The diversity effect

Washington University
School of Medicine

Department of Surgery
Annual Report 2017
Core values shape a department

The Department of Surgery is building a more diverse workforce—and a stronger, more vibrant future. A commitment to nine core values, personified by these surgeons and researchers, is making it possible. Read their stories inside.
Vascular surgery Chief Luis Sanchez, MD, performs a vascular stent graft procedure.
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Letter from the Chair

We embarked on a journey of self-discovery and growth more than a decade ago, when we conducted a faculty survey that revealed the need to improve faculty mentoring and elements of our work culture. At the same time, we recognized the need for greater diversity within our department to reflect the growing numbers of women and underrepresented minorities entering the field of medicine.

Since then, we have committed to creating a work environment in which everyone is valued and supported. We have made great strides in providing faculty leadership and mentorship opportunities, setting expectations for behavior, and also fully participating in an institution-wide diversity and inclusion training program. An organic outcome of this process has been to increase diversity and to become more inclusive in the operating room and other work settings.

According to a report by the Association of American Medical Colleges, medical students were almost evenly divided between men and women in 2016. The number of underrepresented minorities continues to increase steadily.

Our department actively recruits residents and faculty from diverse backgrounds. About 40 percent of last year’s class of general surgery residents were women, and the class overall was a diverse group. We have two women faculty with endowed chairs, and we recently promoted Associate Professors M.B. Majella Doyle, MD, MBA, and Mary Politi, PhD, to lead mentoring efforts and Professor Tiffany Osborn, MD, MPH, to guide leadership and behavioral excellence among faculty.

There are many things we can’t control, but among those we can are the work environment, training approaches and behavioral influences. Being open to others’ observations in the operating room, promoting leadership training and establishing zero tolerance for bad behavior creates not only a more inclusive environment, but also a safer one for patients.

We also aim for the fairest compensation possible, considering research success, clinical work and educational accomplishments.

This report reflects how our changing departmental culture has affected the makeup of the people who choose to build their careers here, and how that growing diversity is in turn shaping our future. Our growing diversity is a welcome change and a strength — a trend we hope will only increase.

Timothy Eberlein, MD
William K. Bixby Professor of Surgery
Chair, Department of Surgery
Washington University School of Medicine
Director, Alvin J. Siteman Cancer Center
In the Division of Plastic and Reconstructive Surgery, each surgery begins with a team meeting, simulated below, to review the upcoming procedure and its necessary materials. The exercise is designed to foster egalitarian relationships, honest communication and, ultimately, patient safety, says Division Chief Susan Mackinnon, MD, far right.
THE DIVERSITY EFFECT

Core Values Shape a Department

The value of diversity is self-evident; when talented people bring varying perspectives to bear on complex problems, innovation flourishes and richer solutions arise. It’s a powerful recipe for addressing today’s toughest medical challenges.

Mirroring a university-wide effort, the Department of Surgery has made a major commitment to embracing several core values that support a culture of diversity. As a result, the department is building an increasingly diverse faculty, a broader research portfolio, and an environment that fosters optimal patient care and faculty satisfaction.

Despite progress, much work remains, through ongoing, intentional effort. The desired outcome: a department well prepared to solve the health care challenges of tomorrow.

CORE VALUES:
- Psychological safety
- Leadership training
- Broad promotion criteria
- Recruiting diversity in all forms
- Addressing disparities
- Fostering leadership
- Work-life balance
- Mentorship
- Serving a diverse population
The division is a national referral center for complex cardiothoracic conditions and has one of the world’s oldest, most respected residency programs. Its faculty advance patient care through pioneering research.
Surgeon Spencer Melby, MD, speaking here with nurse colleague Melita Ware, MSN, ANP-BC, has led an interdisciplinary project applying staff education and closer patient monitoring to reduce the time patients spend on ventilators.
**Targeted efforts reduce time on ventilators**

Washington University cardiac surgeons have significantly reduced the amount of time patients are on ventilation after surgery, an important measure of surgical care quality.

“Evidence suggests that the longer patients stay on ventilation, the higher their chances of getting a ventilator-associated pneumonia,” says cardiac surgeon Spencer Melby, MD. “The risk goes up about 10 percent every day patients are ventilated after surgery. Prolonged ventilation also keeps the patient sedated longer and slows the recovery process.”

Melby and a multidisciplinary quality-improvement team have spent the past two years working to reduce prolonged ventilation — defined by the Society of Thoracic Surgeons as longer than 24 hours — in patients undergoing coronary artery bypass graft (CABG) and aortic valve replacement (AVR). As a result, CABG patients experiencing prolonged ventilation decreased from 15 percent in 2014 to 12.8 percent in 2016, and in AVR patients, the rate decreased from 11.7 percent to 8.7 percent. The average hours spent on ventilation also decreased — from 42.1 hours to 33.7 hours in CABG patients and from 41.2 to 16.7 hours in AVR patients.

Melby, cardiac surgeon Keki Balsara, MD, anesthesiologist Charl De Wet, MD, and cardiothoracic surgery intensive care unit (CT ICU) clinical nurse manager Elaine Thomas-Horton, RN, accomplished the reductions largely through education of physicians, nurses and nurse practitioners about the importance of removing patients from ventilation as soon as possible. Staff in the eICU, a remote monitoring facility, also assist by reminding the CT ICU team when 12 and 18 hours have gone by — logical intervals at which to reassess the need for ventilation.

Washington University cardiac surgeons and anesthesiologists are ahead of the curve on taking patients off ventilators in the operating room before moving them to the CT ICU. At Barnes-Jewish Hospital, about 30 percent of CABG and AVR patients are extubated, or removed from ventilation, in the operating room, compared with about 3 percent of cardiac surgery patients nationally.

“To extubate in the operating room, you have to be comfortable your patient is doing well and that the surgery went well,” says Melby.

Melby and colleagues are now working with surgeons at Christian Hospital and Missouri Baptist Hospital to improve surgical outcomes.
Through basic science research on the immune system, Daniel Kreisel, MD, PhD, left, and Andrew Gelman, PhD, are pursuing methods to advance transplant treatment.
Transplant program gets top outcomes rating

In 2016, as it celebrated two major milestones, the Washington University and Barnes-Jewish Lung Transplant Program was recognized for generating among the nation’s best lung transplant outcomes. The program received the highest rating from the Scientific Registry of Transplant Recipients, an evaluation based on the percentage of patients surviving with a functioning transplanted lung one year after transplant. Only four out of 77 centers received this rating. The program also became one of the few U.S. centers to perform 1,500 total adult lung transplants, and for the year, surgeons performed 83 — a hospital record.

Cardiothoracic surgeon Keki Balsara, MD, presented the center’s long-term outcomes at the American Association for Thoracic Surgery 2017 Annual Meeting, comparing survival rates among patients who received transplants before and after the national system changed in 2005 to allocate lungs based on disease severity rather than wait time. The five-year survival rate increased from 56.8 percent to 68.3 percent, the latter being among the highest survival rates reported to date.

Daniel Kreisel, MD, PhD, surgical director of the Lung Transplant Program, attributes the group’s success to several factors. “We have a strong multidisciplinary approach and a very good supporting staff. Improvements in immunosuppression, perioperative care and treating chronic rejection also benefit patients,” he says.

In addition, the program has a long-standing policy of performing only double-lung transplants, which yield better outcomes than single-lung transplants.

Kreisel and researcher Andrew Gelman, PhD, also advance lung transplant treatment through the National Institutes of Health (NIH)-funded Thoracic Immunobiology Laboratory, based at Washington University. Gelman’s lab discovered that an enzyme therapy currently used to avoid tissue damage at the time of transplant may inhibit the ability of immunosuppressants to promote survival; his lab is testing potential remedies. Kreisel’s research has identified a new immunological pathway that causes lung rejection. And postdoctoral research fellow Hsi-Min Hsiao, PhD, has described cellular mechanisms that contribute to primary graft dysfunction — a syndrome of tissue damage that is a major cause of early death and long-term complications.

“Our collaborative work has yielded experimental tools to help understand what causes lung transplant rejection, information that can be used to identify new approaches to treat it,” says Gelman.
Washington University surgeons at St. Louis Children's Hospital run the world's most experienced lung transplant program, having performed more than 400 lung and heart-lung transplant procedures. Peter Manning, MD, left, and Pirooz Eghtesady, MD, PhD, right, are among those involved.
Rare heart-lung transplant saves teen

A Chicago teenager with severe heart and lung disease was down to his last hope: finding an institution willing to perform a life-saving heart-lung transplant. That hope was fulfilled at St. Louis Children's Hospital, and he is now working his way back to the physical activities he loves.

Spencer Kolman, 15, received the rare transplant at the end of a four-year diagnostic journey. It began when he fell short of breath and collapsed while playing hockey in January 2013. Doctors diagnosed him with asthma and then pneumonia before finding the real culprit: pulmonary fibrosis, or scarring in the lungs. It was the result of chemotherapy that had successfully addressed a cancer Spencer experienced as a toddler.

Living in his bedroom on oxygen last year, his lungs and heart became sicker. A Boston hospital determined he needed a lung transplant, but judged that his health was too poor to undergo the procedure. Spencer and his family then went to St. Louis Children's Hospital and received better news. Pirooz Eghtesady, MD, PhD, chief of pediatric cardiothoracic surgery, and pulmonologist Stuart Sweet, MD, PhD, W. McKim O. Marriott Professor of Pediatrics, said he actually needed a heart-lung transplant, and Eghtesady was comfortable going ahead with the surgery.

Heart-lung transplants are rare for many reasons, says Eghtesady, the Emerson Chair in Pediatric Cardiothoracic Surgery. Suitable organs are in short supply, complication rates are high, and few patients need both organs. “There is not tremendous enthusiasm for the procedure because of bleeding complications and, unfortunately, generally poor outcomes.”

Spencer’s physical condition was deteriorating when he was admitted to the St. Louis Children’s intensive care unit. Thankfully, relief came in about three weeks: The donor organs were on their way.

In a five-hour operation, Eghtesady removed Spencer’s heart and lungs and took the donor heart and lungs — which were attached to each other — and made connections to the airway, aorta, superior vena cava and inferior vena cava.

Today, Spencer is doing well. He thanked his donor family in a letter, telling them he hoped to earn his Eagle Scout award and once again play the trumpet and maybe even hockey.


Division of General Surgery

Acute and Critical Care Surgery • Colon and Rectal Surgery • Endocrine and Oncologic Surgery • Hepatobiliary-Pancreatic and Gastrointestinal Surgery • Minimally Invasive Surgery • Transplant Surgery • Vascular Surgery

The division provides comprehensive subspecialty services, and its robust research efforts continually contribute major advances. Rigorous training programs prepare the next generation of leaders.

Tiffany Osborn, MD, MPH

Leadership training is a cornerstone of the department’s commitment to fostering an inclusive, supportive environment. Surgical/trauma intensivist and emergency medicine physician Tiffany Osborn, MD, MPH, has benefitted from this commitment and now supports development of her faculty peers as co-director of the department’s Leadership and Professionalism Committee. Osborn was an early leader in the evolving combined field of emergency medicine/critical care (EM/CC) and is the nation’s first female EM/CC full professor. She has completed institutional academic leadership training and women-specific programs through the university’s Women Faculty Leadership Institute and Olin Business School. Osborn believes today’s cultural divisions demand strong leadership among physicians. “Learning medical principles is ultimately done alone; applying them requires a team. Inclusivity, service and collaboration are essential physician tools, especially today.”

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64 faculty

All figures FY2016–17 unless otherwise noted
Grant Bochicchio, MD, MPH, left, shown with research coordinator Steve Jarman, RN, BSN, has collaborated with a corporate partner to develop a continuous blood glucose monitor to improve care for critically ill patients.
Continuous glucose monitor aides ICU care

High blood sugar occurs frequently in critically ill patients, resulting from metabolic and hormonal changes that accompany the body’s response to injury and stress. It is also associated with poor clinical outcomes, including infections and other complications, increased hospital length of stay, and death.

To date, measuring high blood sugar in the intensive care unit (ICU) has been a moving target; it takes time to draw blood and get lab results, and the patient’s blood glucose level may change in the interim.

