Washington University Participant Engagement and Cancer Genomic Sequencing Center (WU-PE-CGS), is to fill gaps in knowledge to help reduce the disparities seen in rare and understudied cancers that affect underrepresented groups.

"We're interested in improving care for underserved communities and maximizing the potential of team science, bringing together a diversity of skills, to address these

problems," says Principal Investigator Graham Colditz, MD, DrPH, the Niess-Gain Professor of Surgery and Division Chief of Public Health Sciences.

The diverse team of investigators includes cancer biologist Li Ding, PhD; cancer epidemiologist and Professor of Surgery in the Division of Public Health Sciences Bettina Drake, PhD, MPH; and Chief of Surgical Oncology Ryan Fields, MD, the Kim and Tim Eberlein Distinguished Professor of Surgery.

Fields will lead the participant engagement part of the project, identifying patients with the targeted cancer types and determining who might be interested in participating. To aid these efforts, the researchers have established a patient engagement advisory board that includes patient advocates for rare diseases, as well as members of national patient support groups.

"When we look at cancer genomic studies, most of the participants have been white

male patients, so a lot of the treatment decisions we make are based on that data, and it may not be applicable to women and people of color," says Fields, who is co-leader of the Solid Tumor Therapeutics Program at Siteman Cancer Center at Barnes-Jewish Hospital and Washington University School of Medicine. "We're hoping this project can begin to address some of these disparities."

Two cancers that are more common and not studied enough among Black populations, including in the St. Louis region, are colorectal cancer in African Americans under age 50 and multiple myeloma in African Americans of any age. While cholangiocarcinoma is rare, Washington University has expertise in this cancer and provides care for patients who come to St. Louis from across the country. For each cancer type, the investigators are seeking 300 patient volunteers to participate in the research program. Patients will have their cancer genomes sequenced and compared to their healthy genomes to determine what led to their tumors' formations. The genomic data could help inform how their cancers are treated.

"We're interested in improving care for underserved communities and maximizing the potential of team science, bringing together a diversity of skills, to address these problems."

*-Graham Colditz, MD, DrPH*



# Surgical Oncology Highlights



*Katherine Glover-Collins, MD, PhD.*

## Clinical

Washington University and Siteman Cancer Center are addressing the issue of late-stage breast cancer presentation in underserved patient populations in North St. Louis County. Through community partnerships, screening events and collaboration with public health researchers, the breast cancer surgery program at Christian Hospital and Siteman Cancer Center North St. Louis County has seen significant clinical growth in the past year, serving more patients and detecting cancers sooner. “The Department of Surgery is addressing disparities in health care in the North County area by engaging with the community,” says surgical oncologist **Katherine Glover-Collins, MD, PhD.** “We are bringing access to cancer care that is sorely needed.”

## Research

Metastasis is the most significant contributor to mortality in breast cancer patients. Disseminated tumor cells present in the bone marrow are believed to be the intermediaries in the metastatic process. **Rebecca Aft, MD, PhD,** the Jeffrey F. Moley Professor of Surgery in the Section of Surgical Oncology, is co-principal investigator of an R01 grant characterizing disseminated tumor cells in breast cancer patients. Aft and her co-investigators have developed a strategy for identifying genes associated with disseminated tumor cells, with the goal of implementing targeted therapies to eliminate these cells and interrupt metastasis.



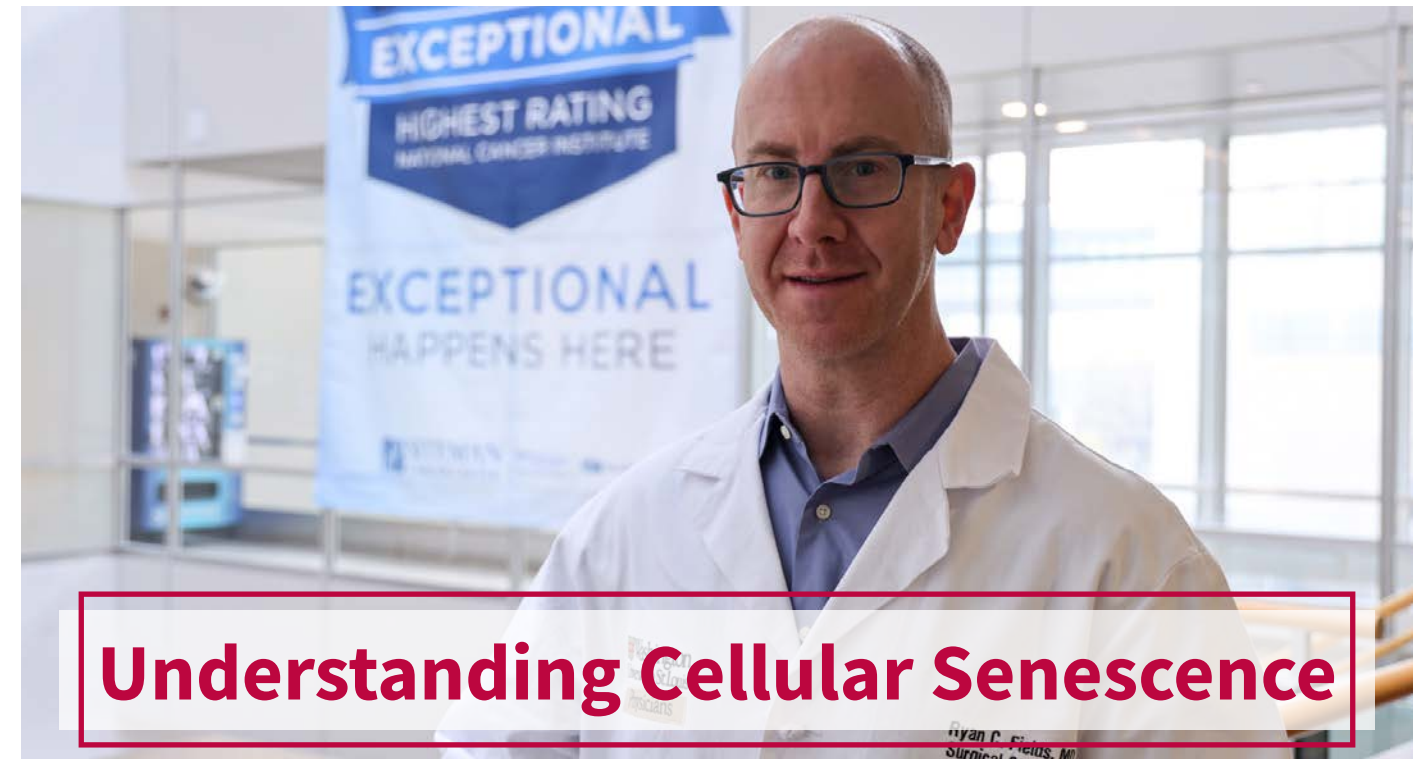
*Rebecca Aft, MD, PhD.*

## Education

The Gateway Curriculum at Washington University School of Medicine in St. Louis is an innovative course of study that integrates academic and clinical excellence with self-care, individualized career development, flexibility, coaching and a special emphasis on social justice. Rotation Director for the Third Year Medical Student Surgery Clerkship **T.K. Pandian, MD, MPH,** has led the development of the new Surgery Clerkship for the Gateway Curriculum. Pandian, who completed the Teaching Scholars Program at the School of Medicine, is a recipient of the 2021 Academy of Educators Honor Roll Award, which recognizes faculty members making outstanding contributions to education.



*Center: T.K. Pandian, MD, MPH.*



# Understanding Cellular Senescence

*Ryan Fields, MD.*

Washington University School of Medicine in St. Louis is joining the Cellular Senescence Network (SenNet), a new research network of the National Institutes of Health (NIH) focused on the study of senescent cells, a rare and important population of cells that is difficult to study but vital for understanding aging and the diseases of aging, including cancer and neurodegeneration. The goal is to help researchers develop new therapies that target cellular senescence to prevent or treat such diseases and improve human health.

Washington University will receive \$7.5 million over five years to support the research. SenNet aims to identify and describe senescent cells across multiple tissues throughout the body, in various states of health and disease, and at many ages across the human life span. The School of Medicine will serve as one of eight tissue-mapping centers for SenNet.

The Washington University Senescence Tissue Mapping Center (WU-SN-TMC) will be led by Principal Investigator Li Ding, PhD, a professor of medicine and of genetics; and co-principal investigators Feng Chen, PhD, an associate professor of medicine; Sheila Stewart, PhD, the Gerty Cori Professor of Cell Biology & Physiology and a professor of medicine; and Chief of Surgical Oncology **Ryan Fields, MD.**

“We are excited to be part of this initiative to understand cellular senescence,” says Fields,

who is the Kim and Tim Eberlein Distinguished Professor of Surgery. “We will work together across the Department of Surgery and the medical school to collect tissues from a diverse patient population, with the goal of shedding some light on the process of cellular senescence.”

Senescent cells have stopped dividing and do not regain the ability to divide again. For years, scientists suspected that cellular senescence only happened in cells growing in a laboratory culture dish and that such cells did not exist in living organisms. Improved technologies have proven this wrong, but the cells remain difficult to study in their natural environments. Much of the consortium’s work will be focused on developing better ways to identify these elusive cells and new laboratory tools to study them. Such tools will build upon previous advances in single-cell analysis, such as those from the Common Fund’s Human Biomolecular Atlas Program and Single Cell Analysis Program.

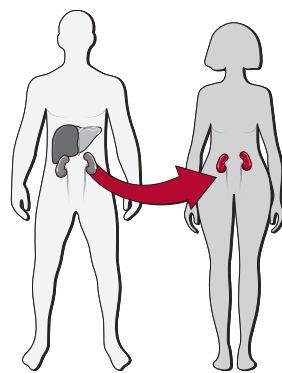
“This research has the potential to impact patient care in numerous areas,” Fields says. “An understanding of this phenomenon of senescence could shed light on the development of age-related diseases, such as macular degeneration, Alzheimer’s and cancer. This collaboration is a unique opportunity to improve human health across the board.”





## Section of Transplant Surgery

Center: Maria B. Majella Doyle, MD, MBA.



This section has a long, successful history and offers the latest advancements in the field. In liver transplantation, the program offers living-related and living-unrelated donor, reduced-size liver, split liver and dual-organ transplantation. Faculty offer both laparoscopic and “mininephrectomy” kidney donor procedures. Transplant surgeons are leaders in islet cell transplantation and have the largest pancreas transplant program in the region. Along with their clinical expertise, faculty are leaders in the field of transplantation research and train fellows in a nationally recognized, two-year certified program.



**1,210**

operating room cases



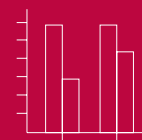
**11,310**

visits



**8**

faculty



**65**

clinical research studies



**\$1,063,197**

research funding



From left: Darren Cullinan, MD, MSCI, Jennifer Yu, MD, MPH, and Greg Martens, MD.

Transplant surgery fellowship programs provide trainees exposure to advanced techniques in the surgical and medical management of patients with end-stage organ disease. Washington University Abdominal Organ Transplant fellows develop proficiency in transplantation by participating in a volume of cases far exceeding requirements set by the Transplant Accreditation & Certification Council. Fellows at the School of Medicine also develop valuable basic and clinical research, leadership and mentorship skills during their training.

Senior fellow **Jennifer Yu, MD, MPH**, received the 2020-2021 Gregorio A. Sicard Fellow Teaching Award for her performance in educating and training general surgery residents. Training residents, medical students and sub-interns during fellowship prepares fellows for careers in transplant surgery at academic medical centers.

“Jennifer has a reputation of going the extra mile to help everybody on the team,” says Transplant Section Chief and Eugene M. Bricker Chair of Surgery **William Chapman, MD**. “And that includes the patient, the nursing staff, other trainees, her peers and especially those who are coming up in their training. She is an excellent surgeon with an endearing personality and the ability to mentor her fellow trainees.”

First year transplant fellow **Darren Cullinan, MD, MSCI**, received the 2020-2021 Keith D. Amos

Memorial Award, commemorating its namesake’s dedication to leadership, education, and patient service and outreach. Cullinan joins the fellowship after graduating from the Washington University General Surgery Residency as a Walter F. Ballinger II Administrative Chief Resident. During residency, Cullinan developed a pancreatic cancer clinical trial with the mentorship of Washington University HPB surgeons.

Fellowship Program Director **Maria B. Majella Doyle, MD, MBA**, fosters leadership skills in fellows as well as faculty in the Department of Surgery through her involvement in the Faculty Development and Mentoring Program. As Chair of the Vanguard Committee of the American Society of Transplant Surgeons, Doyle further advances the engagement of transplant surgeons in leadership initiatives at a national level.

“By creating a better work-life balance and more diverse leadership, we are attracting the best and the brightest trainees to become surgeons,” says Doyle. “We have challenges ahead, from achieving health equity to building trust between patients and physicians, but I also believe we have a bright future as long as we remain engaged in all facets of academic surgery.”



# Transplant Surgery Highlights



Barnes-Jewish Hospital.

## Clinical

The need for liver transplants far exceeds the number of available organs. Transplant Section Chief **William Chapman, MD**, is principal investigator on a clinical trial using normothermic machine perfusion (NMP), a method of organ preservation that could make marginal or unsuitable livers viable options for transplant. Seventy percent of livers treated with NMP in Phase I of the trial were then suitable for transplantation and have shown good initial function. The clinical trial now enters Phase II, where more organs will undergo NMP. If successful, the trial may increase the number of transplantable livers.



William Chapman, MD.

## Education

The American Society of Transplant Surgeons (ASTS) requires a minimum of 45 liver transplant cases during fellowship to receive certification. In a recent study, Washington University transplant surgeon **Adeel Khan, MD, MPH**, assessed the liver transplant fellowship learning curve, examining measures of efficiency and outcomes, such as operative time and biliary complications. The study, published in the American Journal of Transplantation, validates the ASTS minimum, but shows consistent, sustained improvement after 45 cases. Washington University transplant fellows regularly participate in a number of cases far exceeding ASTS requirements. In 2020, the section performed 140 liver transplants.



Adeel Khan, MD, MPH.

“It’s a hard topic to broach. If you feel uncomfortable asking people to consider organ donation, find a friend or a loved one who will fight that battle for you. Let them be your champion.”

-Jason Wellen, MD, MBA



Jason Wellen, MD, MBA.

## Living Donor Champions

There are approximately 100,000 people in the United States waiting for a life-saving kidney transplant, according to the Organ Procurement and Transplantation Network. While most donor organs come from deceased donors, the wait time for a deceased donor kidney can be three to four years or more. Many waitlisted patients with kidney disease become too sick for transplantation before being matched with an available organ.

Washington University transplant surgeons have increased their focus on living organ donation to address this growing need. As Surgical Director of Kidney and Pancreatic Transplantation at the Washington University and Barnes-Jewish Transplant Center, **Jason Wellen, MD, MBA**, is leading the Live Donor Champion Program at the School of Medicine.

Many kidney transplant candidates feel uncomfortable or ill-equipped to ask others to consider donating. A Live Donor Champion is a spouse, significant other, family member or friend who serves as an advocate for the candidate.

“It’s a hard topic to broach,” says Wellen. “If you feel uncomfortable asking people to consider organ donation, find a friend or a loved one who will fight that battle for you. Let them be your champion.”

The Live Donor Champion Program provides Champions with education and advocacy training

to help them seek out potential donors. In pilot studies, participants with a Live Donor Champion were more likely to undergo live donor kidney transplant than other transplant candidates. The kidney transplant team continues to refine the Live Donor Champion Program to best fit the needs of patients. Patients involved in the program have emphasized the value of having a donor champion and encourage future patients to participate in the program.

Living donors can significantly accelerate the transplant process. A compatible living donor organ can be transplanted within months, rather than waiting years for a deceased donor match. The transplant program also participates in paired-donor kidney exchanges, frequently finding matches for multiple transplant candidates across the country.

The Transplant Surgery Section, which performed over 300 kidney transplants in 2020, has also taken steps to improve the organ donation experience. Washington University transplant surgeons perform robotic donor nephrectomy. The minimally invasive technique offers improved 3D visualization, fine motor control and wristed motion for the surgeon, while typically reducing pain, length of stay and recovery time for donors.

“Our goal is to get every eligible candidate transplanted,” says Wellen. “It’s very touching to see how many lives we are able to change.”

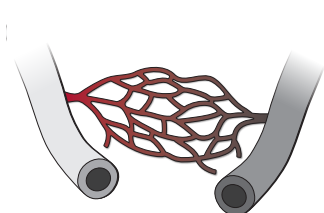




Section of  
**Vascular Surgery**

Right: Mohamed Zayed, MD, PhD.

This section is dedicated to offering open and endovascular treatment for patients with vascular diseases. Surgeons also participate in clinical trials of stent graft devices to treat thoracic aneurysms using endovascular techniques. Faculty provide clinical training in residency and fellowship programs accredited by the Accreditation Council for Graduate Medical Education. Numerous general surgery residents also rotate on the service. Members of the section lead research in basic science, translational research, clinical outcomes and novel device trials.



