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45 Department of Surgery Timeline
This past year has been one of many accomplishments for the Department of Surgery at Washington University School of Medicine. Clinical volume continues to grow as our surgeons offer regional—and in many cases, national and international—referral centers for advanced surgical care. Our basic science researchers and clinical faculty have launched innovative research projects with the help of new funding. And our 11 residencies and fellowships—led by the General Surgery Residency—consistently draw top recruits as premier training programs in their specialties.

This report will provide many of the year’s highlights for our various divisions and sections. With the support of Greg Sicard, MD, our Executive Vice Chairman, we have recruited some of the top faculty in the country over the past few years. In this report, you will see new faces in leadership positions and throughout our faculty.

Other highlights include the top rankings by *U.S. News & World Report* of Barnes-Jewish Hospital and St. Louis Children’s Hospital in a number of specialty areas that include programs in the Department of Surgery. Our surgeons offer care in seven of the 15 specialty areas of the hospitals that were ranked in the top 25. Many of our faculty are active participants in the Alvin J. Siteman Cancer Center at Barnes-Jewish Hospital and the School of Medicine, which this year joined the top tier of cancer research and treatment institutions with a designation by the National Cancer Institute as a Comprehensive Cancer Center.

In addition, you will see the impact made by our surgeons in the lives of patients with leading-edge surgical care. Some of this care involves minimally invasive surgery for conditions that—until recently—were treated through open procedures: colon and prostate cancer, liver resection and endovascular surgery, to name a few. Our Department also has continued to lead the nation in performing complex surgical procedures such as cardiac surgery, esophagectomies, Whipple procedures and plastic nerve reconstructive procedures. In the critical care of very sick patients, we have made major advances in the treatment of cardiac and general surgery patients.

Under our new Vice Chairman for Clinical Services, Ralph Damiano Jr., MD, the Department is developing new initiatives to improve delivery of our services. These include specialized treatment centers and efforts to partner with community physicians throughout the Midwest.

In the research area, two important initiatives taking fundamental discoveries and translating them into clinical treatment have been undertaken. Our Vice Chairman for Research, Robert Thompson, MD, describes our faculty’s contributions to the BioMed 21 program at Washington University, and to the National Institutes of Health (NIH) Roadmap.

In addition to advances in clinical care and research, a primary focus of our Department remains educating the future generation of academic surgical leaders. The quality and innovation that are so much a part of the General Surgery Residency are evident in the report provided by Program Director Mary Klingensmith, MD, and a description of our Surgical Skills Lab.

Looking back, I am proud of our progress over the past year. As we prepare for the future, the prospects are very promising for our patients, trainees, faculty and staff.

Timothy J. Eberlein, MD
Bixby Professor of Surgery;
Chairman, Department of Surgery;
Director, Alvin J. Siteman Cancer Center
Although our volume has grown steadily over the past three years, the Department of Surgery faces many of the same challenges as other academic surgery departments around the country. These include declining reimbursements, the development of alternatives to traditional surgery and the preference of many patients to undergo surgery in a community hospital setting.

Yet, in one area that poses problems for our surgeons and other state health care providers, I am pleased to report some progress. In recent months, a Missouri law designed to reign in soaring medical malpractice costs went into effect. This represents meaningful reform that should address some of the concerns expressed by the state's physicians.

Despite steady growth and other positive developments, the Department's academic leaders and other faculty members are not satisfied to maintain the status quo. A number of initiatives are underway to improve delivery of our services and offer our expertise to patients in outlying areas.

Clinical Activity Shows Steady Growth

Over the past three years, the number of procedures, patient visits and patients who undergo tests and lab procedures...
has grown each year to the current level of more than 55,000 procedures, 74,000 visits and 38,000 tests/lab procedures. This past year, we also had the highest amount of clinical charges and receipts in the history of the Department. At the same time, reimbursements continued to decline and medical malpractice costs increased—trends that are expected to continue.

We have worked with our hospital partners to improve clinical operations. At Barnes-Jewish Hospital, the Southwest Tower is now home to 28 new operating rooms and a new 21-bed cardiothoracic intensive care unit, which constitute the first phase of a $95 million, three-year OR renewal project. St. Louis Children’s Hospital opened a state-of-the-art, minimally invasive surgical suite and launched an $80 million expansion that will include two new operating rooms and expansion of the neonatal and pediatric intensive care units. Plans to expand other clinical services also are underway.

**Initiatives**

The Department’s goals in patient care are twofold: to continue improving clinical operations on the Barnes-Jewish Hospital (BJH) and St. Louis Children’s Hospital campuses and to expand our presence in the St. Louis and Midwest regions.

The Alvin J. Siteman Cancer Center at BJH and Washington University School of Medicine serves as a model for providing exceptional care and extensive services to a group of patients. The Department is in the early stages of using this concept to develop a world-class cardiovascular center offering a multidisciplinary and coordinated approach for patients with heart problems. As this project develops, we also will be looking for opportunities to develop other specialized centers.

Some of our divisions and sections already base a significant amount of their practice at Barnes-Jewish West County Hospital (BJWCH). Urologic surgeons see about 30 percent of their patients at this St. Louis County hospital, including many patients with stone disease. And our colorectal surgeons, who are expanding their practice in West St. Louis County, recently opened the Center for Colorectal and Pelvic Floor Disorders (COPE Center) at BJWCH.

Within the BJC Healthcare System, our surgeons also will look at opportunities to extend services to St. Charles County (adjacent to St. Louis County), as BJC builds a second hospital in this rapidly growing area.

Within the Cardiothoracic Surgery Division, the Section of Cardiac Surgery is a leader in setting up regional care centers. In addition to its cardiothoracic surgery program at Christian Hospital in North St. Louis County, the section manages heart programs in Mount Vernon, IL, and Branson, MO.

As part of a premier academic group, our surgeons have tremendous expertise, and we will look for other opportunities to partner with community physicians to provide specialized care to patients in the Midwest region.

We also are examining innovative ways of direct patient outreach. A pilot Second Opinion Service in the Division of Cardiothoracic Surgery has been very successful and has resulted in approximately 40 percent of patients changing their medical provider to Washington University. In addition, upgrades to the Department of Surgery website have made it more user friendly, and we are planning a number of innovative web-based strategies in the coming year.

As you can see, with a rich history and strong operations, we are poised to continue and expand the clinical mission of the Department of Surgery.

Ralph J. Damiano Jr., MD
Vice Chairman, Clinical Services
Two initiatives set our direction as the Department of Surgery continues its leadership in surgical research.

Biomed 21, a strategic research initiative launched by Washington University, will take fundamental discoveries—in genomics, basic science research and imaging technology—and translate these findings into clinical treatment in the most timely and efficient manner possible. We aim to understand, diagnose and ultimately cure disease by accelerating recent advances in the biologic sciences and focusing them to do the greatest good. In a similar fashion, the National Institutes of Health (NIH) Roadmap encourages the building of research teams that apply basic science to clinical problems.

Our involvement in these initiatives—which is just beginning—adds another dimension to a well-funded, internationally recognized research program.

Under the leadership of surgery chairman Timothy Eberlein, MD, the...
department's research funding has tripled in the past eight years. Researchers now receive almost $20 million in annual NIH, non-federal and corporate-supported grants as well as nearly $2 million in clinical trial support. And we have the most NIH funding devoted to surgeons engaged in science of any academic surgery department in the county.

The medical school's level of NIH funding (the school ranks fourth in grant dollars from the NIH) is an added source of strength, opening up opportunities for collaboration.

In the Department of Surgery, a strong core of faculty members works full time in basic science research. Their range of research interests includes transplant immunology, the molecular development of cancer, the pathophysiology of cardiac problems and the processes underlying urologic conditions. These researchers interact with clinical surgeons, who also may be involved in basic science research, clinical trials or other forms of research. Our clinicians are developing stent graft devices and clinical drug strategies for aneurysms, studying biomarkers in pancreatic cancer and pursuing multi-center cancer drug trials (based at the Alvin J. Siteman Cancer Center)—to name just a few of their interests.

The Department's researchers also are leading efforts in three of the most promising areas of surgical research:

**Genomic research**

J. Perren Cobb, MD, associate professor of surgery and genetics, has played a major role in genomic research into critical injury as part of the Inflammation and the Host Response to Injury collaborative research program. The group's recent study—which found significant differences in the activity levels of genes in critically ill patients versus healthy volunteers—is the first step toward gene-based therapy in the ICU.

Meanwhile, Ming You, MD, PhD, and others pursue research at the Siteman Cancer Center on genes that contribute to lung-cancer susceptibility and seek compounds to prevent the disease.

**Molecular imaging technology**

This technology now has the potential to bridge the gap between molecular and cellular biology and patients' clinical problems. Taking a first step in this area, Greg Sicard, MD, section chief of Vascular Surgery, provides carotid plaque to Mallinckrodt Institute of Radiology for pre-operative molecular imaging.