Because of that imprecision and the risk of triggering low blood sugar, many ICUs have moved away from aggressive blood-sugar control, says Grant Bochicchio, MD, MPH, section chief and the Harry Edison Professor of Surgery. To provide a viable solution, his lab has worked intensively over the past decade with U.S.-based OptiScan Biomedical Corporation to create a bedside continuous glucose monitor. He led a recent multicenter trial that found the device to be safe and accurate, and the company has applied for FDA approval.

“Currently, because it takes time to get lab results, you’re treating the patient based on their blood glucose levels from hours ago rather than what it is right now,” says Bochicchio. “Using mid infrared spectroscopy, the new bedside device draws and measures the patient’s blood every 15 minutes and provides an immediate reading. It improves patient care and decreases nurses’ workload.”

Bochicchio says similar point-of-care monitors have been used for years in ICUs. But they do not provide continuous readings and have been shown to be inaccurate in critically ill patients because of this population’s anemia and heavy medication. In the current study, the new device outperformed these point-of-care monitors on every 1- to 3-hour glucose measurement.

Bochicchio reported the trial’s findings in the Journal of Trauma and Acute Care Surgery in June 2017. Other participating centers were Tufts University in Boston, Memorial Hermann Hospital in Houston and Starwood Cardiac Group in Portland, Ore.

Bochicchio is working with OptiScan to test the monitor’s use in measuring lactate and eventually other substances. Controlling lactate levels is a major goal of preventing septic shock, a life-threatening condition that occurs when blood pressure drops dangerously low after infection.

Grant Bochicchio, MD, MPH, consulted with OptiScan Biomedical Corporation on FDA submission of the bedside continuous glucose monitor.
Left to right, radiation oncologist Parag Parikh, MD, medical oncologist Andrea Wang-Gillam, MD, and colorectal surgery Chief Matthew Mutch, MD, have developed a more effective rectal cancer treatment protocol.
Washington University physicians treating rectal cancer have adopted a new treatment regimen that they have shown reduces or eradicates tumors at a significantly higher rate than conventional therapy.

“The prognosis for rectal cancer tends to be worse than for some other cancers we treat because of the anatomic location of the rectum within the pelvis,” says Matthew Mutch, MD, section chief and the Solon and Bettie Gershman Chair for Colon and Rectal Surgery. “The risk of local recurrence is 4 to 10 percent, and distant recurrence occurs in 25 to 40 percent of cases.”

To improve outcomes, Mutch has teamed up with fellow colorectal surgeons, as well as radiation oncologists and medical oncologists, to develop a regimen that is nine weeks shorter than the traditional approach and gets chemotherapy into the patient much sooner.

Traditionally, the order of treatment has been radiation (five weeks), surgery and then chemotherapy — a 46-week process, with chemotherapy beginning roughly at week 23. The new protocol changes the order, starting with short-course radiation (five days), followed by chemotherapy (16 weeks) and then surgery. The regimen takes 37 weeks, with chemotherapy starting at week four.

The multidisciplinary team reported positive results in the International Journal of Radiation Oncology, Biology and Physics: After radiation and chemotherapy, severity of cancer decreased in 71 percent of patients, and 25 percent showed a complete absence of tumor — results significantly better than those seen with the traditional protocol. “We hope to see a reduction in the rate of distant recurrence as well,” says Mutch.

Colorectal surgeons also are standardizing preoperative imaging, cancer staging procedures and multidisciplinary conference planning for rectal cancer patients. Resident William Chapman Jr., MD, will study clinical outcomes, costs and patient-reported outcomes.

Mutch says rectal cancer patients are eligible for a non-surgical approach to care when radiation and chemotherapy eradicate their tumor. In hopes of making this a viable option for more patients, he is working with Washington University biomedical engineers to develop better imaging methods to sharpen the evaluation of the presence or absence of cancer after radiation and chemotherapy.
Resident Jennifer Yu, MD, MPH, right, and faculty surgeon Julie Margenthaler, MD, left, have assessed guidelines that significantly reduce reoperation rates for breast cancer.
New guideline reduces repeat lumpectomies

A new guideline for determining whether enough tissue has been removed during breast cancer lumpectomy procedures significantly reduces the number of reoperations and lowers costs, according to a study by Washington University breast cancer surgeons.*

In a lumpectomy, surgeons remove the tumor plus a margin of surrounding healthy tissue. Pathologists cover the outside of the excised lump in ink, slice it, and examine the slices under a microscope to determine the size of the margin. If the margin is too small, the patient undergoes a second operation to remove more tissue.

Until recently, there has been disagreement about how wide that margin needed to be. Then in 2014, the Society of Surgical Oncology (SSO) and American Society of Radiation Oncology (ASTRO) issued a consensus guideline known as the “no ink on tumor” standard. Under this guideline, if there is no ink on the tumor, a second operation is unnecessary; wider margins do not lower the risk of recurrence.

“We adopted the standard quickly,” says breast surgeon Julie Margenthaler, MD. “In addition to the potential for cost savings, it represents a big improvement in quality of care. Second surgeries cause anxiety, lost time from work and delays in starting chemotherapy andradiation.”

To measure cost savings, Margenthaler and general surgery resident Jennifer Yu, MD, MPH, reviewed 1,506 cases conducted between 2010 and 2013, pre-guideline, at Barnes-Jewish Hospital. They found that, had the new guideline been in place, it would have avoided 87 reoperations at a total cost of roughly $195,000 — reducing the rate of reoperations by 5.6 percent.

“We will never get the reoperative rate down to zero, because we don’t have anything in the operating room to measure margins,” says Margenthaler. “Despite everything you do, some tumors will still have positive margins. But under the new guideline, we have reduced our rate of reoperation from about 20 to 30 percent to about 10 percent, which provides a significant reduction in cost and anxiety over past practices.”

New faculty member Chet Hammill, MD, MCR, is pioneering the use of laparoscopic and robotic techniques to perform major liver and pancreas surgeries.
Surgeons forge the last laparoscopic frontier

Minimally invasive surgery has become the standard of care for most general surgical procedures. Now Washington University surgeons are leading the effort to introduce these techniques to general surgery’s last laparoscopic frontier: major liver and pancreas surgeries.

“Minimally invasive liver and pancreas surgeries are not very widespread because these are such major operations,” says Chet Hammill, MD, MCR, who joined the faculty in March 2017. “But they’re gaining traction.”

As the former director of hepatobiliary and pancreatic (HPB) surgery for the Legacy Health System in Portland, Ore., Hammill has extensive experience with laparoscopic liver and pancreas surgeries, including distal pancreatectomy, a procedure for treating cancer in which the surgeon removes the tail of the pancreas. He is eager to share his expertise by not only performing these surgeries but also training his fellow HPB-GI surgeons at Barnes-Jewish Hospital to use the same advanced techniques.

“There are good data that show you get the same health outcomes with a minimally invasive distal pancreatectomy as you do performing the open procedure,” says Hammill. “When done laparoscopically, you get the benefits of less pain and blood loss, shorter hospital stay and quicker return to function. These patients typically go home one or two days after surgery compared to four or five days with an open procedure.”

The section’s surgeons are in the early stages of developing a minimally invasive approach for the Whipple procedure, performed to treat pancreas cancer. In this major operation, the surgeon removes the head of the pancreas, gallbladder, part of the stomach, part of the small intestine and the bile duct. For the open procedure, mortality at high-volume centers is 3 percent. But Whipple patients have a 40 percent surgical complication rate, and their rate of survival from the cancer is low.

As a result, improving quality of life for Whipple patients is a high priority for the section’s surgeons. Recently, they implemented a new patient care protocol that emphasizes patient education, an earlier return to activity and normal diet, and improved pain management.

Surgeons perform about 100 Whipple surgeries a year at Barnes-Jewish Hospital.

A GENETICALLY ENGINEERED, immunodeficient mouse model under development by Ryan Fields, MD, and a multidisciplinary team could enable cancer specialists to provide more effective care. Researchers inject part of a patient’s tumor and bone marrow into the model, then test how the tumor responds to various therapies. If validated, the model could help cancer specialists choose treatments tailored to each patient. Fields, pictured above with research technician Ye Bi, is testing the model in melanoma patients, but it could be applied to all cancers. The research is supported by a National Institutes of Health (NIH) R01 grant; co-investigators include Robert Schreiber, PhD, professor of pathology and immunology, researchers at the Elizabeth H. and James S. McDonnell III Genome Institute at Washington University, and collaborators at Yale University and The Jackson Laboratory.

A SPORE GRANT (Specialized Programs of Research Excellence) received in June 2016 is allowing researchers to take their first steps in developing drugs and immunotherapies to treat pancreatic ductal adenocarcinoma (PDAC). Clinical trials will test a combination of drugs that inhibit the survival pathway of certain cancers, as well as a personalized pancreas cancer vaccine. William Hawkins, MD, HPB-GI surgery section chief, is principal investigator of the $10.4 million grant funded by the National Cancer Institute.

FORMER CHIEF RESIDENT Dominic Sanford, MD, MPH, who will join the HPB-GI surgery faculty in 2018, coordinated a clinical trial comparing video-based patient instruction before hospital admission and standard instruction during hospital stay in pancreas cancer patients. The trial uses readmission rates and patient-reported outcomes to measure success.
Jeffrey Blatnik, MD, left, and Michael Awad, MD, PhD, right, are among a small but growing number of surgeons around the country pioneering the use of incisionless procedures to address swallowing disorders and other conditions.
Incisionless surgery gains ground

Jessica Philips, a 28-year-old retail store manager from St. Peters, Mo., suffered for 10 years with swallowing problems that grew progressively worse, until she had trouble consuming any food at all. In March 2017, Jessica was diagnosed with achalasia, a rare swallowing disorder in which the esophagus is unable to move food into the stomach.

The next month — before she could get treatment for the condition — Philips was admitted to Barnes-Jewish Hospital with dehydration. There, she underwent a per oral endoscopic myotomy (POEM), a surgical procedure for achalasia performed via endoscope through the mouth.

Philips’ surgeons, Jeffrey Blatnik, MD, and Michael Awad, MD, PhD, report that patients typically feel no pain from the POEM procedure, in which surgeons relax the muscle that connects the esophagus to the stomach.

“I can eat a regular diet and am sleeping now, the best in years,” says Philips.

POEM is a relatively new, less-invasive alternative to the long-standing conventional choice, the Heller myotomy, in which surgeons access the esophagus through abdominal incisions; originally performed as an open surgery, the laparoscopic Heller surgery has been the procedure of choice since the 1990s. Japanese surgeon Hirano Inoue, MD, performed the first POEM in 2009, and since then the popularity of the procedure has grown. It has a similar success rate as Heller myotomy, with about 95 percent of patients having a significant, long-term improvement in swallowing. Still, it is a highly technical procedure, and a limited number of U.S. centers offer it.

Awad performed Barnes-Jewish Hospital’s first POEM with an interventional endoscopist from the Division of Gastroenterology in 2013. He and Blatnik now perform the procedure together.

“Two- and three-year follow-up in U.S. case studies and longer-term Japanese studies show equivalent outcomes to laparoscopic Heller myotomy,” says Blatnik. “For certain populations, POEM is more effective because you can cut the muscle over a greater length of the esophagus.”

POEM may be just a start for incisionless surgery in the Section of Minimally Invasive Surgery. Awad is looking at a similar treatment for gastroparesis, a disorder that slows or stops the movement of food from the stomach to the small intestine.
Jason Wellen, MD, MBA, right, and his surgical team harvest a kidney from a live donor. Wellen and colleagues want to make living kidney donation easier and more common.
Kidney transplant focus shifts to living donors

Kevin Hamilton, 59, underwent a kidney transplant at Barnes-Jewish Hospital in March 2016 through a national paired kidney exchange after tests determined that his wife, Barbara, 58, was an incompatible donor. In this “kidney swap,” Kevin and Barbara exchanged kidneys with another donor/recipient pair: Kevin received a kidney from a donor in South Carolina, and Barbara’s went to a recipient in Oregon.

Kevin, who had chronic kidney disease, was two months away from needing dialysis and likely would have waited three to five years for a kidney transplant from a deceased donor. With his new kidney, Kevin is now doing well and is out swinging a golf club again. Barbara also is faring well and is glad she was able to help her husband.

Success stories such as this are playing out more and more often at Barnes-Jewish, as the transplant program employs multiple ways to find living donors.

“We have really changed our culture to focus on living donation,” says Kidney Transplant Director Jason Wellen, MD, MBA. Their efforts include encouraging patients to find their own living donor. “If you don’t have a living donor, help us find someone to be your champion. Find an outgoing church member or sibling. Let them ask for you.”