**2,770**

operating room cases



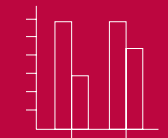
**194**

office procedures



**17,161**

visits



**42**

clinical research studies



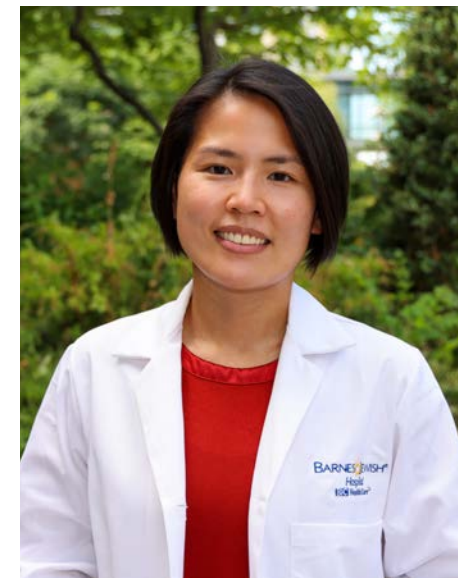
**10**

faculty



**\$1,116,748**

research funding



Shirli Tay, MD.



Luis Sanchez, MD.



Margaret Nalugo, MD.

**A Vital Mission**

The Vascular Surgery Residency Program at Washington University School of Medicine in St. Louis regularly attracts close to 100 applicants for a single position. Trainees benefit from high clinical volume, breadth of research experience and strong mentorship opportunities at an academic medical center committed to advancing health equity in St. Louis.

In 2021, the program accepted two residents: **Margaret Nalugo, MD**, and **Shirli Tay, MD**. Both Nalugo and Tay join the training program with significant vascular research experience. With the guidance of Vascular Surgery Residency Program Director **Westley Ohman, MD**, and the mentorship of vascular surgeon-scientist **Mohamed Zayed, MD, PhD**, these incoming residents have begun vascular surgery training with an impressive series publications, presentations and awards.

Nalugo received a 2021 Vascular Research Initiatives Conference (VRIC) Trainee Award for her research abstract titled “Towards A Cure For Diabetes: Pancreatic Tissue Encapsulation and Implantation In A Novel Arteriovenous Graft.” Mentored by Zayed, who is a Wiley Scholar Award recipient, Nalugo has completed additional training through the Training Opportunities in Translational Imaging Education and Research T32 training program at the Washington University Mallinckrodt Institute of Radiology.

Tay partnered with researchers from the Zayed laboratory to publish research on a blood marker

that can accurately detect a severe type of peripheral artery disease. Led by Zayed, senior author and Director of the Vascular Surgery BioBank, the study was published in Scientific Reports. Tay received the 2020 Early Career Investigator Award from the American Heart Association and presented research at the VRIC in 2020.

Washington University vascular surgeons treat patients with all forms of vascular disease, including diabetes and peripheral artery disease, in the St. Louis region. It is the section’s mission to provide the highest quality of care to all patients. The CDC notes that patients from historically underserved populations are at increased risk of peripheral arterial disease and other vascular diseases. The section aims to address this disparity through inclusive training and access to quality vascular care in St. Louis communities.

Vascular Surgery Section Chief **Luis Sanchez, MD**, recognizes the importance of training and hiring vascular surgeons equipped to provide comprehensive care for these patient populations.

“We have to mirror the populations we serve,” says Sanchez, who is the Gregorio A. Sicard Distinguished Professor of Vascular Surgery. “Having physicians who understand the needs and experiences of our patients is critical to providing the highest quality of care. Our training programs reflect that vital mission.”



# Vascular Surgery Highlights



Patrick Geraghty, MD.

## Clinical

The multidisciplinary Washington University Limb Preservation Program continues to save the limbs of patients at high risk for amputation. Program co-director **Patrick Geraghty, MD**, and vascular surgeons **Westley Ohman, MD**, and **Vipul Khetarpaul, MD**, see patients with peripheral arterial disease, chronic limb-threatening ischemia and other vascular diseases across the region. At Christian Hospital, Khetarpaul provides essential continuity of care for limb preservation patients. “A long-term care plan in a multidisciplinary fashion is really key in addressing the needs of this patient population to sustain the benefits they have received from an intervention, such as good function and circulation,” says Khetarpaul.

## Research

Vascular Surgery Section Chief **Luis Sanchez, MD**, is a national leader in clinical research for the management of aortic arch disease and thoracoabdominal aneurysms. Clinical studies of recently developed devices have shown promising results for the endovascular treatment of patients with these complex conditions, who previously had few or no endovascular options. “If these devices prove successful, it is going to be a gamechanger in the management of thoracoabdominal aneurysms and aortic arch disease,” says Sanchez. “Because of our high clinical volume and surgical expertise, Washington University is a leading center in numerous promising studies.”



Luis Sanchez, MD.

## Education

Trainees in the Vascular Surgery Fellowship and Integrated Residency programs at Washington University School of Medicine in St. Louis remain engaged in research and educational activities while developing diagnostic and surgical skills at Barnes-Jewish Hospital. This year, residents presented research on endovascular and open repair of complex aortic disease at the Critical Issues America annual meeting. First year fellow **Gayan De Silva, MD**, who completed residency training at the School of Medicine this year, received the Eugene M. Bricker Teaching Award, an honor given to Chief Residents who demonstrate skills and passion for teaching.



Gayan De Silva, MD.



Westley Ohman, MD.



Vipul Khetarpaul, MD.

## A Revolution in Patient Care

The Washington University and Barnes-Jewish Heart & Vascular Center offers advanced care for pulmonary embolisms at one of the best hospitals for cardiology, heart surgery and pulmonology, according to U.S. News & World Report. Washington University vascular surgeons are improving care pathways and treatment options for patients with pulmonary embolism and deep vein thrombosis through multidisciplinary collaboration and clinical research.

Venous diseases, such as venous insufficiency and deep vein thrombosis (DVT), can be life- and limb-threatening. DVT blood clots that break off and travel to the lungs are the most common cause of pulmonary embolism (PE). The CDC estimates that up to 100,000 people in the United States die from venous thromboembolism (DVT/PE) each year. While blood clots can form slowly, many cases of PE require emergency treatment to reduce the risk of life-threatening complications.

“Pulmonary embolism care at WashU/BJH has undergone

a complete revolution over the last few years with the introduction of new technologies that allow for long volume clot extraction percutaneously,” says Washington University vascular surgeon **Westley Ohman, MD**. “This has been coupled with a multidisciplinary group spanning vascular surgery, interventional radiology, pulmonary, cardiology, ED, critical care, and the eICU to allow us to facilitate timely and appropriate care for patients at BJH and within the broader BJC network. The Pulmonary Embolism Response Team (PERT) allows for a 24/7 access to experts to develop the best care pathway for the individual patients.”

When a patient presents with emergency PE, the PERT, developed by Ohman and a multidisciplinary team of Washington University Physicians, leaps into action.

The best way to avoid fatal DVT/PE is to treat DVT before it leads to PE or another urgent problem. Washington University vascular surgeons, including Ohman and **Vipul Khetarpaul,**

MD, have established practices treating DVT with the most advanced devices available for removing or breaking up blood clots. Clot retrieval devices and other forms of vascular intervention provide minimally invasive options for many patients with DVT/PE.

An upcoming clinical trial will study a new device for percutaneous mechanical thrombectomy in patients with DVT. Led at the School of Medicine by Khetarpaul, the BOLT study could introduce new treatment options for DVT patients.

“Deep venous disease management is rapidly evolving and cutting-edge treatment options are being offered at Washington University,” says Khetarpaul. “The Vascular Surgery Section is involved with several trials including an upcoming trial offering single stage intervention for extensive leg clots using a new device that can rapidly clear the vein clots without need for clot busting medications and multiple interventions.”






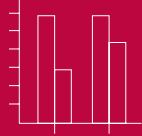




Division of  
**Pediatric Surgery**

Center: *Baddr Shakhsheer, MD.*



This division offers comprehensive treatment for a spectrum of pediatric and congenital conditions, burns and trauma. Board-certified pediatric surgeons offer compassionate, advanced care in a child-friendly environment at St. Louis Children’s Hospital. The division is a regional center for open fetal surgery, performs minimally invasive surgeries and treats many types of tumors. Faculty are actively involved in many areas of research, and leads in education, with a pediatric surgery fellowship approved by the American Council for Graduate Medical Education.

	<b>1,718</b> operating room cases		<b>131</b> office procedures
	<b>12,868</b> visits		<b>48</b> clinical research studies
	<b>7</b> faculty		<b>\$346,830</b> research funding



**Preventing Liver Injury**

From left: *Emily Jean Onufer, MD, MPH, Brad Warner, MD.*

A recent study from Washington University School of Medicine in St. Louis suggests that one type of high-density lipoprotein (HDL) has a previously unknown role in protecting the liver from injury. This special type of “good cholesterol,” called HDL3, protects the liver by blocking inflammatory signals produced by common gut bacteria. The study was published earlier this year in the journal *Science*.

The findings of this study are the result of a years-long collaboration between Division Chief of Pediatric Surgery **Brad Warner, MD**, and Gwendalyn Randolph, PhD, a professor in the Department of Pathology & Immunology. Warner and Randolph are co-principal investigators on an R01 grant studying the causes of fatty liver disease in patients with short bowel syndrome.

“Removal of most of the short bowel is sometimes necessary to treat infants and children with conditions like necrotizing enterocolitis,” says Warner, the Jessie L. Ternberg MD, PhD, Distinguished Professor of Pediatric Surgery. “Short bowel syndrome is a condition that arises following these procedures. This can lead to intestinal-failure associated liver disease, which is a major morbidity that is poorly understood.”

While studying lymphatic transport of fat in the intestine, general surgery resident **Emily Jean Onufer, MD, MPH**, saw that HDL3 travels

from the intestine to the liver through the portal vein. Intestinal damage, such as in short bowel syndrome, allows for Gram negative bacteria to produce inflammatory lipopolysaccharides which travel in the portal vein to stimulate hepatic fibrosis, cholestasis, and steatosis. As it makes this journey, HDL3 binds to lipopolysaccharides, preventing from activating harmful macrophages that cause inflammation in the liver.

Onufer, who is co-author on the *Science* publication, completed her research in the Warner Laboratory, where she gathered data for the R01 grant and forged connections with the Randolph Laboratory.

“Dr. Onufer is a diligent, methodical scientist,” says Warner, who is chief surgeon at St. Louis Children’s Hospital. “She knew what questions to ask and how to find the answers. Her hard work and commitment to research invited the important collaboration that made this study possible.”

“Identifying the protective neutralizing effect of HDL3 against Gram negative bacteria allows for further studies to utilize this form of ‘good cholesterol’ as a future therapy for short bowel syndrome patients given their risk of developing intestinal-failure liver disease,” says Onufer. “This collaboration truly exemplifies the importance of melding the expertise of surgeon scientists, like Dr. Warner, with basic science research to target key clinical questions.”



# Pediatric Surgery Highlights



Top left: Pediatric urologist Douglas Copen, MD, and Baddr Shaksheer, MD.  
Bottom left: Shannon Joerger, MD and Elizabeth Utterson, MD.

## Clinical

The Division of Pediatric Surgery provides leading surgical care for newborns and children at St. Louis Children's Hospital and Barnes-Jewish Hospital. The Emergency and Trauma Center at St. Louis Children's Hospital is nationally recognized by the American College of Surgeons as a Level 1 Pediatric Trauma Center. The Pediatric Colorectal Center offers multidisciplinary treatment for complex conditions including Hirschsprung disease and anorectal malformations. Washington University pediatric surgeons are expanding to local communities, with facilities in South St. Louis County, Springfield, Missouri, and additional locations, ensuring that patients across the region have access to the highest level of pediatric surgical care.

## Research

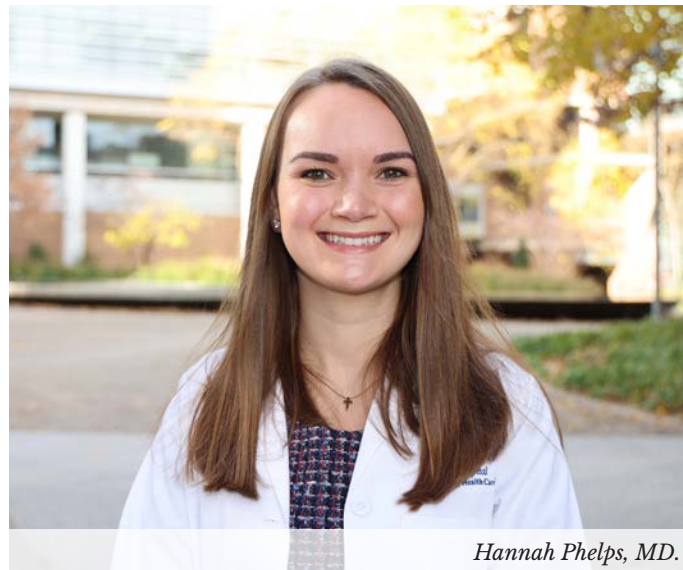
Short gut syndrome is a condition in which the body cannot absorb enough fluids and nutrients because part of the bowel is missing or malfunctioning. The condition, also called short bowel syndrome, is among the most lethal in infancy and childhood. Division Chief **Brad Warner, MD**, alongside Division Chief of Gastroenterology **Nicholas Davidson, MD, DSc**, Professor of Medicine **Deborah Rubin, MD**, and Assistant Director of the McDonnell Genome Institute **Li Ding, PhD**, is leading a multi-PI project funded by an R01 grant from the NIH investigating liver injury after bowel resection in patients with short gut syndrome.



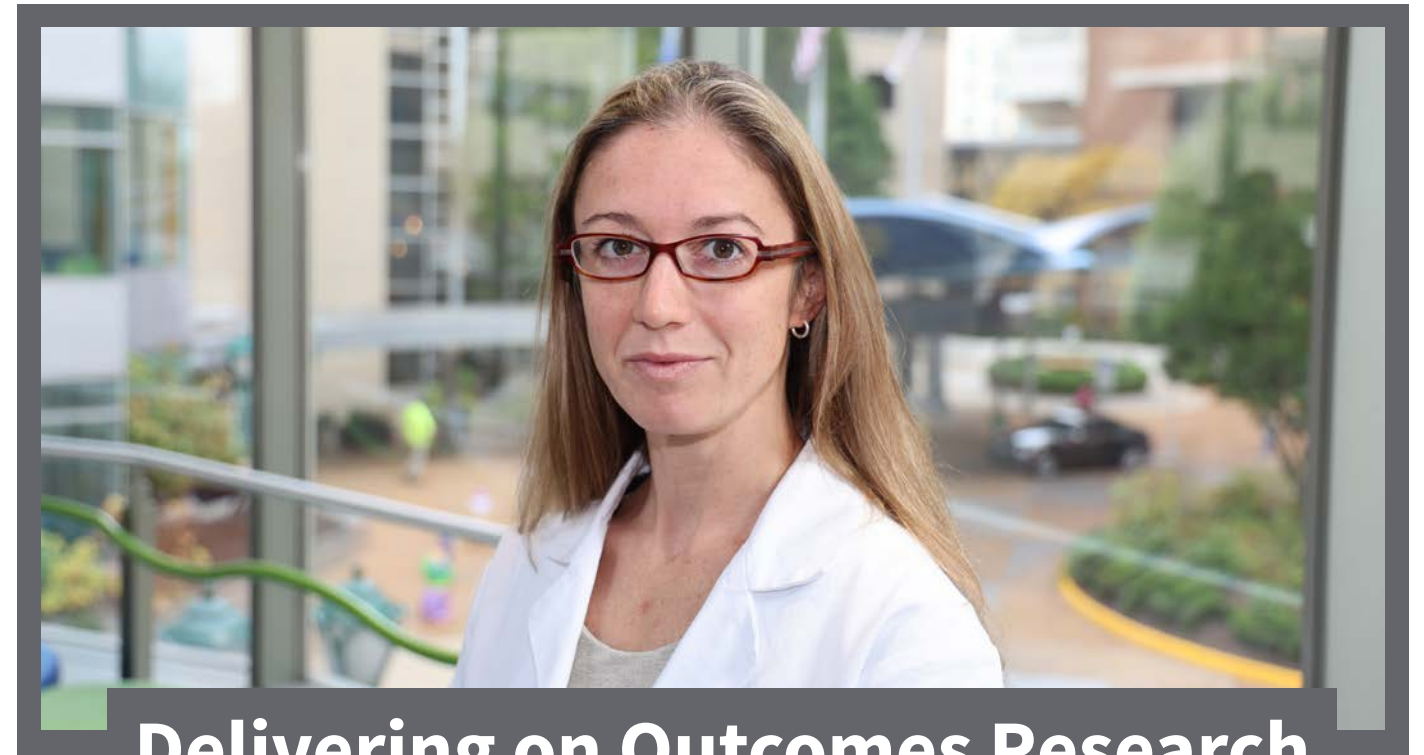
Brad Warner, MD.

## Education

**Hannah Phelps, MD**, a research resident in the laboratory of Division Chief **Brad Warner, MD**, received one of six Resident Research Scholarships from the American College of Surgeons (ACS) for 2021-2023 to study hepatic unfolded protein response in intestinal resection associated liver injury and fibrosis. The ACS scholarships are awarded to residents pursuing careers in academic surgery. "With the long-term career goal of becoming a pediatric surgeon-scientist, I look forward to the opportunity to work with and learn from this group of world-class researchers," Phelps says of the Warner Laboratory.