**Minimally invasive surgery**

As companies develop more sophisticated minimally invasive surgical instruments, our surgeons continue research into their appropriate application. Ralph Damiano Jr., MD, section chief of Cardiac Surgery, led a clinical trial demonstrating that minimally invasive surgery for atrial fibrillation takes half the time of the traditional surgical procedure, but is equally effective. And James Fleshman Jr., MD, section chief of Colon and Rectal Surgery, played a key role in a study demonstrating that minimally invasive surgery is as safe and effective as standard open surgery for most patients with colon cancer.

With these exciting developments—and through intense collaboration with other departments—we look forward to continued progress in basic science research and its translation into the latest clinical treatments.

Robert W. Thompson, MD
Vice Chairman for Research
Thalachallour Mohanakumar, PhD, has research interests in transplantation and tumor immunology.

In Brief

- NIH records place Thalachallour Mohanakumar, PhD, the Jacqueline and William Maritz Professor of Surgery, above the 95th percentile in extramural NIH grants received over the last 25 years. Mohanakumar’s research interests include transplantation and tumor immunology. In addition to his work with the Section of Transplantation and Division of Cardiothoracic Surgery, his laboratory has collaborative projects with faculty in pulmonary medicine, pathology, cell and molecular biology.

- Yian Wang, MD, PhD, associate professor of surgery, and her colleague, Ming You, MD, PhD, professor of surgery, have developed a strain of mice that readily develops lung tumors with the same genetic mutations found in human lung tumors. Moreover, the mice are especially sensitive to the carcinogenic effects of tobacco smoke. The researchers will use the smoke-sensitive mice they developed to test whether various chemopreventative agents can stop the formation and growth of tobacco smoke-induced lung tumors.

- Jeffrey Arbeit, MD, professor of urologic surgery—funded by the National Cancer Institute (NCI), the Association for the Cure of Prostate Cancer (CaP CURE) and Siteman Cancer Center—studies molecules that determine how precancerous cells or cancer cells respond to conditions of low oxygen or reduced nutrients, such as glucose or amino acids. These molecules—hypoxia-inducible factor 1 alpha (HIF-1 alpha) and mammalian target of rapamycin (mTOR)—have been shown to be overactive in human cancers; the mTOR molecule may play a role in prostate cancer. With the help of several Siteman core facilities and collaborators, Arbeit has created transgenic mouse models that more faithfully emulate cancer development, growth and spread than do cell-culture-based systems. So far, it appears that mice with overactive HIF-1 alpha may indeed be prone to developing more aggressive cancers.

- John Boineau, MD, professor of surgery, and Richard Schuessler, PhD, research associate professor of surgery, considered world authorities in cardiac electrophysiology, are co-investigators on an NIH study of surgical treatment of cardiac arrhythmias along with Ralph Damiano Jr., MD.
Department of Surgery

The Divisions
Departmental Leadership

Bixby Professor and Chairman
Director, Alvin J. Siteman Cancer Center
Timothy J. Eberlein, MD

Executive Director, Business Affairs
Jamie Sauerburger

Vice Chairmen

Executive Vice Chairman
Gregorio A. Sicard, MD

Vice Chairman for Clinical Services
Ralph J. Damiano Jr., MD

Vice Chairman for Research
Robert W. Thompson, MD

Division/Section Chiefs

Division of Cardiothoracic Surgery
G. Alexander Patterson, MD
Evarts A. Graham Professor

Section of Cardiac Surgery
Ralph J. Damiano Jr., MD
John Shoenberg Professor

Section of General Thoracic Surgery
G. Alexander Patterson, MD

Section of Pediatric Cardiothoracic Surgery
Charles B. Huddleston, MD

Division of General Surgery
Gregorio A. Sicard, MD

Section of Burn, Trauma and Surgical Critical Care
Timothy G. Buchman, PhD, MD
Harry Edison Professor of Surgery

Section of Colon and Rectal Surgery
James W. Fleshman Jr., MD

Section of Endocrine and Oncologic Surgery
Jeffrey F. Moley, MD

Section of Hepatobiliary-Pancreatic and Gastrointestinal Surgery
Steven M. Strasberg, MD
Pruett Professor of Surgery

Section of Transplant Surgery
William C. Chapman, MD

Section of Vascular Surgery
Gregorio A. Sicard, MD

Division of Pediatric Surgery
Robert P. Foglia, MD

Division of Plastic and Reconstructive Surgery
Susan E. Mackinnon, MD
Sydney M. Shoenberg, Jr. and Robert H. Shoenberg Professor of Plastic and Reconstructive Surgery

Division of Urologic Surgery
Gerald L. Andriole Jr., MD

Residency/Fellowship Program Directors

Breast Fellowship
Jill R. Dietz, MD

Cardiothoracic Surgery Residency
Marc R. Moon, MD

Colon and Rectal Surgery Residency
Elisa H. Birnbaum, MD

General Surgery Residency
Mary E. Klingensmith, MD

Minimally Invasive Surgery Fellowship
J. Christopher Eagon, MD

Pediatric Surgery Residency
Robert P. Foglia, MD

Plastic Surgery Residency and Hand Fellowship
Keith E. Brandt, MD

Surgical Critical Care Fellowship
Craig M. Coopersmith, MD

Transplant Fellowship
William C. Chapman, MD
Jeffrey A. Lowell, MD

Urologic Residency
Gerald L. Andriole Jr., MD

Vascular Surgery Fellowship
Gregorio A. Sicard, MD
xtensive clinical practices and research activity

are the norm for all six sections within the Division of General Surgery—Burn, Trauma and Surgical Critical Care; Colon and Rectal Surgery; Endocrine and Oncologic Surgery; Hepatobiliary-Pancreatic and Gastrointestinal Surgery; Transplant Surgery; and Vascular Surgery.

A division within the Department of Surgery, we have more than 40 faculty members, making us larger than many entire academic departments of surgery in the country. Because of the scope of our sections, the Division’s surgeons perform a wide variety of procedures. Within each specialty, surgeons also offer the most advanced techniques—such as laparoscopically assisted colectomy, ductoscopy, laparoscopic liver and pancreatic surgery, image-guided liver surgery and leading-edge endovascular therapies.

In addition to this innovation, the section’s surgeons are dedicated to excellence in patient care. All of this is possible through the work of our section chiefs, who are leaders in their respective fields.

Our division’s faculty also is committed to advancing science. In each section, faculty members are funded by government or other external sources for basic science and/or clinical research. This research ranges from genomic research in the ICU to advancements in laparoscopic procedures, clinical trials of cancer drugs, transplantation and new devices for endovascular therapies.

In education, the General Surgery Residency Program maintains its standing as one of the most competitive programs in the country. Program Director Mary Klingensmith, MD, has worked relentlessly to tailor the program to the 80-hour duty limit, enhance interactive learning and increase training in minimally invasive surgery.

The following pages will give you a closer look at our residency and the wide range of clinical and research activities pursued by faculty members in our division. In all three areas, the quality and scope of our programs place us among the leaders in general surgery.

Gregorio A. Sicard, MD
Chief, Division of General Surgery; Executive Vice Chairman
The General Surgery Residency Program

at Washington University School of Medicine continues to distinguish itself as it meets the challenges of 21st century graduate medical education.

First, the program offers a breadth and depth not seen in many other general surgery residencies. If residents are undecided about their area of specialization, they will benefit from clinical experience across all of the specialties represented by our five divisions and six general surgery sections. In addition, they will gain extensive operative experience, easily fulfilling case requirements for board eligibility in general surgery.

Residents also find camaraderie—not only among residents but between residents and faculty. Our faculty members, who are among the leaders in their surgical specialties, bring both enthusiasm and a strong desire to mentor to their daily duties.

While some programs specify the type and interval for research, our residents find flexibility regarding whether they do research, when they do it and the type of research conducted. Residents have a wide range of opportunities for traditional bench or clinical outcomes research. They also may choose to pursue advanced degree programs—such as MBA or Master of Public Health programs—during the research years.

Above: Surgery intern Catherine Walsh, MD, participates in the Surgical Skills Lab.
Finally, the program seeks to remain on the leading edge of general surgical residencies by teaching basic and advanced skills in a surgical skills lab, by offering surgical ethics training and by formally pairing residents with faculty mentors who meet with them several times a year.

The residency has met a number of challenges in recent years and will continue to be proactive. We were "ahead of the curve" in complying with the 80-hour duty limit, yet still must make adjustments as patient volumes increase. The program is taking the same vigorous approach to the new competency requirements set forth by the Accreditation Council for Graduate Medical Education (ACGME). We also continue to recruit top applicants among women and minorities.

Part of the program’s success comes from resident input—including concerns raised at town hall meetings and suggestions made at an annual retreat. Working together, residents and faculty have made our training program one of today’s premier general surgery residencies.

Mary E. Klingensmith, MD
Program Director
General Surgery Residency Program

Lab Hones Surgical Skills

Three surgical interns watch and listen intently as General Surgery Chief Resident Mark Cohen, MD, demonstrates how to suture a pig’s foot. As he tugs on the suture with a needle driver, Cohen describes good technique: tying off the suture correctly, maintaining proper blood supply and visualizing how the wound will heal.