The effort is worthwhile, says William Chapman, MD, section chief and the Eugene M. Bricker Professor of Surgery. Kidneys from living donors are generally better quality, and circumventing the long wait for a deceased donor may allow patients to avoid dialysis, which carries its own risks.

If blood work determines that a potential living donor is incompatible, the recipient has several options: a transplant from an ABO-incompatible donor, in which the recipient receives medical treatment before and after transplant to lower the risk of organ rejection; a paired exchange through a Barnes-Jewish database; or a national paired exchange.

The kidney transplant program also has stepped up efforts to make the kidney donor process more donor friendly. Barbara recalls the experience as “wonderful.” The program has since expanded the number of clinic days per week, gathered input from donors about their donation experiences, and developed an early recovery after surgery protocol that improves pain management.
Vascular surgeon Patrick Geraghty, MD, and resident Meghan Kelly, MD, examine patient Beth Roper.
Jeffrey Jim, MD, MPH, above, center, trains other vascular specialists from around the country to perform transcarotid artery revascularization (TCAR), a minimally invasive procedure to open blocked carotid arteries in patients whose poor health or advanced age makes the traditional open surgery too risky.

The two carotid arteries in the neck supply blood to the brain and can become blocked with plaque; if left untreated, blockages can stop blood flow, and plaque debris can dislodge to the brain, causing a potentially disabling stroke. In the procedure, surgeons deliver a stent directly into the carotid artery from a small incision in the neck — a safer and shorter route than delivering via the groin. Washington University was one of 25 institutions around the world to test TCAR, which is now FDA-approved.

A CLINICAL TRIAL at Washington University School of Medicine and two other U.S. centers is evaluating a branched endovascular graft for treating aneurysms and aortic dissections in the ascending aorta and aortic arch. Other stent devices — which also have been tested at Washington University — can be used in the aortic arch but have limited applicability.

The five-year residency program in vascular surgery graduated its first resident, John Ohman, MD, who has joined the faculty. The residency provides a shorter, more focused alternative to completing both a general surgery residency and vascular surgery fellowship. Graduating fellow Senthil Jayarajan, MD, MS, also joined the faculty and will offer expertise in analyzing quality and other health-care data.
Division of Pediatric Surgery

The division offers robust treatment in trauma and congenital conditions, conducts basic science and clinical investigations to address short-gut syndrome and other conditions, and attracts top fellowship candidates.

**30** clinical research studies

**1.4 million** research grants

**6** faculty

**5,948** outpatient visits

**3,376** total procedures

**16** peer-reviewed publications 2016

**CORE VALUE:**

**Broad promotion criteria**

Brad Warner, MD

To attract and retain faculty of diverse backgrounds and talents, the department embraces promotion criteria that reward contributions in any of its three missions: education, patient care and research. In the Division of Pediatric Surgery, faculty activities run the gamut. In the clinic, interests range from trauma prevention to fetal surgery; research involves basic science, clinical and comparative effectiveness studies; teaching efforts include surgical and lab training of fellows and residents. As division chief, Brad Warner, MD, encourages faculty in all pursuits. Surgeon Jacqueline Saito, MD, MSCI, has had the freedom to pursue training and leadership positions in patient safety and quality improvement (PS/QI). She works as an outcomes physician in the BJC HealthCare Center for Clinical Excellence and gives back to the division through PS/QI projects. Warner also jumps in to support newly recruited surgeon Jesse Vrecenak, MD, as she performs large fetal intervention cases. “You have to support your team,” says Warner.
Patients such as Cole Chrismo, successfully treated for a life-threatening esophageal abnormality, will benefit from a research consortium through which investigators share data on rare childhood conditions.
Institutions join forces to treat rare conditions

At just four years of age, Cole Chrisco has faced more health challenges than most people face in a lifetime. Immediately after his birth at a suburban St. Louis hospital, Cole was diagnosed with a rare, life-threatening abnormality of the esophagus and transferred to St. Louis Children’s Hospital. There, surgeon Jacqueline Saito, MD, MSCI, performed a life-saving operation within his first 24 hours.

The condition she corrected was esophageal atresia/tracheoesophageal fistula (EA/TEF), in which the upper and lower esophagus do not meet, and the lower esophagus connects to the windpipe instead of the upper esophagus. In the four years since that initial surgery, Cole also has been treated for a heart condition, narrowing of the esophagus, an allergic/immune condition called eosinophilic esophagitis, and other serious medical issues. His recovery has been strong.

“He’s doing very well,” says Elizabeth Chrisco, Cole’s mother.

In treating patients such as Cole who have EA/TEF or other rare conditions, Saito draws not only from her surgical training and experience, but also from her participation in the Midwest Pediatric Surgical Consortium (MWPSC),* a group of 11 Midwestern academic medical centers focused on improving care of rare conditions through research. Saito and St. Louis Children’s are charter members.

In December 2016, the consortium published a retrospective study of 396 EA/TEF cases treated at member hospitals — the largest report of the condition to date. The study identified potential opportunities for improved care related to the use of nasogastric tubes during surgical treatment.

“This is a study that a single center would have difficulty performing in a meaningful way,” says Saito. “The consortium will compare four treatment approaches and monitor the outcomes in a future quality-improvement study.”

The MWPSC also is conducting clinical studies on management of collapsed lung, congenital cystic lung malformations and gastrochisis, a condition in which the bowel pushes through a hole in the abdominal wall.

In addition, it has funding from the Patient-Centered Outcomes Research Institute to study the costs and outcomes of a non-surgical treatment of acute appendicitis. The approach could represent an improved and more cost-efficient way to treat some patients.

*Other MWPSC centers are Children’s Hospital of Wisconsin, Children’s Mercy Kansas City, Cincinnati Children’s Hospital Medical Center, Indiana University, Nationwide Children’s Hospital, Northwestern University, University of Chicago, University of Louisville, University of Michigan and University of Wisconsin - Madison.

SAVING THE LIVES OF CHILDREN with short bowel syndrome (SBS) is one aim of the research lab of Division Chief Brad Warner, MD. SBS, characterized by a lack of functional small intestine, is fatal in 30 to 40 percent of cases, with 60 percent of those fatalities thought to result from liver disease — a major complication of SBS. Until recently, experts attributed this fatal complication to the intravenous feeding children with SBS receive. But Warner’s lab found that surgical intestine removal alone is a significant cause of liver disease in these patients and that oral antibiotics prevent liver injury. Their findings, published in the journal Surgery, open the door for using not only oral antibiotics but prebiotics, probiotics or fecal transplantation to help avert liver disease. Warner is pictured above with medical student Shirli Tay, left, and general surgery resident Lauren Barron, MD.

A TOP-TIER FELLOWSHIP program is the result of several steps taken over the past decade in the division, including obtaining American College of Surgeons (ACS) trauma verification, lining up top speakers for the Jessie Ternberg Visiting Professorship and preparing lab residents to present research findings at national meetings. In 2017, the pediatric surgery fellowship had 100 applicants for a single position.

JESSE VRECENAK, MD, joined the faculty after completing a pediatric surgery fellowship at Children’s Hospital of Philadelphia. She has established a basic science laboratory investigating hematopoietic stem cell transplantation, a treatment that could prevent blood diseases such as sickle cell anemia, thalassemia or spherocytosis. Vrecenak also will be the surgical director for the fetal care program.
CORE VALUE:
Recruiting diversity in all forms

Ida Fox, MD

The department fosters excellence in part by recruiting diversity in all forms. The Division of Plastic and Reconstructive Surgery is a prime example, with its diversity of gender, age, ethnicity and research interests, from bench to bedside. Drawing from the mentorship of Division Chief Susan Mackinnon, MD, plastic and reconstructive surgeon Ida Fox, MD, has become a national leader in nerve transfers to restore arm and hand function in patients with spinal cord injuries; she has actively shared her skills with colleagues nationwide. She recently began collaborating with researchers at Stanford University on a multicenter study of nerve and tendon transfers. Fox, who was the only female resident in her plastic surgery residency, says she feels at ease in a division where everyone is unique. “I can focus on my family, colleagues, residents and students — and clinical care.” Now a mentor herself, she tells residents her high standards are meant to help them achieve their best.

Division of Plastic and Reconstructive Surgery

The division is dedicated to improving patient care through basic and clinical research. It is known worldwide for peripheral nerve transfers and other advanced treatments and offers leading residency and fellowship training.

- 56 clinical research studies
- $1.7 million research grants
- 13 faculty
- 11,993 outpatient visits
- 32,421 total procedures
- 48 peer-reviewed publications

All figures FY2016–17 unless otherwise noted
Surgeon Amy Moore, MD, and biomedical engineer Matthew Wood, PhD, are developing new approaches to avoid the nerve pain that is a common complication of amputation.
Technique addresses amputee nerve pain

Since 2001, U.S. soldiers have undergone more than 2,200 major upper- and lower-limb amputations because of war injuries. But their problems don’t end with the fitting of a prosthesis and care of the residual limb. Pain typically persists.

The pain comes from neuromas — balls of regenerated nerve cells that form on the end of a cut nerve. Neuromas are a frequent complication of the most common amputation technique, called traction neurectomy, which involves cutting the nerve and relocating the remaining nerve ending to an area more protected by muscle and soft tissue. If the nerve ending regenerates in a disorganized way, it forms a neuroma.

“These service members get their amputations in the battlefield or at a foreign military hospital,” says Amy Moore, MD, a Washington University plastic and reconstructive surgeon at Barnes-Jewish Hospital who both treats and studies neuromas. “They can develop painful neuromas and then require a corrective surgery before they can wear a prosthesis.”

She and her colleagues found a potential solution while studying a different but related topic: the process of using chemically processed nerve tissue to bridge gaps in injured nerves. In the lab, they noticed that processed grafts seemed to accelerate and then slow the nerve growth that, in this situation, is desirable for re-establishing nerve function. They hypothesized that these processed grafts, attached to nerve endings in amputations, might help control the nerve regeneration that leads to neuromas.

In 2016, she received a grant from the Department of Defense to study the possibility.

Division Chief Susan Mackinnon, MD, the Sydney M. Jr. and Robert H. Shoenberg Chair in Plastic and Reconstructive Surgery, developed the necessary surgical technique. She and Moore have used it in about 40 people, with initial success.

Moore is collaborating with researchers at Walter Reed National Military Medical Center and the Uniformed Services University of the Health Sciences, both in Bethesda, Md., to test the technique in animal models through microscopic study and by monitoring the blood for substances that indicate pain. The long-term goal is a clinical trial.

If successful, their work could benefit more than 2 million U.S. citizens living with limb loss and those with neuromas caused by other nerve conditions.

SURGEONS WORLDWIDE learn new techniques in peripheral nerve surgery from Washington University surgeons through the division’s online education tools and in-person visits to St. Louis. Ecuadorian hand surgeon Marco Yanez, MD, visited in April 2017, and division surgeon John Felder, MD, traveled to Ecuador in fall 2017 to perform surgeries with him and conduct training. Yanez wants to learn more about brachial plexus and nerve-transfer surgeries to help patients in his country with debilitating limb injuries. He and others can also reference a new educational website called PASSIO (passioeducation.com), developed by Division Chief Susan Mackinnon, MD, and interactive surgical education specialist Andrew Yee. The website builds on an earlier website (nervesurgery.wustl.edu) that instructed military surgeons in treating limb injuries. Felder, Yanez and Yee (left to right) are pictured above.

FOREGOING HIERARCHY, new practices in the division’s operating rooms foster the open communication and personal accountability that is essential for patient safety. Before surgery, team members introduce themselves by first name and role. The surgeon reminds the team that the patient is the most important person in the room, and all team members refer to each other by first name. On a whiteboard, a medical student or intern writes patient data; the senior resident writes the surgical steps; and the surgeon lists needed equipment so the nursing team is aware of special requirements and has them ready to go.