Hannah Phelps, MD.



## Delivering on Outcomes Research

Jesse Vrecenak, MD.

Washington University pediatric surgeon **Jesse Vrecenak, MD**, is part of a multidisciplinary team of experts at the Barnes-Jewish Hospital Fetal Care Center who care for mothers and babies with birth defects, including gastroschisis. Gastroschisis is a fetal condition affecting the abdominal wall. While a fetus develops, the muscles and skin of the abdomen do not form correctly. This leaves a hole through which the intestines, and other organs such as the stomach or liver, push to the outside.

Vrecenak is site Principal Investigator for the Gastroschisis Outcomes of Delivery (GOOD) Study, a multi-center clinical trial researching the best time to deliver a baby with this condition. The two standard delivery options for newborns with gastroschisis include inducing labor at 35 weeks or allowing labor to begin naturally.

The GOOD Study, which is funded in part by the National Institute of Child Health & Human Development (NICHD) of the National Institutes of Health (NIH), aims to determine which of these delivery options leads to the best outcomes for patients.

"We are trying to pinpoint the ideal time of delivery for these babies, who have a complex situation," says Vrecenak. "Inducing early labor may reduce the severity of the gastroschisis but comes with the risk of complications associated with prematurity. Waiting the full term avoids the risks of prematurity, though there is a chance of the bowel becoming more damaged. We want to find the right time to deliver for the best outcome for mother and baby."

After delivery, most newborns with gastroschisis require surgery to put the intestines back inside the abdomen. Some smaller defects can be treated with a single primary reduction

procedure, while larger defects require a staged reduction, where the surgeon moves the organs into the abdomen over a period of days before closing the hole.

Gastroschisis occurs in one out of every 4,000 births. The CDC notes that gastroschisis incidence is increasing, especially among younger mothers.

The GOOD Study is collecting data from more than 20 participating locations. Each location, including the Fetal Care Center, is a member of the North American Fetal Therapy Network (NAFTNet), an association of medical centers that perform advanced in-utero fetal therapeutic procedures. The researchers plan to generate the largest prospective, multicenter database of gastroschisis-related outcomes in the United States, providing data for future development of hypotheses and study designs regarding gastroschisis-related outcomes.



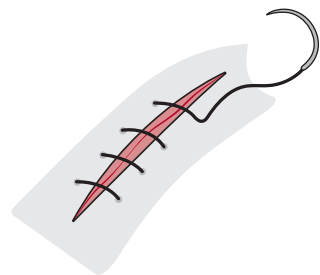


Division of

Right: Justin Sacks, MD, MBA.

## Plastic and Reconstructive Surgery

Plastic and reconstructive surgeons are experts in craniofacial, aesthetic, breast and general reconstructive, gender affirming, hand, limb preservation, lymphedema, nerve and pediatric plastic surgeries. The division is an international center for nerve injury and pioneer of peripheral nerve transfers. Faculty are leaders in basic, translational and clinical research, including clinical outcomes research and bench-to-bedside discoveries in nerve research and tissue engineering. Building on a legacy of training leaders and innovators, the division's residency and fellowship programs offer comprehensive training, outstanding mentorship and exposure to advanced surgical technology.



**4,304**

operating room cases



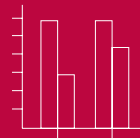
**5,851**

office procedures



**37,765**

visits



**141**

clinical research studies



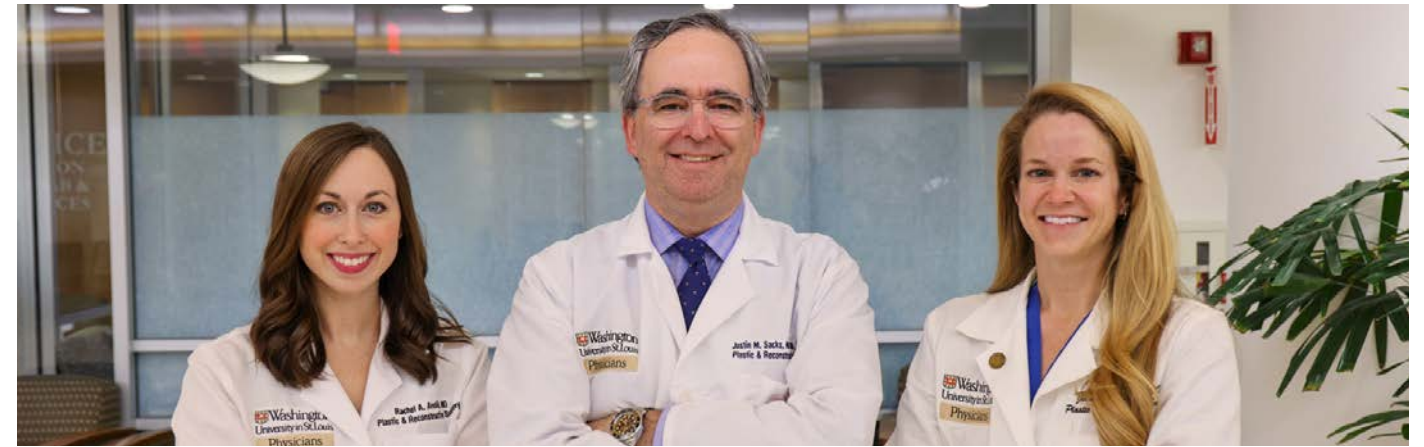
**20**

faculty



**\$791,777**

research funding



From left: Rachel Anolik, MD, Justin Sacks, MD, MBA, Joani Christensen, MD.

## Leading in Microsurgery

Washington University plastic and reconstructive surgeons perform head-to-toe corrective and cosmetic surgery across 10 clinical programs: aesthetic, breast reconstruction, craniofacial, general reconstruction, hand, limb preservation, lymphedema, nerve, pediatric plastic and gender affirming surgery. Many of these areas of focus require expertise in microsurgery, a discipline that uses specialized operating microscopes and precision instruments to repair intricate structures smaller than a few millimeters in diameter. The growing team of microsurgers in the Division of Plastic and Reconstructive Surgery restores form and function to an increasing number of breast surgery, limb preservation and lymphedema patients.

“With the recent introduction of additional faculty with fellowship training in microvascular surgery, we are able to build on the existing breadth of plastic and reconstructive surgery services at Washington University,” says Division Chief of Plastic and Reconstructive Surgery **Justin Sacks, MD, MBA**.

The microsurgery faculty now includes **Rachel Anolik, MD**, who completed a microsurgery fellowship at Memorial Sloan Kettering Cancer Center before joining the department in 2020, and **Joani Christensen, MD**, who joins the department in 2021 after completing a fellowship in microvascular reconstruction at M.D. Anderson Cancer Center.

Sacks, who is the Shoenberg Endowed Chair in Plastic and Reconstructive Surgery, notes that Anolik has been an instrumental partner in developing a novel multidisciplinary lymphedema program at the School of Medicine.

“Improving the quality of life for patients with lymphedema is central to our goal,” says

Department of Surgery | Annual Report 2021

Anolik. “Our state-of-the-art multidisciplinary lymphedema treatment program offers conservative, medical, and therapeutic management. Our partners in therapy are crucial for baseline lymphedema measurements, preoperative optimization, postoperative therapy and limb volume surveillance.”

In breast reconstruction, many patients utilize their own tissue from other parts of the body, rather than having implants. Sacks, an expert in cancer reconstruction microsurgery, has seen a significant increase in the clinical volume of breast reconstruction surgery in the past year. Partnerships with surgical oncologists and other providers across the medical school, hospital system and Siteman Cancer Center enable Washington University plastic and reconstructive surgeons to provide the desired types of surgery and outcomes for women who choose breast reconstruction after cancer surgery.

The division extends its microsurgical expertise to its training programs through a new microsurgery fellowship program in partnership with the Department of Orthopedic Surgery. The Washington University Plastic and Orthopedic Reconstructive Microsurgery Fellowship Program provides broad microsurgical training, with an emphasis on limb reconstruction, lymphedema surgery and cancer reconstruction.

“Washington University plastic and reconstructive surgeons have trained at the premier medical schools and cancer centers in the country, bringing clinical expertise to our patients, depth to our training programs and rigor to our research programs,” says Sacks. “The Division of Plastic and Reconstructive Surgery has historically played a critical role in developing the specialty. We are continuing this tradition of excellence at Washington University today and into the future.”



# Plastic and Reconstructive Surgery Highlights



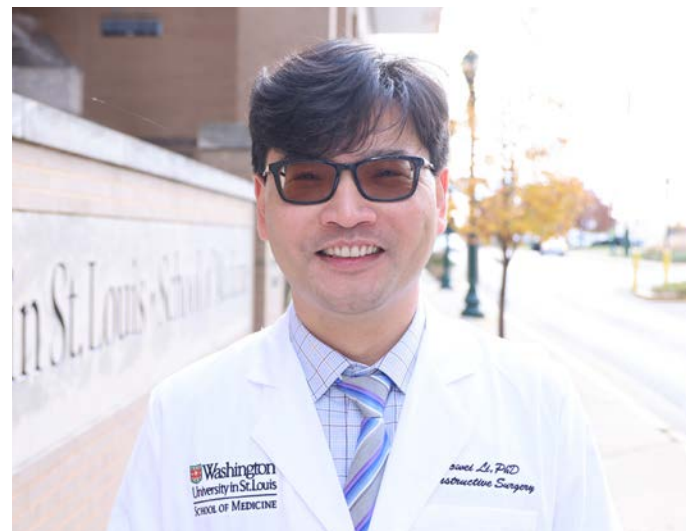
John Felder, MD.

## Clinical

Washington University plastic and reconstructive, acute and critical care, and vascular surgeons are leading the multidisciplinary Limb Preservation Program at the School of Medicine. Co-Director **John Felder, MD**, leads the plastic and reconstructive area of limb preservation, saving limbs with microvascular reconstructive surgery. The goal of the program is to restore form and function to patients who might otherwise require amputation due to vascular disease, trauma or other limb-threatening conditions. For patients who do require amputation, Felder ensures the highest level of function and reduces pain in the affected limb through nerve transfer procedures.

## Research

**Xiaowei Li, PhD**, an accomplished researcher with expertise in biomaterials, tissue engineering and regenerative medicine, joined the division in June 2021. Li, who was awarded the American Heart Association Career Development Award in 2018, is developing biomaterials approaches to improve stem cell therapies and applying biomaterial platforms to promote tissue regeneration. Li and Division Chief of Plastic and Reconstructive Surgery **Justin Sacks, MD, MBA**, previously collaborated on research focused on soft tissue regeneration at Johns Hopkins School of Medicine, where Li was a postdoctoral fellow and assistant research scientist. “The arrival of Dr. Li marks an exciting period of growth for the Plastic Surgery Research Laboratories,” says Sacks.



Xiaowei Li, PhD.

## Education

The Plastic Surgery Residency Program, led by Program Director **Alison Snyder-Warwick, MD**, and Associate Program Director **Kelly Currie, MD**, provides clinical training in breast, craniofacial, head/neck trauma, hand, microsurgery, cosmetics and peripheral nerve surgery. The program has trained residents for over a century and continues to grow and innovate in surgical education. More than 20 residents currently train in the program, which offers a high volume of diverse operative experience, and broad basic, translational and clinical research opportunities. “It is very rewarding to watch residents bloom into exceptionally competent, innovative and confident leaders in plastic surgery during their training,” says Snyder-Warwick, who is also Director of the Facial Nerve Institute and Co-Director of the Cleft and Craniofacial Institute at St. Louis Children’s Hospital.



Alison Snyder-Warwick, MD.



# A Powerhouse of Plastic Surgery Research

From left: Xiaowei Li, PhD, Amanda Westman, PhD, Matthew Wood, PhD.

Research in the Division of Plastic and Reconstructive Surgery aims to improve patient care in each of the division’s 10 areas of clinical focus through the most advanced basic science, translational and clinical studies. Three full-time independent investigators lead the research programs in the division, collaborating with clinical faculty to solve problems in truly bench-to-bedside fashion.

Director of Clinical and Translational Research **Amanda Westman, PhD**, focuses on translating novel technologies to the clinical setting using in vivo studies and computational models. Westman and Division Chief of Plastic and Reconstructive Surgery **Justin Sacks, MD, MBA**, are leading research on a single-use disposable device capable of performing continuous bedside pressure monitoring. Sacks and Westman received a 2021-22 Big Ideas Competition grant from BJC HealthCare and the School of Medicine to translate the device, which prevents pressure ulcer development and progression, to clinical use.

“It is an exciting time to be part of the Division of Plastic and

Reconstructive Surgery,” says Sacks, who is the Shoenberg Professor of Plastic and Reconstructive Surgery. “We are growing our research programs to complement all of the division’s clinical programs. This institution is a powerhouse of plastic surgery research.”

Scientific Director of the Plastic Surgery Research Laboratories (PSRL) **Matthew Wood, PhD**, leads a consortium of investigators with the common objective of studying the pathology, mechanisms and prospective clinical treatments for the problems facing plastic and reconstructive surgeons today. The PSRL contains over 2,000 square feet of lab space and has the research infrastructure to perform the highest level of basic science investigation in tissue engineering, immunology and nerve physiology. PSRL researchers have been continuously NIH-funded since 1993, and have published more than 1,000 peer-reviewed articles and several dozen books and chapters. Wood and senior scientist **Dan Hunter**, who are investigating the role of T cells in nerve injury and regeneration, are among the nation’s leaders in neuroma research. The team published a

book chapter, titled “Neuroma Pathology: The Role of Histologic Analysis,” in 2020.

“As part of our effort to think about problems in plastic surgery in ways that others have not, we are recruiting and building a team for diverse ideas,” says Wood. “We have new team members that will help us complement our core clinical programs.”

Among the new members of the division’s research program is **Xiaowei Li, PhD**, who joins the Division of Plastic and Reconstructive Surgery as an assistant professor of surgery. His research aims to create bioengineering platforms for nervous tissue regeneration after injuries or diseases.

“Together, Matt Wood and Amanda Westman have developed the research infrastructure to support future discoveries and innovations in plastic and reconstructive surgery,” says Sacks. “Our research fellows, investigators, clinical faculty and trainees benefit from having access to an organized, structured program of basic, translational and clinical research.”











Division of

# Public Health Sciences

Graham Colditz, MD, DrPH.



The Division of Public Health Sciences provides a platform for investigators across disciplines to collaborate on projects affecting clinical care and outcomes. Faculty are epidemiologists, statisticians, behavioral scientists, economists, health communication scientists and more who address a range of population health challenges. Their aim is to prevent cancer and other diseases, promote population health and improve quality and access to health care in the region. The division also offers a Master of Population Health Sciences (MPHS) degree program for training in population-based clinical outcomes research.

 <b>16</b> MPHS graduates	 <b>21</b> MPHS students
 <b>225</b> publications	 <b>159</b> clinical research studies
 <b>27</b> faculty	 <b>\$13,605,192</b> research funding



## Reducing Breast Cancer Risk

Adetunji Toriola, MD, PhD.

Breast cancer is the most common cause of cancer among women in the United States, except for skin cancers. One in eight American women will develop breast cancer in their lifetime, and the American Cancer Society estimates over 43,000 women will die from breast cancer in 2021. Preventing breast cancer and understanding its risk factors are key areas of investigation for the Division of Public Health Sciences.

About 25% of breast cancer cases occur in women under 50. Breast density—the relative amount of glandular, connective and fat tissue as seen on a mammogram—is one of the strongest risk factors for breast cancer, especially in premenopausal women. Associate Professor of Surgery **Adetunji Toriola, MD, PhD**, is principal investigator on an R01 grant from the National Institutes of Health (NIH) to study the metabolomics of mammographic breast density.

“A decrease in breast density leads to a reduction in breast cancer incidence,” says Toriola. “Nevertheless, the molecular basis of mammographic breast density and the mechanisms through which dense breast increases breast cancer risk are poorly understood.”

Toriola aims to leverage state-of-the-art metabolomics research to uncover the molecular mechanisms, biological pathways and novel actionable biomarkers associated with breast density in premenopausal women.

Decreasing breast density is the focus of a new Phase II clinical trial led by Toriola at Washington University School of Medicine in St. Louis. The trial, supported by a \$3 million grant from the National Cancer Institute of the NIH, will investigate the use of an osteoporosis drug for its potential to reduce breast density. Currently, the only preventive therapy for these high-risk women is the chemotherapy drug tamoxifen, which can have serious side effects for some patients. This new therapy could help reduce the risk of breast cancer with fewer undesirable side effects.

“The safety and effectiveness of this drug is well established in its use as an FDA-approved therapy to prevent osteoporosis and bone fractures in older women,” says Toriola, principal investigator on this prevention trial. “It is given as an injection under the skin in the upper arm, upper thigh or stomach area, but it only needs to be administered every six months, rather than daily like tamoxifen. So we hope that denosumab will provide an additional prevention option for women with dense breasts who are at high risk of developing breast cancer.”

In addition to leading research in breast cancer prevention, faculty in the Division of Public Health Sciences promotes mammography screening and patient education with community outreach programs through partnerships with Siteman Cancer Center and community partners across the St. Louis area.





Mary Politi, PhD.