The exercise is an introduction to the Surgical Skills Lab—a component of the Washington University General Surgery Residency designed to ease the transition from medical school to the operating room.

“We call it their boot camp,” says Debbie Tiemann, RN, nurse coordinator of the lab. “Some of the interns have had significant experience with basic surgical skills in medical school, and some have not. We are trying to get them all on the same playing field.”

From learning suturing in “boot camp,” general surgery residents go on to practice other manual skills, perform procedures on pig and cadaver models, and train on endoscopic and laparoscopic simulators.

When Program Director Mary Klingensmith, MD, launched the skills lab four years ago, only a handful of general surgery residencies had similar programs. Today, she estimates that about 10 percent of the 274 training programs offer this type of hands-on training outside of the operating room.

Klingensmith, who completed her general surgery residency training in the 1990s, had an idea for starting a skills lab when she interviewed for a faculty position in 2000.

“It was lacking in my experience as a trainee, and I felt it was something that needed to be done,” she says. “When I interviewed with Dr. (Timothy) Eberlein, the department chairman, he also wanted to see it happen. My interest plus his interest added up.”

Overall, the skills lab is tilted slightly toward junior residents, who tend to have more time for formal instruction. However, residents in all years of the training program participate in the lab, and as they gain experience, the tasks become more complex—for example, performing angiography in a pig and resuscitative thoracotomy in a cadaver.

A laparoscopic simulator allows residents to practice basic manual skills and steps involved in removing a gall bladder.

“You start as if your ports and instruments are already placed and you are seeing the gall bladder, just continued on page 12
as you would in a live patient,” says Klingensmith. “If you don’t do the right thing, it’s realistic—you can spill bile or cause bad bleeding. Most of the complications that happen in real life also happen in the virtual environment. The advantage is that you can just hit restart and begin all over.”

Other virtual reality experiences are provided by an endoscopy simulator, which offers training in bronchoscopies and colonoscopies. For the bronchoscopy, residents are given the case of a 42-year-old man who is coughing up blood. They see the X-ray and CT scan, perform the bronchoscopy to find the lung tumor, and biopsy the tumor.

Third-year general surgery resident Marcus Tan, MD, notes that the bronchoscopy simulator also allows residents to look at a normal airway—something they might not be able to do with actual patients. He believes his practice on simulators and in basic skills sessions has carried over to his work with patients.

“The more experience and practice you have with any surgical technique, the better you are going to be able to do it,” says Tan. “That’s the same whether it’s knot tying or suturing or advanced laparoscopy.”

Klingensmith does not claim the skills lab produces better surgeons. Because of the variability in patients and the large number of cases that would have to be studied, she acknowledges this is a difficult proposition to prove. However, she believes the lab offers important benefits to patients and residents.

“Patients know enough to ask if this is the first time you’ve done something,” she says. “There is public pressure and increased acknowledgment from the surgical community that it is probably unethical to allow novices to do too much.

“The lab is also a way to keep skills in a low-pressure, relaxed environment where learning is the focus, not getting things done. It’s much more directed toward the learner as opposed to the task.”

Lab resident Marcus Tan, MD, and General Surgery Residency Program Director Mary Klingensmith, MD, work at the endoscopy simulator.

In Brief

• The residency had another highly competitive match for 2005-2006, with eight outstanding students from top medical schools joining the program after interviews of many applicants.

The overwhelming majority of graduates—29 of 33—over the past five years (2000-2004) have gone on to fellowship training or faculty positions, including five who eventually joined the Department of Surgery at Washington University School of Medicine.

• Lab resident Sekhar Dharmarajan, MD, won the sixth annual Samuel A. Wells Jr., Resident Research Day competition sponsored by the General Surgery Residency Program at Washington University School of Medicine. Dharmarajan, who received his medical degree from the University of Pittsburgh, entered a project focused on injury after experimental lung transplantation.

Other lab resident finalists were Kevin McConnell, MD, whose research focused on pneumonia and inflammatory response; and Jack Oak, MD, who studied the suppression of abdominal aortic aneurysms in mice.

• Program Director Mary Klingensmith, MD, was awarded the Outstanding Teacher of the Year Award by the Association for Surgical Education. Formed in 1980, the association represents more than 190 medical schools and institutions throughout the United States and Canada. Its
Research Opportunities Abound

Many research opportunities exist for general surgery residents at Washington University School of Medicine. Most residents spend two to three years in scientific research with no clinical responsibilities in the middle of their training program. Although research is optional, the majority of residents take advantage of this opportunity.

Residents may pursue research in any of the six general surgery sections—Burn, Trauma and Surgical Critical Care; Colon and Rectal Surgery; Endocrine and Oncologic Surgery; Hepatobiliary-Pancreatic and GI Surgery; Transplant Surgery; or Vascular Surgery—or in the Division of Cardiothoracic Surgery. They also may work in other surgical, basic science or clinical science departments at Washington University. In addition, they may spend their research years with an investigator at another university or at the National Institutes of Health (NIH). Some residents even choose to pursue advanced degree programs—such as master’s degrees in business administration or public health—during their research years.

In keeping with one of the residency’s main goals—training the next generation of leaders in academic surgery—faculty members work to tailor each resident’s research experience. Research areas encompass molecular or cell biology, complex systems analysis, animal models of laparoscopic surgery, resident education and other disciplines related to surgery.

The Department of Surgery has three NIH-sponsored training grants. However, all surgical sections have external funding to support residents performing specialized clinical and basic science research within their division. In addition, many residents have applied for and won research competitions from national surgical societies.

The Department devotes approximately 61,000 square feet of laboratory space to research. During Washington University’s 2005 fiscal year, it had more than $19 million in annual external grant funding and placed second among academic departments of surgery in NIH support. In addition, the Department had $1,779,000 in clinical study income, almost twice the amount of eight years ago.

primary goal is to promote the art and science of education in surgery. Klingensmith also was one of two medical school faculty members who received the Loeb Teaching Fellowship sponsored by the medical school. Her proposal for the two-year fellowship involved developing a simulation curriculum. Medical school students will learn basic technical skills and also how to work on simulator equipment.

- The General Surgery Residency Program and the Center for the Study of Ethics and Human Values at Washington University are working together to offer monthly surgical ethics sessions. Ira Kodner, MD, a colorectal surgeon and director of the center, helps lead these optional “pizza round” sessions, which offer a way for harried students to pause and contemplate the emotional, humane and legal implications of their medical decisions.

- The fourth edition of the Washington Manual of Surgery was published by the Department of Surgery in 2005. Four selected chief residents from the Department edit each edition with the assistance of the editor-in-chief, Mary Klingensmith, MD. The editors select and invite residents in the laboratory years and beyond to write or revise chapters for the book with a faculty co-author who has expertise in the topic. By writing these chapters, residents learn how to combine information from diverse sources and communicate a brief, rational approach to the management of patients with surgical problems. The book has been commercially successful for Lippincott, Williams and Wilkins, Inc., and the Department anticipates that it will continue to be revised every two to three years. All interns entering the program receive the book.

- At an annual retreat held each spring, residents discuss the strengths and weaknesses of the program as well as the challenges faced while training in the current era of limited work hours.

- Residents take time out for a number of social activities during the academic year. These include a welcoming picnic, holiday party at the house of Department Chairman Timothy Eberlein, MD, an annual chief residents dinner and a departmental golf tournament.
The Section of
Burn, Trauma and
Surgical Critical Care

As the baby boom generation approaches retirement age, the volume and acuity of cases continue to rise. Older baby boomers tend to be fragile, yet they are intent on remaining active during their senior years. As a consequence, we are seeing increases in both trauma and critical illness.

Serving the St. Louis region—as the area’s only nationally verified Level 1 Trauma Center—our primary goal is providing safe and efficient care for emergency, critically ill and injured patients. For us, the meaningful standard is not

A national leader in emergency surgical services, the Section of Burn, Trauma and Surgical Critical Care is well positioned to face the challenges of an aging population, advance critical care research and train the next generation of critical care professionals.

As the baby boom generation approaches retirement age, the volume and acuity of cases continue to rise. Older baby boomers tend to be fragile,
preventing mortality, but return to function—say, going back to work or returning to a sport. And we contribute to the critical care field nationally as we work to develop best practices in the ICU.

Among our important research contributions, faculty member J. Perren Cobb, MD, has advanced the field of genomics in ways that are highlighted in the accompanying article. But all of our faculty members are active in research—through a post-doctoral training grant in critical care (one of only two such NIH-supported grants in the country), clinical studies, study of heritable aspects of critical illness, evaluation of appropriate triage and many other areas.

Finally, we offer multidisciplinary training through our Surgical Critical Care Fellowship, as well as multi-professional training for physician trainees, nurses taking advanced practice training and those learning nutritional support.

As a leader in the key aspects of critical care—patient care, research and teaching—we are poised to remain the region’s preeminent trauma program.