A DECISION-SUPPORT TOOL under development by public health sciences researcher Mary Politi, PhD, and plastic surgeon Terence Myckatyn, MD, is designed to enable physicians and patients to make sound decisions about breast reconstruction based on clinical evidence and patient preferences.
Core Value: 
Addressing disparities

Bettina Drake, PhD, MPH
Addressing health care disparities through research and community engagement is a core value of the School of Medicine, the Department of Surgery and its Division of Public Health Sciences. The work of epidemiologist Bettina Drake, PhD, MPH, exemplifies these values. She co-leads the Prostate Cancer Community Partnership, which promotes prostate cancer screening among African-American men. She also develops epidemiologic studies in this high-risk group to identify modifiable factors that can be addressed through intervention or educational tools. The nature of the division’s research is a strong draw for faculty who are members of underrepresented minorities, both within the division and across the school. “It’s not just faculty, but staff that’s diverse,” says Drake. “That provides a welcoming environment for faculty candidates, post-docs and applicants to our master’s program who are underrepresented minorities.” The division’s expertise also has attracted collaborators school-wide.

The division conducts multidisciplinary research, education and outreach efforts to prevent cancer and other major diseases, promote population health and improve the quality of and access to health care.

70 clinical research studies
$4.0 million research grants
170 peer-reviewed publications
19 faculty
16 graduates 2017
24 currently enrolled
3,531 patients in 3 interventional trials 2016–17

All figures FY2016–17 unless otherwise noted
Postdoctoral research scholar Marquita Lewis, PhD, left, and faculty member Aimee James, PhD, MPH, are studying how low-income Missourians cope with the inability to pay for health care.
Study explores impact of inability to pay

In a 2014 study, conducted after implementation of the Affordable Care Act (ACA), the Henry J. Kaiser Family Foundation reported that low-income Missourians still struggled to afford medical costs. A third of those enrolled in MO HealthNet, the state Medicaid program, were not confident they could afford usual or major medical costs. Among uninsured Missourians, more than three quarters could not afford usual medical costs, and nine in 10 reported they were unable to pay major medical costs.

Public health sciences researcher Aimee James, PhD, MPH, says the inability of low-income people to pay medical costs and the resulting lack of adherence to medical treatment plans is a long-standing problem that has remained relatively constant in Missouri, a state that did not expand Medicaid under the ACA. She hopes her work funded by a new grant will help the uninsured and underinsured — along with their providers — find solutions.

“We still have patients who make too much for Medicaid and too little for the ACA subsidies,” says James. “With the insured, there are still co-pays and medications. We decided to try to address these issues.”

Under a grant from the National Institute on Minority Health and Health Disparities, James and her coworkers are recruiting patients with one or more chronic health conditions at federally supported health centers and from the community at large. The researchers will survey study participants about financial strain and the strategies patients use to follow their doctors’ instructions. Are they taking one medication but not another? Are they going to the food pantry instead of the grocery store to save money? Are they skipping their medicines altogether?

The next steps will be making health providers more aware of their patients’ dilemmas and developing an intervention program that helps bring patients and providers together to discuss options. An end goal will be a resource guide and strategic intervention to close the gaps.

“I would love to test the findings in a larger trial,” says James. “Is there time for physicians and patients to have longer conversations about less expensive prescriptions and other alternatives? We would like to make that happen.”
Division of Urologic Surgery

Division faculty treat all urologic cancers and conditions and provide outstanding residency and fellowship training. Faculty research efforts have contributed major advances in the early detection and treatment of prostate cancer.

CORE VALUE: Fostering leadership

Sam Bhayani, MD

Urologic surgeon Sam Bhayani, MD, is a product of concerted departmental efforts to build successful leaders and provide leadership opportunities. After completing his medical degree and surgery residency training at Washington University, he was a busy clinician and internationally known researcher for many years, then recognized he wanted to do more. With the support of Department Chair Timothy Eberlein, MD, and Business Affairs Executive Director Jamie Sauerburger, he took on leadership roles at Barnes-Jewish West County Hospital, including serving as chief medical officer (CMO). Now he is CMO of Washington University Physicians, among the nation’s largest academic clinical practices. In this major administrative role, he advises 1,361 physicians in patient safety, patient satisfaction and other issues. Bhayani, the Holekamp Family Endowed Chair in Urology, says the department gave him the foundation to achieve as a leader, including his work to improve access to health care in St. Louis.

Clinical research studies

59

Research grants

$2.7 million

Faculty

15

Patient care

25,022 outpatient visits

19,049 total procedures

Peer-reviewed publications

71

All figures FY2016–17 unless otherwise noted
Through a National Institutes of Health (NIH) grant, urologist Alana Desai, MD, and colleagues are working with investigators at four other institutions to improve stone disease management and prevention.
Studies address stone disease pain

Urologist Alana Desai, MD, hears patients with urinary stone disease describe the accompanying pain as the worst they have ever experienced; women report that it is more painful than childbirth. Yet funding and research studies on how to alleviate this pain and prevent recurrence have been limited.

The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) broke new ground when it formed a funded network of investigators at Washington University and four other institutions to establish the Urinary Stone Disease Research Network to focus on management and recurrence of stone disease. The NIDDK grant will fund observational studies on hydration practices and the use of ureteral stents. The agency also will set up a biorepository to collect specimens.

Desai and fellow Washington University urologist H. Henry Lai, MD, co-principal investigators, both treat patients with urinary stone disease.

“Our goal in the hydration trial is to study hydration effect on recurrence of stone disease in adults and children,” says Desai. “We know that increasing fluid intake reduces the risk of recurrent stones. We will look at ways to maintain that over the long term with a multi-component behavioral intervention program.”

Desai will lead the trial in patients from Barnes-Jewish Hospital and St. Louis Children's Hospital, comparing a control group given standard care with a treatment group that receives incentives to take additional fluid each day and guidance from a behavioral therapist if they do not meet their goals.

Some patients also suffer severe pain and discomfort from stents placed in the ureter after endoscopic stone surgery. Urgency or frequent urination may accompany this pain. Lai will conduct a study to identify factors that predict which patients will experience these issues, information that could influence treatment decisions and patient counseling.

Washington University and the other centers will contribute blood, urine and microbial samples to a central NIDDK biorepository, which is the first in the country for stone disease.

Other centers in the NIDDK study are Duke University, the University of Pennsylvania, the University of Texas Southwestern and the University of Washington.
Residents and fellows benefit from exposure to a large and diverse patient population at nationally ranked hospitals. Trainees enjoy strong mentorship from faculty who are leaders in their fields.

- Leisha Elmore, MD

Institutional support for work-life balance fosters work satisfaction among faculty, allowing them to contribute on flexible terms. General surgery resident Leisha Elmore, MD, has extended this departmental core value to the trainee level through her award-winning research on gender differences in burnout among U.S. general surgery residents. Her research abstract, reporting results from her national survey of residents, garnered an award at the 2016 Academic Surgical Congress. A key finding: the rate of burnout for women went up when they had a partner or a partner and children, while the rate of burnout decreased for men under the same circumstances. Women and men also exhibited different signs of burnout. Elmore reports residents help each other through nanny sharing and other means; they also draw from senior residents, alumni and faculty for both career and life advice. Wellness initiatives to enhance resident quality of life also are under way.
Associate General Surgery Residency Program Director Jason Wellen, MD, MBA, second from left, discusses a case with residents Kelly Koch, MD, Bola Aladegbami, MD, and Shuddhadeb Ray, MD, left to right.
The General Surgery Residency has stayed a step ahead of regulatory requirements for reducing duty hours and trends in skills training, simulation and curriculum development. Efforts to create a culture of patient safety and quality improvement (PS/QI) follow a similar trajectory: The residency was poised to meet recent Accreditation Council for Graduate Medical Education (ACGME) guidelines as the accreditation body rolled them out.

“The ACGME General Surgery Milestones require that residents have experience in PS/QI, and the higher-level milestones require them to be actively involved in projects to improve patient care,” says Residency Program Director Paul Wise, MD.

Multiple layers have emerged as Wise, Associate General Surgery Residency Program Director Jason Wellen, MD, MBA, and department faculty continue to build a residency culture in which PS/QI is a central focus:

- The residency has a curriculum that includes lectures on principles of PS/QI every year. Another four lectures on topics such as problem-based quality improvement and the elements of a patient-safety culture occur over a span of two years. Both residents and faculty attend the presentations.
- Morbidity and mortality (M&M) conferences, held weekly among faculty and trainees to discuss patient-care mistakes, no longer focus solely on poor outcomes, but also on near misses, which present an opportunity for quality improvement. Residents create fishbone or Ishikawa diagrams to visualize contributing factors and identify root causes.
- All residents and fellows in the Department of Surgery are required to participate in PS/QI projects during their training. In addition, they are encouraged to present their projects at the department’s annual PS/QI poster session.
- As part of the American College of Surgeons National Surgical Quality Improvement Program® (ACS NSQIP®) Quality in Training initiative, Wellen shares outcomes data with residents regarding their own surgical cases. The program prepares residents for evaluating their performance as independent surgeons.

“We have become much more intentional with our focus on PS/QI and making sure it becomes routine,” says Wise. “Residents must have an understanding of how they can ensure better outcomes for their patients.”
General Surgery Residency
The Washington University General Surgery Residency was among the first surgical training programs in the country to begin reshaping a century-old model of teaching residents how to perform surgery. Residents were traditionally taught under the “See One, Do One, Teach One” method: observe a surgery, replicate it with limited guidance, and, later, teach it. Almost 20 years ago, the Washington University residency introduced a skills and simulation lab that allowed trainees to learn some technical skills at their own pace. More recently, its educators have been at the forefront of these activities:

• Early specialization programs
• Flexibility in Surgical Training with more focused training in the resident’s surgical specialty of choice
• Training models incorporating more evaluation and feedback
• Involvement in national surgical curriculum development

Program Leadership
Professor of Surgery Paul Wise, MD, is program director of the residency, which began in 1919 and remains one of the top surgical residency programs in the United States. Five associate program directors support Wise by offering expertise in specific areas of surgical education and engaging residents on a daily basis. The department faculty — many of whom have been or are leaders of national organizations — also enthusiastically embrace their roles as teachers and mentors.

Research
The department has strong basic science research, but residents are not limited to laboratory work in their research years. They can engage in clinical or translational research or earn advanced degrees in public health or business administration.

International Rotation
The residency’s newest addition is a rotation at Mzuzu Central Hospital in Malawi, Africa, a resource-limited hospital that serves the needs of nearly 2.5 million citizens. Residents care for a wide range of adult and pediatric surgical patients, performing more than 100 cases during this two-month rotation.

Resident Involvement
Residents have many opportunities at an annual retreat to offer input on managing the educational curriculum and improving the program. A social outing at the retreat is among several annual activities that bring residents together.

Plastic Surgery Residency
Vilray Blair, MD — one of the founders of the plastic surgery specialty — initially developed the training program at Washington University School of Medicine in the early 20th century. The residency is a six-year integrated program, including 4 ½ years of plastic surgery training in breast, craniofacial, pediatrics, head/neck trauma, hand, microsurgery, cosmetic and peripheral nerve surgery. Residents also complete rotations in all the general surgery experiences required by the American Board of Plastic Surgery and subspecialty rotations in oculoplastics, surgical dermatology, orthopedic trauma and anesthesia. Training takes place at Barnes-Jewish Hospital, Barnes-Jewish West County Hospital, Christian Hospital and St. Louis Children’s Hospital.

Program director: Marissa Tenenbaum, MD

Urology Residency
The Urology Residency has a long and distinguished history in preparing graduates for careers in urologic surgery, dating to 1910. Today, urology residents are exposed to a volume and diversity of surgical cases that is among the highest for urologic residency programs. The program places major emphasis on technological innovation. Residents complete four years, as well as an additional intern year, performing rotations at Barnes-Jewish Hospital, St. Louis Children’s Hospital, the VA St. Louis Health Care System and Barnes-Jewish West County Hospital.

Program director: Erica Traxel, MD

Vascular Surgery Residency
The Vascular Surgery Residency is a five-year program for medical school graduates who decide to focus exclusively on vascular surgery, endovascular surgery and the management of patients with vascular disease. The program has full accreditation and graduated its first resident in 2017. The section also offers a vascular surgery fellowship for postgraduate trainees who decide to specialize in vascular surgery during their general surgery residency.