**Clinical**

The Division of Public Health Sciences aims to improve the health equity of the St. Louis area by educating patients, addressing financial toxicity in health care and increasing access to cancer screening across the region. Professors of Surgery **Bettina Drake**, PhD, MPH, **Aimee James**, PhD, MPH, and **Mary Politi**, PhD, are leading collaborative projects to improve patient health. The Program for the Elimination of Cancer Disparities (PECaD) partners with community leaders to highlight the importance of cancer screenings. The division has developed a lung cancer screening toolkit for use by primary care providers in local communities. Ongoing projects examine the burden of financial toxicity in cancer treatment and other areas of patient care.

**Research**

**Joy Jiang**, PhD, assistant professor of surgery in the Division of Public Health Sciences, received a four-year \$1.35 million MERIT award from the National Institutes of Health (NIH) for her project “Dynamic prediction incorporating time-varying covariates for the onset of breast cancer.” The project aims to improve breast cancer risk assessment by examining personalized, individual-specific data that may change over time. Jiang and Division Chief of Public Health Sciences **Graham Colditz**, MD, DrPH, developed a method of improving risk prediction based on mammogram data, supported by funding Colditz received from the Breast Cancer Research Foundation and published this year in *Biostatistics*.



Joy Jiang, PhD.

**Education**

The division’s Master of Population Health Sciences degree program continues to benefit surgical trainees interested in pursuing public health research during their lab years. General Surgery lab resident **Brendan Heiden**, MD, MPH, initiated lung transplantation research during a course studying risk prediction, offered by Associate Professor of Surgery **Yikyung Park**, ScD. This research has led to multiple publications and presentations, as well as the development of an online calculator, in collaboration with thoracic surgeon **Varun Puri**, MD, MSCI, to help physicians rapidly determine if a donor lung is likely to be eligible for transplant.



Yikyung Park, ScD.



Elizabeth Salerno, PhD, MPH.

**Physical Activity and Cancer Survival**

Researchers at Washington University School of Medicine in St. Louis have identified important associations between physical activity and cancer-related outcomes. **Elizabeth Salerno**, PhD, MPH, assistant professor of surgery in the Division of Public Health Sciences, is first author on two key studies examining physical activity and cancer, published this year.

The first study, published in *Cancer Epidemiology, Biomarkers & Prevention*, a journal of the American Association for Cancer Research, found an association between slow walking pace and an increased risk of death among cancer survivors. The slowest walking pace was linked to mortality among survivors of nine cancer types, including breast, colon, melanoma, Non-Hodgkin lymphoma, oral, prostate, rectal, respiratory and urinary cancers. Cancer survivors with mobility disability were at more than five times greater risk of death than individuals with no cancer diagnosis or disability. The next

steps in this research include identifying the underlying reasons for this association and developing potential interventions to target walking pace after cancer.

“Cancer survivors are living longer than ever – and that’s good news,” says Salerno, who conducted this research while a postdoctoral researcher at the National Cancer Institute (NCI). “But it’s important to improve our understanding of how the diagnosis and treatment of a broad range of cancers may affect walking pace during survivorship — a potentially modifiable risk factor — which could lead to new treatment and rehabilitation strategies to improve the health of these patients.”

The relationship between physical activity and cognitive function after chemotherapy is the focus of the second study, published in the *Journal of Clinical Oncology*. Researchers at the School of Medicine, in collaboration with Rochester Medical Center and the NCI, found a strong association between high levels of physical

activity and the ability to maintain cognitive function among breast cancer patients treated with chemotherapy.

“Cognitive decline related to cancer treatment is a growing clinical concern,” says Salerno. “Some patients with cancer experience memory lapses, difficulty concentrating or trouble finding the right word to finish a sentence. Knowing the detrimental effects of chemotherapy on cognitive function, we wanted to understand the dynamic relationships between physical activity and cognition before, during and after chemotherapy to hopefully inform early, cost-effective prevention strategies to promote health in these patients. Our findings suggest that maintaining higher levels of physical activity may indeed be important for protecting cognition in patients with breast cancer undergoing chemotherapy.”

This research lays the groundwork for future clinical trials to investigate whether exercise can prevent what is commonly referred to as “chemo brain,” a decline in cognitive function many breast cancer patients experience.

“These findings contribute to the growing body of evidence highlighting the importance of promoting physical activity as early as possible across the continuum of cancer care,” says Salerno.

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**“Cancer survivors are living longer than ever – and that’s good news.”**

*-Elizabeth Salerno, PhD, MPH*

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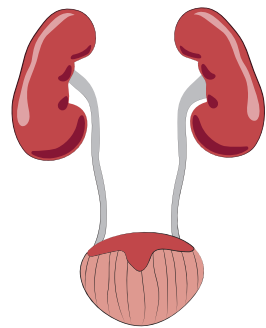


From left: Gerald Andriole, MD, Nicholas Pickersgill, MD, and Eric Kim, MD.



Sam Bhayani, MD, MS.

## Division of Urologic Surgery

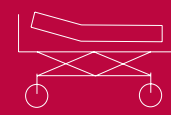


Faculty in this division are leaders in the field of urology and minimally invasive surgical techniques. Urologists offer a range of treatment options, both surgical and nonsurgical, for medical conditions of the urogenital tract, including the prostate and testicles in males and the kidneys and bladder in both males and females. The division is also nationally recognized for its research on detecting and determining the level of risk of prostate cancer. The urology residency and fellowship programs train outstanding physicians through the expertise of fellowship-trained faculty, high volume, diversity of cases and spirit of inquiry.



**7,793**

operating room cases



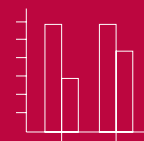
**12,455**

office procedures



**48,632**

visits



**70**

clinical research studies



**26**

faculty



**\$4,879,404**

research funding



## Personalizing Urologic Cancer Care

From left: Eric Kim, MD, R. Sherburne Figenshau, MD.

Washington University urologists are leading clinical investigations targeted towards developing more personalized cancer care. Clinical studies in the division continue to advance methods of diagnosing and treating urologic cancers.

**Eric Kim, MD**, is principal investigator of a study evaluating the use of Diffusion Basis Spectrum Imaging (DBSI) for early detection of prostate cancer. DBSI is a novel MRI parameter that may help urologists detect prostate cancer sooner and determine appropriate treatment.

Focal ablation allows physicians to target only the cancerous portion of the prostate for patients with localized cancer. Washington University urologists, including Kim and **Arjun Sivaraman, MD, MBBH, MS, MCH**, are participating in a multi-center study to determine the efficacy of using MRI/ultrasound fusion imaging technology to direct focal ablation of prostate tissue using nanoparticle-directed laser ablation.

**Zachary Smith, MD**, and a multidisciplinary team of researchers are investigating the ability of checkpoint inhibitor immunotherapy to improve the condition of patients with initially unresectable kidney cancer. After receiving this immunotherapy, some patients were able to undergo cytoreductive nephrectomy. Future studies aim to predict which patients will respond to immunotherapy and become surgical candidates.

“We are trying to understand who will respond to which therapy,” says Smith. “When we can predict how you will respond to immunotherapy or chemotherapy, we can develop truly personalized medicine for patients with urologic cancers.”

Smith, radiation oncologist **Aadel Chaudhuri, MD, PhD**, and medical oncologist **Vivek Arora, MD, PhD**, are developing a urine test to study the DNA of muscle-invasive bladder cancer patients treated with radical cystectomy.

“For bladder cancer, if a urine biopsy can detect whether the early chemotherapy totally eradicated the tumor, it could help some patients avoid major surgery to remove the bladder,” says Chaudhuri.

While there are existing urine tests that can help identify bladder cancer, these can be imprecise. Cystoscopy is more precise, but also more invasive. A DNA-based urine test could prove to be more sensitive by identifying any residual disease following cystectomy, and more specific than other urine tests, which can provide false-positive results.

“Personalized cancer care means that we will be able to tailor our treatment plan to each individual,” says Division Chief **Gerald Andriole, MD**, the Robert K. Royce Distinguished Professor of Urologic Surgery. “We have excellent treatment options, and these advances will help us know in advance which will work best for each patient.”



# Urologic Surgery Highlights



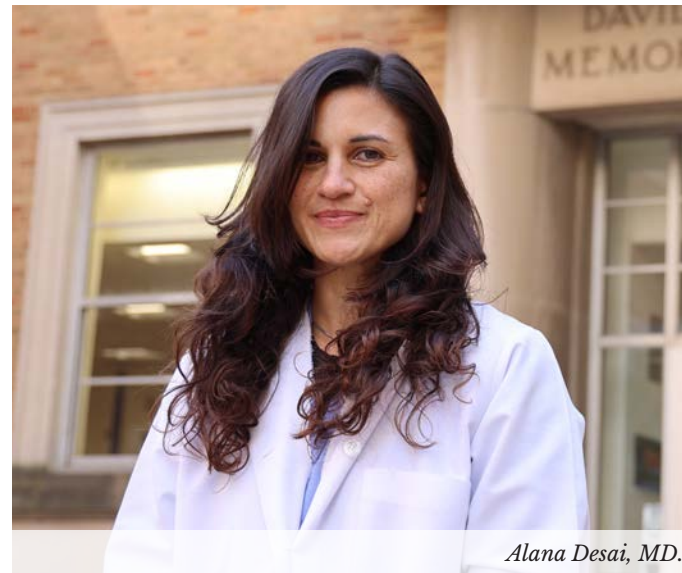
Gerald Andriole, MD.

## Clinical

In a multi-year effort, the Division of Urologic Surgery and BJC HealthCare have united to provide world-class Washington University urologic care at nine clinical locations across the St. Louis area and Illinois. This ongoing partnership aims to enhance quality of care, increase access to health services and reduce the total cost of care across the hospital system. “By providing the same high level of urologic care at each location, we can standardize care for patients on both sides of the river,” says Division Chief **Gerald Andriole, MD**, the Robert K. Royce Distinguished Professor of Urologic Surgery, who led the initiative.

## Research

Washington University urologist **Alana Desai, MD**, is leading a study to examine stent-associated pain in urinary stone disease patients after ureteroscopy. “Stone disease can be painful enough,” Desai says. “If we can identify those at risk for severe stent pain, we can better address their pain through future studies.” Desai and Professor of Surgery **Henry Lai, MD**, are co-principal investigators on multiple projects investigating urinary stone disease prevention, symptoms and treatment, funded by the National Institute of Diabetes and Digestive and Kidney Diseases and the Urinary Stone Disease Research Network.



Alana Desai, MD.

## Education

The Division of Urology now offers a Society of Urologic Oncology (SUO) Fellowship led by Program Director **Zachary Smith, MD**. The SUO-accredited fellowship provides in-depth experience in open, laparoscopic, robotic and reoperative surgery for all urologic cancers. Fellows collaborate with radiation oncologists and medical oncologists for comprehensive training in every aspect of urologic malignancy. The two-year program, which accepts one fellow per year, comprises one year of clinical and one year of research experience. **Cayce Nawaf, MD**, the inaugural fellow, completed urology residency training at Yale School of Medicine.



From left: Cayce Nawaf, MD, and Zachary Smith, MD.



## 100 Years of Urology Training

From left: Kefu Du, MD, Erica Traxel, MD, Jason Frankel, MD.

In 1921, the Washington University Urology Residency Program accepted its first intern. The program celebrates its centennial by recognizing historical contributions to field of urology and continuing this tradition of excellence in urologic training.

Over the past century, Washington University School of Medicine has become a national leader in urologic surgery. Faculty have continuously made major contributions to patient care, from pioneering transurethral prostatic resection to introducing techniques for ileal conduit urinary diversion and developing PSA testing for prostate cancer. Washington University urologists were also early leaders in laparoscopic surgery, performing the first laparoscopic nephrectomy in 1990. Faculty today continue to advance new approaches to all forms of urologic cancers, minimally invasive surgery, reconstructive urology, stone disease, men’s health problems and other conditions.

“Washington University Urology has been on the cutting-edge since urology became a field,” says Urology Residency Program Director **Erica Traxel, MD**. “I am proud to be part of a

division and program with such a rich history.”

In its hundredth year, the residency program builds on this rich history by training residents in the latest techniques and technologies. At the Washington University Institute for Surgical Education (WISE), trainees practice complex procedures, such as partial nephrectomy and robotic prostatectomy. Expert faculty lead skills labs in endourology and other areas of urologic specialization, introducing residents to the newest innovations in technique.

“The landscape of residency training has changed significantly over the past hundred years,” says Assistant Program Director **Jason Frankel, MD**. “We are developing educational programming and pedagogy. We are becoming more intentional about the way we train the next generation of urologists.”

Assistant Professor of Surgery **Kefu Du, MD**, has formalized robotics curriculum in the division. Faculty offer conferences dedicated to patient safety and quality improvement. Residents receive training to understand and address

inequities in access to medical care.

Traxel and Frankel aim to bring a new level of academic structure to urologic training. Frankel is completing a graduate degree in education. In 2020, Traxel was inducted to the Academy of Educators at the School of Medicine. Traxel has also been a member of the Office of Medical School Education Gateway Curriculum Immersion development team.

“It takes more than training someone to understand a disease process or steps of an operation,” says Traxel. “We are training residents to see patients as human beings. We are training residents to maintain their own wellness. Washington University is expanding the scope of urologic education and training.”

“Washington University Urology has been on the cutting-edge since urology became a field. I am proud to be part of a division and program with such a rich history.”

-Erica Traxel, MD





Top left: Bettina Drake, PhD, MPH, right, speaks to a community member during a cancer prevention event in East St. Louis.  
 Top right: Members of the Division of Urologic Surgery stand together at the White Coats for Black Lives protest in June 2020.  
 Bottom left: Muhammad Faraz Masood, MD, (third from right) and his surgical team during a procedure.  
 Bottom right: Katherine Glover-Collins, MD, PhD, with a patient in North County St. Louis.

Oluseye Oduyale, MD, left, and Tiffany Brocke, MD, during a thyroid lab in the WISE Center.



**“I would suggest that all of us in the Department of Surgery have a fourth mission: to improve the diversity of our specialty as well as to improve the health equity of all the patients we serve.”**

-Timothy Eberlein, MD, Chair of the Department of Surgery, Senior Associate Dean for Cancer Programs, Washington University School of Medicine in St. Louis, Director of Siteman Cancer Center

## Diversity, Equity and Inclusion

“Diversity in healthcare providers inspires a sense of comfort and pride in the patients we take care of. To be able to recognize and be cared for by providers look like them and may come from similar backgrounds does a lot to increase the quality of healthcare we are providing, but it also helps dismantle the distrust unrepresented minorities have with the health care system.”  
 - Nicholas Pickersgill, MD, Urology Resident

“Addressing disparities in research and in healthcare is just the right thing to do... Promoting health equity is really one of the things we can all do. Whether you are focused on policy or you are a surgeon or a basic scientist, it’s one of the things that each and everyone one of us can contribute in the fields we currently work in.”  
 -Bettina Drake, PhD, MPH, Professor of Surgery

“The Department of Surgery addresses disparities in healthcare in the North County area... By building the Siteman Cancer Center in North County, we can bring the access that is sorely needed.”  
 - Katherine L. Glover-Collins, MD, PhD, Assistant Professor of Surgical Oncology

“Diversity is necessary in every walk of life. We all do better when we have the influences from all areas and cultures.”  
 -Majella Doyle, MD, MBA, Mid-America Transplant/ Department of Surgery Distinguished Endowed Chair in Abdominal Transplantation

“We have an opportunity as a profession to improve our diversity, improve the pipeline of surgeons of color, to represent the population of the United States.”  
 -Timothy Eberlein, MD, Chair of the Department of Surgery, Senior Associate Dean for Cancer Programs, Washington University School of Medicine in St. Louis, Director of Siteman Cancer Center

“Washington University is really on the forefront of actually addressing healthcare for those who are vulnerable or disadvantaged.”  
 -Will Ross, MD, MPH, Associate Dean for Diversity, Washington University School of Medicine

“I think we have done great work in ensuring that surgery is a place that welcomes people who are different and that benefits our patients since they can see themselves reflected in their care providers.”  
 -Jorge Zárate Rodríguez, MD, General Surgery Resident

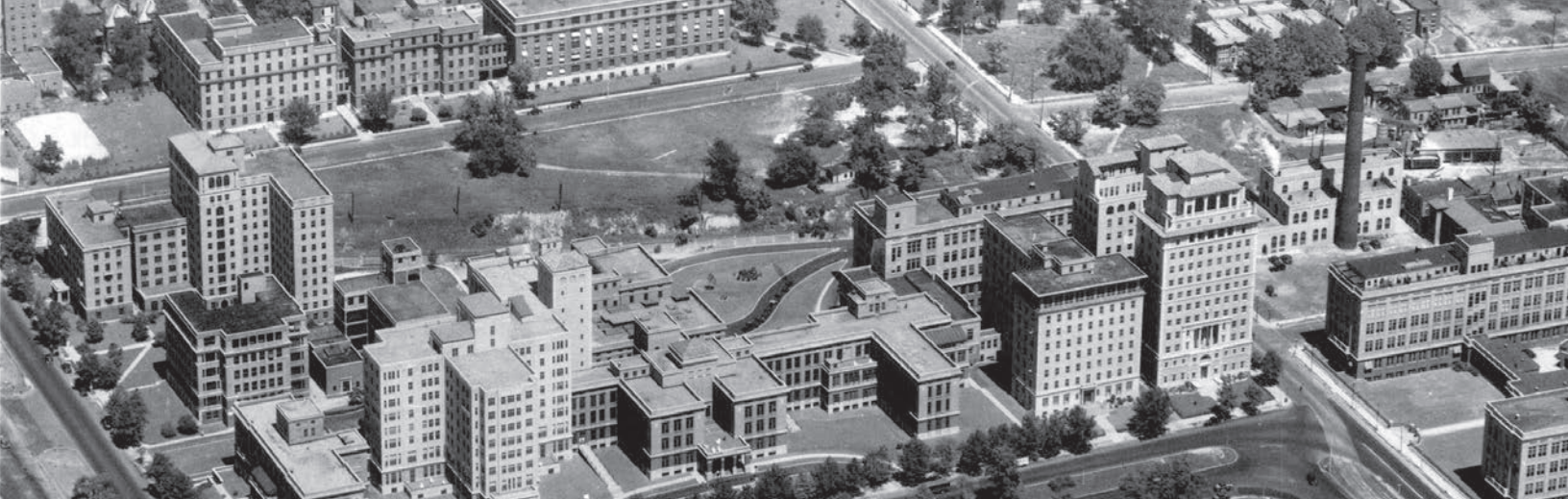


“The Department of Surgery has really developed programs in all these communities where we are trying to reduce disparities and improve health equity.”