Timothy G. Buchman, PhD, MD
Chief, Section of Burn, Trauma and Surgical Critical Care

Genomic Research Addresses ICU Challenges

A new technology may hold the answer to long-standing challenges in the ICU: trauma surgeons’ limited ability to predict and shape patient outcome.

“We have become very good at supporting life through artificial organs,” says Washington University Professor of Surgery J. Perren Cobb, MD. “But we don’t provide anything that helps the body heal faster, and a fundamental tension remains—we can’t tell who’s doing well and who’s doing poorly. So we create an ICU environment that we believe is optimal for healing, wait and hold the hand of the loved one.”

After years of research on inflammation—a key component in the body’s response to critical illness and injury—investigators now believe genomic technology may hold the key to better understanding this critical process. As a result, trauma surgeons may one day be able to precisely tailor treatments for critically injured patients.

Using DNA microarrays—glass slides with grids of 40,000 spots, each containing DNA from a single gene—researchers at Washington University School of Medicine and 19 other institutions* found significant differences in the activity levels of genes in severely injured patients versus healthy individuals. And they already have begun the next step—a longitudinal study to find molecular signatures consistent with a good post-injury outcome compared with those indicating a bad outcome.

“If we determine the molecular profile of specific cell types over time in responders versus nonresponders, we should be able to map the trajectory of somebody who is healing versus somebody who is not,” says Cobb. “If we measure this frequently enough, we may be able to tell early on that someone is not heading in the right direction.”

Trauma surgeons may then be able to better intervene and aid healing. And with more precise treatment, the ICU could become a more predictable—and hopeful—place for patients and their families.

*The Inflammation and the Host Response to Injury collaborative research program is supported by the National Institute of General Medical Sciences.

In Brief

• Craig Coopersmith, MD, is lead investigator in quality-improvement studies suggesting solutions to two of the most common and dangerous patient safety challenges in the ICU population: restoring normal phosphorus levels and preventing infections caused by catheters.

• Faculty members published results of their successful work in reducing deep venous thrombosis in trauma patients in the Journal of Trauma with Douglas Schuerer, MD, as the lead author.

• Section Chief Timothy Buchman, PhD, MD, received a grant from the James S. McDonnell Foundation to develop a critical care interdisciplinary research consortium at the national level.

In the ICU, a humidifier on a mechanical ventilator replaces some of the functions of the human nose and pharynx.
Our national leadership in colon and rectal surgery is demonstrated by our contributions to the study of laparoscopic colectomy, multifaceted research programs and the mark made by our residency graduates in academic surgery programs throughout the country.

As detailed on the opposite page, Washington University was part of an international team determining that minimally invasive surgery is as safe and effective as standard open surgery for most patients with cancer confined to the colon. Since the study was completed, use of this technique has tripled across the country. Meanwhile, our section plays a key role in the advancement of laparoscopic colectomy, with six of our seven faculty members training other surgeons.

Much of our research also focuses on colorectal cancer. Collaborative
efforts include the use of positron emission tomography (PET) scanning in staging colorectal cancer and the use of DNA microarray technology to select adjuvant patient therapy. In addition, the section collaborates on studies of other colorectal diseases, and our clinical trials address a wide spectrum of new technology and drugs for colorectal conditions.

Both research and clinical experience are essential to training two colorectal surgery residents each year. The residency program—which celebrated its 25th anniversary in 2005—has seen about 50 percent of its recent graduates go on to academic surgery positions in leading institutions. As an example, one of last year’s graduates—Steven Hunt, MD—recently joined our faculty as assistant professor.

All of these activities occur as we grow our volume by six to eight percent a year—including expansion of clinical initiatives at Barnes-Jewish West County Hospital. These accomplishments point to a growing and dynamic program and show why our section is considered a leader in colorectal patient care, research and teaching.

James W. Fleshman Jr., MD
Chief, Section of Colon and Rectal Surgery

Surgeons Lead Educational Effort

After an international study found minimally invasive colon cancer surgery as safe and effective as the standard open surgery, a challenge remained: Many surgeons lacked the training to perform the procedure. So Washington University colon and rectal surgeons, who had been instrumental in the study, also became leaders in efforts to train their colleagues.

The American Cancer Society reports that colon and rectal cancer is the third most common cancer found in this country—with more than 100,000 new cases of colon cancer expected this year.

The minimally invasive procedure to remove colon cancer—called laparoscopically assisted colectomy—was first performed in 1990. But, until last year, there was concern that patients undergoing the laparoscopic procedure were more likely to have another bout of cancer or to develop cancer at or near the surgical incisions.

To address these issues, a group of American and Canadian colon surgeons—including Washington University colon and rectal surgery chief James Fleshman Jr., MD—systematically studied the procedure. They also placed a moratorium on laparoscopically assisted colectomy performed outside the scope of their study.

In May 2004, the New England Journal of Medicine published the team’s findings that the minimally invasive procedure is as safe and effective as standard open surgery for most patients with cancer confined to the colon. However, the team cautioned that the procedure is only safe and effective if stringent surgical standards are met.

Since then, Washington University colon and rectal surgeons have played important roles in teaching safe methods to other surgeons. First, they gathered a focus group to develop guidelines for training surgeons that were endorsed by the American Society of Colon & Rectal Surgeons (ASCRS) and the Society of American Gastrointestinal and Endoscopic Surgeons (SAGES). Second, six of the section’s seven surgeons now teach the procedure to other surgeons.

“Most colon and rectal surgeons have never performed a laparoscopically assisted colectomy,” says Fleshman. “Residents now receive training, and practicing surgeons are coming back to take cadaver courses. We have been a major leader in that effort.”

With more surgeons trained in safe methods, use of the procedure has increased from about 5 percent to almost 20 percent, according to Fleshman.
The Section of
Endocrine and Oncologic Surgery

There were many positive developments in the Section of Endocrine and Oncologic Surgery this year. Chief among them, the Alvin J. Siteman Cancer Center joined the highest ranking cancer research and treatment institutions with a designation by the National Cancer Institute (NCI) as a Comprehensive Cancer Center. Our surgeons are leaders at Siteman and enthusiastically participate in its programs.

Our section provides the latest approaches to the treatment of breast cancer, melanoma and sarcoma. As part of a multidisciplinary team at the Joanne Knight Breast Health Center, our surgeons interact closely with breast radiologists, plastic surgeons, medical oncologists, radiation oncologists, genetic counselors and others to provide the best in contemporary breast care. We offer breast cancer patients image-guided biopsy, sentinel node mapping and biopsy, breast conservation therapy and brachytherapy. Breast surgeon Jill Dietz, MD, also uses ductoscopy to locate abnormalities in the ductal lining of the breast in patients with pathologic nipple discharge or those at high risk for developing breast cancer.

We also have the world's largest hereditary endocrine cancer registry at a single institution and provide internationally recognized care for thyroid cancer, adrenal tumors, parathyroid and pancreatic-endocrine tumors. The section has three actively accruing institutional clinical trials for thyroid cancer,
and we have published papers in leading surgical and scientific journals on minimally invasive parathyroidectomy, thyroid cancer and adrenal tumors.

We continue to provide the best in multidisciplinary care to patients with melanoma and sarcoma. Our weekly melanoma-sarcoma multidisciplinary conference is regularly attended by more than 30 surgeons, radiation oncologists, radiologists, medical oncologists, dermatologists and pathologists.

In research, our faculty members are active in both basic and translational investigations. Breast cancer research ranges from clinical vaccine trials for breast cancer therapy to studies on advanced breast cancer. And we offer the only NCI-funded therapeutic clinical trial for thyroid cancer.

Finally, our section, which has always provided training for general surgery residents, established a breast cancer fellowship this year. The fellowship is approved by the Society for Surgical Oncology.

I am confident that, with our solid foundation, our section’s excellence in patient care, research and graduate medical education will continue to thrive.

Jeffrey F. Moley, MD
Chief, Section of Endocrine and Oncologic Surgery

In Brief


- The section welcomes William Gillanders, MD, a breast and endocrine surgeon whose research interest is in circulating biomarkers of breast cancer.

- Rebecca Aft, MD, PhD, received NCI funding for research on circulating biomarkers and markers of response in patients with advanced breast cancer.

- Jeffrey Moley, MD, and Bruce Hall, MD, both received clinical teacher of the year awards from the School of Medicine’s class of 2005.

- An article co-authored by Jeffrey Moley, MD, and Mary DeBenedetti, BSN, on prophylactic thyroidectomy in children with MEN-2A gene mutations appeared in the New England Journal of Medicine in September 2005. This is the first long-term follow-up study demonstrating that medullary thyroid cancer can be prevented in these patients, who otherwise uniformly develop the disease.

**Trial Targets**

**Thyroid Cancer**

When Teresa Wright of West Plains, MO, was diagnosed with advanced medullary thyroid cancer in July 2004, surgery was not an option. The tumor was wrapped around two major arteries, and no doctor would attempt an operation to remove it.

