

Michael E. DeBakey Department of Surgery

2021 Annual Report

The Pursuit of Excellence is Our Objective



Baylor
College of
Medicine

MICHAEL E. DEBAKEY
DEPARTMENT OF
SURGERY

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Message from the Chair

It has been a great honor to serve as chair of surgery of the Michael E. DeBakey Department of Surgery since November 2012, having been afforded the unique opportunity to continue the storied legacy that began with Dr. DeBakey assuming this role 75 years ago.

Nothing could have quite prepared us for the unprecedented challenges of the COVID-19 pandemic that began almost two years ago. But, through it all, the department has persevered in our efforts to help lead the way through these most unusual and uncommon of times while continuing to pioneer new advances and innovations in surgery. All members of our department have played a vital role in supporting our patients and colleagues and the extraordinary needs of our organizations through these trying days. For this reason, I could not ever be more proud and appreciative of our team, our department and our focus on mission.

Over the past nine years and continuing today, we have seen immense growth in our department, which now includes a faculty of more than 170 full-time physicians and scientists and more than 60 advanced practice providers, more than 150 trainees, and an additional 160 staff members. We proudly note that women or underrepresented minorities make up more than 75% of our total 150 recruits contributing to this growth. This expansion has fueled our achievement of many new milestones across our healthcare, research, education and outreach and inclusion missions. Reflective of these advancements, we proudly rank 13th in the *U.S. News & World Report* for surgery departments.

The landmarks of this next leg of the legacy journey inspired by Dr. DeBakey are our innumerable innovations and record clinical and academic achievements. These include the 200th transoral thyroid/parathyroid procedure performed by Drs. Raymon Grogan and James Suliburk, the 200th robotic cardiac surgery procedure by Dr. Kenneth Liao, the 3500th thoracoabdominal aneurysm repair by Dr. Joseph Coselli, and the 3000th liver transplant by Dr. John Goss and our transplant team. We lead the nation in quality ranking for our trauma program at Ben Taub Hospital, founded by Dr. Kenneth Mattox and now led by Dr. Chad Wilson, rank highest for surgical quality in the VA system, and have once again reached *U.S. News & World Report* top-tier consideration for cardiac surgery.

Our research team, led by vice chair Dr. Scott LeMaire and director of clinic research Dr. Barbara Trautner, also have made great strides. Our Office of Surgical Research (OSR) founded in 2014, today garners over \$20 million in annual grant funding. Our federal funding has increased to \$11 million and our National Institutes of Health funding now stands at an estimated total of \$8 million. Our OSR has grown to include more than 50 research coordinators, grants managers, medical writers, statisticians, and other staff supporting faculty and trainee researchers. Our team manages more than 200 clinical studies and grants, more than 600 manuscripts, chapters, books, and other works published annually.

Partnered with Baylor St. Luke's Medical Center, the Michael E. DeBakey VA Medical Center, Ben Taub Hospital and Texas Children's Hospital, all standing as leading icons in our health care community, we are confident and excited for the future of the Michael E. DeBakey Department of Surgery. We look forward to the great changes awaiting the future of surgery, and we plan and expect to lead the journey to that future.

– Todd K. Rosengart, M.D.

Department at a Glance



12

Divisions



230

Full-time Faculty



130

Residents and
Fellows



9

ACGME
Residencies
and
Fellowships



7

Texas Medical
Board
(non-ACGME)
Fellowships



13th

Best Graduate
Programs
(Surgery)
*U.S. News &
World Report*



\$20M

Extramural
Funding



\$8M

NIH Funding



>200

Clinical Studies
and Grants



92%

Approval Rating
ACGME General Surgery
Resident Survey

ACGME = Accreditation Council for Graduate Medical Education

Full-Time Faculty

32 Professors 42 Associate Professors 84 Assistant Professors 75 Instructors

#DeBakeySurgeon

New faculty members: Drs. Lauren Goldie, Rachel W. Davis, Jessie Z. Yu, Feibi Zheng, Erin Greenleaf, Catherine Seger and Natasha Hansraj.

New Faculty Recruits



Dr. E. Ramsay Camp
Professor
Surgical Oncology



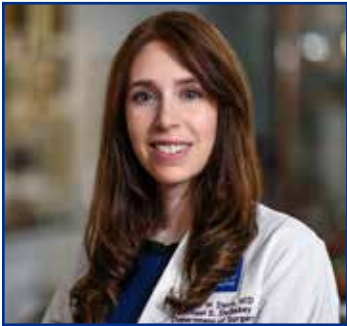
Dr. Mastian Chand
Assistant Professor
Acute Care Surgery



Dr. Nilesh Chitnis
Assistant Professor
Immune Evaluation Lab



Dr. Justin Choi
Assistant Professor
Vascular Surgery



Dr. Rachel W. Davis
Assistant Professor
Global Surgery



Dr. Livia Eberlin
Associate Professor
Surgical Oncology Research



Dr. Lauren Goldie
Assistant Professor
Congenital Heart Research



Dr. Erin K. Greenleaf
Assistant Professor
Vascular Surgery



Dr. Natasha Hansraj
Assistant Professor
Vascular Surgery



Dr. Samer Mattar
Professor
Metabolic and Bariatric Surgery



Dr. Alexander Schutz
Assistant Professor
Cardiothoracic Surgery



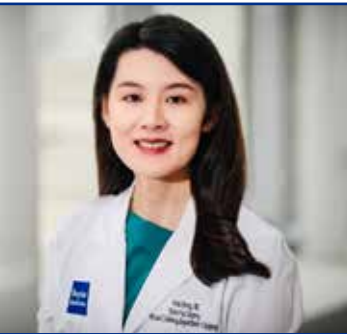
Dr. Catherine Seger
Assistant Professor
Trauma and Acute Care Surgery



Dr. Yan Shi
Assistant Professor
Pediatric Surgery



Dr. Jessie Z. Yu
Assistant Professor
Adult Plastic Surgery



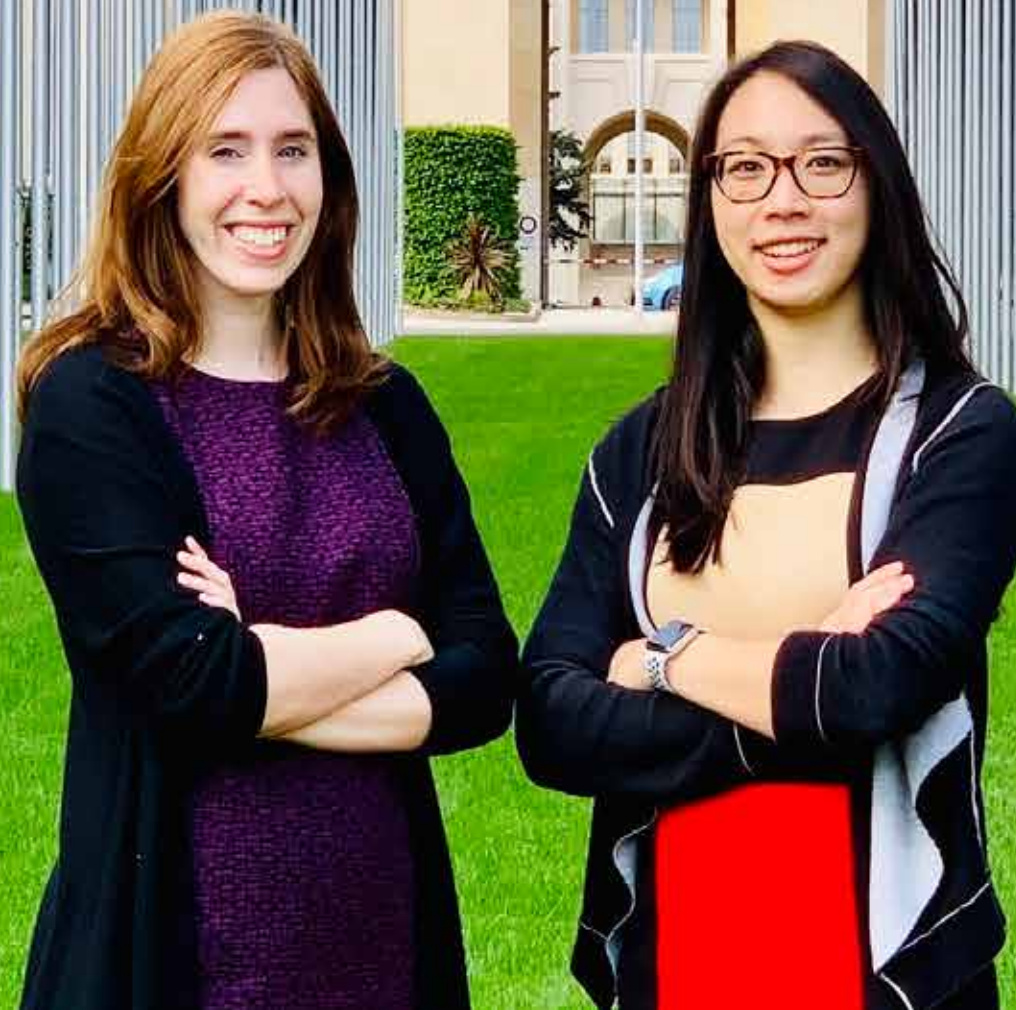
Dr. Feibi Zheng
Assistant Professor
Surgical Oncology

Not pictured:
Carmisha Kellum, NP
Anne LeNeave, NP
Alexandria Sarenski, PA-C
Chaim Sigler, PA-C
Caitlin Valverde, NP
Taylor Vickers, PA-C

mission: EDUCATION

The Michael E. DeBakey Department of Surgery is committed to equipping the surgeons of tomorrow with the necessary tools to be leaders of their field. Our fully accredited academic training programs range from our 16 residency and fellowship programs to our undergraduate medical education programs. Our highly sought DeBakey Summer Student program draws pre-medical students from around the nation to spend a summer with our department. Our general surgery residency program with nine categorical positions—one of the largest in the nation—includes a five-year clinical track, a seven-year academic/research track, a unique seven-year global surgery track, and a new six-year design innovation fellowship option developed in partnership with sister programs in the Texas Medical Center.