- Timothy Eberlein, MD, Chair of the Department of Surgery, Senior Associate Dean for Cancer Programs, Washington University School of Medicine in St. Louis, Director of Siteman Cancer Center

From left: Justin Sacks, MD, MBA, Ida Fox, MD, Thomas Tung, MD, and Joani Christensen, MD.





The Washington University Medical Campus, circa 1931.

## OUR MISSION IN ACTION: Washington University Surgery at Homer G. Phillips Hospital

The global COVID-19 pandemic and recent social injustices have increased national awareness of the need for health equity in underserved communities and diversity in institutions including health care systems. At Washington University School of Medicine in St. Louis, departmental and institutional leaders are addressing these vital issues through advances in clinical, research and educational programs. The Department of Surgery, which this year hosted the 31st Annual Meeting of the Society of Black Academic Surgeons, has a longstanding history of leading the charge in health care equity and diversity.

When Homer G. Phillips Hospital opened its doors in 1937, it was the only hospital in St. Louis to offer learning opportunities and clinical experience to African American doctors. At a time when health care was segregated and Black patients did not have access to the same quality treatment as white patients, Homer G. Phillips Hospital improved access to high quality care and became an essential part of the St. Louis community. Washington University surgeons made significant contributions to the training of physicians and treatment of patients at the hospital until it closed its doors in 1979.

**Evarts Graham, MD**, the first Bixby Professor and full-time chair of the Department of Surgery at Washington University School of Medicine, taught residents at Homer G. Phillips Hospital. Graham's career was marked by many outstanding achievements, including the first successful pneumonectomy for cancer in 1933 and research linking cigarette smoke and lung cancer. Under Graham's leadership, Washington

University Department of Surgery faculty led lectures and workshops for Homer G. Phillips Hospital trainees and performed surgery for the hospital's patients. Graham is frequently credited for keeping the hospital open through periods of turmoil, providing consulting services to physicians and ensuring the highest level of care for patients.

With Graham's support, **Robert Elman, MD**, who was world-renowned for his research in pancreatitis and amino acids, was named chief of staff and director of surgery at Homer G. Phillips Hospital in 1937. In 1941, **William Sinkler, MD**, became medical director of the hospital. A distinguished Washington University surgeon, Sinkler was appointed head of surgery in 1956. Elman, Sinkler and other remarkable surgeons led the hospital in training Black physicians and caring for patients in St. Louis.

"At the height of Homer G. Phillips Hospital, fifty percent of all Black graduates from medical schools in the United States came through Homer G. Phillips Hospital," says **Timothy Eberlein, MD**, the William K. Bixby Professor and Chair of the Department of Surgery. "It was the team of Sinkler and Elman who were responsible for demanding excellence in all areas of training."

One of the outstanding trainees from that era was **LaSalle Leffall, Jr., MD**, who went on to serve as President of the American College of Surgeons (ACS) and was chair of surgery at Howard University College of Medicine for 25 years. The ACS describes Leffall as "a brilliant surgeon, oncologist, medical educator, civic leader, patient advocate, and mentor to the students and residents he trained." His experience training



Panoramic composite of the Washington University Medical School and its facilities, circa 1915.

at one of the few institutions open to Black physicians at the time had a profound impact on Leffall's career as a surgeon and educator.

"You have to realize that this was one of only four places in America where a black surgeon could be trained," Leffall told Eberlein when the two visited the site of Homer G. Phillips Hospital together years ago.

The story of Washington University surgeons at Homer G. Phillips Hospital continued for the duration of the hospital's existence. Department of Surgery faculty, including Graham's successor **Carl Moyer, MD**, were champions of the hospital and its training programs. Like Leffall, many of the surgical residents from Homer G. Phillips Hospital went on to provide the highest quality of care for patients locally and nationally, transforming the landscape of medicine.

"In order to have a successful, diverse community of surgeons, we need to open doors, mentor and be sponsors," says Eberlein. "We have an opportunity as a profession to improve our diversity to represent the population in the United States. While resources may grow or be cut back, we have to be responsible for making permanent partnerships in our community."



## The Legacy Continues

Timothy Eberlein, MD, joins the Department of Surgery as Bixby Professor and chair in 1998, with a commitment to improving the health equity of the St. Louis community

The Alvin J. Siteman Cancer Center is established in 1999, with Eberlein named director

The Division of Public Health Sciences conducts world-leading research, education and outreach to prevent cancer, promote population health, and improve access to health care in Missouri and beyond

The Program for the Elimination of Cancer Disparities, led by the Division of Public Health Sciences and Siteman Cancer Center, is recognized by the National Cancer Institute as a national model for eliminating local and regional disparities in cancer education, prevention and treatment

Siteman Cancer Center opens a satellite facility at Christian Hospital in north St. Louis County, engaging with community leaders to provide patient education, cancer screening and state-of-the-art clinical care

The Department of Surgery offers a Diversity Sub-Internship Program to support minority student experiences in academic surgery

Washington University surgeons provide clinical care at 21 locations across the region, bringing access to the highest quality of care to local communities

Homer G. Phillips Hospital, the city's only public hospital that served the city's Black residents. The institution was in operation from 1937 to 1979.





## Celebrating Diversity in Surgery with the Society of Black Academic Surgeons

From left: Past SBAS President Anthony Stallion, MD, Past President Martin Karpeh, Jr., MD, Local Program Chair Dineo Khabele, MD, Secretary Luz Rodriguez, MD, President-elect Carla Pugh, MD, PhD, President Andrea Hayes-Jordan, MD, Executive Director L. D. Britt, MD, MPH, Department Chair Timothy Eberlein, MD, and Chancellor Andrew Martin, PhD.

The Department of Surgery had the distinguished honor of hosting the Society of Black Academic Surgeons' 31st Annual Meeting, held September 16-19 at Washington University School of Medicine in St. Louis.

Since the Society of Black Academic Surgeons' establishment in 1989, the organization supports Black and other underrepresented faculty, trainees and students in surgical subspecialties across the nation. The Society seeks to increase the number of Black and underrepresented minority faculty in academic surgery, cultivate the development of surgical scientists, promote its members to leadership positions in America and throughout the world, and eliminate health disparities for the most vulnerable populations.

The meeting was hosted in a hybrid format, allowing for professionals from around the

country to safely gather to view the sessions in person or stream the sessions live. Presenting faculty members provided answers to audience members' questions after each panel.

Timothy Eberlein, MD, Bixby Professor & Chair of the Department of Surgery, kicked off the day by welcoming the attendees and reminding them of the department's three-part mission in patient care, research and education excellence.

"I would suggest that the Department of Surgery has a fourth mission: to improve the diversity of our department, our leadership as well as to improve the health equity of the patients we serve," says Eberlein.

The meeting's comprehensive program showcased esteemed basic, clinical and translational research taking place within the Department of Surgery and throughout the medical campus. In addition to discussions spearheaded by

the Department of Surgery panelists, executive leaders and experts from throughout the institution contributed to the event.

During the meeting's clinical panel, Maria B. Majella Doyle, MD, MBA, the Mid-America Transplant/Department of Surgery Distinguished Endowed Chair in Abdominal Transplantation, spotlighted the Department of Surgery's clinical growth and innovations in transplant surgery.

Sam Bhayani, MD, the Holekamp Family Endowed Chief of Urologic Surgery and Chief Medical Officer of the Faculty Practice Plan, showcased the Faculty Practice Plan's growth and clinical impact on the region and highlighted the Urology team's advancements in the treatment of renal cell cancers.

Puja Kachroo, MD, Assistant Professor of Cardiac Surgery and Co-Director

of Transcatheter Therapies and Research, concluded the clinical panel by amplifying the Transcatheter Aortic Valve Replacement program's multidisciplinary approach and outcomes.

The research panel was kicked off by Ryan Fields, MD, Chief of Surgical Oncology and Kim & Tim Eberlein Distinguished Professor of Hepatobiliary-Pancreatic and Gastrointestinal Surgery. Fields outlined the Department of Surgery's diversified research portfolio and additionally discussed how patient-derived xenograft models impact precision medicine in metastatic colorectal cancer treatment.

**"If we all work together, we will be able to nationally impact the diversity of our physician and surgeon pool but also improve the health equity of those we serve. It is a vital mission and I look forward to working with our entire team to accomplish."**

*-Timothy Eberlein, MD*

Daniel Kreisel, MD, PhD, Professor of Cardiothoracic Surgery, Pathology and Immunology and Surgical Director of the Lung Transplant Program, highlighted the institution's advancements in lung transplantation and immunology focused research.

Mohamed Zayed, MD, PhD, Associate Professor of Vascular Surgery and Radiology, concluded the research panel by describing how his research team utilizes precision medicine to translate vascular biology to vascular surgery.



From left: Maria B. Majella Doyle, MD, MBA, Sam Bhayani, MD, MS, Puja Kachroo, MD, and Dineo Khabele, MD, during a panel discussion.

The final panel of the Friday session was kicked off by Shaina Eckhouse, MD, Associate Professor of Minimally Invasive Surgery. In her presentation, Eckhouse outlined methods for incorporating formal patient safety and quality improvement efforts into busy academic and clinical practices.

Bettina Drake, PhD, MPH, Professor of Surgery in the Division of Public Health Sciences, highlighted the efforts of the Program for the Elimination of Cancer Disparities and its partners. The program is dedicated to assuring all cancer patients and communities benefit from the clinical and scientific advances at Siteman Cancer Center to reduce the cancer burden and related disparities while engaging communities to promote health equity across Siteman's catchment and beyond.

Piroska Kopar, MD, Assistant Professor of Acute and Critical Care Surgery and Director of the Center for Humanism and Ethics in Surgical Specialties (CHES) closed out the alternative panel by explaining

the mission of CHES and how to tackle some of the current ethical challenges facing surgeons and other medical professionals.

To conclude the day's meeting, Dr. Eberlein showcased the intertwining history of the Department of Surgery and the former Homer G. Phillips Hospital. Though the facility closed in the late 1970s, the mission at the core of Homer G. Phillips Hospital is very much evident and persistent in the Department of Surgery as it continues to address the disparities in health care throughout the city region and beyond.

"We have an opportunity as a profession to improve our diversity, improve the pipeline of surgeons of color, to represent the population in the United States," Eberlein says. "If we all work together, we will be able to nationally impact the diversity of our physician and surgeon pool but also improve the health equity of those we serve. It is a vital mission and I look forward to working with our entire team to accomplish."



# Department of Surgery RESEARCH

The department's research enterprise is among the largest of its peers in the United States. A leader in National Institutes of Health funding among its peers nationwide, it encompasses a full spectrum of robust basic science, clinical and public health sciences research.

Breakthroughs made by our department investigators, many of which serve as full-time operating surgeons, are critical to the clinical development in fields such as oncology, immunology, pancreas and breast cancer research, among many others.

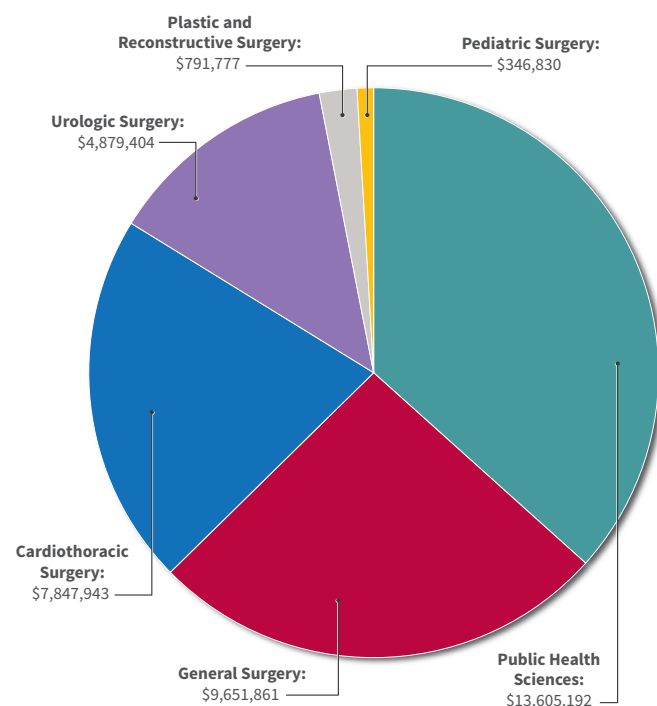
**169**  
active grants

**\$37,144,905**  
research grant funding

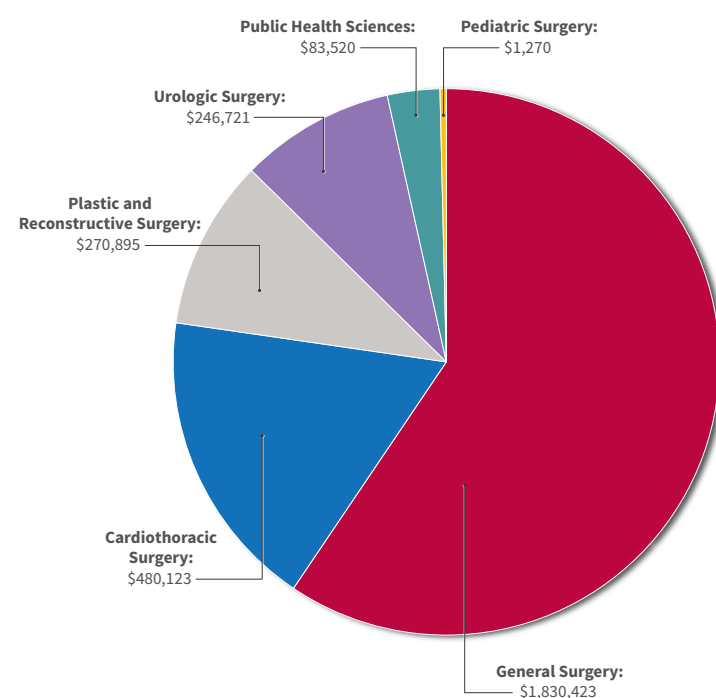
**640**  
clinical research studies

**\$2,912,952**  
clinical trial contract income funding

Research Grants by Division



Clinical Study Contract Income by Division



FUNDING ABOVE \$1,000,000

Division of Cardiothoracic Surgery

Section of Thoracic Surgery



**Varun Puri, MD, MSCI**  
NIH R01 / Optimizing Donor Management in Lung Transplantation  
07/01/20-06/30/24: \$1,575,000

Division of General Surgery

Section of Vascular Surgery



**Mohamed Zayed, MD, PhD** (Multi-PI: Robert J. Gropler, MD (Cardiology) (Original Contact PI: Sean English, MD))  
NIH R01 / CCR2 Targeted Molecular Imaging and Treatment of Abdominal Aortic Aneurysms  
08/01/20-07/31/24: \$3,039,008



**Mohamed Zayed, MD, PhD**  
NIH R01 / Regulation of Endothelial Lipid Metabolism in the Setting of Diabetes and Critical Limb Ischemia to Prevent Surgical Complications  
04/01/21-03/31/25: \$2,132,855

Division of Public Health Sciences



**Graham Colditz, MD, DrPH**  
St. Jude / Implementation Sciences Collaborative  
10/01/20-09/30/25: \$4,795,140



**Yin Cao, ScD, MPH**  
NIH R37 / Obesity, sedentary behaviors, and diet quality for prevention and early detection of early-onset colorectal neoplasia  
07/01/20-06/30/25: \$2,877,662



**Adetunji Toriola, MD, PhD**  
NIH R01 / Metabolite Profiles and Mammographic Density in Premenopausal Women  
07/01/20-06/30/25: \$1,801,405



**Siobhan Sutcliffe, PhD, ScM, MHS**  
NIH U01 / Bladder Health promotion and LUTS prevention in adolescent and adult women across the life course  
09/01/20-06/30/25: \$1,590,000

FUNDING ABOVE \$100,000

Division of General Surgery

Section of Acute and Critical Care Surgery



**Pirooska Kopar, MD**  
The Foundation for Barnes-Jewish Hospital / Washington University School of Medicine, Center for Humanism and Ethics in Surgical Specialties  
10/01/20-09/30/21: \$186,899

Section of Surgical Oncology



**Ryan Fields, MD**  
Blue Continga, LLC / Onvansertib drug study  
05/21/21-05/20/22: \$208,866

Division of Plastic and Reconstructive Surgery



**Susan Mackinnon, MD**  
The Foundation for Barnes-Jewish Hospital / The Implementation of Video-Based Surgical Coaching to Improve Resident Performance in the Treatment of Complex Hand and Maxillofacial Trauma  
04/01/21-03/31/22: \$148,600

Division of Public Health Sciences



**Yikyung Park, ScD**  
NIH R03 / Dietary Patterns and Cardiovascular Disease Risk in Childhood Cancer Survivors: St. Jude Lifetime Cohort  
07/01/20-06/30/22: \$182,771

Division of Urologic Surgery



**Nupam Mahajan, PhD**  
Department of Defense / Therapeutic Targeting of Recurrent Castrate Resistant Prostate Cancer by ACK1 Tyrosine Kinase Inhibitor (R)-9b  
05/01/21-04/30/24: \$861,839



**Kiran Mahajan, PhD**  
Department of Defense / Therapeutic Targeting of Recurrent Castrate Resistant Prostate Cancer by ACK1 Tyrosine Kinase Inhibitor (R)-9b  
05/01/21-04/30/24: \$712,271

Washington University Department of Surgery is the second highest ranking department in NIH funding according to the Blue Ridge Institute for Medical Research in 2020.