Program director: Jeffrey Jim, MD, MPHS
Fellowships

Advanced Gastrointestinal/Minimally Invasive Surgery Fellowship
Program director:
L. Michael Brunt, MD

Breast Disease Fellowship
Program director:
Julie Margenthaler, MD

Cardiothoracic Surgery Fellowship
Program director:
Marc Moon, MD

Colorectal Surgery Fellowship
Program director:
Steven Hunt, MD

Hand, Nerve and Microsurgery Fellowship
Program director:
Amy Moore, MD

Hepatobiliary-Pancreatic Surgery Fellowship
Program director:
William Hawkins, MD

Minimally Invasive Urology Fellowship
Clinical fellowship director:
R. Sherburne Figenshau, MD
Research fellowship director:
Ramakrishna Venkatesh, MD

Pediatric Urology Fellowship
Program director:
Douglas Coplen, MD

Surgical Critical Care Fellowship
Program director:
Douglas Schuerer, MD

Transplant Surgery Fellowship
Program director:
M.B. Majella Doyle, MD, MBA

Vascular Surgery Fellowship
Program director:
Jeffrey Jim, MD, MPHS
The department’s research enterprise is among the largest of its peers in the U.S. It encompasses the full spectrum of translational and public health science and draws from the school’s critical mass of leading faculty and facilities.

**Focused Areas of Research Excellence**
- Cancer biology
- Cancer epidemiology and public health
- Cancer immunology
- Cardiovascular physiology
- Education
- Lung transplantation immunology
- Peripheral nerve injury
- Prostate cancer
- Sepsis and critical injury
- Vascular biology

**Clinical Research Studies**
- **543**

All figures FY2016–17 unless otherwise noted
*Includes Siteman Cancer Center support grant
As part of his graduate work toward a medical degree and a master's degree in public health, Kshitij Desai, right, is studying peripheral arterial plaque of diabetic patients with his research mentor, vascular surgeon Mohamed Zayed, MD, PhD.
Broad research efforts remain strong

The Department of Surgery is strongly committed to its research mission, which includes fostering basic, translational, clinical and public health research to improve human health. Despite a very competitive funding environment, the department continues to draw ample support, ranking second in National Institutes of Health (NIH) funding among surgery departments nationwide in 2016.*

Basic and Translational Research

Researchers seeking to improve survival for pancreatic ductal adenocarcinoma have developed two clinical trials as part of a Specialized Programs of Research Excellence (SPORE) grant, a major translational research award from the National Cancer Institute (NCI). The SPORE grant funds four drug-development and immunotherapy projects, a biostatistics core, a tissue repository core and a career-development program for junior researchers. Pancreas SPORE researchers span the department, medical school and other institutions. Basic science across disciplines also remains a strength.

Clinical Research

Surgeons who serve as principal investigators in surgical oncology trials received new administrative support this year as the department’s Clinical Research and Data Management Group assumed coordination of many of the surgical oncology trials at the Alvin J. Siteman Cancer Center at Barnes-Jewish Hospital and Washington University School of Medicine. The department’s Vice Chair for Research, William Gillanders, MD, is national principal investigator for a breast cancer study combining chemotherapy and antibody therapy to activate anti-tumor immunity. William Chapman, MD, is principal investigator for a device trial evaluating normothermic machine perfusion technology to protect liver organs before transplant. Mohamed Zayed, MD, PhD, maintains a vascular biobank that serves scientific investigations related to vascular diseases.

Public Health Research

Public health sciences researchers are leaders in cancer and disease prevention research, with Division Chief Graham Colditz, MD, DrPH, at the forefront of efforts to promote healthy lifestyles. Last year, he advised the national Cancer Moonshot initiative to accelerate cancer research. Investigators also study patient decision-making, health disparities, health communication, chronic disease prevention, cancer genetics, biostatistics and public health in underdeveloped countries.

*Blue Ridge Institute for Medical Research

A U.S. SENATE SUBCOMMITTEE heard Department Chair Timothy Eberlein, MD, explain at a March 8 hearing, shown above, why federal funding is critical to the search for innovative therapies for cancer and other diseases. Eberlein, also director of Siteman Cancer Center, cited the application of genomic analysis to develop precision cancer treatments as an example of promising research. He also said NIH is vitally important to the careers of young scientists. Other medical experts who testified at the hearing were Stacey Schultz-Cherry, PhD, of St. Jude Children’s Research Hospital; Thomas Grabowski, MD, of the University of Washington; and Jennifer Sasser, PhD, of the University of Mississippi.

EARLY CAREER NIH K08 AWARDS went to plastic surgeon Alison Snyder-Warwick, MD, and vascular surgeon Mohamed Zayed, MD, PhD. The awards highlight the breadth of the department’s basic science research and its commitment to developing young surgeon-scientists through mentoring. Snyder-Warwick will investigate the role of terminal Schwann cells — located at the interface between motor nerves and muscle — in normal function and after motor nerve injury. Her studies may suggest new strategies to treat nerve injuries. Zayed’s grant will fund ongoing translational research that explores the biochemistry of diabetic peripheral arterial disease and potential methods to inhibit this difficult-to-treat disease. He also received the American College of Surgeons/Society for Vascular Surgery Foundation Career Development grant, which matches K08 funds.
Research Funding
New awards, FY2016-17

MAJOR FUNDING
William Hawkins, MD
Division of General Surgery, Section of Hepatobiliary-Pancreatic and Gastrointestinal Surgery
$10,362,953
NIH SPORE/Washington University SPORE in Pancreatic Cancer (P50CA196510) 07/28/16-06/30/21
The Specialized Programs of Research Excellence (SPORE) grant is a cornerstone of the National Cancer Institute’s efforts to promote collaborative, interdisciplinary translational cancer research. This SPORE grant involves both basic and clinical/applied scientists working together and supports projects that will result in new and diverse approaches to the prevention, early detection, diagnosis and treatment of pancreatic cancer.

Alana Desai, MD, and Henry Lai, MD
Division of Urologic Surgery
$3,399,499
NIH U01/1/1 Urinary Stone Disease Washington University Research Network (U01DK110986) 07/01/06-06/30/18
This grant establishes a multicenter, multidisciplinary group of investigators known as the Urinary Stone Disease Research Network (USDRN). Washington University is one of these centers, which will look at the impact of increased fluid intake and increased urine output on the rate of recurrence of urinary stones, conduct research to understand and mitigate ureteral stent-related pain and symptoms, and provide data and collect biological samples from the studies to create a resource for future researchers.

Ryan Fields, MD
Division of General Surgery, Section of Hepatobiliary-Pancreatic and Gastrointestinal Surgery
$1,816,168
NIH R01/Towards True Precision Oncology: Validation of a Comprehensively Humanized, Autologous Mouse Model (R01CA204115) 01/09/17-12/31/19
Fields and a multidisciplinary research team are developing a mouse model that could enable cancer specialists to test how an individual person’s tumor responds to specific therapies. The lab is testing the model in melanoma patients, but eventually it could be applied to all cancers.

Vetta Thompson, PhD
Division of Public Health Sciences
$1,030,161
Patient-Centered Outcomes Research Institute (PCORI)/Developing and Validating Quantitative Measures to Assess Community Engagement in Research: Addressing the Measurement Challenge (ME-1511-33027) 02/01/17-01/31/20
Thompson, co-PI, and researchers use community-engaged research approaches and mixed methods (e.g. qualitative/quantitative) research techniques to develop and validate comprehensive (long) and condensed (shorter) survey instruments that assess the level of community engagement in research studies from the stakeholder perspective.

ADDITIONAL FUNDING
Cardiothoracic Surgery
Andrew Gelman, PhD
Section of General Thoracic Surgery
$176,265
Quark (Industry)/The Evaluation of Quark siRNA in Mouse Lung Transplants 06/27/2017-06/23/2018

General Surgery
Dirk Spitzer, PhD
Section of Hepatobiliary-Pancreatic and Gastrointestinal Surgery
$686,236
Department of Defense/U.S. Army/New-Generation Precision Medicines: Biomarker-Targeted TR3 Biologics Overcome Treatment Resistance in Ovarian Cancer (WB1XWH-17-1-0102) 04/01/17-03/31/20

William Gillanders, MD
Section of Endocrine and Oncologic Surgery
$400,000
Siteman Investment Program Pre-SPORE/Siteman Cancer Center Breast Cancer SPORE (competitive second year) 01/01/17-12/31/17

William Hawkins, MD
Section of Hepatobiliary-Pancreatic and Gastrointestinal Surgery
$150,537
Pancreatic Cancer Action Network (PanCAN)/Targeting Tumor Infiltrating Myeloid Cells to Enhance Immunotherapy (16-65-HAWK) 07/01/16-06/30/18

Mohamed Zayed, MD, PhD
Section of Vascular Surgery
$150,000
Society for Vascular Surgery Foundation/Mentored Clinical Scientist Research Career Development Award 06/01/17-05/31/20
Plastic and Reconstructive Surgery

Alison Snyder-Warwick, MD
$717,332
NIH K08/Investigation of Terminal Schwann Cell Function in Homeostasis and Injury (K08NS096232) 04/01/17-03/31/21

Katherine Santosa, MD
$121,980
NIH F32/Molecular Mechanisms of Terminal Schwann Cell Response After Nerve Injury (F32NS098561) 07/01/16-06/30/18

Plastic and Reconstructive Surgery/Public Health Sciences

Terence Myckatyn, MD (Plastic Surgery) and Mary Politi, PhD (Public Health Sciences)
$400,000
Siteman Investment Program Multi-PI Pre-R01/Optimizing Decision Making About Breast Reconstruction After Mastectomy: A Patient-Centered Approach 01/01/17-12/31/18

Public Health Sciences

Erin Linnenbringer, PhD
$543,275
NIH K07/Integration of Genomic and Social Science in Breast Cancer Disparities Research (K07CA212032) 09/15/06-08/31/20

RESEARCH GRANTS

Total: $22,569,798

By Source
- Government: $15,399,639
- Non-Government: $7,170,159

By Division
- General Surgery: $7,958,016
- Cardiothoracic Surgery: $4,803,409
- Public Health Sciences: $3,993,580
- Urologic Surgery: $2,695,632
- Plastic and Reconstructive Surgery: $1,711,709
- Pediatric Surgery: $1,407,453

CLINICAL TRIAL CONTRACT INCOME

Total: $2,912,939

- General Surgery: $1,531,607
- Cardiothoracic Surgery: $1,064,021
- Urologic Surgery: $254,431
- Plastic and Reconstructive Surgery: $58,380
- Public Health Sciences: $4,500

All figures: FY 2016-17
Clinical Operations

Through a strong relationship with our two nationally ranked hospital partners, the department provides multidisciplinary care in nearly every surgical subspecialty, with a focus on excellence and patient safety.

CORE VALUE:
Serving a diverse population

Rebecca Aft, MD, PhD

The department is making deliberate efforts to ensure that the strong diversity of its patient population is represented in its clinical trials — a necessity for ensuring that medical research benefits everyone. Leading in this area is breast surgeon and cancer researcher Rebecca Aft, MD, PhD, who enrolls many of her patients in clinical trials. Overall, about 16 percent of Siteman Cancer Center patients are underrepresented minorities, and this group makes up 12 percent of therapeutic trial enrollment. In some of Aft’s trials — many focusing on targeted therapy for early-stage breast cancer — minority participation is as high as 25 percent. She and Siteman colleagues work hard to address the complex barriers to minority trial participation. Issues include lack of trust and practical issues such as lack of transportation. “We educate patients and work with all the resources we have to ensure that participating in trials is not a burden for them,” says Aft.
Better patient education is an important component of department-wide patient safety and quality-improvement protocols employed by staffers such as colorectal surgery nurse practitioner Bonnie Johnston, BSN, RN.
Almost a decade ago, the Department of Surgery began moving its surgical care into a value-based model, focused on improving patients’ health through evidence-based, cost-effective methods. This approach — almost certain to remain the trend in U.S. health care — continues to yield benefits for the department's surgical patients and promises to improve care for years to come.

Over the past year, the department has focused on standardizing care pathways, developing patient safety and quality improvement projects in data-determined areas of deficiency, and reducing operating-room costs.

The colorectal surgery section and urology division have led the way in establishing standard enhanced recovery after surgery (ERAS) protocols that prescribe exact steps for patients and caregivers — from preparation at home through the hospital stay and recovery periods. The results have been a dramatic reduction of surgical site infections (SSIs) in patients who have part of their colon removed and a decreased rate of deep-space infections for patients who have had all or part of their bladders removed.

“Transplant surgeons recently implemented an ERAS protocol for their living kidney donors, and hepatobiliary-pancreatic surgeons have begun using a protocol for patients undergoing pancreas cancer surgery,” says Dee Dee Epstein, RN, BSN, patient safety nurse coordinator. “These pathways aim to decrease pain and length of stay, improve recovery and reduce readmission.”