We educate a highly qualified cadre of more than 130 residents and fellows in specialties including trauma and acute care, abdominal and cardiothoracic transplantation, congenital heart, vascular, plastics, pediatric and cardiothoracic surgery. Central to the success of our nine Accreditation Council for Graduate Medical Education approved residency and seven fellowship programs is our close integration with our four iconic affiliates - Baylor St. Luke's, the Michael E. DeBakey Veterans Affairs Medical Center, Ben Taub Hospital and Texas Children's Hospital. These premier institutions include one of the top-ranked children's hospitals in the world and the largest VA hospital in the nation, and provide a continuum of care ranging from cutting edge robotic surgery across multiple disciplines to the highest quality of care for the underserved provided by our faculty and trainees. Our clinical curriculum includes off site elective rotations at The University of Texas MD Anderson Cancer Center, McGovern Medical Center Burn Center, and Penrose Hospital in Colorado Springs.



Global Surgery Track director Dr. Rachel W. Davis and resident Dr. Megan Vu outside the United Nations Headquarters



Vice chair for education Dr. Bradford Scott addresses a class of DeBakey Summer Surgery students.

Training the Next Generation of Surgeons

Our educational programs are built upon the strong foundation of more than 170 dedicated faculty, many leaders in their field, and the resources of our department that is ranked 13th by *U.S. News & World Report*. Supported by an outstanding staff of education professionals, our residents in turn support our education mission by offering their own time and attention to help train medical students clerking in our core surgery rotation. Exemplary student and resident recruitment results, approval ratings, in-service and board examination scores and increasing numbers of graduating students seeking surgery residencies all reflect the excellence of our programs.

Our faculty educators continuously seek to set the standard for surgical education. Reflecting this commitment, our curriculum includes professional development/leadership seminars, wellness

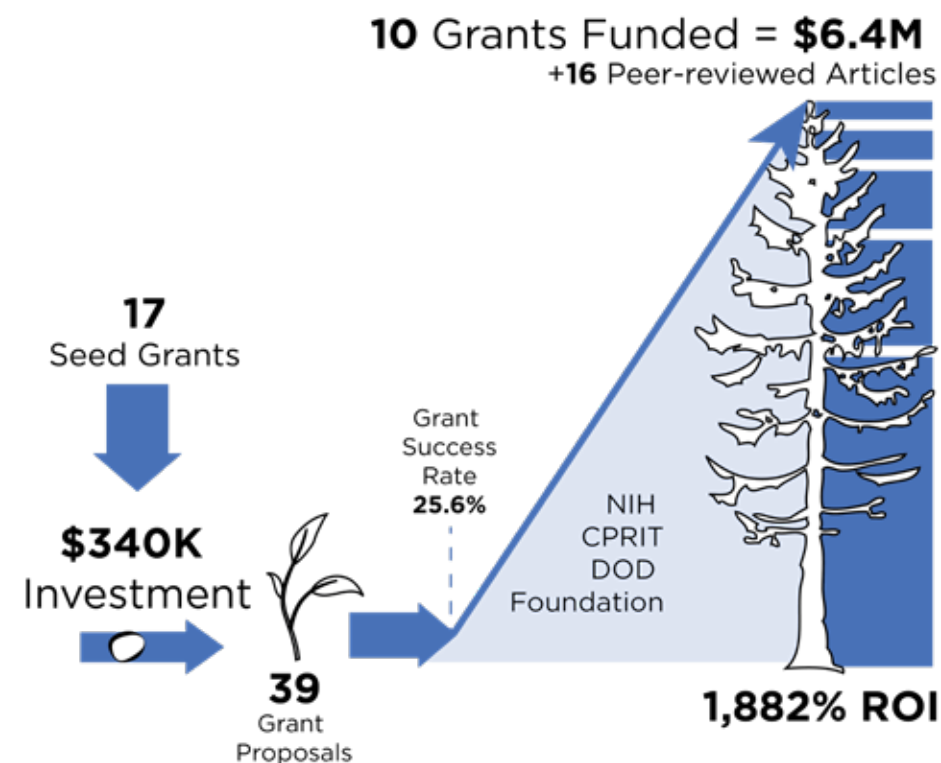
programs, an extensive research curriculum, student and resident mentorship programs, hands-on simulation training such as “Boot Camps” for matriculating students, “Movie Night” reviews of surgical videos and “Chalk Talks” with faculty experts.

Highlighting the fruits of our research curriculum and the research of our trainees and staff is our annual two-day Research Symposium, regularly attended by more than 200 department members and guests and featuring noted invited lecturers. This year’s guest speaker was Dr. Craig Miller, author of the recently released biography of the life of Dr. DeBakey. Finally, we are each year treated to the “Swan Song” presentations of our graduating categorical residents and our DeBakey Summer Students each recapping their memories and lessons learned at Baylor.

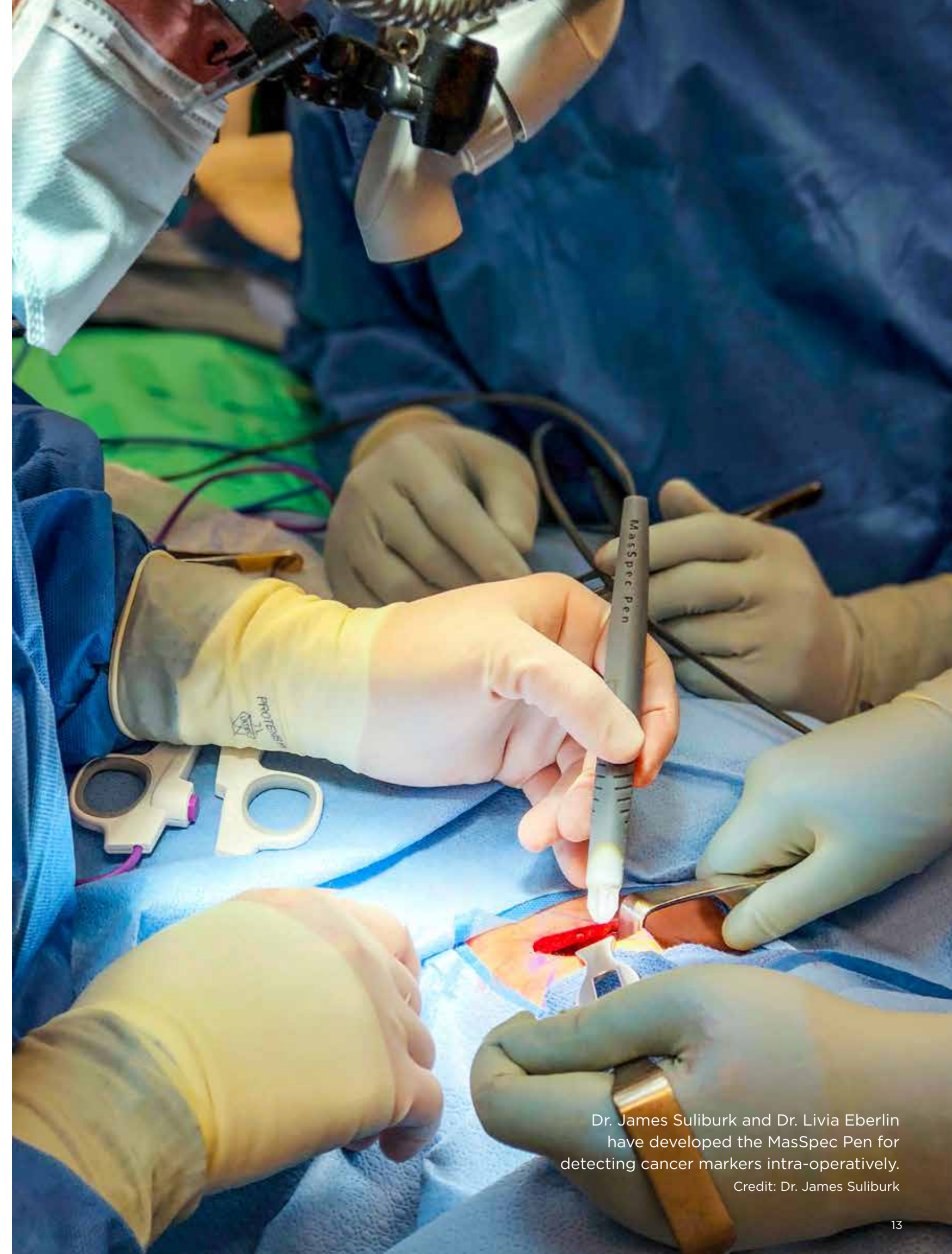
mission: RESEARCH

Research is a core mission and a distinct strength of the Michael E. DeBakey Department of Surgery. Efforts from faculty, staff and trainees focus on improving health through science, scholarship and innovation. This vision is realized through collaborative research initiatives in which basic, translational and clinical researchers work together across disciplines and specialties to discover fundamental insights into human health and disease and to apply their discoveries to develop new diagnostic tools and treatments.