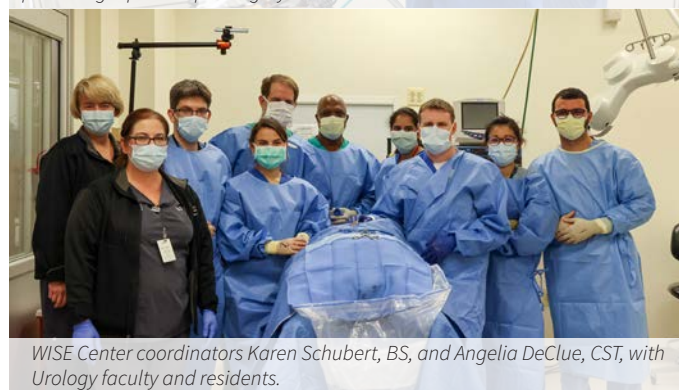
## Department of Surgery Education Overview

Left: General Surgery resident Louisa Bai, MD, during a Fundamentals of Laparoscopic Surgery skills lab.  
 Top right: From left: General surgery residents Maria Martinez, MD, and Wahid Abu-Amer, MD, during a thyroid lab.  
 Bottom right: From left: Urology resident Shilpa Argade, MD, Arnold Bullock, MD, and Lewis Thomas IV, MD, during a penile prosthesis placement lab.

Residents and fellows training within the Department of Surgery's leading educational programs gain knowledge from internationally recognized academic surgeons. Shaped by leaders who are experts in developing surgical curriculum, the programs within the department offer early specialization options, participation in academic research and hands-on clinical and simulated training.



From left: General surgery residents Nikki Rossetti, MD, and Ariana Naaseh, MD, practicing laparoscopic surgery skills.



WISE Center coordinators Karen Schubert, BS, and Angelia DeClue, CST, with Urology faculty and residents.

## The Department of Surgery congratulates the class of 2020-2021 graduating Chief Residents and Fellows:

### RESIDENCY GRADUATES

#### General Surgery

Darren R. Cullinan, MD, MSCI  
 Gayan S. De Silva, MD, MS  
 Rahul R. Handa, MD  
 Linda J. Schulte, MD  
 Kelly L. Koch, MD  
 Jared M. McAllister, MD  
 Roheena Z. Panni, MD, MPHS  
 Tara R. Semenkovich, MD, MPHS  
 Wen Hui Tan, MD

#### Plastics and Reconstructive Surgery-Integrated

Utku C. Dölen, MD  
 Trina G. Ebersole, MD  
 Teri Nelson Moak, MD

#### Vascular Surgery-Integrated

Brandon D. Downing, MD, PhD

#### Urologic Surgery

Shellee Ogawa, MD, MS  
 Jonathan R. Weese, MD  
 Affan Zafar, MD

### FELLOWSHIP GRADUATES

#### Surgical Critical Care

Kaily Ewing, DO  
 Avian Chang, MD  
 Jordan Kirsch, DO  
 John Madore, MD  
 Ilya Rakitin, MD  
 Cletus Stanton, MD

#### Colon and Rectal Surgery

Kristen Ban, MD, MS  
 Gregory Low, MD  
 Zhifei (Jeff) Sun, MD

#### Minimally Invasive Surgery

William Sherrill, MD

### FELLOWSHIP GRADUATES (Cont.)

#### Breast Oncology

Ashton Brooks, MD

#### Abdominal Transplant

Teresa (Tracy) Rice, MD

#### Vascular Surgery

Ehsan Benrashid, MD  
 Erin Greenleaf, MD, MS

#### Thoracic Surgery

Conor Hynes, MD  
 Simran Randhawa, MD  
 Timothy Lancaster, MD, MS

#### Mechanical Cardiac Support

Siddharth Sarangi, MD

#### Pediatric Surgery

Ryan Antiel, MD, MS

#### Hand, Nerve and Microsurgery

Stahs Pripotnev, MD  
 Manuel Medina, MD

#### Peripheral Nerve Surgery

Alexander Yang, MD, PhD

#### Trauma and Reconstructive Urology

Wesley Baas, MD

#### Minimally Invasive Endourology

Joshua Palka, DO

#### Center for Humanism and Ethics in Surgical Specialties (CHES)

Leah Conant, MD  
 Paul Kepper, MD  
 Jessica Kramer, MD  
 Kelly Vallar, MD

#### Congenital Cardiac Surgery

Jacob Miller, MD

**7<sup>th</sup>**  
 in the United States general surgery  
 residency program\*

**4**  
 residency programs

**19**  
 fellowship programs



The Department of Surgery trains the next generation of surgeons in all surgical specialties. Below are the 2021-2022 trainees.

Residents

GENERAL SURGERY RESIDENCY

Daniel Colchado, MD	PGY 1
Helen Li, MD	PGY 1
Ariana Naaseh, MD	PGY 1
Ifeanyichukwu Okereke, MD	PGY 1
Nikki Rossetti, MD, MSc	PGY 1
Shaleen Sathe, MD	PGY 1
Steven Tohmasi, MD	PGY 1
Catherine Zivanov, MD	PGY 1
Ioana Florea, MD, MPH	PGY 1
Zhiyi (Liu) Liu, MD	PGY 1
Usman Panni, MD	PGY 1
Hamna Shahbaz, MD	PGY 1
Omolade Sogade, MD	PGY 1
Forrest Williard, MD	PGY 1
Yun Zhu (Louisa) Bai, MD	PGY 2
Tiffany K. Brocke, MD	PGY 2
Ahmed Eltahir, MD	PGY 2
William D. Gerull, MD	PGY 2
Angela Lee, MD	PGY 2
Oluseye K. Oduyale, MD	PGY 2
Sophia H. Roberts, MD	PGY 2
Felicia Zhang, MD	PGY 2
Maria Del Pilar Martinez, MD	PGY 2
Javier E. Rincon Briceno, MD	PGY 2
Wahid Abu-Amer, MD	PGY 2
Faiz Gani, MD	PGY 2
Katharine Caldwell, MD, MSCI	PGY 3
Connor Callahan, MD, MSc	PGY 3
Leah Conant, MD	PGY 3
Christian (Corbin) Frye, MD	PGY 3
Matthew Grant, MD, MPhil	PGY 3
Charles (Alston) James, MD	PGY 3
Bradley Kushner, MD	PGY 3
Ebunoluwa Otegbeye, MD, MPH	PGY 3
Eileen Smith, MD	PGY 3
Allie Steinberger, MD, MPH	PGY 3
Erin Andrade, MD, MPH	PGY 4
Ina Chen, MD	PGY 4
Heidy Cos Felipe, MD	PGY 4
Cathleen Courtney, MD	PGY 4
Sandra Garcia Aroz, MD	PGY 4
Meghan Kelly, MD	PGY 4
Jessica Lindemann, MD, PhD	PGY 4
Robert MacGregor, MD	PGY 4
Emily Onufer, MD, MPH	PGY 4
William Chapman, Jr., MD, MPH	PGY 5
Jesse Davidson, MD, MSCI	PGY 5
Jason Gauthier, MD	PGY 5
Ali Khiabani, MD, MHA	PGY 5
Bradley Krasnick, MD, MSCI	PGY 5
Kristen Seiler, MD	PGY 5
Melanie Subramanian, MD, MPH	PGY 5

GENERAL SURGERY RESIDENCY (CONTINUED)

Tsehay Abebe, MD	Lab Resident
Sydney C. Beache, MD	Lab Resident
Cameron Casson, MD	Lab Resident
Julie Clanahan, MD	Lab Resident
Britta J. Han, MD, MEd	Lab Resident
Brendan T. Heiden, MD, MPH	Lab Resident
Annie K. Hess, MD	Lab Resident
Paul M. Kepper, MD, MS	Lab Resident
Martha McGilvray, MD, MSt	Lab Resident
Kenneth F. Newcomer Jr., MD	Lab Resident
Franklin Olumba, MD	Lab Resident
Hannah Phelps, MD	Lab Resident
Jorge G. Zárate Rodriguez, MD	Lab Resident
Merrill Rubens, MD	Lab Resident
Hailey Shepherd, MD	Lab Resident
Kerry Swanson, MD	Lab Resident

PLASTIC SURGERY RESIDENCY

Grace Keane, MD	PGY 1
Caitlin Marks, MD	PGY 1
Abdullah Said, MD	PGY 1
Erin Peterson, MD	PGY 2
Anna Rose Johnson, MD, MPH	PGY 2
Jonah Orr, MD	PGY 2
Margaret (Shea) Harrison, MD	PGY 2
Alexandra Keane, MD	PGY 3
Damini Tandon, MD	PGY 3
Kenan Tawaklna, MD	PGY 3
William Zhu, MD	PGY 3
Danielle J. Brown, MD	PGY 4
David Chi, MD, PhD	PGY 4
Rachael M. Payne, MD	PGY 4
Ema Zubovic, MD	PGY 5
Jordan Bruce, MD	PGY 5
Lauren Jacobson, MD	PGY 5
Andrew Linkugel, MD	PGY 5
Danielle Cooper, MD	PGY 6
Austin Ha, MD	PGY 6
Amelia Van Handel, MD	PGY 6

VASCULAR SURGERY RESIDENCY

Margaret Nalugo, MD	PGY 1
Shirli Tay, MD	PGY 1
Julia Suggs, MD	PGY 2
Brian Sullivan, MD	PGY 3
Momodou Jammeh, MD	PGY 4
Katherine M. Holzem, MD, PhD	PGY 5

UROLOGIC SURGERY RESIDENCY

Kendrick Campbell, MD	PGY 1
James Gross, MD	PGY 1
Jinfeng (Jay) Jiang, MD	PGY 1
Inkkaruch (Amy) Kuprasertkul, MD	PGY 1
Helen Kim, MD	PGY 2
Connor McCormick, MD	PGY 2
Steven Ngo, MD	PGY 2
Daniel Wong, MD	PGY 2
Muhammad (Hassan) Alkazemi, MD	PGY 3
Nimrod B. Gozal, MD	PGY 3
Andrew McLaughlin, MD	PGY 3
Nicholas Pickersgill, MD	PGY 3
Kathryn Agamawi, MD	PGY 4
Shilpa Argade, MD	PGY 4
Grant Henning, MD	PGY 4
Laura Lee, MD	PGY 4
Yifan Meng, MD	PGY 5
Alexander Parker, MD	PGY 5
Carrie Ronstrom, MD	PGY 5

Fellows

SURGICAL CRITICAL CARE

Rami Al-Aref, MD	PGY 6
Ea-sle Chang, MD	PGY 6
Patrick Craft, DO	PGY 6
Reilin Moore, MD	PGY 6
Sumaiya Sarwar, MD	PGY 6
Marguerite Spruce, MD	PGY 6

COLON AND RECTAL SURGERY

Kasim Mirza, MD	PGY 6
Jessica Felton, MD, MS	PGY 6
Pridvi Kandagatla, MD	PGY 6

MINIMALLY INVASIVE SURGERY

Victoria Gershuni, MD, MS, MTR	PGY 6
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HEPATO-PANCREATO-BILIARY SURGERY

Natasha Leigh, MD	PGY 7
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BREAST ONCOLOGY

Irene Israel, MD	PGY 6
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ABDOMINAL TRANSPLANT

Jennifer Yu, MD, MPH	PGY 7
Gregory Martens, MD	PGY 6
Darren Cullinan, MD, MSCI	PGY 6

VASCULAR SURGERY

Genevieve Hayek, MD	PGY 7
Gayana De Silva, MD	PGY 6
Esmaeel (Reza) Dadashzadeh, MD	PGY 6

THORACIC SURGERY

Lauren Barron, MD	PGY 7
Kathryn Engelhardt, MD, MS	PGY 7
Matthew Schill, MD	PGY 7
Whitney Brandt, MD	PGY 6
Linda Schulte, MD	PGY 6
Tara Semenkovich, MD, MPH	PGY 6

MECHANICAL CARDIAC SUPPORT

Antonio Polanco, MD	PGY 7
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CONGENITAL CARDIAC SURGERY

Vinod Sebastian, MD	PGY 7
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PEDIATRIC SURGERY

Andrew Yeh, MD	PGY 7
Paul McGaha, MD, MSc	PGY 6

HAND, NERVE AND MICROSURGERY

Kashyap Tadisina, MD	PGY 7
Robert Teixeira, MD	PGY 7

PERIPHERAL NERVE SURGERY

Fawaz Alotaibi, MD	PGY 7
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TRAUMA AND RECONSTRUCTIVE UROLOGY

Shellee Ogawa, MD, MS	PGY 6
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UROLOGIC ONCOLOGY

Cayce Nawaf, MD	PGY 6
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MINIMALLY INVASIVE ENDOUROLOGY

Brijesh Patel, MD	PGY 6
Mark Biebel, MD, MS	PGY 6

CLINICAL MICROSURGERY

Giorgio Giatsidis, MD, PhD	PGY 7
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“One of the great things about my time at Washington University has been the people. There are faculty here who are passionate about surgical education. We have an incredible administrative support staff who provide the best possible experience for both our residents and our students.”

-Mary Klingensmith, MD

## Mary Klingensmith Named ACGME Senior Vice President for Procedural Accreditation

Mary Klingensmith, MD, has been named Senior Vice President for Procedural Accreditation at the Accreditation Council for Graduate Medical Education (ACGME).

Over more than two decades at Washington University, Klingensmith, who held the Mary Culver Distinguished Professorship, has had a lasting impact on medical education both locally and nationally.

Klingensmith joined the Department of Surgery in 2000, serving as General Surgery Residency Program Director until 2012. With the support of Timothy Eberlein, MD, the William K. Bixby Professor and Chair of the Department of Surgery, Klingensmith established one of the first surgical skills labs in the country. In 2001, Klingensmith founded the lab known today as the Washington University Institute for Surgical Education (WISE). Certified as a Level 1 Accredited Education Institute by the American College of Surgeons (ACS), WISE was among the first labs to offer simulation training outside of the operating room.

“Dr. Eberlein was incredibly encouraging,” says Klingensmith. “He made it my priority to establish a surgical skills lab. It was a great opportunity to make Washington University a leader.”

As Vice Chair for Education in the Department of Surgery, Klingensmith oversaw medical student education, four ACGME-accredited residency programs and 14 fellowships. She led the incorporation of Early Specialization Training in cardiothoracic and vascular surgery, as well as flex-track training in all specialties, allowing residents to create custom training experiences while still meeting all requirements for Board certification.

“Mary has played a transformational role in creating innovative educational programs and strengthening all aspects of education in the Department of Surgery,” says Eberlein. “Her impact transcends the Department of Surgery. She has improved educational programs across the entire School of Medicine through her exceptional leadership and by example of what she has done in our department.”

She has served as a Loeb Teaching Fellow, associate director of the Wood Simulation Center and, from 2016-17, Interim Senior Associate Dean for Medical Education.

In 2018, Klingensmith became founding director of the Washington University Academy of Educators, an institutional collaboration of educators fostering a culture of educational excellence and an institutionally valued community of leaders in health science education.



From left: Paul Wise, MD, Timothy Eberlein, MD, and Mary Klingensmith, MD.

Klingensmith holds multiple national roles in surgery and surgical education through the American Board of Surgery (ABS), ACS, Association for Surgical Education and American Board of Medical Specialties. In 2019, she became ABS Vice President and Editor-in-Chief of the Surgical Council on Resident Education (SCORE).

As Vice President for Procedural Accreditation at the ACGME, Klingensmith will oversee the accreditation process for medical training programs across the country.