As endocrinologists know, surgery is the standard of care for medullary thyroid cancer, and if that is not possible, patients currently have no other options. But, a year after her diagnosis, Teresa is part of an effort to change that. She is one of 16 patients so far participating in a clinical trial of 17-AAG—a drug that may target medullary and differentiated thyroid cancer—at the Alvin J. Siteman Cancer Center and five other institutions.

“I went into the trial with the thought of helping others,” says Teresa. Teresa joined the trial after becoming a patient of Jeffrey Moley, MD, principal investigator for the trial. Moley is a world-renowned expert in the treatment of medullary thyroid cancer.

“To date, there are no drugs that work on these diseases,” says Moley. “Since we know a lot about the molecular genetics of the tumors, we are trying to apply a more targeted strategy based upon the use of drugs that are known to affect the altered proteins that result in tumor formation.”

The 17-AAG trial is the first approved for thyroid cancer by the Cancer Therapy Evaluation Program, the regulatory body of the National Cancer Institute. Moley is optimistic about the trial and also notes other clinical trials are underway with similar medications.

The trial is a welcome development for Teresa, who has metastatic cancer in her left hip and ribs. After beginning her treatments in March 2005, she began feeling better and went back to work at a part-time job in April. “My relationship with Dr. Moley has been more than just a doctor-patient relationship,” she says. “He’s been real concerned.”

Like about a quarter of medullary thyroid cancer patients, Teresa also learned she has Multiple Endocrine Neoplasia (MEN)-2 Syndrome, which may have predisposed her to the cancer. Thus, she and her husband Rick are having their six children tested for the MEN-2 gene.

Jeffrey Moley, MD, with Teresa Wright, who is enrolled in a clinical trial of 17-AAG, a drug that may target medullary and differentiated thyroid cancer.
It has been a year of positive developments for the Section of Hepatobiliary-Pancreatic and Gastrointestinal (HPB-GI) Surgery.

Three new attending surgeons—Brent Matthews, MD; William Hawkins, MD, and Valerie Halpin, MD—bring expertise in minimally invasive surgery, HPB cancer and bariatric surgery to our section. Our service remains a high-volume center for open surgical procedures for cancers of the liver, pancreas and biliary tract, but in the past year, we have greatly increased our volume of laparoscopic surgeries for these diseases—especially laparoscopic liver surgery. We continue to perform approximately 100 Whipple procedures per year—the major operation for pancreatic cancer—with low morbidity, low mortality and a short length of stay.

We also perform a high volume of laparoscopic gastroesophageal reflux disease (GERD) procedures. Many of these procedures are for complex problems such as recurrent hiatal hernias. The bariatric surgical program is increasing.

Above: Laparoscopic patient Martha Hoffman with J. Christopher Eagon, MD, (left) and Steven Strasberg, MD.
in numbers and complexity of problems seen, and in other areas of minimally invasive surgery, our section is seen as the regional center for these procedures.

In research, our section is involved in a major study of adjuvant therapy in resected pancreatic cancer—now in its third year and nearing completion. We have several studies in liver cancer, including new ways of administering radio-frequency (RF) ablation. Another study on staging involves patients whose liver cancer is unresectable; they are treated until their cancer is resectable and then a resection is performed. David Linehan, MD, continues his work on a pancreatic cancer vaccine.

As program director of the General Surgery Residency, faculty member Mary Klingensmith, MD, makes a major contribution to graduate medical education, and J. Christopher Eagon, MD, serves as director of the Minimally Invasive Surgery Fellowship. An important sectional goal is to develop an HPB-GI Fellowship.

Our primary clinical goals remain the same—achieving the best results, developing new procedures, improving patient safety and outcomes, and broadening the range of diseases we can treat.

Steven M. Strasberg, MD
Chief, Section of Hepatobiliary-Pancreatic and GI Surgery

Laparoscopic Surgeries Make Recovery Easier

As surgeons employ new technologies and instruments to expand the use of laparoscopic procedures, patients ultimately benefit.

Ten years ago, patients like Martha Hoffman had major gastric and liver surgery as open operations. Today, Washington University hepatobiliary-pancreatic and gastrointestinal (HPB-GI) surgeons perform many of these surgeries laparoscopically—typically resulting in a shorter hospital stay, less pain and a quicker recovery.

Martha, a neonatal nurse, came to HPB-GI surgeon J. Christopher Eagon, MD, when she weighed about 275 pounds—165 pounds over her ideal body weight. Preoperative tests also showed gallstones, and Martha underwent a laparoscopic gastric bypass and cholecystectomy in January 2004.

Tests also had revealed a liver lesion. Eagon planned to remove the lesion for biopsy when he performed the gastric bypass surgery, but was unable to reach it. When Martha underwent CT and MRI scans of the liver, results were inconclusive. So Eagon referred Martha to section chief Steven Strasberg, MD.

To aid with the recovery, Strasberg waited to perform a laparoscopic liver resection until Martha had lost about 70 pounds, nine months after the gastric bypass surgery. Fortunately, the lesion turned out to be benign.

“I felt I received excellent care,” says Martha. “I had more pain following the gastric bypass surgery, but I attribute that to my weight at the time of that recovery. And I told Dr. Strasberg he was completely on the money for having waited with the liver resection. I recovered from the liver surgery much more quickly and with less pain.”

Strasberg estimates the HPB-GI Section is one of fewer than 10 centers in the country performing major liver, pancreatic and gastric operations laparoscopically for cancerous and benign conditions (laparoscopic gastric bypass is performed more widely).

“You want to make sure you’re doing the same safe operation you are performing as an open procedure,” Strasberg says.

Martha is pleased with the results of her procedures. With only a common complication following the bypass surgery—some scarring, corrected by an endoscopic procedure—she weighed 160 pounds a year after her surgery. She has since undergone reconstructive plastic surgery to remove excess skin and looks forward to a healthier lifestyle.

A CT scan of Martha Hoffman’s abdomen showed a liver tumor (see arrow).

In Brief

• The U.S. News & World Report edition of “America’s Best Hospitals” ranked Barnes-Jewish Hospital 12th in digestive disorders and 19th in cancer for 2005. Washington University HPB-GI surgeons provide care in both these specialties.

• The HPB-GI Section welcomes L. Michael Brunt, MD, as a new associate professor. He formerly served on the faculty of the Endocrine and Oncologic Surgery Section and is a very active member of the Washington University Institute for Minimally Invasive Surgery.

• J. Christopher Eagon, MD, and Valerie Halpin, MD, provide surgical support for a large bariatric surgery program at Barnes-Jewish Hospital and Barnes-Jewish West County Hospital. Approximately 80 percent of gastric bypass procedures are performed laparoscopically.

• A research article by HPB-GI surgeons in press at the Journal of the American College of Surgeons addresses some of the side effects of newer forms of chemotherapy, how to recognize them and their impact on operability of patients.
The past two years have brought tremendous growth to the Section of Transplant Surgery. We have seen a 70 percent increase in volume of cases, from liver and kidney transplants to nontransplant liver-related surgery and vascular access procedures.

The increase in live donor kidney and liver transplants is a significant factor in this growth. With the help of the “mini-nephrectomy”—a minimally invasive procedure to remove the donor kidney, developed by our surgeons—we perform about 50 percent of our kidney transplants as live donor procedures. And approximately 20 percent of liver transplants are either live donations or split-liver transplants.

Our results with liver and kidney transplants have been excellent despite a shift toward transplantation of recipients who are progressively sicker. Meanwhile, we continue to establish and explore new procedures.
programs and techniques. We recently performed our first three successful pancreas transplants and are involved in two trials examining the use of three-dimensional imaging techniques during liver surgery, including one of the country's only NIH-sponsored image-guided liver surgery trials.

With the immunology lab of Thalachallour Mohanakumar, PhD, and other NIH-funded grants headed by surgeons in our section, we have one of the nation's most active basic research programs in abdominal organ transplantation. To complement this, we have hired two full-time clinical research coordinators and have significantly expanded our efforts in this area.

All of this activity creates a fertile training ground for transplant surgeons. So, in 2004, we re-established our transplant fellowship, which now has two fellows preparing for careers in academic transplant surgery.

With strength in all areas of our mission—patient care, research and teaching—we continue to be at the forefront of transplant surgery.

**William C. Chapman, MD**
Chief, Section of Transplant Surgery

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**Grandmother Gives Special Gift**

When Loretta Zerr returned to her home in western Kansas last Easter Sunday, she was "glowing." She had witnessed, and taken part in, what she describes as a miracle.

About four weeks earlier, Loretta had given the gift of life—part of her liver—to her grandson, Tanner, who was then 10 months old. The procedure was performed by Washington University transplant surgeons William Chapman, MD, who removed a portion of Loretta's liver, and Jeffrey Lowell, MD, who transplanted the liver in Tanner.

At the time, Tanner, suffering from biliary atresia, weighed 12 pounds and was struggling to stay alive. He had jaundice and a swollen stomach, and the whites of his eyes were a "Mountain Dew yellow," as described by his mother, Stacy. Since the transplant, father Randy says Tanner's transformation has been like "night and day"—he gained four pounds over the next several months, and his energy level became much like that of his twin sister Morgan, a normal one-year-old.