Our commitment to the research mission is exemplified by several landmark commitments the department has made over the past eight years to support the research efforts of our faculty and trainees. These efforts include the creation and marked expansion of our Office of Surgical Research, which today contributes to the service of over 50 clinical trial coordinators, pre- and post-award grants managers, biostatisticians, medical writers and other personnel supporting our researchers. Since 2014, the department has provided seed grant funding to junior faculty with high potential for future extramural awards. Our Surgery Incubator, INSTINCTSM, likewise provides our scientist-inventors with support for design innovation, invention disclosure, prototyping and even product commercialization. Finally, our grant review program leverages faculty expertise and extramural study section experience in providing invaluable peer review of pending grants. This effort has led to a remarkable 25% funding rate for submitted grants.



Our Faculty Research Seed Grant Program has been a terrific success. Since launching the program in 2014, our award recipients have completed research projects that generated key data in support of ten subsequent successful grant applications to NIH and other major sponsors.



Dr. James Suliburk and Dr. Livia Eberlin have developed the MasSpec Pen for detecting cancer markers intra-operatively.
Credit: Dr. James Suliburk

Cancer Research

Surgery has always been a mainstay of efforts to treat and cure highly diverse and complex cancer disease processes. The multidisciplinary, collaborative mindset of cancer care extends to our research program, where our surgical oncologists work with cell biologists, medical oncologists, genetic scientists, imaging experts, bioinformatics specialists and industry partners to help extend survival and improve the quality of life for patients with cancer. These NIH-, state-, foundation-, and industry-funded efforts include:

- Miniature MassSpec “Cancer Pen” to detect cancer tissue during surgery (Suliburk, Eberlin)
- Immunotherapeutics for thoracic and gastrointestinal cancers (Burt, Ripley, Camp)
- International clinical trials to track treatments for breast cancer (Thompson, Carter)
- Mutli-institutional consortium to optimize surgery for pancreatic cancer (Fisher, Van Buren)

Transplantation Research

Baylor surgeons have led research in organ transplantation for more than five decades, providing patients with life-saving treatment options based on advancing science and technology. While the number of organs available for transplant has remained unchanged, the number of individuals on waiting lists for organs continues to grow. Efforts to address this challenge include:

- Innovation of ex vivo perfusion techniques to salvage marginal donor organs (Loor, Liao)
- Use of AI to create risk scoring systems for organ-recipient matching (Rana)
- Development of artificial kidney technology (Galvan)
- Development of a next-generation artificial heart technology (Frazier, Cohn)

Plastic and Reconstructive Surgery Research

Researchers in the Division of Plastic Surgery approach holistic healing by working across disciplines to restore both physical form and function. These interventions include studies to address physical deformities caused by trauma, surgical interventions, fibrosis and scarring. These efforts include:

- The newly formed discipline of spino-plastic reconstruction, innovated by our plastic surgery division in collaboration with partners in neurosurgery and orthopedics (Reece)
- Wound healing and “scarless” surgery research (Keswani, Bilaji)

Cardiac and Vascular Research

Our cardiovascular research targeting diseases of the heart and vasculature is conducted throughout Baylor’s affiliated institutions and includes a growing portfolio of clinical and translational research ranging from genetics and molecular biology to the testing of new surgical technologies. Our 30-plus major laboratory investigations and clinical trials include:

- Cell reprogramming studies to improve myocardial recovery after infarction (Rosengart)
- Studies to better understand the molecular underpinnings of aortic disease (LeMaire, Shen)
- Development of novel "smart" wearable technologies to identify and prevent limb- and life-threatening complications of peripheral vascular disease (Najafi)
- International studies expanding use of the Wound, Ischemia and foot Infection (WIFI) scoring system developed by Dr. Joseph Mills to prevent limb loss (Mills, Chung)
- Detailed outcomes analysis of the world’s largest series of TAA procedures (Coselli)
- Transfusion trigger studies (Kougias)

Surgical Health Services Research

Health services research ensures that all patients have equal access to clinical and translational innovations that are effectively delivered into the standards of patient care. We collaborate in these efforts through our SHARE program (Surgical Health Services Academy for Research and Education), a partnership with the Center for Innovations in Quality, Effectiveness and Safety (IQvEST), the largest health services research program in the Southwest. These integrative efforts include:

- First-of-kind federally funded study of gun violence in Harris County (Naik-Mathuria)
- Artificial intelligence/machine-learning modeling of cardiac and transplant surgery outcomes (Ghanta, Rana)
- Assessment of systemic causes of under-treatment of hyperparathyroidism (Makris)

Trauma and Acute Care Surgery Research

Studies to advance the care of trauma and critically ill patients represent a long-standing legacy of our department, beginning with the iconic trauma resuscitation studies of Dr. Kenneth Mattox. Ongoing efforts in this field being pursued in our department include:

- Trauma outcomes optimization programs (Wilson)
- Randomized clinical trial evaluating cyclosporine treatment of COVID patients (Burt)
- Behavioral studies of human factors effects on patient care (Suliburk, Rosengart)
- Thrombosis risks in COVID patients (Mortus, Brubaker, Rosengart)

mission: HEALTHCARE

Patients and colleagues from around the world seek our highly trained and specialized surgeons, drawn by our reputation for highest-quality outcomes and personalized attention to patient care. Our surgical pioneers are proud to continue at the forefront of developing advanced techniques and technologies that transform surgery. Our team performs nearly 30,000 surgical cases and has 40,000 patient visits annually. Our journey to add depth and expertise to our world-class surgical cadre is nevertheless ongoing. In 2020-2021 alone, we welcomed twelve new surgeons to our vascular, colorectal, critical care, hepatopancreatobiliary and plastic surgery programs..

We continue to innovate safer and less invasive approaches to surgical care. For example, Dr. Kenneth Liao has established one of the largest and fastest growing robotic heart programs in the U.S. Dr. Bryan Burt has likewise pioneered a novel trans-thoracic robotic approach to treating thoracic outlet syndrome, Dr. Raymon Grogan has pioneered the technique of “scarless” trans-oral thyroid surgery and Dr. Joseph Coselli continues to improve upon the world’s largest experience in aortic surgery. This past year we also established the Center for Ambulatory Surgery Therapeutics (CfAST), an office-based, ambulatory surgery program that partners with its sister Office-Based Endovascular Lab (OBEL), started in 2019 to provide expeditious, cost-effective and patient-centered procedures.

While quality outcomes are our first priority, outstanding service also is our passion. Under the leadership of vice chair for clinical affairs Dr. William Fisher, we continue to practice both. Our sub-specialty groups all integrate clinic and hospital staffs into cohesive teams that streamline communications, input best practices and maximize patient safety, engaging patients as central members of their care team to develop easier and more reliable ways for patients navigating their care. New online physician referral and direct patient appointment setting, telemedicine consultations and electronic patient messaging exemplify these initiatives.

We have garnered “Center of Excellence” and other accolades for many of our services, including bariatrics, transplant, cardiovascular and acute care surgery, and have been nationally ranked in multiple surgical specialties at our flagship hospital, Baylor St. Luke’s Medical Center, by *U.S. News & World Report*, all a nod to the remarkable skills and dedication of our multidisciplinary teams of highly talented surgeons and surgical staff.



Dr. Christy Y. Chai cares for patients at the Michael E. DeBakey Veterans Affairs Medical Center.



Physician assistants Brian Lassinger and Logan Healy take time out to work at the Houston Food Bank

mission: OUTREACH & INCLUSION

We have a long history of training surgeons to provide excellence in surgical care to underserved communities and around the globe. This culture of outreach is reflected in our long-standing collaboration with programs such as Smile Train, which under the leadership of Dr. Larry Hollier has provided more than 150,000 pediatric cleft surgeries in 85 countries, and in our multiple other missions abroad.

First conceived and developed in 2015 by then general surgery resident Dr. Rachel Davis, our Global Surgery track is the only such NRMP-listed track in the United States that now includes a diverse cadre of six residents seeking to enhance healthcare in resource-

limited communities from Mongolia to South America. This seven-year global surgery track provides training in the “44 essential surgery skills” along with global health studies through internships at international agencies such as the World Health Organization in Geneva. With the appointment of Dr. Davis to our faculty as global surgery residency director, we look forward to the expanded reach of this program in helping the underserved in our own community.