“The exciting thing is that all of the accreditation elements are on the table for reconsideration,” says Klingensmith, who will oversee accreditation of surgery, OB/GYN, urology, plastic surgery, neurosurgery and many other specialties. “All of those specialties, and the procedural aspects of other specialties will be my responsibility to represent as a voice regarding what is important to surgical and procedural training when we think about accrediting programs.”

For more than 20 years, Klingensmith has been a departmental, institutional and national leader in surgical education.

“As I reflect on this next phase of my career, I will miss a lot of the work I’ve done in the Department of Surgery, but I’m mostly going to miss the people and how willing they were to listen to what at the time were some crazy ideas,” says Klingensmith. “One of the great things about my time at Washington University has been the people. There are faculty here who are passionate about surgical education. We have an incredible administrative support staff who provide the best possible experience for both our residents and

our students. And then the residents: We’ve been so lucky to attract not only incredibly smart and skilled people, but fabulous human beings. They care deeply about their work, they’re kind to each other and they are kind to our patients. It just makes your day really pleasant to work with these people who are in it for the right reasons.”

The Department of Surgery congratulates Klingensmith on this new opportunity and looks forward to future advances in surgical education. Klingensmith remains on the faculty as Emeritus Professor of Surgery. In recognition of her seminal contributions to surgical education, one of the resident teams will be named in her honor and a new education conference center will be named, “The Mary E. Klingensmith, MD, Surgical Education Center.”



Mark Klingensmith, MD, (sixth from left) and “Team Klingensmith,” a residency alliance and mentorship group named in her honor.





## Washington University Medical Campus

Washington University Medical Campus includes Barnes-Jewish Hospital, St. Louis Children's Hospital, and the Alvin J. Siteman Cancer Center at Barnes-Jewish Hospital and Washington University School of Medicine.

The Washington University Medical Campus is the St. Louis region's epicenter for advanced medical and surgical care. The campus, which is one of the nation's largest academic clinical practices, is home to Barnes-Jewish Hospital, St. Louis Children's Hospital, and the Alvin J. Siteman Cancer Center at Barnes-Jewish Hospital and Washington University School of Medicine.

Supported by Washington University Physicians, the School of Medicine's clinical practice group of more than 1,500 full-time clinicians and surgeons, patients have access to leading-edge treatments as a result of research from one of the top-ranked medical schools in the nation.

The largest hospital in Missouri, Barnes-Jewish Hospital is the only hospital in the St. Louis region to be recognized among the best hospitals in the country by U.S. News & World Report. The facility is a Level 1 Trauma Center and Washington University School of Medicine's dedicated non-profit teaching hospital.

The region's largest and sole pediatric hospital recognized as a Level 1 Pediatric Trauma Center, St. Louis Children's Hospital is consistently ranked among the nation's best pediatric hospitals by U.S. News & World Report. The hospital's sole mission—to do what is right for kids—comes to life through medical discovery, innovative therapies and compassionate care.

An international leader in cancer treatment, research, prevention, education and community outreach, Siteman Cancer Center is the only National Cancer Institute-designated Comprehensive Care Center in Missouri. Doctor offices, testing locations and other cancer services are housed in the 107,422-square-foot Center for Advanced Medicine.

### Clinical Locations:

- Barnes-Jewish Hospital
- St. Louis Children's Hospital
- Siteman Cancer Center
- St. Louis Children's Specialty Care Clinic
- Barnes-Jewish West County Hospital
- Christian Northeast Hospital
- Barnes-Jewish St. Peters
- Progress West Hospital
- Center for Advanced Medicine South County
- Siteman South County
- Memorial Hospital Belleville
- Memorial Hospital East
- St. Louis VA Medical Center



## Meet Me in St. Louis

St. Louis city skyline. Photo by Brad Warner, MD.

Founded in 1764 at the confluence of the Mississippi and Missouri rivers, St. Louis became known as "the Gateway to the West" because of its use as a major transportation center for river and railroad traffic. Over 250 years later, St. Louis has transformed to become a global center for biotechnology and medical research.

Newcomers to the region soon discover that St. Louis is an ideal place to train and pursue an academic career. A leading center for international research and destination for patients seeking excellent care, the city also attracts engineers, entrepreneurs, artists and other innovative professionals.

The Washington University Medical Campus is conveniently located within the city's Central West End, a neighborhood brimming with living, dining and entertainment options that cater to the area's young professionals.

A patchwork of surrounding eclectic neighborhoods are packed with trendy restaurants, bars and shops with historic charm. The easy-to-navigate city makes commuting a breeze and reaching some of the city's world-class attractions even easier.

From the multi-use trails that wind through some of the city's most popular destinations to the enormous applause that pours through the stadiums during national sporting events, there are so many things that make St. Louis a special place to call home.

## Resident Favorites

Residents share their favorite things about living in St. Louis.

### William Chapman, Jr., MD, MPHS

Administrative General Chief Surgery Resident

The Missouri Botanical Garden! Stunning azaleas in the spring, a koi pond that the kids love and a tropical "Climatron" that is the perfect mid-winter reminder that it will one day be warm again! The fact that it's a 5-minute walk from my house and just around the corner from our favorite restaurant, Olio, is an added bonus.

### Carrie Ronstrom, MD

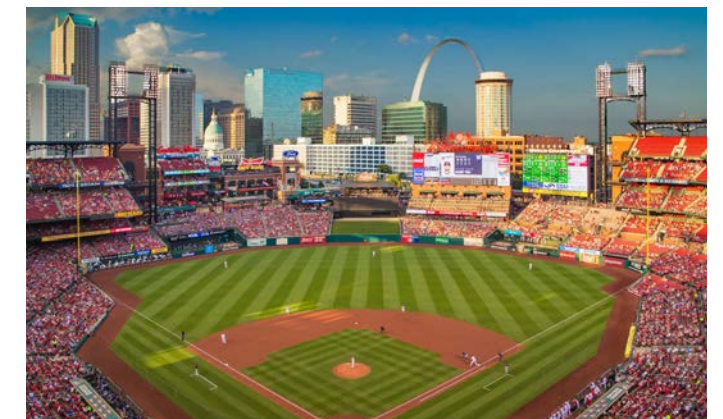
Chief Urology Resident

It's hard to pick only one place in St. Louis as my favorite, but I would have to choose the St. Louis Zoo. I love going to the zoo and pointing out the different animals with my son. It's especially nice that the zoo is free because it doesn't matter if you can only make it for an hour, you can always return!

### Jorge Zarate Rodriguez, MD

General Surgery Resident

St. Louis is a great place to live because it has a small town feel but it still has plenty of stuff to do, with tons of sports and art/music events going on all the time. It's also pretty affordable. It's probably one of the few cities where one can afford to buy a home on a resident's salary!



## Top Places to Go in St. Louis

Busch Stadium located in Downtown St. Louis, which is home to 11 time World Series Champions, the St. Louis Cardinals.

- Forest Park
- Missouri Botanical Garden
- Tower Grove Park
- City Museum
- Busch Stadium



CHAIR'S OFFICE



**Timothy J. Eberlein, MD, Chair**  
William K. Bixby Professor of Surgery; Spencer T. and Ann W. Olin Distinguished Professor; Director, Alvin J. Siteman Cancer Center



**William C. Chapman, MD**  
Eugene M. Bricker Professor of Surgery; Executive Vice Chair



**Maria B. Majella Doyle, MD, MBA**  
Professor of Surgery; Co-Director, Faculty Career Development/Mentoring; Vice Chair for Clinical Affairs



**William E. Gillanders, MD**  
William K. Bixby Professor of Surgery; Vice Chair for Research



**Mary E. Klingensmith, MD**  
Mary Culver Distinguished Professor of Surgery; Vice Chair for Education; Director, Washington University School of Medicine Academy of Health Professions Educators; Associate Director, Simulation Center



**Benjamin D. Kozower, MD, MPH**  
Professor of Surgery; Vice Chair for Patient Safety and Quality Improvement

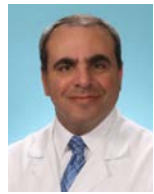


**Tiffany M. Osborn, MD, MPH**  
Professor of Surgery; Director, Leadership and Professional Development



**Mary C. Politi, PhD**  
Professor of Surgery; Co-Director, Faculty Career Development Mentoring

INSTITUTIONAL LEADERSHIP



**Michael M. Awad, MD, PhD**  
Associate Professor of Surgery; Director of the Comprehensive Robotic Surgery Program, BJC HealthCare



**Sam B. Bhayani, MD, MS**  
Professor of Surgery; Holekamp Family Endowed Chair in Urology; Chief Medical Officer, Washington University Physicians; Patient Care Quality and Safety Committee, Board of Directors, Barnes-Jewish Hospital



**Graham A. Colditz, MD, DrPH, MPH**  
Niess-Gain Professor of Surgery; Chief, Division of Public Health Sciences; Associate Director, Prevention and Control, Siteman Cancer Center



**Bettina F. Drake, PhD, MPH**  
Professor of Surgery; Associate Director, Community Outreach and Engagement, Siteman Cancer Center



**Timothy J. Eberlein, MD**  
Bixby Professor and Spencer T. and Ann W. Olin Distinguished Professor; Director, Alvin J. Siteman Cancer Center



**Shaina R. Eckhouse, MD**  
Associate Professor of Surgery; Surgical Leader, BJH Perioperative Services Leadership



**Bruce L. Hall, MD, PhD, MBA**  
Vice President and Chief Medical Officer, BJC HealthCare



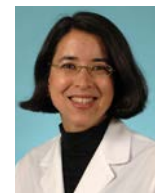
**Steven R. Hunt, MD**  
Professor of Surgery; Surgical Director, Barnes-Jewish Center for Advanced Medicine - South County



**Matthew G. Mutch, MD**  
Solon and Bettie Gershman Professor of Surgery; Chief, Section of Colon and Rectal Surgery; Chief of Surgery, Barnes-Jewish West County Hospital



**Kamlesh B. Patel, MD**  
Associate Professor of Surgery; Medical Director, Perioperative Services, St. Louis Children's Hospital



**Jacqueline M. Saito, MD, MSCI**  
Medical Director for Clinical Excellence, BJC HealthCare



**Brad W. Warner, MD**  
Professor of Surgery; Surgeon in Chief, St. Louis Children's Hospital



**Jason R. Wellen, MD**  
Associate Professor of Surgery; Surgical Leader, Perioperative Services, Barnes-Jewish Hospital

DIVISION OF CARDIOTHORACIC SURGERY



**Ralph J. Damiano, Jr., MD**  
Chief, Division of Cardiothoracic Surgery  
Evarts A. Graham Professor of Surgery

Section of Cardiac Surgery



**Marc R. Moon, MD**  
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John M. Shoenberg Chair in Cardiovascular Disease

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Shuddhadeb Ray, MD, MPHS

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**Pirooz Eghtesady, MD, PhD**  
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Emerson Chair in Pediatric Cardiothoracic Surgery

**Assistant Professors**  
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**Instructor**  
Jacob Miller, MD

DIVISION OF GENERAL SURGERY



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Chief, Division of General Surgery  
Eugene M. Bricker Professor of Surgery

Section of Acute and Critical Care Surgery



**Grant V. Bochicchio, MD, MPH**  
Chief, Section of Acute and Critical Care Surgery  
Harry Edison Professor of Surgery

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Bailey D. Freeman, MD  
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Douglas J.E. Schuerer, MD

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Mark H. Hoofnagle, MD  
Piroska Kopar, MD  
Jessica Kramer, MD  
Jennifer M. Leonard, MD, PhD  
Jerry M. Liddell, DPM  
Nishant Raj, MD  
Jason A. Snyder, MD  
Melissa K. Stewart, MD  
Isaiah R. Turnbull, MD, PhD

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Michael D. Weiss, DPM  
Muhammad Yasin, MD  
Thoi H. Ngo, MD  
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Jessica Staszak, MD, MS

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Travis Arnold-Lloyd, MD  
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Deacon Lile, MD  
Matthew McHale, MD  
Michelle Medintz, MD  
Charlie Srivilasa, MD  
David Testrake, MD



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**Section of Hepatobiliary-Pancreatic & GI Surgery**



**William G. Hawkins, MD**  
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 Neidorff Family and Robert C. Packman Professor of Surgery

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 MCR

**Assistant Professors**  
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 MPHS  
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**Section of Minimally Invasive Surgery**



**Michael Brunt, MD**  
**Chief, Section of Minimally Invasive Surgery**  
 Professor of Surgery

**Associate Professors**  
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 PhD  
 Jeffrey A. Blatnik, MD  
 J. Chris Eagon, MD  
 Bethany C. Sacks, MD,  
 MEd

**Assistant Professors**  
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 MD, MS  
 Shaina R. Eckhouse, MD  
 Sara E. Holden, MD  
 Arnab Majumder, MD

**Section of Surgical Oncology**



**Ryan C. Fields, MD**  
**Chief, Section of Surgical Oncology**  
 Kim and Tim Eberlein Distinguished Chair in Surgical Oncology

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 PhD

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 MHS  
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 Collins, MD, PhD  
 Beth A. Helmink, MD,  
 PhD  
 T.K. Pandian, MD, PhD

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**William C. Chapman, MD**  
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 MD, MBA

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 Surendra Shenoy, MD,  
 PhD

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 Jason R. Wellen, MD,  
 MBA

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**Luis A. Sanchez, MD**  
**Chief, Section of Vascular Surgery**  
 Gregorio A. Sicard Distinguished Professor in Vascular Surgery

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 Brian G. Rubin, MD  
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 PhD

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**C-STARS**  
 Nathan Droz, MD

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 Jun Guo, PhD  
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 MSCI

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 Jesse D. Vrecenak, MD

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**Chief, Division of Plastic and Reconstructive Surgery**  
 Sidney M. Jr. and Robert H. Shoenberg Chair in Plastic and Reconstructive Surgery

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 MSc  
 Marissa M. Tenenbaum,  
 MD

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 Thomas H. Tung, MD

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 Joani M. Christensen, MD  
 Kelly B. Currie, MD  
 John M. Felder, MD  
 Amy Kells, MD, PhD  
 Dennis C. Nguyen, MD,  
 MS  
 Mitchell A. Pet, MD  
 Alison K. Snyder-  
 Warwick, MD

**Assistant Professors (cont.)**  
 Matthew D. Wood, MS,  
 PhD  
 Amanda Westman, PhD  
 Xiaowei Li, PhD  
 Shoichiro Tanaka, MD,  
 MPH

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**Chief, Division of Public Health Sciences**  
 Neiss-Gain Professor of Surgery

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 MPH  
 Feng Gao, MD, PhD, MPH  
 Aimee S. James, PhD,  
 MPH  
 Lisa M. Klesges, PhD, MS  
 Mary C. Politi, PhD  
 Siobhan Sutcliffe, PhD,  
 ScM, MHS  
 Yan Yan, MD, PhD

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 Jingqin Luo, PhD  
 Yikyung Park, ScP  
 Adetunji T. Toriola, MD,  
 PhD  
 Erika A. Waters, PhD,  
 MPH

**Assistant Professors**  
 Su-Hsin Chang, PhD  
 Kia L. Davis, ScD, MPH  
 Ashley J. Houston, OTD,  
 MSCI, OTR/L  
 Jean Hunleth, PhD, MPH  
 Shu (Joy) Jiang, PhD  
 Erin Linnenbringer, PhD,  
 MS

**Assistant Professors (cont.)**  
 Ying Liu, MD, PhD  
 Angela Mazul, PhD, MPH  
 Elizabeth Salerno, PhD,  
 MPH  
 Michelle Silver, PhD, ScM  
 Fei Wan, PhD  
 Ana Baumann, PhD, MA  
 Chongliang Luo, PhD

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**Chief, Division of Urologic Surgery**  
 Robert K. Royce Distinguished Professor in Urologic Surgery

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 Arnold D. Bullock, MD  
 R. Sherburne Figenshau,  
 MD  
 Nupam Mahajan, PhD

**Professors**  
 H. Henry Lai, MD  
 Ramakrishna Venkatesh,  
 MD, MS  
**Associate Professors**  
 Douglas E. Coplen, MD  
 Erica J. Traxel, MD  
 Alana C. Desai, MD

**Assistant Professors**  
 Sunil M. Apte, MBBS, MS  
 Christopher T. Arett, MD,  
 MBA  
 Kefu Du, MD  
 Jason K. Frankel, MD  
 Dane P. Johnson, MD  
 Eric H. Kim, MD  
 Kiran Mahajan, PhD  
 Gregory P. Murphy, MD  
 Charles U. Nottingham,  
 MD, MS

**Assistant Professors (cont.)**  
 Kenneth Sands, DO, MBA  
 Arjun Sivaraman, MD,  
 MBBS, MS, MCH  
 Zachary L. Smith, MD  
 Lewis J. Thomas, IV, MD  
 Gino J. Vricella, MD  
 Paul Kogan, MD  
 Ralph Torrence, MD



DIVISION OF CARDIOTHORACIC SURGERY



**Jacob Miller, MD**  
Instructor, Section of Pediatric  
Cardiothoracic Surgery

**Residency**  
General Surgery, Washington  
University School of Medicine  
in St. Louis

**Fellowship**  
(1) Congenital Cardiac  
Fellowship, Washington  
University School of  
Medicine in St. Louis; (2)  
Thoracic Surgery Fellowship,  
Washington University School  
of Medicine in St. Louis



**Harold G. Roberts, Jr., MD**  
Associate Professor

**Residency**  
(1) General Surgery, University  
of Maryland School of  
Medicine; (2) Cardiothoracic  
Surgery, University of Illinois  
College of Medicine

**Fellowship**  
Adult Cardiac Surgery, Beth  
Israel Hospital, Harvard  
Medical School

DIVISION OF GENERAL SURGERY



**Jordan Kirsch, DO**  
Instructor, Section of Acute and  
Critical Care Surgery

**Residency**  
General Surgery, WellSpan York  
Hospital

**Fellowship**  
Surgical Critical Care,  
Washington University School  
of Medicine in St. Louis



**Lindsay M. Kranker, MD**  
Instructor, Section of Acute and  
Critical Care Surgery

**Residency**  
General Surgery, Wright State  
University, Boonshoft School of  
Medicine

**Fellowship**  
Surgical Critical Care,  
University of Nevada, Las Vegas  
School of Medicine



**Thoi Ngo, MD**  
Assistant Professor, Section of  
Acute and Critical Care Surgery

**Residency**  
General Surgery, Morristown  
Medical Center

**Fellowship**  
Surgical Critical Care,  
Washington University School  
of Medicine in St. Louis



**Jessica K. Staszak, MD, MS**  
Instructor, Section of Acute and  
Critical Care Surgery

**Residency**  
General Surgery, University  
of Tennessee Health Science  
Center

**Fellowship**  
Pediatric Surgical Critical Care,  
Children's Mercy Hospital, St.  
Luke's Hospital

DIVISION OF GENERAL SURGERY (Cont.)