During Tanner's illness—which began to show at one month of age and was diagnosed at three months—the Zerrs often made decisions quickly. After discussions with health care professionals in their hometown of Kansas City—who could not offer a live-donor option—the Zerrs came to St. Louis Children's Hospital. While speaking to the hospital transplant staff, they quickly gained a sense of peace about Tanner's future.

About six weeks later, Tanner and Loretta underwent the surgery. They had no complications during surgery, and Tanner's prognosis is excellent.

"To the best of our ability to predict, Tanner will have as close to a normal life expectancy as if he had not had biliary atresia and the transplant," says Lowell.

From her research, Stacy knows that a liver transplant in a 12-pound baby is a difficult surgery. "Dr. Lowell showed he is a very talented surgeon by performing this operation and not having complications," she says.

Loretta, who came forward as a donor after learning she had the right blood type (and was a more compatible match than father Randy), was impressed by Chapman's professionalism. "He informed me of the risks up front and the potential rewards of our efforts," she says.

Loretta, who has been back at work at her husband's engineering firm since early April, now sees an active Tanner with a normal complexion and is thankful for the blissful results.

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**In Brief**

- The Alvin J. Siteman Cancer Center at Barnes-Jewish Hospital and Washington University School of Medicine formed a multidisciplinary clinic for the management of hepatocellular carcinoma (HCC) patients. In addition to transplantation, the HCC clinic offers complex liver resection, chemoembolization and radiofrequency ablation.
- Jeffrey Lowell, MD, served as Senior Advisor (for Medical Affairs) to the Secretary of the U.S Department of Homeland Security. During his tenure, Lowell worked as a Senior Policy Advisor in operational and intelligence areas, strengthening the nation’s medical preparedness and response efforts.
- The section established the Anderson-Newton Lectureship in Transplantation to honor Charles B. Anderson, MD, and the late William T. Newton, MD, pioneers in transplantation at Washington University.
The Section of Vascular Surgery

The vascular surgery service treated fewer than 300 patients when it was launched in 1983. Today, we perform more than 4,000 procedures annually and are recognized as a major vascular surgical center in the United States.

Our nine faculty members foster excellence not only in patient care but in research and teaching as well. A very collegial atmosphere exists among our faculty, which includes members recruited from other institutions—such as Juan Parodi, MD, the first vascular surgeon to perform minimally invasive aneurysm surgery—and surgeons trained through our fellowship program.

As our clinical volume grows—approximately 15 percent during the past year—vascular surgery patients benefit from leading-edge technology. This includes clinical trials of several stent...
graft devices designed to repair thoracic aortic aneurysms through minimally invasive endovascular procedures.

In research, our efforts span from the bed to the laboratory and back to the bed. Three faculty members—Eric Choi, MD; Robert Thompson, MD, and John Curci, MD—receive external support for basic science research. Thompson and Curci are active in clinical trials evaluating medications that may slow the growth of aneurysms.

Completing our threefold mission, the Vascular Surgery Fellowship is one of the most selective vascular surgery training programs in the country, recruiting two top fellows each year from a list of almost 100 applicants. The vascular surgery rotation in the General Surgery Residency is also very popular among residents, and we take the time each year to host 25 to 30 international vascular surgery residents at the end of their training.

In the coming year, our goals are to continue our excellence in patient care, expand our research and clinical practice, and to once again attract the best and brightest minds to our fellowship program.

In Brief

- The Section of Vascular Surgery continues to participate in trials of endografts for abdominal aortic aneurysms. The section also has participated in the three clinical trials of endografts for thoracic aortic aneurysms—including one that recently has become commercially available.

- Juan Parodi, MD; Brian Rubin, MD; Luis Sanchez, MD, and Section Chief Gregorio Sicard, MD, are actively involved in clinical trials for cutting-edge endovascular therapies for aneurysms and other vascular conditions.

- Robert Thompson, MD, was selected as vice chairman for research in the Department of Surgery.

- Sicard served as president of the Society of Vascular Surgery during the 2004-05 academic year.

Vascular Patient Keeps Active Lifestyle

For Raymond Karrasch, who has lower extremity peripheral vascular disease, walking had become a real chore by the spring of 2004.

“My right leg was very painful when I walked,” says Ray. “When I walked a block, I’d have to stop and rest.”

Fortunately, Ray had a treatment option unavailable until just a few years ago. Referred by his primary care physician to vascular surgeon Patrick Geraghty, MD, he underwent an endovascular procedure to treat his chronically occluded right superficial femoral artery. Through a needle puncture in the groin, Geraghty reopened the artery using an angioplasty balloon and a stent.

Ray is enthusiastic about the results. The recovery was not painful, and a year later, he has no pain in his leg. Conscientious about his health, Ray follows Geraghty’s advice to exercise and stay active. “I cut the grass walking and play golf on Tuesday mornings,” he says. “It’s nine holes, and I walk.”

According to Geraghty, claudication such as Ray’s was significantly under-treated when surgery was the only option. “Although current lower extremity endovascular treatments are not as durable as open surgical bypass, they carry a lower risk of procedure-related mortality, and provide a much faster recovery,” says Geraghty. “For those patients who have not improved with good medical therapy, percutaneous revascularization offers an often dramatic and immediate improvement in ambulation. Over the years, we have refined our techniques and can now address complex total blockages of the leg arteries with every expectation of success.”

Geraghty describes the Section of Vascular Surgery as a leader in the trend toward using endovascular surgery to treat claudication. As an example, Geraghty is one of the principal investigators in a multicenter clinical trial comparing the two major types of stents used for endovascular treatment of claudication.

With the aging of the baby boom generation, the increase in lower extremity atherosclerotic vascular disease—including claudication and critical limb ischemia—will soon dwarf the occurrence of other vascular diseases such as carotid artery disease and abdominal aortic aneurysms.

“When these symptoms occur, it’s terribly limiting,” says Geraghty. “I enjoy being able to help my older patients maintain their independence, and these minimally invasive procedures have become crucial to that effort.”
The Division of Cardiothoracic Surgery

is one of the nation’s leading heart and lung programs because each of our sections—general thoracic surgery, cardiac surgery and pediatric cardiothoracic surgery—continues to break new ground in clinical treatment and research.

In cardiac surgery, our division has a long-standing history of involvement in research and clinical applications of arrhythmia surgery. This year, we moved another step forward with a minimally invasive procedure for atrial fibrillation, which translates into lower risk for the patient. The general thoracic surgery section—one of the top such programs in the country—continues its well-deserved reputation as a highly organized, active service. And our pediatric cardiothoracic surgeons—known for their extensive lung transplant program—are performing more and more “hybrid” procedures in conjunction with cardiologists in the cath lab. Our division also operates a program

Above: General thoracic surgeon Bryan Meyers performs complex esophageal surgeries.
at Christian Northeast Hospital, where a large volume of cardiac and thoracic cases are treated by our faculty in a community hospital setting.

Complementing our clinical operations, the division has active laboratory research programs in lung transplantation, transplant immunology, cardiac arrhythmia and myocardial function. In addition, we have an active clinical research program, which maintains our clinical research activities and multiple databases. Each faculty member devotes a considerable amount of time and energy to research projects spanning the field of cardiothoracic surgery.

As our section chiefs summarize their areas, it is important to note that all make major contributions to the Cardiothoracic Fellowship, which attracts top candidates in the field. The fellowship promises to become even more attractive to applicants as the program prepares to offer a “fast-track” option to general surgery residents. With a strong educational component added to patient care and research, our sections take very balanced approaches to fulfilling the Division’s mission.

G. Alexander Patterson, MD
Evarts A. Graham Professor of Surgery; Chief, Division of Cardiothoracic Surgery and Section of General Thoracic Surgery

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General Thoracic Surgery

The General Thoracic Surgery Section is among the country’s most comprehensive programs in its field. Annually ranked by U.S. News & World Report as a top program in respiratory care, the section operates one of the most active lung transplant centers in the world. In addition, our surgeons are an integral part of the Alvin J. Siteman Cancer Center, an NCI-designated Comprehensive Cancer Center, which allows us to participate in optimal multidisciplinary care of patients with lung cancer and esophageal cancer. And our program has been instrumental in the development of lung volume reduction surgery for emphysema.

Another major strength is our treatment of benign and malignant esophageal disease. In this area, our

Cardiac Surgery

Ranked among the nation’s top 10 cardiac programs by U.S. News & World Report in 2005, the Cardiac Surgery Section continues to be a world leader in the surgical treatment of heart disease. As the highest volume program in our region, we maintain busy clinical practices in the treatment of coronary disease, valvular heart disease, thoracic aortic pathology, heart failure and arrhythmias. Specialized multidisciplinary programs have been introduced and include the Center for the Diseases of the Thoracic Aorta, a congestive heart failure program with special emphasis on heart transplantation and assist devices, and a group dedicated to adults with congenital heart disease.