The outreach efforts of our department extend in other ways to our local community as well. Our “Surgical Saturdays” provide surgical procedures for patients in need in our community and “Reach for the Stars” aims to inspire young women in high schools towards careers in science and engineering.

Finally, our Outreach and Inclusion Committee led by Dr. Michele Loor looks inward at our own department to enhance and inspire diversity, equity and inclusion. Together with our Faculty Ambassadors, Drs. Ourania Preventza and Christy Chai, Ronnetta Etter and Holly Shilstone, these department leaders are helping us to bring an increasing culture of diversity to our faculty and trainees and in our academic programs, support equity in promotion and compensation, and enhance the wellness and mindfulness of all department members.



Faculty are investigating artificial intelligence to improve outcomes. Image by Scott Holmes, CMI

ABDOMINAL TRANSPLANTATION

The Division of Abdominal Transplantation provides care for both pediatric and adult patients ranging in age from infants to greater than 75 years old. The division offers an integrated, multidisciplinary team approach for transplant patients comprised of five transplant surgeons, eight hepatologists, two nephrologists, and 10 advanced practice providers. The abdominal transplant program is one of the largest in the U.S. and it consistently receives high marks from the Scientific Registry for Transplant Recipients and *U.S. News & World Report*.

The kidney transplant program has consistently been ranked as one of the top programs in the U.S. in terms of outcomes and the pediatric transplant program is the largest in the country. To overcome the ongoing organ shortage, our kidney transplant program participates in the National Kidney Registry paired donor program and established our own multi-institutional kidney transplant swap program that includes the following hospitals: Baylor St. Luke's Medical Center, Texas Children's Hospital and the Michael E. DeBakey Veterans Affairs Medical Center.

Since its inception in the 1990's, our team has performed more than 3,000 liver transplants and 2,500 kidney transplants with excellent outcomes. Notably, we performed the first in-situ-split adult-pediatric liver transplant, the first adult-adult split liver transplant, as well as the first adult living donor liver transplant in the Texas Medical Center.

Our faculty is committed to clinical and basic science research, in part funded through NIH grants, in areas such as adult and pediatric solid organ transplantation, liver disease, kidney disease, immunogenetics and bone marrow transplants. The Baylor St. Luke's Advanced Liver Therapies Research Center offers patients access to clinical trials of the latest diagnostic tests and therapies. The division-run Immune Evaluation Laboratory continues to expand its research activities while remaining the largest program of its kind in the Texas Medical Center. Additionally, the Clinical Research Collaborative is also pursuing artificial intelligence machine learning techniques to improve on predictive models in transplant medicine funded by the National Science Foundation. Other faculty are embarking on 3D bio additive technologies to usher in the next era of transplant medicine.

We also provide outstanding clinical training for the next generation of transplant surgeons and contribute to abdominal transplantation education by securing research funding, publishing peer-reviewed manuscripts and presenting at national transplant meetings. This is highlighted by the multiple teaching awards given to our faculty every year.

CARDIOTHORACIC SURGERY

Dr. Joseph S. Coselli, vice-chair of surgery and chief, Division of Cardiothoracic Surgery

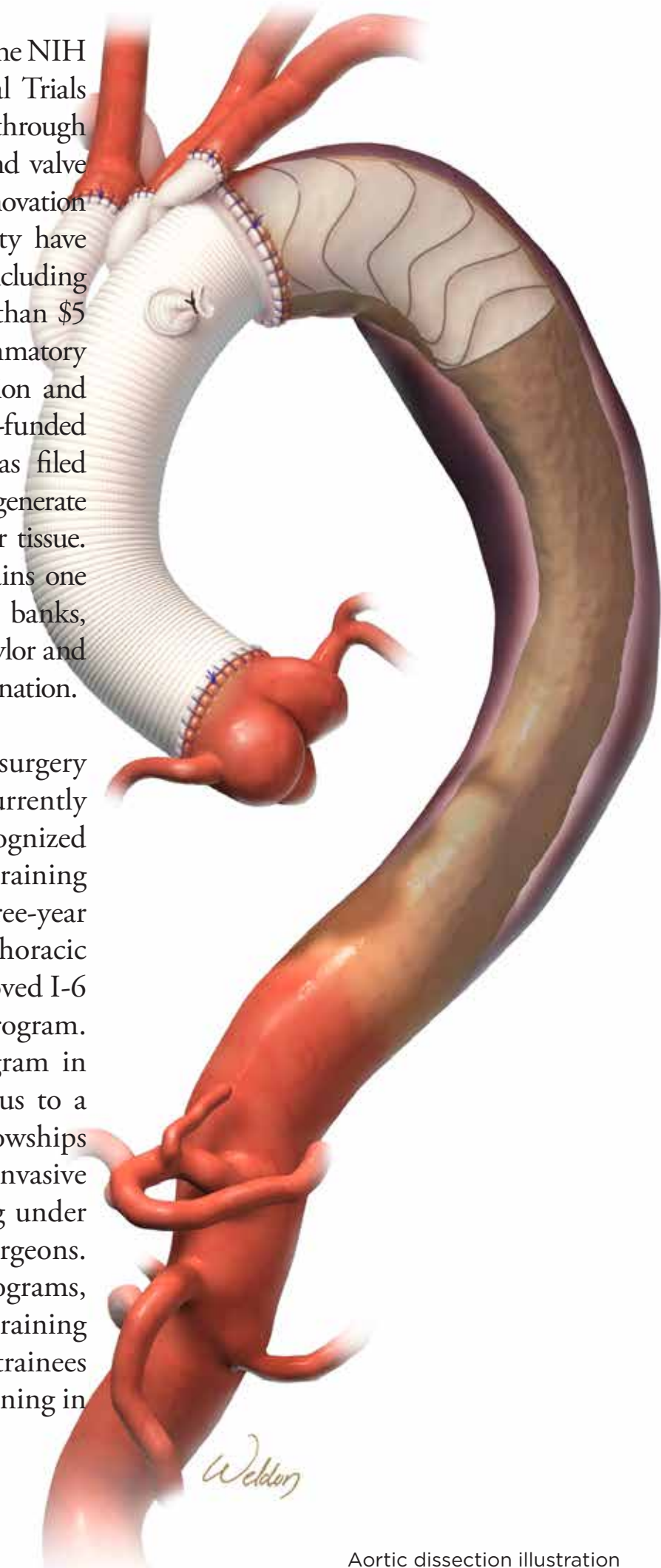


The Division of Cardiothoracic Surgery continues a long history of excellence building upon the groundbreaking work in cardiothoracic surgery of Dr. Michael E. DeBakey, Dr. Denton A. Cooley and Dr. E. Stanley Crawford. The current world-renowned team is honored to be ranked 13th in the nation and first in Houston for Heart Surgery by *U.S. News & World Report*, with special distinction in heart bypass surgery, aortic valve surgery and abdominal aortic aneurysm repair at Baylor St. Luke's Medical Center.

At the Michael E. DeBakey Veterans Affairs Medical Center, our surgeons perform more than 300 open-heart surgeries and more than 100 lung and esophageal procedures annually, making it the busiest VA cardiac center in the U.S. The cardiothoracic surgery team at Baylor St. Luke's has performed more than 10,000 repairs of the aorta and more than 3,600 repairs of thoracoabdominal aortic aneurysms. Our Baylor St. Luke's surgeons have performed over 1,000 TAVR procedures and participate in multiple mitral and tricuspid valve clinical trials.

Recognized as a Core Clinical Center for the NIH / NHLBI-funded Cardiothoracic Surgical Trials Network, the division is leading breakthrough research in heart failure, aortic disease and valve sparing through clinical trials, device innovation and laboratory investigations. Our faculty have received multiple funding awards including NIH/NHLBI R01 grants totaling more than \$5 million for projects addressing pro-inflammatory pyroptotic cell death in aortic degeneration and myocardial regeneration. Our NIH-funded Laboratory for Cardiac Regeneration has filed multiple patents describing techniques to regenerate functional myocardium from cardiac scar tissue. The Aortic Disease Research Lab maintains one of the world's most extensive aortic tissue banks, enabling high-quality research both at Baylor and in other academic institutions around the nation.

With one of the largest thoracic surgery residency programs in the U.S., currently with 13 active trainees, Baylor is recognized for its outstanding cardiothoracic training opportunities, including our three-year fellowship and its cardiac track and thoracic track as well as our new ACGME-approved I-6 integrated thoracic surgery residency program. The inaugural match for our I-6 program in 2021 was a great success, connecting us to a highly sought candidate. Specialty fellowships in aortic surgery and minimally invasive cardiac surgery provide further training under the auspices of world-renowned surgeons. Augmenting our clinical training programs, our select NIH-funded T32 research training program provides M.D. and Ph.D. trainees with two years of dedicated research training in cardiovascular surgery.