**Teresa Rice, MD**  
Instructor, Section of  
Transplant Surgery

**Residency**  
General Surgery, University of  
Cincinnati

**Fellowship**  
Abdominal Organ Transplant  
& Hepatobiliary-Pancreatic  
Surgery, Washington  
University School of Medicine  
in St. Louis



**Zachary J. Wanken, MD, MS**  
Assistant Professor, Section of  
Vascular Surgery

**Residency**  
Vascular Surgery, Dartmouth-  
Hitchcock Medical Center

**Fellowship**  
Vascular Disease Strategically  
Focused Research Network,  
American Heart Association

DIVISION OF PLASTIC AND RECONSTRUCTIVE SURGERY



**Joani M. Christensen, MD**  
Assistant Professor

**Residency**  
Combined Plastic Surgery,  
Harvard University

**Fellowship**  
Macrovascular Reconstructive  
Surgery, MD Anderson Cancer  
Center



**Xiaowei Li, PhD**  
Assistant Professor (Research  
only)

**Graduate Education**  
Tianjin University (MS,  
Material Science and  
Engineering); Clemson  
University (PhD,  
Bioengineering)

**Fellowship**  
The John Hopkins School of  
Medicine



**Shoichiro Tanaka, MD,  
MPH**  
Assistant Professor

**Residency**  
General Surgery, Ochsner  
Health System

**Fellowship**  
(1) Hand and Microsurgery,  
Christine M. Kleinert Institute  
for Hand and Microsurgery;  
(2) Plastic and Reconstructive  
Surgery, Summa Health  
System



**Amanda M. Westman, PhD**  
Assistant Professor (Research  
only)

**Graduate Education**  
University of Virginia (PhD,  
Biomedical Engineering)

**Fellowship**  
*National Science Foundation  
Graduate Research Fellowship,  
University of Virginia*



DIVISION OF PUBLIC HEALTH SCIENCES



**Ana A. Baumann, PhD**  
Assistant Professor (Research only)

**Graduate Education**  
Universidade de Brasilia (MA, Behavior Analysis); Utah State University (PhD, Psychology - Behavior Analysis)



**Chongliang Luo, PhD**  
Assistant Professor (Research only)

**Graduate Education**  
University of Science and Technology in China (MS, Statistics); University of Connecticut (PhD, Statistics)

**Fellowship**  
*Doctoral Disertation Fellowship, University of Connecticut*

DIVISION OF UROLOGIC SURGERY



**Paul Kogan, MD**  
Assistant Professor

**Residency**  
Urology, University of Iowa Hospitals & Clinics

**Fellowship**  
Robotics Urologic Surgery, Ohio Health Dublin Methodist Hospital

LEADERSHIP TRANSITIONS



**Sam B. Bhayani, MD, MS**  
Sam B. Bhayani, MD, MS, was named Division Chief of Urologic Surgery. Bhayani is the Holekamp Family Endowed Chair in Urology. He has served as Chief Medical Officer of the Washington University Faculty Practice Plan, known as Washington University Physicians, since 2015. He served as Chief of Surgery at Barnes-Jewish West County Hospital from 2012-2018 as well as Chief Medical Officer from 2011-2016. Bhayani is an internationally respected researcher and urologic oncologist, who maintains an active clinical practice focused on the treatment of kidney and prostate cancer.

NEW ENDOWED PROFESSORS



**Michael Brunt, MD**  
Michael Brunt, MD, Section Chief of Minimally Invasive Surgery, was named Pruett Family Professor of Surgery. Brunt received the 2021 Lifetime Achievement Award from the Barnes-Jewish Hospital Medical Staff Association. This award recognizes a surgeon who has made significant contributions over a long and accomplished career at Barnes-Jewish Hospital and Washington University School of Medicine in St. Louis. He also received the Distinguished Alumnus Award from Johns Hopkins University earlier this year.

NEW PROFESSORS OF SURGERY



**Michael Awad, MD, PhD**  
Minimally Invasive Surgery



**Ida Fox, MD**  
Plastic and Reconstructive Surgery



**Erika Walters, PhD, MPH**  
Public Health Sciences



**Adetunji Toriola, MD, PhD**  
Public Health Sciences



## NATIONAL AND INTERNATIONAL ORGANIZATIONS

**Rebecca L. Aft, MD, PhD**

*Jeffrey Moley Professor of Surgery*  
Member, Breast Committee, Alliance for Clinical Trials

**Michael M. Awad, MD, PhD**

*Professor of Surgery*  
Board of Governors, Society of American Gastrointestinal and Endoscopic Surgeons (SAGES)  
Vice President, Association for Surgical Education  
Program Chair, American Foregut Society

**Keith E. Brandt, MD**

*William G. Hamm Professor of Surgery*  
Executive Director, American Board of Plastic Surgery  
Board of Directors, American Board of Medical Specialties

**Michael Brunt, MD**

*Chief, Section of Minimally Invasive Surgery*  
*Pruett Family Professor of Surgery*  
President, Fellowship Council  
Executive Council, Central Surgical Association  
Secretary, SAGES Education and Research Foundation  
2021 Lifetime Achievement Award, Barnes-Jewish Hospital Medical Staff Association  
Distinguished Alumnus Award, John Hopkins University

**William C. Chapman, MD**

*Chief, Division of General Surgery*  
*Chief, Section of Abdominal Transplantation*  
*Professor of Surgery*  
*Eugene M. Bricker Chair of Surgery*  
Executive Vice-Chair, Department of Surgery President, Southern Surgical Association

**Graham A. Colditz, MD, DrPH**

*Chief, Division of Public Health Sciences*  
*Niess-Gain Professor of Surgery*  
Member, National Institutes of Health Council of Councils  
Deputy Editor, Public Health, *Science Advances*

**Ralph J. Damiano Jr., MD**

*Chief, Division of Cardiothoracic Surgery*  
*Everts A. Graham Professor of Surgery*  
Board of Directors, American Association for Thoracic Surgery  
Co-Chairman, Publications Committee, American Association for Thoracic Surgery  
2021 William Glenn Lecture, 2021 American Heart Association Scientific Sessions

**Maria B. Majella Doyle, MD, MBA**

*Professor of Surgery*  
*Distinguished Endowed Chair in Abdominal Transplant*  
President-Elect, The Americas Hepato-Pancreato-Biliary Association

**Bettina F. Drake, PhD, MPH**

*Professor of Surgery*  
Member, Susan G. Komen African American Health Equity Initiative Community Advisory Board

**Pirooz Eghtesady, MD, PhD**

*Chief, Section of Pediatric Cardiothoracic Surgery*  
*Emerson Chair in Pediatric Cardiothoracic Surgery, St. Louis Children's Hospital*  
Member, January 2022-December 2023 Scientific Committee, Pediatric Heart Transplant Society  
Member, Strategic Planning Committee, Pediatric Heart Transplant Society  
Co-Chair, Writing Group for Tetralogy of Fallot in Neonates and Infants, American Association of Thoracic Surgery  
Invited Member, Writing Group on the American Heart Association Pulmonary Hypertension in Congenital Heart Disease Summit  
Invited Member Committee, Pediatric Pulmonary Hypertension Unresponsive to Medical Therapy Clinical Practice Guideline, American Thoracic Society

**Ryan C. Fields, MD**

*Chief, Section of Surgical Oncology*  
*Kim and Tim Eberlein Distinguished Chair in Surgical Oncology*  
Chair, Research Committee, Society of Surgical Oncology  
Chair, Education Committee, American Society of Clinical Oncology annual meeting

**Sean C. Glasgow, MD**

*Associate Professor of Surgery*  
Commander, 932nd Medical Squadron (USAFR), Scott Air Force Base, IL  
Associate Editor, Diseases of the Colon & Rectum

**Beth A. Helmink, MD, PhD**

*Assistant Professor of Surgery*  
Peritoneal Disease Working Group, Society of Surgical Oncology

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Editor, Breast Section, Annals of Surgical Oncology  
Chair, Breast Committee, American Board of Surgery

**Marc R. Moon, MD**

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*John M. Shoenberg Chair in Cardiovascular Disease*  
Director, Center for Diseases of the Thoracic Aorta  
Past President, American Association for Thoracic Surgery

**Matthew G. Mutch, MD**

*Chief, Section of Colon and Rectal Surgery*  
*Solon and Bettie Gershman Chair in Surgery*  
*Professor of Surgery*  
Secretary, Executive Council, American Society of Colon and Rectal Surgery

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Board of Directors, Aesthetic Surgery Education Research Foundation

**G. Alexander Patterson, MD**

*Joseph C. Bancroft Professor of Surgery*  
Editor in Chief, Annals of Thoracic Surgery

**Varun Puri, MD, MSCI**

*Associate Professor of Surgery*  
Member, Planning Committee 2020, American Association for Thoracic Surgery  
Member, Lung Transplant Writing Group - Extracorporeal Support, American Association for Thoracic Surgery  
Member, Scientific Affairs and Government Relations Committee, American Association for Thoracic Surgery  
Member, Grants Review Committee, Thoracic Surgery Foundation

**Gerald L. Andriole Jr., MD**

*Chief, Division of Urologic Surgery*  
*Robert K. Royce Distinguished Professor*  
Richard Williams Prostate Cancer Research Award, American Urological Association

**Christopher T. Arett, MD**

*Assistant Professor of Surgery*  
*Greenlight Center of Excellence designation from Boston Scientific*

## NATIONAL AND INTERNATIONAL ORGANIZATIONS

**Justin M. Sacks, MD, MBA**

*Shoenberg Professor and Chief, Division of Plastic and Reconstructive Surgery*  
Executive Committee, Plastic Surgery Research Council  
Chair, Development Committee, American Society of Plastic Surgeons  
Chair, Technology, Innovation and Disruption Committee, American Society of Plastic Surgeons  
Lead, Comprehensive Reconstruction, American Society of Plastic Surgeons National Meeting  
US Diplomat, European Plastic Surgery Research Council

**Jacqueline M. Saito, MD, MSCI**

*Associate Professor of Surgery*  
Chair, Children's Surgery Data Committee (NSQIP-Pediatric), American College of Surgeons  
Associate Medical Director, Supply and Resource Stewardship, BJC Healthcare  
Co-Lead, Colorectal Surgical Site Infection Pioneer Cohort, Children's Hospitals' Solutions for Patient Safety

**Douglas J.E. Schuerer, MD**

*Professor of Surgery*  
State Chair, Missouri Committee on Trauma

**Nupam Mahajan, PhD**

*Professor of Surgery*  
*Director of Urological Research*  
*Endowed Professor of Urological Research*  
Translational Science Award, Congressionally Directed Medical Research Program, Department of Defense

Career Development Award, American Association of Transplantation

**Jason A. Snyder, MD**

*Assistant Professor of Surgery*  
Vice Chair, Missouri Committee on Trauma

**Alison K. Snyder-Warwick, MD**

*Assistant Professor of Surgery*  
Secretary, Sir Charles Bell Society  
Secretary-Treasurer, Plastic Surgery Research Council

**Marissa M. Tenenbaum, MD**

*Associate Professor of Surgery*  
Board of Directors, American Society for Aesthetic Plastic Surgery

**Adetunji T. Toriola, MD, PhD, MPH**

*Associate Professor of Surgery*  
Chair Person, Executive Committee, ColoCare Study  
Member, Population Sciences Working Group, American Association for Cancer Research  
Member, Cancer, Heart and Sleep Epidemiology B Study Section, National Institute of Health  
Member, Susan G. Komen African American Health Equity Initiative Community Advisory Board

**Brad W. Warner, MD**

*Chief, Division of Pediatric Surgery*  
*Jessie L. Ternberg, MD, PhD Distinguished Professor of Pediatric Surgery*  
Director, American Pediatric Surgical Association Foundation  
Associate Editor, Journal of Pediatric Surgery

**Kiran Mahajan, PhD**

*Assistant Professor of Surgery*  
Translational Science Award, Congressionally Directed Medical Research Program, Department of Defense

**Ruben Nava Bahena, MD**

Career Development Award, American Association of Transplantation  
Career Development Award, American Association of Thoracic Surgery

## NATIONAL AND INTERNATIONAL AWARDS





From left to right: Glover Copher, MD, with Meg White in front of her childhood home. Glover Copher, MD, Dr. Evarts Graham and others taken on February 28, 1935, in front of Mallinckrodt Institute of Radiology. Glover Copher, MD.

## A Lasting Impact

Renowned surgeon-scientist Glover Copher, MD, would oftentimes take his granddaughter, Meg White, on tours of Barnes-Jewish Hospital when she was a child. To this day, she remembers clearly how many people greeted her grandfather as they walked through the halls. “He was beloved. Everyone knew him, from the doctors and nurses to the people in the cafes,” she says.

Dr. Copher’s popularity spoke to his passion for his role as a professor of surgery at Washington University School of Medicine in St. Louis. Copher was driven to make the profession of surgery better, and was known for rarely taking time off. “I enjoy my work so much that every day is a vacation,” he once said.

During his career, Copher published several research projects and pioneered investigations within the field of surgery. Most notably, he helped to discover a new x-ray process, cholecystography, which enabled physicians to examine a patient’s gall bladder without an exploratory operation. As both a dedicated teacher and a proponent of experimentation, Copher was a fervent supporter of involving his students in research.

Ranking alongside Copher’s many contributions to the field of medicine was his philanthropy. In

addition to his own generosity, Copher personally persuaded many other prominent St. Louisans to invest in the hospital and medical school. Early in his career, he saw a need to establish an endowment for research within the Department of Surgery, and thus established the Glover H. Copher Research Fund. Although he passed away in 1970, Copher’s gift will continue to have an impact on the surgical field in perpetuity.

Recently, Copher’s gift funded general surgery resident Eileen Smith, MD, during her time as the inaugural Washington University Institute for Surgical Education (WISE) education fellow.

While most general surgery residents use their research years to pursue translational science or clinical outcomes research, Smith was most interested in surgical education-based studies. Because this is the less traditional route, at first, Smith was concerned about receiving the proper funding for her work, but the resources available through the Copher Research Fund enabled program leadership to establish a surgical education role for her.

During the two-year fellowship, Smith designed and executed curriculum for remote resident education during the COVID-19 pandemic, revitalized the way the program prepared



Top: Eileen Smith, MD. Bottom left: Eileen Smith, MD, and Timothy Eberlein, MD, performing surgery. Bottom right: Eileen Smith, MD, operating DaVinci robot in the WISE Center.

residents for the oral boards, and conducted several education-related research projects. Smith’s changes to the educational structure of the program continue to be used today.

“I feel so grateful to the program for helping make this happen and that we had these funds to support that effort,” says Smith. “Things like this give us the flexibility to build the career that we’re interested in, and it also demonstrates that the department and our culture at the institution prioritizes our educational experience.”

When informed how her grandfather’s funds had been used to improve surgical education within the Department of Surgery, White was delighted. “That’s exactly what he wanted,” she says. “He wanted that lasting impact.”

Thanks to Copher’s leadership and vision for the

future of surgery, the department remains at the forefront of education and innovation. His legacy will live on not only through his many medical advancements, but also through his generous philanthropy.

### To Make a Gift

The Department of Surgery welcomes your support. Ways to make a gift include annual unrestricted giving such as membership in the Eliot Society, gifts for education of residents and fellows, support for research and endowment, and planned gifts and bequests. For additional information please contact the Office of Medical Alumni and Development at (314) 935-9690.





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From left: Luis Sanchez, MD, Grant Bochicchio, MD, MPH, and Justin Sacks, MD, MBA.

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## Surgery

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surgery.wustl.edu

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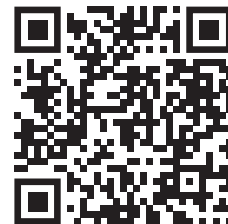
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