Our group has pioneered and remains active in innovative areas in

Pediatric Cardiothoracic Surgery

Although our lung transplant program is the largest of its kind in the world, more of our clinical activity is devoted to the repair of congenital heart defects. Historically, this treatment involved heart surgery only. In recent years—at St. Louis Children’s Hospital (SLCH) and other leading centers—the approach has evolved to include the combination of surgical and cath lab procedures, thereby reducing the risk of operations.

Our section also operates one of the largest pediatric heart transplant programs in the country. Sanjiv Gandhi, MD, who joined our faculty this past year, has been instrumental in providing mechanical cardiac support as a bridge to transplantation, as well as in many other areas.

Dr. Gandhi and I see not only pediatric patients, but a growing number of adult patients with congenital

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surgeons employ laparoscopic and open surgery to treat complex esophageal cases—a service that distinguishes our program from many others. And our clinical programs, for both lung and esophageal disease, are strongly supported by Barnes-Jewish Hospital with excellent facilities and staff including advanced practice nurses.

To complement our clinical services, research professor Thalachallour Mohanakumar, PhD, has an active research grant in lung transplant rejection. Meanwhile, I hold current NIH funding for investigation of lung transplant preservation.

We also have recently recruited a full-time research scientist to support the activities of the thoracic surgery laboratory.

Finally, because of our depth in clinical care and research, the general thoracic surgery service provides a very fertile training ground for cardiothoracic surgery fellows.

G. Alexander Patterson, MD
Evarts A. Graham Professor of Surgery; Chief, Section of General Thoracic Surgery

our profession, such as beating heart surgery, minimally invasive valve surgery and endoluminal stenting for thoracic aneurysms. Our program also has developed an international reputation for the treatment of atrial fibrillation. Since the early 1980s, we have been a leader in both research and the clinical application of arrhythmia surgery. In 1987, the Cox-Maze procedure was first performed at Barnes-Jewish Hospital and has since become the gold standard for the treatment of atrial fibrillation. Over the past year, we have introduced a minimally invasive approach, which has significantly decreased the morbidity of the procedure.

Combining clinical care with research and teaching has been a hallmark of our group. Four of five faculty members have extramural funding from either the National Institutes of Health or the American Heart Association. Over the last year, our faculty published more than 70 manuscripts. Our residency training program is one of the most selective and comprehensive in the United States.

In summary, we remain committed to excellence in clinical care, research and teaching. We plan to continue our position as one of the preeminent academic cardiac surgical programs in the world.

Ralph J. Damiano Jr., MD
John M. Shoenberg
Professor of Surgery; Chief, Section of Cardiac Surgery

heart disease. This is not surprising when you consider recent reports that the number of adults with congenital heart disease now exceeds the number of children with heart defects. Because of our familiarity with heart defects, we provide surgical services to this population of adult patients, which translates into about 20 to 25 operations per year.

As our practice continues to grow, SLCH is keeping pace. As part of its ICU expansion, the hospital will create a 12-bed unit devoted to critical care of patients who have undergone cardiac or transplant surgery or who have other heart problems.

In research, I have been active in developing techniques to reduce the risk of arrhythmia associated with the Fontan procedure. Both Dr. Gandhi and I hope to expand our investigations in the coming years.

We look forward to working closely with cardiologists and the staff of SLCH as we offer new services and our caseload grows.

Charles B. Huddleston, MD
Chief, Section of Pediatric Cardiothoracic Surgery
**Laparoscopic Surgery Solves Swallowing Problems**

Guy Turner first had minor problems swallowing 12 years ago. By 2002, his symptoms had worsened considerably.

“It got to a point where it was rather obnoxious,” says Guy. “I began to lose weight. I’d have to get up and excuse myself from almost any table I sat down at. I used a wedge pillow to sleep, and I had a bucket at my bedside for spit-ups.”

Over the next two years, Guy underwent numerous tests and took medications, which either were ineffective or caused side effects. By 2004, he’d had enough—it was time to get a “permanent fix,” as he describes it.

Guy’s doctor referred him to thoracic surgeon Bryan Meyers, MD, who specializes in benign esophageal surgery. At the age of 82, Guy underwent a laparoscopic Heller myotomy and an anti-reflux wrap for his achalasia.

“I had no pain, and there was really no discomfort,” says Guy. “The swallowing problems are practically gone, although I still have my moments when I get into a noisy situation or don’t chew properly.”

According to Meyers, avoiding a thoracotomy, or chest incision, by performing a laparoscopic Heller myotomy was a major benefit to Guy in his early recovery. “In the long run, the functional results from the surgery are the same,” he says. “But in the short term, the recovery is much quicker.”

Meyers, who also specializes in esophageal cancer, uses minimally invasive surgery to treat large paraeosophageal hernias as well as achalasia. In patients with complex benign esophageal conditions who need re-operations, he often combines laparoscopic and open procedures. “Each surgeon has to be very honest with himself or herself about whether the outcome will be the same with minimally invasive surgery,” he says. “There are circumstances—particularly with complex re-operations—in which I make the decision to use an open approach.”

Meyers also collaborates with general surgeons who perform some of the same laparoscopic procedures. “Volume makes a big difference in these cases because once you reach a critical mass, the outcomes get better,” he says. “The Department of Surgery is among the national leaders in terms of volume and quality for minimally invasive esophageal surgeries.”

**Thoracic Endovascular Treatment Close to Home**

Lifelong South St. Louis resident Mary Ronzio was glad she did not have to travel far to receive endovascular treatment for her thoracic aortic aneurysm.

Mary’s doctor had watched the aneurysm for several years when he observed it starting to grow. So Mary’s daughter Judith searched the Internet for a doctor who could implant a stent rather than perform an open operation, and found one in Chicago. As it turned out, Mary’s doctor was able to make a referral to cardiac surgeon Marc Moon, MD, at Barnes-Jewish Hospital—less than two miles away.

In June 2004, Moon teamed with vascular surgeon Luis Sanchez, MD, to

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implant a stent in Mary's thoracic aorta. The stent, part of a clinical trial, is still awaiting FDA approval, although stent-grafts similar to the one used in Mary are now FDA approved. Mary was in the hospital for three days and had no complications. When she went home, Mary, now 84, was able to resume her daily routine and activities, which include playing bocce ball with her friends.

According to Moon, atherosclerosis is the main cause of thoracic aortic aneurysms. “Because hardening of the arteries is a time-dependent phenomenon, patients are usually in their 60s or 70s,” he says. “As the baby boom generation ages, we could very well see an increase in cases.”

Moon offers endovascular treatment of thoracic aortic aneurysms in conjunction with vascular surgeons at the Center for Diseases of the Thoracic Aorta (CDTA). The center also treats acute and chronic aortic dissections (tearing of the aorta) and Marfan syndrome.

CDTA surgeons are on call 24 hours a day and often treat dissections in the middle of the night. In the past year, surgeons performed approximately 90 aortic surgeries.

“We always work in a collaborative fashion with the patient’s primary care physician,” says Moon. “We are disease focused, but the whole patient requires treatment by the primary care physician. We can’t do it alone.”

Hybrid Operation Used to Treat Congenital Heart Defects

Ten-month-old Hailey Owen recently benefited from a development in the field of pediatric cardiac surgery—the increased use of hybrid operations that combine the traditional surgical approach with cardiac catheterization in the operating room.

Two weeks after her operation to repair two congenital heart defects, Hailey appeared alert and healthy as she waited for a check-up in the heart clinic of St. Louis Children’s Hospital (SLCH). “She’s back to normal—crawling around, standing up, talking,” observed her mother Marcia.

Hailey’s congenital heart defects were picked up on an ultrasound at seven days after birth. At SLCH, Charles Huddleston, MD, chief of the Section of Pediatric Cardiothoracic Surgery, was able to make a more specific diagnosis—Hailey had tetralogy of Fallot and lacked continuity between her right and left pulmonary arteries.

At about 10 days, Huddleston operated to restore the continuity between the two pulmonary arteries, but Hailey’s condition was complicated by the development of blockage in the left pulmonary artery. At an appropriate age—eight months—Hailey underwent an unsuccessful attempt to dilate the artery in the cath lab.

Huddleston waited another two months—in part, so Hailey could grow a bit. Then he surgically repaired the tetralogy of Fallot while David Balzer, MD, director of catheterization services at SLCH, worked with Huddleston to open up the artery and place a stent in it.

The repair of tetralogy of Fallot, a complex heart defect that includes a hole between the wall of the ventricles, is an operation that has been performed since the 1950s. By combining the operation with cardiac catheterization, the overall procedure was simpler and shorter.

“This translates into an easier postoperative course and recovery for the patient,” says Huddleston. “That certainly was true with Hailey—she went home in five days.”