Aortic dissection illustration by Scott Weldon, MFA, CMI, FAMI

CARDIOTHORACIC TRANSPLANTATION & CIRCULATORY SUPPORT

The Division of Cardiothoracic Transplantation & Circulatory Support continues its long history as a world leader in the treatment of advanced heart and lung failure. With more than 1,500 heart transplants and 1,500 ventricular assist device implants, we remain one of the largest heart transplant and circulatory support programs in the world. Our growth and exceptional outcomes make our program one of the leading centers in the country, for which we have been granted Center of Excellence status by regional and national certifying agencies.

Our practice at Baylor St. Luke's Medical Center is one of a select few with cardiac-designated robotics and is the only one in greater Houston to provide robotic cardiac surgery. Since our 2019 launch by Dr. Kenneth Liao, chief of the division, we have performed more than 200 robotic cases—the fastest pace in the country. The benefits of robotic cardiac surgery include decreased bleeding, risk of stroke, hospital stays, wound infection and recovery times.

Our program is ranked 13th nationally by *U.S. News & World Report*, with distinction in heart failure, coronary bypass, aortic valve surgery, TAVR and abdominal aortic aneurysm repair. Reflective of this “cutting edge” status, we recently implanted an EverHeart LVAD, one of a select group of centers to do so. We likewise lead with 10 COVID lung transplants, including a double lung transplant in one of the youngest transplanted patients in the world.

Our research breakthroughs include our participation in the Expand Heart Trial, which demonstrated that an ex-vivo organ perfusion system for beating donor heart resuscitation decreases waitlist time and increases successful transplantation of impaired donor hearts. We are developing a new generation of pediatric ventricular assist devices, and with NIH funding are developing a novel continuous flow total artificial heart. With a major privately-funded grant, research also is underway to assess the safety of heart transplantation using ex-vivo perfusion after circulatory death, seeking to expand the acceptable donor heart pool.

The division currently offers a one-year cardiothoracic transplant and mechanical circulatory support fellowship and a one-year robotic and minimally invasive cardiac surgery fellowship program. Residents and fellows rotating through our division will experience broad exposure to a large portfolio of routine and complex procedures performed by leaders in the field. Learners will have sufficient experience to qualify for United Network for Organ Sharing certification and robotic experience, enabling their own launch of robotic cardiac practices in most institutions.



Baylor St.Luke's is one of a few centers in the nation, and only center in Houston, selected to participate with the COMPETENCE trial EVAHEART 2 Left Ventricular Assist System © 2014 Evaheart, Inc. All rights reserved.

Division chief Dr. Christopher Caldarone, along with Dr. Iki Adachi and Dr Jeffrey Heinle use an intensive team-based approach to optimize outcomes for every patient.

CONGENITAL HEART SURGERY

From its inception at Texas Children's Hospital in 1954, the Division of Congenital Heart Surgery has become a global leader in pediatric congenital heart surgery. The division offers surgical care for children and adults with congenital heart disease in an environment that fosters cutting-edge research and educates tomorrow's leaders in congenital heart surgery.

The division is a key member of the Texas Children's Heart Center, which has been ranked number one nationally by *U.S. News & World Report* for the last five years. One of the largest pediatric and adult congenital heart programs in the country, the Heart Center includes attending cardiac surgeons who perform more than 1,000 operations annually. Surgeons team with dedicated pediatric cardiologists, cardiovascular anesthesiologists, perfusionists, physician assistants, nurse practitioners, registered nurses, pharmacists, and cardiovascular-specific OR and ICU nurses to provide treatment for all known congenital heart defects in patients of all ages.

The Heart Center moved in 2018 to the Texas Children's Hospital Legacy Tower, which includes 58 ICU beds, four dedicated operating rooms and four dedicated catheterization labs on nine hospital floors. A dedicated unit for adults with congenital heart disease (ACHD) was added in 2020. This new unit has 12 variable acuity beds and adult-centered clinic space.

In addition to its participation in the department's thoracic surgery residency, the division offers a congenital cardiac surgery fellowship, one of only 15 such programs nationally recognized by the Accreditation Council for Graduate Medical Education (ACGME). Program participants receive intense training in pediatric and adult congenital heart disease, heart and lung transplantation, and in one of the world's largest pediatric heart failure/ventricular assist device (VAD) programs.

Our faculty maintains an active research program across a broad spectrum, focusing specifically on congenital heart surgical outcomes and quality, pediatric heart and lung transplantation, mechanical circulatory support, aortic reconstruction, surgical repair of congenital coronary anomalies and, in collaboration with Rice University, pediatric bioengineering. Our research program has also recently been revitalized with the formation of the Center for Congenital Cardiac Research (CCCR). Two faculty members currently hold NIH funding.



Division chief Dr. Bryan Burt

GENERAL THORACIC SURGERY

The David J. Sugarbaker Division of Thoracic Surgery, named in honor of the renowned late founding chief of the division in 2021, offers specialized care for all thoracic conditions. Our faculty are exceptionally trained surgeons with expertise in robotic, minimally invasive and open resections. Since 2016, our division has performed more than 750 robotic surgeries, including more than 200 cases this past year. We deliver individualized, multidisciplinary cancer treatments through the Dan L Duncan Comprehensive Cancer Center and the Mesothelioma Treatment Center. We also offer specialized care for patients with benign and malignant esophageal disorders at our Center for Dysphagia and Swallowing Disorders, and for patients with thoracic outlet syndrome at our Thoracic Outlet Clinic, both of which have become national destinations.

Our group performs innovative translational research in the clinic and in the laboratory. We offer an array of clinical trials that include investigator-initiated studies and collaborative multi-center national trials. Two of the most recent trials include an industry-sponsored investigator-initiated trial expected to discover biomarkers predictive of response to immunotherapy for patients with thoracic malignancies, and an industry-sponsored investigator-initiated trial that tests the efficacy of cyclosporine in hospital in-patients suffering from COVID-19.

Both our Thoracic Surgery Systems Onco-Immunology Laboratory (SOIL) and the Thoracic Carcinogenesis Laboratory are funded by the National Institutes of Health for their investigations into mechanisms of response to immunotherapy and mechanisms of carcinogenesis. Recent research funding includes an R37 research grant from the NCI (up to seven years of funding), two awards from the Cancer Prevention and Research Institute of Texas (CPRIT) and two additional NIH grant applications with anticipated funding.

Through partnership with the Divisions of Cardiothoracic Surgery, Cardiothoracic Transplantation and Circulatory Support and the Texas Heart Institute, we provide comprehensive training in thoracic surgery. In addition to our participation in the department's new six-year integrated residency and traditional three-year Thoracic Surgery Fellowship and its thoracic track, we offer an advanced fellowship in minimally invasive thoracic surgery. This year also marks the fifth consecutive year Baylor thoracic residents have successfully applied to the prestigious American Association for Thoracic Surgery robotics fellowship.

METABOLIC & BARIATRIC SURGERY

The Division of Metabolic and Bariatric Surgery was created in 2020 to recognize metabolic surgery as a specialized field of surgery addressing the clinical needs of metabolic dysfunction and severe obesity. The division includes a multidisciplinary group of specialists including dietitians, psychologists and physical therapists who as a team optimize the care of metabolic and bariatric surgery patients. We also recently welcomed a nurse navigator who helps guide patients and family members through the peri-operative surgical pathway, including pre-operative preparations, expectations and patient responsibilities.

Under the leadership of Dr. Samer Mattar, past president of the American Society for Metabolic and Bariatric Surgery (ASMBS), division members work with gastroenterologists and other specialists at the Weight Loss and Metabolic Center at Baylor St. Luke's Medical Center. Together we deliver a state-of-the-art continuum of care firmly rooted in our mission to achieve safe and sustainable outcomes and empower each person to improve health, quality of life and overall well-being through dignified, multidisciplinary, evidence-based approaches. Our vision is to be the national leader and premier innovator in eradicating weight-related diseases.

Our program has experienced a 40% growth in new patient visits in the past year and an increase of surgical cases despite pandemic-related curtailments of elective cases. This growth was accompanied by a reduction in the hospital readmission rate by nearly 40%, representing continued advancement of our quality standards.

Reflective of our accomplishments, we were recognized this year by Blue Cross/Blue Shield as a Blue Distinction Center, joining fewer than 25% of bariatrics programs in the nation. This follows our 2019 accreditation by the Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program, a national standard of the American College of Surgeons and the ASMBS.

We have continued to grow through collaborative associations with Baylor St. Luke's specialty programs, such as our fatty liver disease and orthopedic clinics, and initiatives such as the VA MOVE program. This program focuses on care for veterans with metabolic dysfunction and improves their quality of life through the promotion of positive lifestyle changes.

Caring for metabolic syndrome invites numerous avenues of research and education. We have accordingly embarked on collaborative studies in the areas of asthma, inflammation, orthopedics, liver disease and gut microbiome, including research in under-represented groups and those who have survived COVID-19. Because bariatric surgery is technically demanding, performed both laparoscopically and robotically, it also offers unparalleled opportunities for surgical training, and we continue to welcome increasing resident interest in our service.

Texas Children's is ranked #3 among top children's hospitals in the nation in the *U.S. News & World Report*.