To further improve patient care, each division and section reviews metrics from internal and external quality-reporting systems: the Washington University event-reporting system, Barnes-Jewish Hospital cost data, the Vivient reporting system for academic medical centers, and the American College of Surgeons National Surgical Quality Improvement Program® (ACS NSQIP®). These metrics have led to the SSI reductions and to the procedural change of reporting radiology and lab results directly to the surgeon, instead of sending reports through specialists.

A yearlong effort to reduce operating room costs helped the hospital save millions of dollars over the past year.

“We achieved agreement to use one type of stapler, implant and other disposable items after asking our surgeons to compare the many existing alternatives,” says Gerald Andriole, MD, vice chair for patient safety and clinical effectiveness. “This was the low-hanging fruit; next year it will be a little more challenging.”

**Highlights**

**Standardization improves outcomes**

Improvements and standardization in surgery scheduling could yield big benefits for the Department of Surgery, its patients and other surgical areas.

Transplant, cardiothoracic, and plastic and reconstructive surgeons are piloting the project with the support of Jackie Martin, MD, vice president of perioperative services at Barnes-Jewish Hospital. Surgeons use an electronic scheduling form that requires details about the patient and surgery: for example, whether the patient is healthy or sick, obese, or has adhesions from previous surgeries, or whether any blood work or special equipment is needed for the surgery.

The information goes to the entire operating-room team, including nurses, anesthesiologists, central sterile supply staff and residents.

“In the past, nurses would have to read surgeons’ minds to know that a special piece of equipment was needed for a specific patient,” says Gerald Andriole, MD, vice chair for patient safety. “The new scheduling process enables the operating room to be much better prepared for surgery.”

Martin plans to use the scheduling system as a best practice that other clinical care areas such as otolaryngology, neurosurgery, and obstetrics and gynecology could adopt.
A major campus renewal project consolidates and expands surgical services, cancer care and other programs, adds to private inpatient beds and incorporates outpatient clinics and diagnostics.
Washington University Medical Campus

Washington University Medical Campus is among the largest academic medical centers in the world, with comprehensive strengths in nearly every area of clinical medicine and biomedical investigation. Its culture is collaborative and collegial.

ITS PRIMARY MEMBERS are Washington University School of Medicine and its affiliated hospital partners, Barnes-Jewish Hospital and St. Louis Children's Hospital. The School of Medicine's clinical practice group, called Washington University Physicians, is one of the largest academic clinical practices in the nation. Its 1,361 specialty and primary care clinicians comprise the medical staffs at Barnes-Jewish and St. Louis Children's hospitals.

Barnes-Jewish Hospital is the largest hospital in Missouri, with 1,365 beds. It has been ranked on U.S. News & World Report's Honor Roll of America's best hospitals for 25 consecutive years, holds advanced certification from the Joint Commission on lung volume reduction surgery and ventricular assist devices and is an American College of Surgeons-verified Level I trauma center.

St. Louis Children's Hospital is the largest children's hospital in the region, with 280 beds and an American College of Surgeons-verified Level I pediatric trauma center. It offers comprehensive services in every pediatric medical and surgical specialty and is recognized as one of America's top children's hospitals by U.S. News & World Report, which in 2017 ranked the hospital in all 10 specialties surveyed.

The Alvin J. Siteman Cancer Center at Barnes-Jewish Hospital and Washington University School of Medicine is the only National Cancer Institute-designated Comprehensive Cancer Center in Missouri and is ranked as one of the nation's top cancer facilities by U.S. News & World Report. It is among the top five nationally in patient volume.

Multidisciplinary research in nearly every area of biomedicine is a hallmark of the school. U.S. News & World Report perennially ranks the school's graduate programs among the nation's best. Faculty and chief residents author the Washington Manual of Medical Therapeutics, among the world’s most widely sold medical textbooks.

<table>
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<th>Research grants and contracts</th>
<th>548.5 million</th>
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<th>Physicians (university-employed)</th>
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<th>Outpatient visits</th>
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<table>
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<tr>
<th>Hospital beds</th>
<th>1,645</th>
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<table>
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<tr>
<th>Hospital discharges</th>
<th>90,979</th>
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Barnes-Jewish Hospital and St. Louis Children's Hospital 2016
St. Louis

The “Gateway to the West” is a thriving metropolitan area of 2.8 million people that retains the friendly character of the Midwest. The fun and culture of a big city are readily available, but living in St. Louis is easy and affordable.

THE SCHOOL OF MEDICINE is located in the city’s eclectic Central West End neighborhood, full of sidewalk cafes, coffeehouses, shops and affordable housing. Forest Park, located adjacent to the medical center, is a haven for those seeking cultural and outdoor activities. At 1,300 acres, it is among the nation’s biggest city parks — 500 acres larger than New York’s Central Park — and is home to art, history and science museums, an outdoor musical theater and the Saint Louis Zoo, as well as a variety of athletic facilities, picnic areas and a system of scenic lagoons and waterways.

St. Louis offers a significantly lower cost of housing than the nation’s major coastal cities. In this family-friendly environment, residents of all ages enjoy a substantial number of free attractions year round. St. Louis is a sports-minded city that enthusiastically supports St. Louis Cardinals baseball and Blues hockey and a number of semi-pro teams. The Missouri Botanical Garden offers beautiful displays year round. The St. Louis Symphony is among the country’s best, and several first-rate theater companies practice their art here. The Fox Theatre presents Broadway shows, dance performances and concerts. Blues, jazz and rock bands are hot attractions in local clubs, and a large outdoor venue draws major concerts. Annual festivals celebrate regional beer breweries and wineries, hot air balloons, Earth Day, African arts, Japanese culture, international films, Mardi Gras, wine, Scottish games and Strassenfest, among other interests.

Outdoor activities can be found within and around the metropolitan area; bike trails line both the Mississippi and Missouri rivers, and the Ozark mountains and river valleys are perfect for backpacking, camping, fishing and canoeing. St. Louis’ central location makes exploring nearby cities easy and inexpensive.

#1 city for millennials
Business Insider 2017

#2 Major League Baseball attendance
Major League Baseball

Free museum district
Missouri History Museum
Saint Louis Art Museum
Saint Louis Science Center
Saint Louis Zoo

#1 city park & zoo
USA Today Reader’s Choice 2016

Affordable #6 among major cities
Investor’s Business Daily 2017
Leadership

Faculty in the Department of Surgery have been appointed to national and international organizations and have received numerous honors.

National and International Organizations

Rebecca Aft, MD, PhD
Professor of Surgery
Member, NCI Cancer Biomarkers Study Section

Jeffrey Blatnik, MD
Assistant Professor of Surgery
Member, Board of Governors, Americas Hernia Society

Keith Brandt, MD
William G. Hamm Professor of Surgery
Executive director, American Board of Plastic Surgery

L. Michael Brunt, MD
Chief, Section of Minimally Invasive Surgery
Member, Society of American Gastrointestinal and Endoscopic Surgeons
Board of Governors
Member, Board of Directors, SAGES
Education and Research Foundation
Member, Board Fellowship Council
Secretary, Central Surgical Association

Graham Colditz, MD, DrPH
Neiss-Gain Professor of Surgery
Chief, Division of Public Health Sciences Advisor, National Cancer Moonshot Initiative
Advisor, National Cancer Institute
Board of Scientific Advisors
Chair, National Academies of Sciences Workshop on Improving Health Research for Small Populations

Ralph Damiano Jr., MD
Evarts A. Graham Professor of Surgery
Chief, Division of Cardiothoracic Surgery
Editor-in-chief, Innovations in Cardiothoracic Surgery

Timothy Eberlein, MD
William K. Bixby Professor of Surgery
Chair, Department of Surgery
Board of Regents, American College of Surgeons
Chair, National Comprehensive Cancer Network Board of Directors
Editor-in-chief, Journal of the American College of Surgeons

William Gillanders, MD
Professor of Surgery

Mary Klingensmith, MD
Mary Culver Distinguished Professor of Surgery

Erin Linnenbringer, PhD
Instructor of Surgery
Jane Engelberg Memorial Fellowship Advisory Group, National Society of Genetic Counselors

Peter Manning, MD
Professor of Surgery
Co-clinical lead, Surgical/ICU Learning Lab, National Pediatric Cardiology Quality Improvement Collaborative

Julie Margenthaler, MD
Professor of Surgery
Secretary-Treasurer, American Society of Breast Surgeons

John Mazuzki, MD, PhD
Professor of Surgery
President, Surgical Infection Society, 2016-17

Bryan Meyers, MD, MPH
Patrick and Jay Williamson Professor of Surgery
Chief, Section of Thoracic Surgery
Chair, American Board of Thoracic Surgery

Marc Moon, MD
John M. Shoenberg Professor of Surgery
Chief, Section of Cardiovascular Surgery
Secretary, American Association for Thoracic Surgery

Alex Patterson, MD
Joseph Bancroft Professor of Surgery
Editor-in-chief, The Annals of Thoracic Surgery

Luis Sanchez, MD
Gregorio A. Sircad Distinguished Professor of Vascular Surgery
President, Cinjuros Vasculares de Habla Hispana, 2015–2017

Alison Snyder-Warwick, MD
Assistant Professor of Surgery
Secretary, Sir Charles Bell Society

Siobhan Sutcliffe, PhD, ScM, MHS
Associate Professor of Surgery
Project leader, Multidisciplinary Approach to the Study of Chronic Pelvic Pain (MAPP) Research Network

Thomas Tung, MD
Professor of Surgery
Board of Directors, American Society of Plastic Surgeons

National and International Awards

Keith Brandt, MD
William G. Hamm Professor of Surgery
2016 American Society of Plastic Surgeons President’s Award

Donald Buck II, MD
Assistant Professor of Surgery
Special commendation, “Review of Plastic Surgery” 2016 Surgical Textbook Awards, British Medical Association

William Chapman, MD
Eugene M. Bricker Professor of Surgery
Chief, Division of General Surgery and Section of Transplant Surgery
Francis Moore Excellence in Mentorship in the Field of Transplantation Award

Gayan De Silva, MD
Lab General Surgery Resident
Resident Research Award, Vascular & Endovascular Surgery Society

Jose “Pepe” Diaz-Miron, MD
Chief General Surgery Resident, and Paul Wise, MD
General Surgery Residency Program Director
Alpha Omega Alpha (AOA) National Medical Honor Society

Sean English, MD
Assistant Professor of Surgery
2017 Kylie Scholar Award, Vascular Cares

Patrick Geraghty, MD
Professor of Surgery
First author, one of five most highly cited articles in Journal of Vascular Surgery, 2014-15

Linda Jin, MD
Lab General Surgery Resident
Resident Scholar Research Award, Society for University, Anyrsico Foundation

Susan Mackinnon, MD
Shoenberg Professor of Plastic and Reconstructive Surgery
Chief, Division of Plastic and Reconstructive Surgery
American Association of Plastic Surgeons
Distinguished Fellow Award

Terence Myckatyn, MD
Professor of Surgery
Plastic Surgery Foundation Bernard G. Sarnat Excellence in Grant Writing Award

Tiffany Osborn, MD, MPH
Professor of Surgery and Emergency Medicine
First female full professor in combined field of emergency medicine (EM) and critical care (CC)
First female physician boarded in both EM and CC in United States

Kristen Seiler, MD
Lab General Surgery Resident
Resident Research Award, Association for Academic Surgery

Gregorio Sircad, MD
Emeritus Professor of Surgery
René Leriche Prize 2017, International Society of Surgery/Société Internationale de Chirurgie

Alison Snyder-Warwick, MD
Assistant Professor of Surgery
K08 Clinical Investigator Grant Award, National Institute for Neurological Diseases and Stroke (NINDS), NIH
Plastic Surgery Foundation Bernard G. Sarnat Excellence in Grant Writing Award

Mohamed Zayed, MD, PhD
Assistant Professor of Surgery
K08 Clinical Investigator Grant Award, National Institutes of Health (NIH)
Plastic Surgery Foundation Bernard G. Sarnat Excellence in Grant Writing Award

Dominic Sanford, MD
General Surgery Chief Resident
Eugene Bricker Teaching Award
(General Surgery residency award)

Pamela Choe, MD
General Surgery Chief Resident
Keith D. Amos Memorial Award
(General Surgery residency award)

Graham Colditz, MD, DrPH
Neiss-Gain Professor of Surgery
Chief, Division of Public Health Sciences
Pancreas SPORE Biostatistics

Eleanor Drew, MD
Assistant Professor of Surgery
Clinical Teacher of the Year Award

Jason Gauthier, MD and
Jennifer Yu, MD
General Surgery Residents
Resident of the Year Award

Aimee James, PhD, MPH
Associate Professor of Surgery
Chair, Behavioral Science Subcommittee, Siteman Cancer Center Protocol Review and Monitoring Committee

Susan Mackinnon, MD
Shoenberg Professor of Plastic and Reconstructive Surgery
Chief, Division of Plastic and Reconstructive Surgery, and Alec Patterson, MD
Joseph Bancroft Professor of Surgery
25 Year Distinguished Service Award, Washington University School of Medicine

Washington University School of Medicine
Sam Bayhani, MD
Holekamp Family Endowed Chair in Urology
Chief medical officer, Faculty Practice Plan

Elisa Birnbaum, MD
Professor of Surgery
Chief Residents Faculty Mentorship Award
(General Surgery residency award)

Alex Bribiesco, MD
Cardiothoracic Surgery Fellow
Gregorio A. Sircad Fellow Teaching Award
2017 (General Surgery residency award)

Bettina Drake, PhD, MPH
Associate Professor of Surgery
Pancreas SPORE Administrative Core Co-Investigator

Eleanor Drew, MD
Assistant Professor of Surgery
Clinical Teacher of the Year Award

Jason Gauthier, MD and
Jennifer Yu, MD
General Surgery Residents
Resident of the Year Award

Aimee James, PhD, MPH
Associate Professor of Surgery
Chair, Behavioral Science Subcommittee, Siteman Cancer Center Protocol Review and Monitoring Committee

Susan Mackinnon, MD
Shoenberg Professor of Plastic and Reconstructive Surgery
Chief, Division of Plastic and Reconstructive Surgery, and Alec Patterson, MD
Joseph Bancroft Professor of Surgery
25 Year Distinguished Service Award, Washington University School of Medicine

Laurie Punch, MD
Assistant Professor of Surgery
Evarts Graham Teaching Award
(General Surgery residency award)

Clinical Teacher of the Year Award

Dominic Sanford, MD
General Surgery Chief Resident
Eugene Bricker Teaching Award
(General Surgery residency award)
Barnes-Jewish Hospital, St. Louis Children's Hospital and BJC HealthCare

Maria B. Majella Doyle, MD, MBA
Associate Professor of Surgery, and Jason Wellen, MD, MBA
Associate Professor of Surgery
Directors, Abdominal Organ Transplantation Program, St. Louis Children's Hospital

Bruce Hall, MD, PhD, MBA
Professor of Surgery
Chief quality officer, BJC HealthCare

Steven Hunt, MD
Associate Professor of Surgery
Surgical co-director, Center for Advanced Medicine – South County

John Kirby, MD
Associate Professor of Surgery
Medical director, Rehabilitation Services, Barnes-Jewish Hospital

Daniel Kreisel, MD, PhD
Professor of Surgery
Surgical director, Lung Transplant Program, and Scientific director, Washington University and Barnes-Jewish Transplant Center

Kamlesh Patel, MD
Assistant Professor of Surgery
Medical director of craniofacial surgery, St. Louis Children's Hospital
Physician lead for rapid performance improvement, St. Louis Children's Hospital

Jacqueline Saito, MD, MSCI
Assistant Professor of Surgery
Outcomes physician, Center for Clinical Excellence, BJC HealthCare

Matthew Silviera, MD
Assistant Professor of Surgery
Co-leader of Colorectal Enhanced Recovery After Surgery Team, awarded Barnes-Jewish Hospital Team Award for Quality Improvement

WILLIAM CHAPMAN, MD, chief of the Section of Transplant Surgery and the Eugene M. Bricker Professor of Surgery, received the 2017 Francis Moore Excellence in Mentorship in the Field of Transplantation Award from the American Society of Transplant Surgeons. The award acknowledges established surgeons for their stewardship of fellowship trainees and junior faculty.

MARY KLINGENSMITH, MD, vice chair of education and the Mary Culver Distinguished Professor of Surgery, became chair of the American Board of Surgery (ABS) board of directors in June 2017. The ABS certifies surgeons who have met defined educational, training and knowledge standards and oversees their continuous certification. As ABS chair, Klingensmith will lead efforts to revamp the certification process and will initiate a strategic planning process. Klingensmith is the third woman ever to chair the ABS since its founding in 1937, and she is the fourth Washington University School of Medicine surgeon to lead the organization.

BRYAN MEYERS, MD, MPH, chief of the Section of Thoracic Surgery and the Patrick and Joy Williamson Professor of Surgery, became chair of the American Board of Thoracic Surgery (ABTS) in September 2017. The ABTS oversees certification of thoracic surgery training program graduates and ongoing maintenance of certification for certified thoracic surgeons. Meyers already has led efforts to make the recertification exam less punitive and more of a learning process.

Outcomes research

Surgical outcomes research is a major strength in the Department of Surgery. To build onto existing collaborations between surgeons and public health sciences faculty, the department established the Surgery and Public Health Research (SPHERE) Center. Members meet monthly for research discussions and mentorship, with an ultimate goal of spurring more competitive grants. Left to right, Public Health Sciences Chief Graham Colditz, MD, DrPH, thoracic surgeon Benjamin Kozower, MD, MPH, and public health sciences researcher Mary Politi, PhD, are co-leaders.
Faculty

**CHAIR’S OFFICE**

Timothy J. Eberlein, MD, Chair
William K. Bixby, Professor of Surgery; Director, Alvin J. Siteman Cancer Center

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

Gerald L. Andriole, MD
Robert Killian Royce, MD; Distinguished Professor of Urologic Surgery; Vice Chair for Patient Safety and Clinical Effectiveness

William E. Gillanders, MD
Vice Chair for Research

Mary E. Klingensmith, MD
Mary Culver Distinguished Professor of Surgery; Vice Chair for Education

**INSTITUTIONAL LEADERSHIP**

Maria B. Majella Doyle, MD, MBA
Co-Director, Faculty Career Development/Mentoring

Sam B. Bhayani, MD
Holekamp Family Endowed Chair in Urology; Chief Medical Officer, Washington University Physicians

Tiffany M. Osborn, MD, MPH
Director, Leadership and Professional Development

Bruce Lee Hall, MD, PhD, MBA
Chief Quality Officer, BJC HealthCare

Mary C. Politi, PhD
Co-Director, Faculty Career Development/Mentoring

Jacqueline M. Saito, MD, MSCI
Outcomes Physician, Center for Clinical Excellence, BJC HealthCare

**DIVISION OF CARDIOTHORACIC SURGERY**

Ralph J. Damiano Jr., MD, Chief
Evarts Ambrose Graham Professor of Surgery

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

Ralph J. Damiano Jr., MD, Chief, Division of Cardiothoracic Surgery; Evarts Ambrose Graham Professor of Surgery

Nabil A. Munfakh, MD
Michael K. Pasque, MD
Richard B. Schuessler, PhD
Professors of Surgery

William A. Gay Jr., MD
Professor Emeritus of Surgery

Michael Crittenden, MD
Associate Professor of Surgery; Chief of Cardiothoracic Surgery, St. Louis VA Medical Center- John Cochran Division

Brian P. Cupps, PhD
Spencer J. Melby, MD
Hersh S. Maniar, MD
Associate Professors of Surgery

Keki R. Balsara, MD
Akinobu Itoh, MD, PhD
Puja Kachroo, MD
Muhammad F. Masood, MD
Stefano Schena, MD, PhD
Assistant Professors of Surgery

Julia Kar, PhD
Instructor in Surgery

Pirooz Eghesady, MD, PhD, Chief
Emerson Chair in Pediatric Cardiothoracic Surgery; St. Louis Children’s Hospital

Peter B. Manning, MD
Professor of Surgery

Aaron Abarbanell, MD, MS*
Orlando Petrucci, MD, PhD
Assistant Professors of Surgery

Anoop Brar, PhD
Instructor in Surgery

**Section of Cardiac Surgery**

Bryan F. Meyers, MD, MPH, Chief
Patrick and Joy Williamson Chair in Cardiothoracic Surgery

G. Alexander Patterson, MD
Joseph C. Bancroft
Professor of Cardiothoracic Surgery

Andrew E. Gelman, PhD
Jacqueline G. and William E. Martz Professor

Benjamin D. Kozower, MD, MPH
Professor of Surgery

Daniel Kreisel, MD, PhD
Professor of Surgery; Director of Lung Transplantation

Alexander S. Krupnick, MD
Varun Puri, MD, MSCI
Associate Professors of Surgery

Wenjun Li, MD
Assistant Professor of Surgery

Xingan Wang, MD, PhD
Instructor in Surgery

**Section of Pediatric Cardiothoracic Surgery**

Pirooz Eghesady, MD, PhD, Chief
Emerson Chair in Pediatric Cardiothoracic Surgery; St. Louis Children’s Hospital

Peter B. Manning, MD
Professor of Surgery

Aaron Abarbanell, MD, MS*
Orlando Petrucci, MD, PhD
Assistant Professors of Surgery

Anoop Brar, PhD
Instructor in Surgery

**Section of General Thoracic Surgery**

Bryan F. Meyers, MD, MPH, Chief
Patrick and Joy Williamson Chair in Cardiothoracic Surgery

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Joseph C. Bancroft
Professor of Cardiothoracic Surgery

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Varun Puri, MD, MSCI
Associate Professors of Surgery

Wenjun Li, MD
Assistant Professor of Surgery

Xingan Wang, MD, PhD
Instructor in Surgery

**Section of Acute and Critical Care Surgery**

Grant V. Bochicchio, MD, MPH, Chief
Harry Edison Professor of Surgery

Bradley D. Freeman, MD
John E. Mazuski, MD, PhD
Tiffany M. Osborn, MD, MPH
Douglas J.E. Schuerer, MD
Associate Professors of Surgery

Obid N. Ihai, MD
John P. Kirby, MD
Forest R. Sheppard, MD*
Associate Professors of Surgery

Sara A. Buckman, MD, PharmD
Julianne Donnelly, MD
Eleanor Drew, MD
Stephen R. Eaton, MD
Zachary Englert, DO*

**DIVISION OF GENERAL SURGERY**

William C. Chapman, MD, Chief
Eugene M. Bricker, Professor of Surgery

Section of Acute and Critical Care Surgery

**Critical Care Service in the Cardiothoracic Intensive Care Unit**

Michael S. Avidan, MBChB, FCA, Chief
Dr. Seymour and Rose T. Brown Professor of Anesthesiology and Surgery

Charli J. De Wet, MBChB
Professor of Anesthesiology and Surgery

Diego Casali, MD
Julianne Donnelly, MD
Daniel A. Emmert, MD, PhD
Mohammad Helwani, MD, MSPH
Clare H. Ridley, MD
Adnan Sadiq, MD
Assistant Professors of Anesthesiology and Surgery

**Section of General Thoracic Surgery**

Bryan F. Meyers, MD, MPH, Chief
Patrick and Joy Williamson Chair in Cardiothoracic Surgery

G. Alexander Patterson, MD
Joseph C. Bancroft
Professor of Cardiothoracic Surgery

Andrew E. Gelman, PhD
Jacqueline G. and William E. Martz Professor

Benjamin D. Kozower, MD, MPH
Professor of Surgery

Daniel Kreisel, MD, PhD
Professor of Surgery; Director of Lung Transplantation

Alexander S. Krupnick, MD
Varun Puri, MD, MSCI
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Wenjun Li, MD
Assistant Professor of Surgery

Xingan Wang, MD, PhD
Instructor in Surgery

**Section of Pediatric Cardiothoracic Surgery**

Pirooz Eghesady, MD, PhD, Chief
Emerson Chair in Pediatric Cardiothoracic Surgery; St. Louis Children’s Hospital

Peter B. Manning, MD
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Aaron Abarbanell, MD, MS*
Orlando Petrucci, MD, PhD
Assistant Professors of Surgery

Anoop Brar, PhD
Instructor in Surgery

**Section of Acute and Critical Care Surgery**

Grant V. Bochicchio, MD, MPH, Chief
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Douglas J.E. Schuerer, MD
Associate Professors of Surgery