Photo by Paul Vincent Kuntz



PEDIATRIC SURGERY

The Division of Pediatric Surgery at Texas Children's Hospital is one of the largest and most experienced pediatric surgical programs in the world. The division has 16 faculty members and staff physicians at Texas Children's Hospital—ranked 3rd among top children's hospitals in the nation and #1 in Texas by *U.S. News & World Report* for 2020-2021.

Over the past year, our pediatric surgical oncology program has performed more than 80 solid tumor cases including Wilms, neuroblastoma, liver, thoracic, adrenal, pancreas, and gonadal tumors. In our adolescent bariatric surgery program, our surgeons have performed more than 35 laparoscopic gastric bypass surgeries in the last year—one of the highest volumes in the region—and have contributed to the national research mission to understand the metabolic effects of the surgery within this age group.

The Texas Children's Fetal Center leads the nation in performing and developing techniques to diagnose and treat unborn children. In collaboration with the maternal fetal medicine group at Baylor College of Medicine, our fetal surgeons have performed the highest volumes of minimally invasive spina bifida repair and fetal endoscopic occlusion for congenital diaphragmatic hernia in the U.S., Our pectus excavatum program has gained an international reputation, with more than 100 Nuss procedures performed this year. Finally, our Level I trauma program had more than 1,200 trauma admissions in 2020, making it one of the largest in the region.

These clinical missions are underscored by our groundbreaking research initiatives, which are supported by government agencies including the National Institutes of Health and private foundations. We continue to drive the field of pediatric surgery forward through our basic and translational research programs, which have received new awards from the Enduring Hearts Foundation and the Department of Defense this year.

We also place great emphasis on our education mission, with the goal of training the next generation of pediatric surgeons through residency and fellowship. The division is the pediatric training partner for Baylor College of Medicine, providing mentorship for general surgery residents during their rotations at Texas Children's Hospital. We are also home to the Pediatric Surgery Fellowship Program, one of the highest regarded programs in the nation, and which accepts only one applicant per year. During this two-year program, residents are exposed to a broad array of surgical cases and work closely with pediatric surgery faculty as well as our surgical critical care and fetal surgery fellows in the surgical care of sick children.

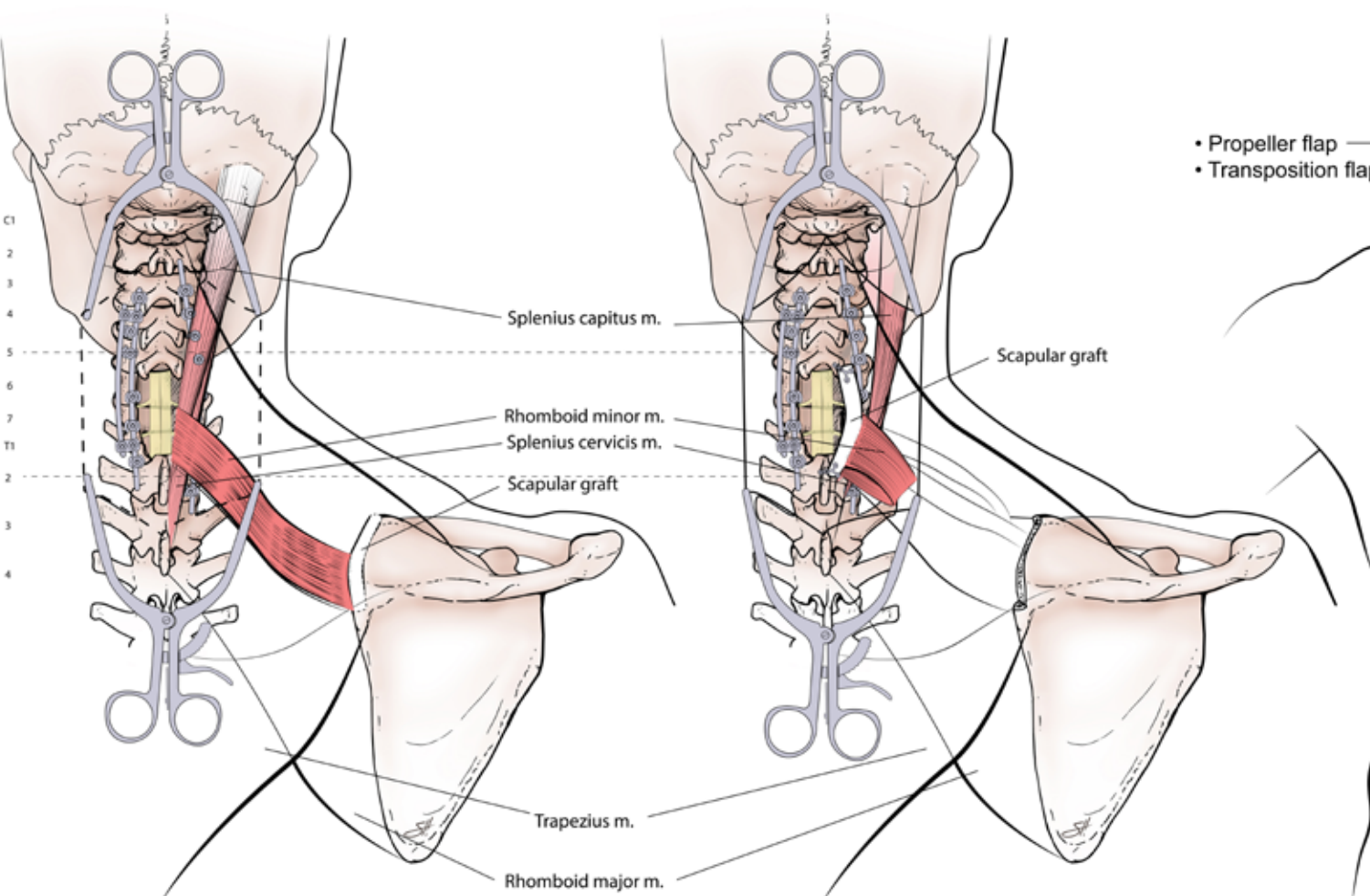
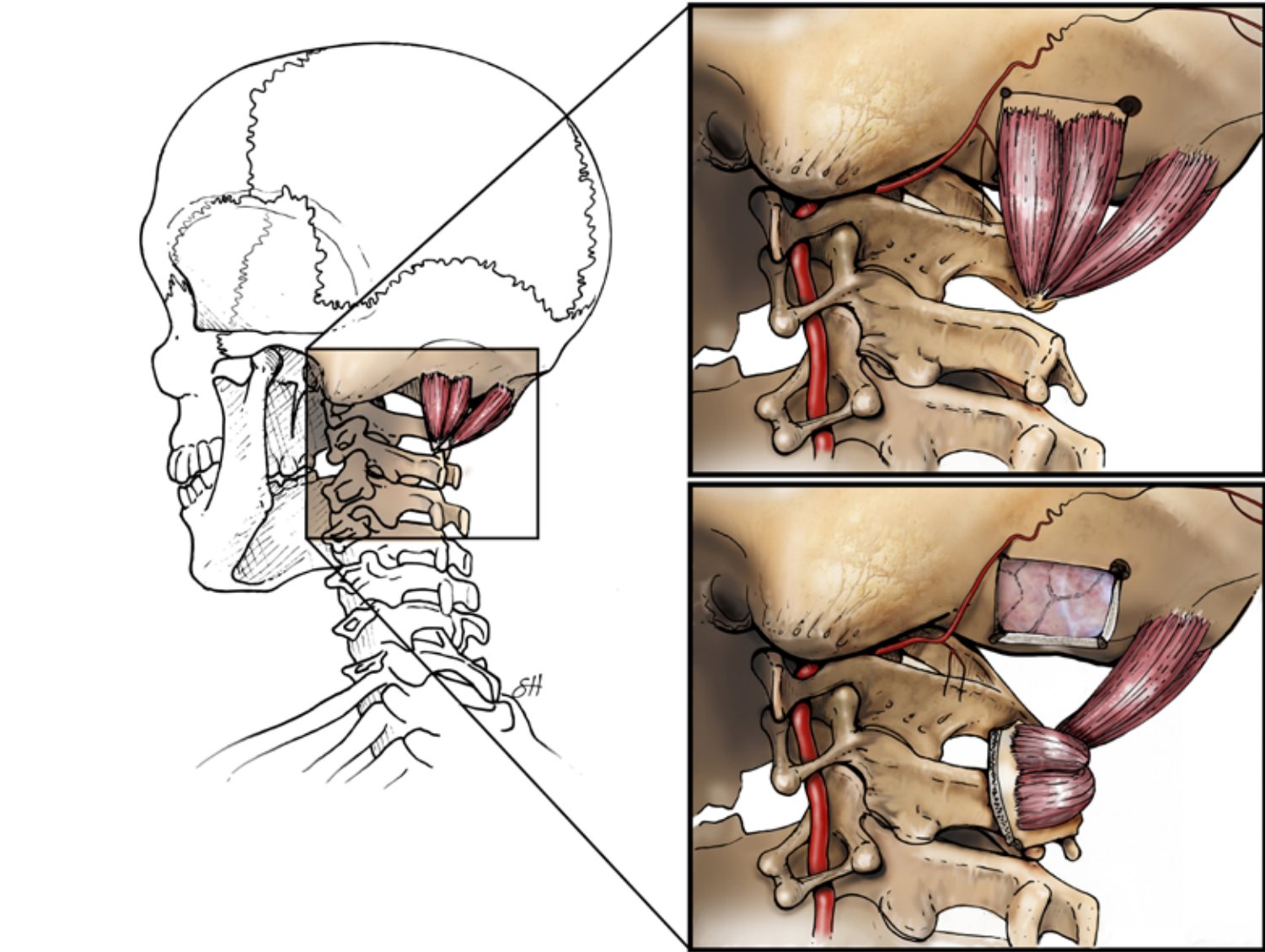
PLASTIC SURGERY

Faculty in the Division of Adult Plastic Surgery combine the science of medicine with the art of patient care in their practices, which include the Center for Plastic Surgery at the Lee and Joe Jamail Specialty Care Center, Ben Taub Hospital, Houston Methodist, The University of Texas MD Anderson Cancer Center and the Michael E. DeBakey Veterans Affairs Medical Center. We also have coordinated unique and extremely popular elective surgery rotations with UTMB-Shriners Burn Unit and The Dallas Plastic Surgery Institute.

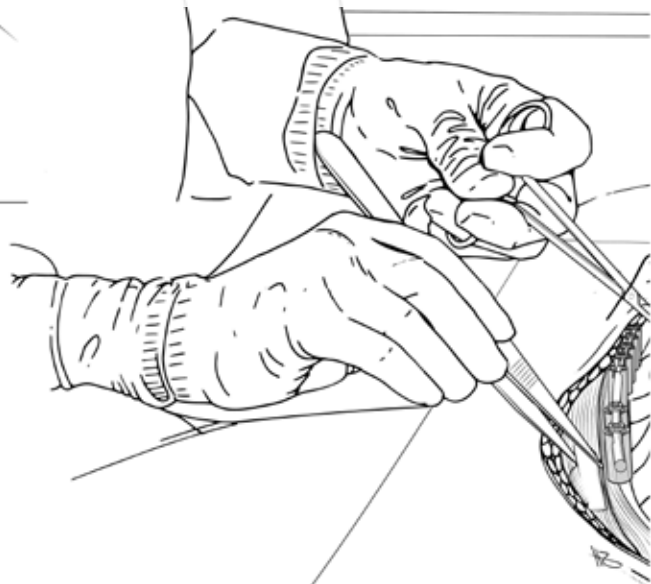
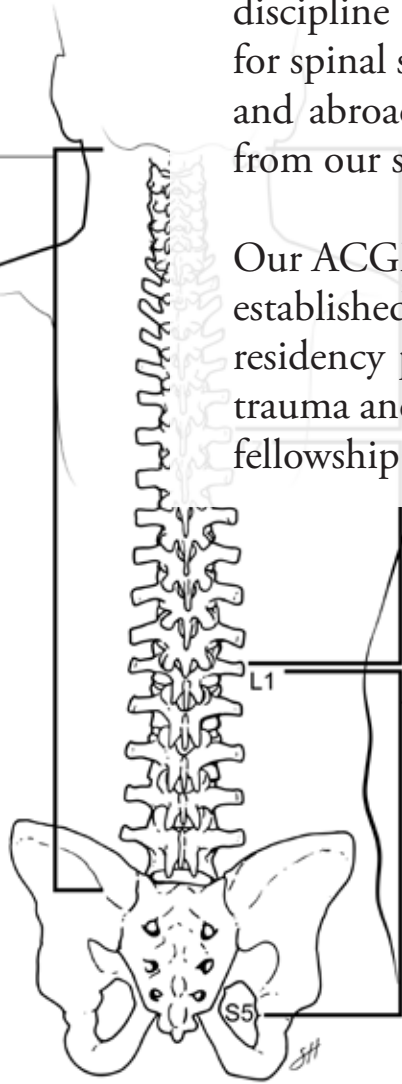
Our doctors provide advanced techniques in aesthetics and aesthetic surgery, facial plastic surgery, cosmetic skin and body surgery, reconstructive breast surgery, lymphedema surgery, reconstructive surgery, spino-plastic and hand surgery.

Ranked first in the nation for the past two years by Doximity.com for research output of any plastic surgery program, our faculty pursue a wide variety of clinical and basic science research projects, reflected in more than 100 peer-reviewed publications annually. Working with the Department of Neurosurgery, our faculty are at the forefront of the newly formed discipline of spino-plastic reconstruction, a surgical technique providing enhanced access for spinal stabilization procedures. More than 100 clinicians and researchers from the U.S. and abroad have attended our annual Spino-Plastic Reconstruction Conference to learn from our surgeons about this new sub-specialty.

Our ACGME-accredited six-year integrated residency in plastic surgery, one of the longest established programs in the U.S., also is consistently ranked one of the top plastic surgery residency programs in the country. It offers training exposure ranging from cosmetics to trauma and breast reconstruction microsurgery. We also offer a Texas State Board approved fellowship in hand surgery through the Department of Orthopedic Surgery.



- Propeller flap
- Transposition flap



Spino-Plastic Reconstruction illustrations by Scott Holmes, CMI

PEDIATRIC PLASTIC SURGERY

The Division of Plastic Surgery at Texas Children's Hospital has one of the longest standing plastic surgery programs in the U.S., where legendary figures in the field who have graced the halls of Baylor included Drs. Ralph Millard, Baron Hardy, Melvin Spira and Samuel Stal. The division boasts the largest pediatric plastic surgery practice at the largest children's hospital in the U.S., including 12 plastic surgeons, two craniofacial orthodontists and one oral surgeon. Our pediatric hand team is composed of four plastic and orthopedic pediatric trained surgeons who provide care for complex congenital and traumatic injuries.

The program is located in the Texas Medical Center where the plastic surgery residents receive training in all areas required by the ACGME and the American Board of Plastic Surgery. Clinical rotations are performed at three private institutions: Baylor St. Luke's Medical Center, Texas Children's Hospital and Houston Methodist Hospital. Public and government hospital affiliations are with Ben Taub Hospital (a Level I trauma center), the Michael E. DeBakey Veterans Affairs Medical Center and The University of Texas MD Anderson Cancer Center, all leading centers in their respective areas of focus.

Our faculty and alumni recognitions include service as editors of the *Journal of Plastic and Reconstructive Surgery*, the premier journal of the field, and in the presidency of the American Society of Plastic Surgery and the American Association of Hand Surgeons. Additionally, our division faculty lead the profession in our academic pursuits, regularly publishing studies related to clinical outcomes, clinical care, novel surgical interventions, value-based cost allocation, telehealth implementation, business policy and plastic surgery training.



Pediatric plastic surgeon Dr. Laura Monson and patient.

Photo by Paul Vincent Kuntz



SURGICAL ONCOLOGY

The Division of Surgical Oncology, with its collaborative sections for breast, colorectal, endocrine and hepatopancreatobiliary surgery, treats a comprehensive range of breast, endocrine, gastrointestinal and other solid organ cancers. Our surgical oncology team led by division chief Dr. Ramsay Camp, also surgical oncology service line chief at Baylor St. Luke's Medical Center, plays an integral role in supporting cancer care at our comprehensive NCI-designated Dan L Duncan Comprehensive Cancer Center, ranked 25th in the 2021 *U.S. News & World Report*. In this survey, our GI surgery program specifically achieved a 24th place ranking for U.S. programs and our colon cancer surgery program was deemed “high performing.”

Our surgical oncologists are at the forefront of advancing cancer care, working with NIH and other federal and industry grants to conduct critical studies to advance potential cancer cures. Novel surgical approaches to treat cancer pioneered by our faculty include such new techniques as trans-oral thyroid and parathyroid surgery, trans-rectal colectomy, magnetic seed imaging in the treatment of breast cancer and use of a mass spectrometry “Cancer Pen” to assess tumor margins. Reflective of these achievements, our faculty received multiple academic awards this past year, including Norton Rose Fulbright Faculty Excellence, Women of Excellence and Excellence in Patient Care awards.

Our Elkins Pancreatic Center, led by Dr. William Fisher, was awarded this past year a renewal of its multicenter U01 grant to investigate the role of the microbiome in pancreatitis, diabetes and pancreatic cancer. Our researchers also are applying abeyance pathology at our McNair and Ben Taub clinical sites to integrate clinical biopsies with proteogenomics to elucidate mechanisms of cancer progression and drug resistance. Our faculty also serve as national leaders for studies developing artificial intelligence for margin assessment in breast cancer surgery.

We recognize that a cancer diagnosis is one of the most difficult, stressful times for our patients. Everything we do from the bench to the clinic is aimed at easing the stress of this challenging time for each of our patients with cancer.

TRAUMA & ACUTE CARE SURGERY

This year a new Division of Trauma and Acute Care Surgery was created within the Department of Surgery, reflecting the Baylor legacy of expert trauma care at Ben Taub Hospital and the rise of the new specialty of acute care surgery. In addition to our trauma program, led by Dr. Chad Wilson at Ben Taub, the division includes our critical care programs at each of our hospital affiliates and a new Hernia Center led by Dr. Michele Loor that is based out of our McNair Campus Baylor Clinic. These sub-specialty programs are complemented by elective general surgery and emergency general surgery practices at each campus. Together, the division includes nearly three dozen physician and advance practice provider faculty, making it one of the largest divisions in our program.