Obid N. Ihai, MD
John P. Kirby, MD
Forest R. Sheppard, MD*
Associate Professors of Surgery

Sara A. Buckman, MD, PharmD
Julianne Donnelly, MD
Eleanor Drew, MD
Stephen R. Eaton, MD
Zachary Englert, DO*
New Faculty

Aaron Ababaranel, MD, MS
Assistant Professor, Section of Pediatric Cardiothoracic Surgery
Training and experience: Medical degree, University of Michigan, Ann Arbor; master of science in clinical research, Indiana University; general surgery residency and cardiac surgery research fellowship, Indiana University; thoracic surgery residency, Emory University, Atlanta; congenital heart surgery fellowship, Children’s Hospital of Los Angeles/University of Southern California, Los Angeles; clinical instructor, pediatrics, University of Southern California, Los Angeles; United States Navy Surface Warfare Officer (operations, engineering and administration)
Clinical interests: All facets of congenital heart surgery
Research interests: Clinical outcomes and registry database research in infants and young children undergoing cardiac surgery; partnership building and delivery of cardiothoracic surgical services to low- and middle-income countries

Yin Cao, ScD, MPH
Assistant Professor, Division of Public Health Sciences
Training and experience: Doctor of science, Harvard T.H. Chan School of Public Health, Boston; master of public health, Columbia University, New York
Research interests: Cancer epidemiology, risk prediction, screening/early detection; chemoprevention of major cancers, particularly gastrointestinal malignancies

Chun-Cheng (Richard) Chen, MD
Instructor, Section of Acute and Critical Care Surgery
Training and experience: Medical and doctoral degree, Vanderbilt University School of Medicine; master of engineering, Massachusetts Institute of Technology, Cambridge; general surgery residency and surgical critical care fellowship, Washington University
Clinical interests: General surgery, trauma and critical care
Research interests: Surgical technology, informatics, automation

Kia Davis, ScD, MPH
Assistant Professor, Division of Public Health Sciences
Training and experience: Doctor of science, Harvard T.H. Chan School of Public Health, Boston; master of public health, Saint Louis University School of Public Health, St. Louis; postdoctoral fellow, Cancer Health Disparities Training Program (T32), University of North Carolina-Chapel Hill.
Research interests: Applied social epidemiology; reducing cancer health disparities by informing organizational and policy change; relationships between socioeconomic status, stress and cancer risk factors in underserved communities

Zachary Englert, DO
Assistant Professor, Section of Acute and Critical Care Surgery
Training and experience: Doctor of osteopathic medicine, Philadelphia College of Osteopathic Medicine; internship and residency, East Carolina University, Vidant Medical Center; surgical critical care fellowship and acute care surgery fellowship, Shock Trauma Center, University of Maryland Medical Center
Clinical interests: Instructor for the Air Force Center for Sustainment of Trauma and Readiness Skills (C-STARs) program; management of complex wounds and necrotizing soft tissue infections

Chet Hammill, MD, MCR
Associate Professor, Section of Hepatobiliary-Pancreatic and Gastrointestinal Surgery
Training and experience: Medical degree, University of Illinois, Urbana; master of science in aeronautical and astronautical engineering, University of Illinois, Urbana; master of clinical research, Oregon Health & Science University, Portland, Ore.; general surgery residency, University of Hawaii, Honolulu; hepatobiliary and pancreas surgery fellowship, Portland Providence Medical Center, Portland, Ore.
Clinical interests: Liver, pancreas and biliary diseases, minimally invasive and robotic surgery
Research interests: Image-guided surgery, ablation therapies, surgical technologies and innovation

Jean Hunleth, PhD, MPH
Instructor, Division of Public Health Sciences
Training and experience: Doctoral degree and master’s in public health, Northwestern University, Evanston, Ill.; postdoctoral education, Division of Public Health Sciences, Washington University
Research interests: Caregiving and treatment seeking for infectious and chronic diseases in Africa (most specifically, Zambia) and the United States. Special interest in children’s experiences of and responses to illness, medicine and health programming

Senthil Jayarajan, MD, MS
Assistant Professor, Section of Vascular Surgery
Training and experience: Medical degree, University of Cincinnati Medical School, Ann Arbor; master of science in clinical research and translational medicine, Temple University, Philadelphia, Pa.; general surgery internship, postdoctoral research fellowship and general surgery residency, Temple University Hospital; vascular surgery fellowship, Washington University
Clinical interests: All aspects of vascular surgery with a special focus on limb salvage and thoracic outlet syndrome
Research interests: Cost-effective improvements of surgical outcomes

Gerald Jeung-Il Cho, MD
Assistant Professor, Division of Plastic and Reconstructive Surgery
Training and experience: Medical degree, University of Cincinnati; plastic and reconstructive surgery residency, University of California, San Francisco; hand surgery and microsurgery fellowship, The Buncke Clinic, San Francisco; craniofacial and pediatric plastic surgery fellowship, New York University Langone Medical Center, New York
Clinical interests: Facial trauma, post-traumatic facial reconstruction, pediatric plastic surgery, cleft lip and palate, craniofacial microsurgery, nose reconstruction, ear reconstruction, orthognathic surgery
John Ohman, MD
Assistant Professor, Section of Vascular Surgery
Training and experience: Medical degree, University of Texas McGovern Medical School, Houston; vascular surgery residency, Washington University
Clinical interests: General vascular surgery, complex open and endovascular aortic reconstructions for aortic aneurysm and aortic dissection
Research interests: Rapid management and transfer of acute aortic syndromes through the pre-hospital and hospital environments; management of primary aortic and aortic graft infections

Nishant Raj, MD
Assistant Professor, Section of Acute and Critical Care Surgery
Training and experience: Medical degree, Ross University School of Medicine, Portsmouth, Dominica; general surgery residency, Cleveland Clinic Foundation, Cleveland
Clinical interests: General and minimally invasive surgery including laparoscopic and robotic surgery

Forest Sheppard, MD
Associate Professor, Section of Transplant Surgery
Training and experience: Medical degree, University of Virginia School of Medicine, Charlottesville, Va.; general surgery residency and trauma/surgical critical care fellowship, University of Colorado, Denver; trauma surgery research fellowship, National Institutes of Health (NHI); U.S. Navy, four deployments, trauma/comb casualty care translational research
Clinical interests: Resuscitation, transfusion, trauma, critical care, emergent general surgery

Kelly Vallar, MD
Assistant Professor of Surgery, Section of Acute and Critical Care Surgery
Training and experience: Medical degree, University of Missouri-Kansas City; general surgery residency, Saint Louis University School of Medicine; surgical critical care fellowship, Washington University
Clinical interests: Laparoscopy, emergency general surgery, trauma, care for veterans

Jesse Vrecenak, MD
Assistant Professor, Division of Pediatric Surgery
Training and experience: Medical degree, University of Pennsylvania; general surgery residency, Hospital of the University of Pennsylvania; general surgery research fellowship, Children's Hospital of Philadelphia; pediatric surgery fellowship, Children's Hospital of Philadelphia
Clinical interests: Fetal consultation and surgery, including EXIT delivery and in utero interventions; surgical treatment of congenital diaphragmatic hernia; congenital lung lesions (CPAM/BPS); intestinal atresias, gastrochiisis, omphalocele; minimally invasive surgery, including hernia repair and surgical treatment of reflux; general pediatric surgery
Research interests: Fetal biology and immunology; in utero cellular therapies

Brian Wong, PhD
Assistant Professor, Section of Transplant Surgery
Training and experience: Doctoral degree, cardiovascular pathology and allograft vasculopathy, University of British Columbia; postdoctoral fellowship in metabolic and epigenetic regulation of angiogenesis/lymphangiogenesis, VIB/KU Leuven Center for Cancer Biology, Leuven, Belgium
Research interests: Role of lymphatic vessels in solid allograft rejection, with specific emphasis on understanding key metabolic and epigenetic regulatory pathways that regulate lymphatic function and immunomodulatory capabilities; role of lymphatics in transplant biology; development of novel therapeutics to improve graft outcome and prevent rejection

Muhammad Yasin, MD
Assistant Professor, Section of Acute and Critical Care Surgery
Training and Experience: Medical degree, Allama Iqbal Medical College, Punjab University, Lahore, Pakistan; internal medicine residency, District Headquarters Hospital, Faisalabad, Pakistan; general surgery observership,Good Samaritan Hospital, Cincinnati; general surgery residency, Our Lady of Mercy Hospital, Bronx, New York; and Mount Carmel Health, Columbus, Ohio; colon rectal surgery fellowship, Grant Medical Center, Columbus
Clinical Interests: General and colorectal surgery
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Matthew Mutch, MD, colon and rectal surgery chief, has been installed as the Solon and Betty Gershsman Chair for Colon and Rectal Surgery.

Sam Bhayani, MD, was named the Holekamp Family Endowed Chair in Urology.

Andrew Gelman, PhD, has been named the Jacqueline G. and William E. Maritz Professor of Surgery, Pathology and Immunology.
In memory: Jeffrey F. Moley

Jeffrey Fletcher Moley, MD, chief of the Section of Endocrine and Oncologic Surgery, died Sunday, Oct. 15, 2017, at his home in Kirkwood, Missouri. He was 64.

Moley, also an associate director at the Alvin J. Siteman Cancer Center at Barnes-Jewish Hospital and Washington University School of Medicine, died following a sudden cardiac event. He had been married for 30 years to Kelle Moley, MD, the university’s James P. Crane Professor of Obstetrics and Gynecology.

“Jeff was a world-class surgeon and a pioneering researcher,” said David Perlmutter, MD, executive vice chancellor for medical affairs and dean of the School of Medicine. “He was admired by faculty here and across the globe and was a role model to younger faculty and trainees.”

For more than two decades, Moley studied and treated multiple endocrine neoplasia (MEN), rare inherited syndromes that often cause thyroid cancer and other endocrine diseases. Along with Samuel Wells Jr., MD, former chair of the Department of Surgery, Moley was part of a team that identified the genetic mutations responsible for MEN syndromes and advanced a preventive procedure involving surgical thyroid removal. Moley also operated on patients with recurrent thyroid cancer and other endocrine diseases.

“Jeff was a masterful surgeon,” said Timothy Eberlein, MD, department chair. “He delicately performed surgery to remove the thyroid gland in young children — some only a few months old — who were destined to develop an inherited form of thyroid cancer. The margin of error in these procedures is almost none, and Jeff was simply remarkable. He was uniformly admired nationally and internationally for his surgical skills.”

Moley’s research also helped to identify novel molecular targets in thyroid cancer and led clinical trials of systemic targeted therapy. Besides treating patients at Barnes-Jewish Hospital and St. Louis Children’s Hospital, Moley worked for more than three decades for the VA St. Louis Health Care System, recently as head of surgical services.

At the hospitals, Moley trained residents and medical students. “They loved him,” Eberlein said. “He was gentle, kind and encouraging.”

Born in New York City in 1953, Moley earned his bachelor’s degree from Harvard University in 1976 and medical degree from Columbia University in 1980. He completed his internship and residency, and was chief resident in general surgery, at Yale New Haven Hospital and worked as a fellow at the National Cancer Institute of Health (NIH). After a year on the Yale faculty, he joined the Washington University faculty in 1988.

Moley maintained a lifelong interest in history and politics. He also enjoyed sports and music. A jazz guitarist, mandolin player and vocalist, he led the Fletcher Moley Group, a local jazz and rhythm and blues band, and previously performed with Seldom Home, a bluegrass band.

In addition to his wife, Moley is survived by: three sons, Patrick, Charles and John; his mother, Janis Walton Moley; a sister, Janis McCarthy; and a brother, Roger Moley.

The Department of Surgery will establish an endowed chair in his memory.
The 1,300 specialty and primary care clinicians who make up Washington University Physicians comprise the medical staffs at Barnes-Jewish Hospital and St. Louis Children’s Hospital.

In spring 2017, a New Yorker magazine cover illustration depicted a ring of female surgeons’ faces from the patient’s perspective. It sparked a worldwide social media conversation as female surgeons re-created the cover through photos of themselves. Their effort celebrated the presence of women in this traditionally male-dominated field. Washington University’s contribution featured some of the department’s female surgical faculty and residents. View the New Yorker cover at newyorker.com/magazine/2017/04/03.

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