With our high-volume trauma program ranked at the top of the American College of Surgeons Trauma Quality Improvement Program clinical quality rankings for trauma programs and our critical care programs deploying state-of-the-art care for nearly 100 patient beds in five ICUs across the Texas Medical Center, the division's clinical programs are first in class. The breadth of care and experience provided by division faculty, treating cases ranging from perforated diverticulitis to acute appendicitis, is the backbone of our clinical and residency training programs. The division thus plays a pivotal role in supporting our general surgery residency and its own highly sought, ACGME-accredited Surgical Critical Care Fellowship, staffed by faculty who are all double-boarded in general surgery and surgery critical care.

The research efforts of the division are focused on surgical outcomes and health services research studies, studying the impact of the evidence-based protocols developed and implemented by our acute care surgery teams. In partnership with IQuEST faculty, these studies help to enhance the implementation of best practices care protocols for the sickest of the sick.



SICU medical director Dr. Michele Loor in the COVID Unit at Baylor St. Luke's Medical Center.

VASCULAR SURGERY & ENDOVASCULAR THERAPY

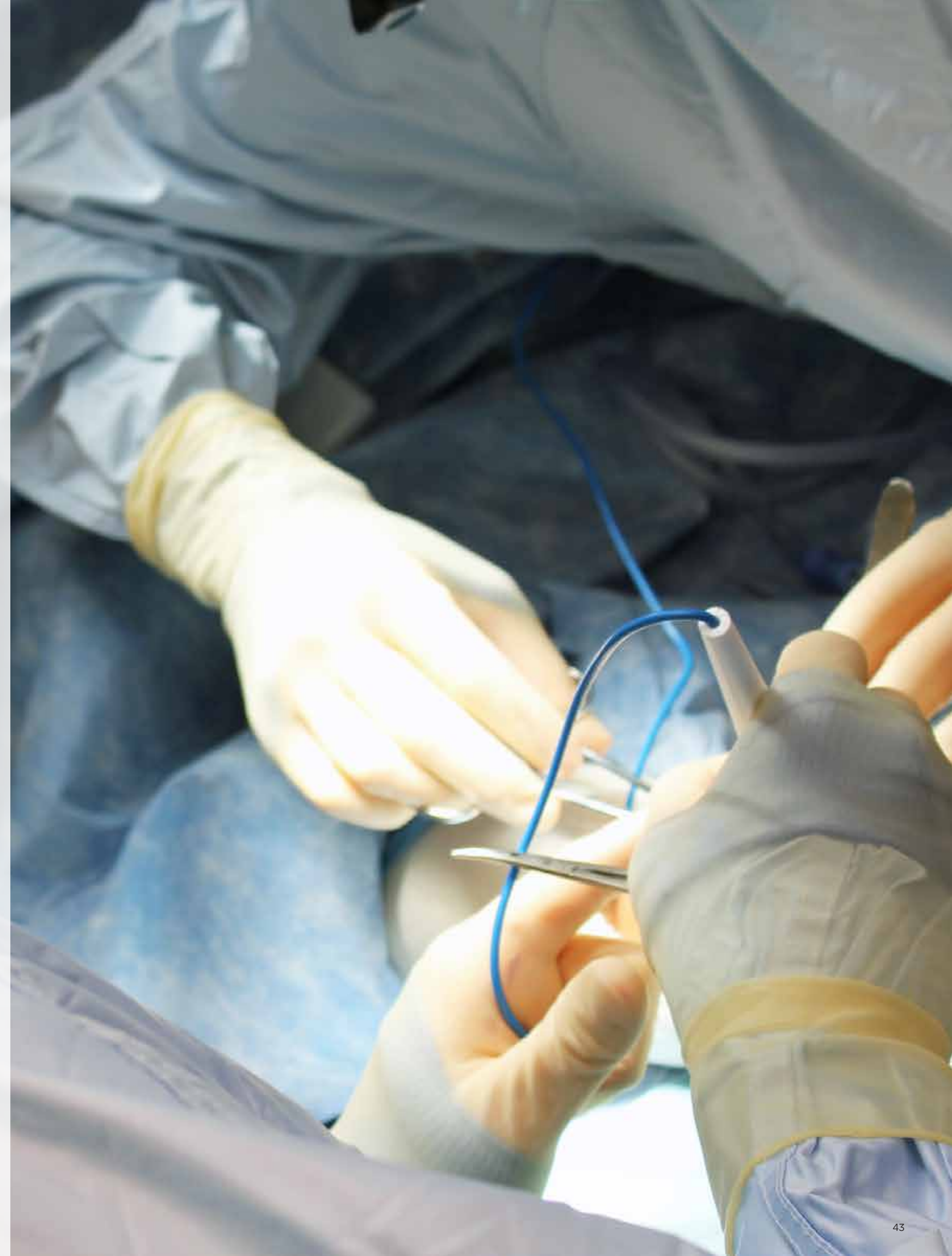
Our multidisciplinary vascular surgery clinical program, integrating vascular surgeons, podiatrists, physical therapists and others, has evolved from performing primarily traditional open surgical procedures to today offering a wide range of cutting-edge, minimally invasive endovascular interventions.

Our STEP (Save The Extremity Program) is a regional, national and international leader in multidisciplinary care for diabetic foot ulcer and chronic limb-threatening ischemia. Our group also is at the forefront in performing Distal Vein Arterialization procedures, a novel limb salvage approach using the venous system when arterial strategies are insufficient. These innovative programs complement traditional open and percutaneous treatments for aortic, carotid and other major vascular diseases.

The division's research ventures are broad and focus on developing of new technologies and methods to prevent and treat a variety of vascular conditions. This research covers a wide range of endeavors from preventing falls and measuring frailty with wearable technologies, to preventing amputations by developing innovative endovascular techniques. Our focused clinical research activities include peripheral arterial disease, endovascular aneurysm repair and fenestrated endovascular aneurysm repair trials.

Our faculty has received numerous funding awards, including a \$17 million Federal grant to study postoperative anemia and the threshold for transfusion in vascular surgery patients. Among many other grants funded by federal or non-governmental agencies, we also were recently awarded a Society for Vascular Surgery VISTA grant to reduce amputations and disparities within Harris Health System, our county health authority.

We offer exceptional educational opportunities for the next generation of vascular surgeons. Our ACGME-accredited Vascular Surgery Fellowship (5-2) and integrated residency (0-5) provide comprehensive training in the care of vascular patients using the best medical, open surgical and catheter-based endoluminal therapy. Our faculty and trainees routinely present their work at the annual meetings of nearly all the major vascular professional societies, with subsequent publications in the highest ranked surgical journals.



Endowed Chairs and Professors

Baylor College of Medicine

Josephine Abercrombie Endowed Professorship in Plastic Surgery Research
Edward M. Reece, MD

Cullen Foundation Endowed Chair
Joseph S. Coselli, MD

DeBakey Bard Chair in Surgery
Todd K. Rosengart, MD

Jimmy and Roberta Howell Professorship in Cardiovascular Surgery
Scott A. LeMaire, MD

George L. Jordan, MD Chair of General Surgery
William E. Fisher, MD

Meyer-DeBakey Chair in Investigative Surgery
George P. Noon, MD

Stan and Sue Partee Endowed Chair in Hepatology
Prasun Kumar Jalal, MD

John W. “Jack” Reid, MD, ’43 and Josephine L. Reid Endowed
Professorship in Surgery
Joseph L. Mills, Sr. MD

Lester and Sue Smith Endowed Chair in Surgery
Kenneth K. Liao, MD, PhD

Olga Keith Wiess Chair of Surgery
Alastair Thompson, BSc (Hons), MBChB, MD
E. Ramsay Camp, MD

Texas Children’s Hospital

Clayton Endowed Chair in Cardiac Transplant and Mechanical Support
Iki Adachi, MD

Melvin Spira MD Endowed Chair in Plastic Surgery
Edward P. Buchanan, MD

Donovan Chair in Congenital Heart Surgery
Christopher A. Caldarone, MD

JLH Foundation Chair in Transplant Surgery
John A. Goss, MD

Brad and Melissa Juneau Endowed Chair in Congenital Heart Surgery
Jeffrey A. Heinle, MD

S. Baron Hardy Endowed Chair in Plastic Surgery
Larry H. Hollier, MD

Clayton Endowed Chair in Surgical Research
Sundeep Keswani, MD

Samuel Stal, MD Endowed Chair in Plastic Surgery
William C. Pederson, MD

**Michael E. DeBakey Department
of Surgery at Baylor College of Medicine**

One Baylor Plaza, MS: BCM390
Houston, Texas 77030

Editor-in-Chief: Todd K. Rosengart, MD
Editing and Design: Scott C. Holmes, CMI
Editing: Amanda May
Editing: Bertie Taylor, MFA

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MICHAEL E. DeBAKEY
DEPARTMENT OF
SURGERY