Hailey’s case illustrates the close working relationship between cardiac surgeons and cardiologists at SLCH. “Each of us wants to advance the field of the other, because in the long run, we know it’s going to pay off in taking care of the kids,” says Huddleston.
General Thoracic Surgery In Brief

- Barnes-Jewish Hospital was ranked fourth in the nation for respiratory disorders by U.S. News & World Report in 2005. Faculty members in the general thoracic surgery section provide surgical services for this hospital program.
- Lung cancer patients now have access to the most advanced surgical care available with the introduction of the Video Assisted Thoracoscopic Surgery (VATS) lobectomy at Barnes-Jewish Hospital and Christian Hospital. VATS, or thoracoscopy, involves inserting an illuminated rigid tube through a small incision made between the ribs, and the use of video-endoscopic equipment that allows the entire operating team to view and assist in the operation. When compared to a traditional open-chest thoracotomy, VATS reduces the amount of chest wall trauma, deformity and post-operative pain.

Cardiac Surgery In Brief

- Barnes-Jewish Hospital was ranked ninth in heart and heart surgery by U.S. News & World Report in 2005. Faculty members in the Cardiac Surgery Section provide all of the surgical services for this hospital program.
- Planning is underway for a comprehensive, multidisciplinary cardiovascular center combining cardiac surgery, cardiology, vascular surgery and ancillary services.
- The Cardiac Surgery Section developed and refined nationally recognized surgical procedures such as all-arterial grafting, minimally invasive heart surgery, off-pump (beating heart) surgery and valve repair.
- Washington University cardiac surgeons have the best published results in the world with the treatment of atrial fibrillation and the only NIH-funded grant in this area.
- The Congestive Heart Failure Center and the Heart Transplant Program are involved in the clinical trial of a ventricular assist device that represents the next generation in mechanical heart support. The device consists of a rotator, which spins and propels blood from the left ventricle into the aorta. This concept has allowed the device to be miniaturized, have fewer moving parts and operate without noise. Nader Moazami, MD, recently implanted the device in a young adult with heart failure as a bridge to transplant.

Pediatric Cardiothoracic Surgery In Brief

- Sanjiv Gandhi, MD, has implanted a small mechanical ventricular assist device in two young children as a bridge to transplant. Until recently, there have been no such devices specifically designed for small children. To date, no American pediatric heart transplant center has implanted more than three of these devices.
- About 50 percent of patients who undergo the Fontan operation—used to treat complex congenital heart defects—experience arrhythmias that place them at high risk. Charles Huddleston, MD, has developed an animal model to study the problem and introduced techniques to reduce the risk of arrhythmia.
The Division of Pediatric Surgery

offers excellence in clinical treatment, research and fellowship training even as we see significant increases in our volume.

Admissions to the pediatric surgical service have increased by 52 percent over the past five years. And just during the past year, our service was up by 2,500 patient days—a 36 percent increase—while performing more than 2,000 operative procedures. Meanwhile, as visits to the St. Louis Children's Hospital Emergency Department continue to rise, trauma cases are growing at a disproportionate rate.

A significant change in pediatric surgery during recent years is the growing number of procedures performed laparoscopically. As a leader in this field, we have experienced a fivefold increase in minimally invasive surgery over the last three years. Procedures now performed laparoscopically include appendectomy, correction of malrotation, treatment of gastroesophageal reflux disease (GERD), bowel resection, lung biopsy and evacuation of empyema.

During the same time period, the Division worked to combine our care of pediatric burn and wound patients in a single unit. This helped us better utilize
our nursing staff and physical space with no cross infection from wound patients to burn patients. We also provide procedural sedation to pediatric burn patients so they do not experience pain while being treated.

As one of three Pediatric Level 1 Trauma Centers in Missouri, we have an opportunity not only to treat traumatic injury—the number one killer of children—but to use our clinical experience to advance trauma research. Our pediatric surgeons followed up a report on pediatric gunshot wounds (Journal of Trauma, 2003) with a study of pediatric all-terrain vehicle (ATV) accidents (Journal of Pediatric Surgery, 2005). We also plan to play an advocacy role encouraging public safety on these issues.

The success of our Division also is evident in our fellowship training program. In July 2004, the Residency Review Committee of the Accreditation Council for Graduate Medical Education (ACGME) approved expansion of the program from one to two fellows, who serve overlapping two-year fellowships.

As you can see, our Division—a top pediatric surgery program—complements clinical excellence with leadership in research and clinical training.

Robert P. Foglia,
MD
Chief, Division of Pediatric Surgery

Improved Treatment Increases Survival

Tim and Ann Baker laugh when they describe their one-year-old son Miles as one of the happiest babies they’ve ever seen—but also very stubborn.

The Bakers’ joy contrasts with the uncertain period surrounding Miles’ birth. Born prematurely with a congenital diaphragmatic hernia (CDH), Miles was airlifted from Boone Hospital in Columbia, MO, to St. Louis Children’s Hospital (SLCH) on the day of his birth, March 24, 2004.

“We nicknamed him both Mighty Miles and Miracle Miles,” says Ann. “He definitely has a stubborn streak and is very headstrong, and we think that probably helped him get through this.”

Pediatric surgeon Patrick Dillon, MD, who operated on Miles, credits advancements in the understanding and treatment of CDH with saving the one-year-old’s life.

Historically, infants were rushed from the delivery room to the operating room to repair a CDH. In addition, ventilator management was designed to treat pulmonary hypertension by maintaining high oxygen saturation levels and a pH of 7.4. This strategy, often requiring elevated ventilator pressure and excessive oxygen, frequently injured the babies’ fragile lungs and may have contributed to the poor survival rates.

“When I was in medical school, the survival rate for these babies was at best 50 percent,” says Dillon. “Then—in the late 1990s—there began to be reports of a novel way to manage these patients.”

Pediatric surgeons at Babies Hospital in New York had recommended a gentler form of ventilator support and delaying surgical repair of the CDH for several days. This technique, utilizing lower airway pressures and tolerating lower oxygen levels, minimized potential injury to the lungs and allowed for a decrease and stabilization of the pulmonary hypertension. The result has been a dramatic increase in the survival rate of CDH patients.

Dillon has worked with fellow pediatric surgeons and neonatologists at SLCH to adopt these new practices.

“When these new techniques, our survival rate has increased to about 85 percent,” says Dillon. “A full-term newborn with an isolated CDH has a very good chance of going home with an excellent long-term prognosis.”

The Bakers are grateful not only for the advances in treatment, but for the care they received. “It was just unbelievable,” says Tim.

In Brief

- The Division’s surgeons reported on the evolution of their burn program, which expanded into a pediatric wound service, during a meeting of the American Burn Association in Chicago on May 10-13, 2005. While the incidence of methicillin-resistant Staphylococcus aureus (MRSA) was more than 50 percent in wound patients, no burn patients contracted the infection.
- Robert Foglia, MD, chief of the Division of Pediatric Surgery, was appointed state chair by the Committee on Trauma of the American College of Surgeons. He plans to use the position as a platform to advocate public safety for children.
- Continuing Medical Education programs on burn and trauma drew between 96 and 112 doctors, nurses and emergency medical services (EMS) workers in Quincy, IL, and the Missouri cities of Poplar Bluff, Cape Girardeau and West Plains.
- For the second consecutive time, St. Louis Children’s Hospital was named one of the nation’s 10 best pediatric hospitals by Child Magazine in 2005.
The Division of Plastic and Reconstructive Surgery

With outstanding faculty and programs, the Division of Plastic and Reconstructive Surgery excels in patient care, research and training tomorrow’s leaders in plastic and hand surgery.

The scope of our clinical services covers every facet of plastic and reconstructive surgery. We are an international center for nerve transplantation and a national referral center for treatment of nerve injury, including peripheral nerve and brachial plexus surgery, hand surgery and nerve compression surgery. For cancer and trauma patients, we offer the latest reconstructive surgical techniques, including the transverse rectus abdominis myocutaneous (TRAM) flap procedure for post-mastectomy breast reconstruction. Plastic reconstructive surgeons also provide surgical services—and are

Above: Emily Mills uses her surgically repaired left arm to salute Susan MacKinnon, MD.
an important part of the multidisciplinary patient care team—at the Alvin J. Siteman Cancer Center.

Our surgeons provide the most up-to-date pediatric plastic surgical care at St. Louis Children’s Hospital. As part of these services, our Division operates a Cleft Palate and Craniofacial Deformities Institute, which has treated more than 2,950 patients with cleft lip and palate, and another 2,300 with major craniofacial anomalies.

In the field of cosmetic surgery, our faculty members offer a full range of treatments—including complex makeovers—to reshape the body and enhance facial features. Patients of the Cosmetic Surgery Institute—like all of our surgical outpatients—are seen in the Center for Advanced Medicine, an attractive facility that helps our patients feel more comfortable when they visit our surgeons.

As leaders in basic science and clinical research, our faculty branches out to study many topics. Colleagues join me in studying nerve grafts for repair after injury and the role of immunosuppressants in nerve regeneration. We have the leading laboratory in the study of traumatic nerve injuries, and findings from our research have had significant impact on the clinical management of nerve-injured patients. Faculty members also conduct basic research into solid tissue transplantation, study facial ethnic features and aging in the face, conduct clinical trials evaluating the outcomes of various types of breast reconstructions, assess the quality of life after nerve injury, and study speech improvement after cleft palate repair.

All of this goes hand-in-hand with our plastic surgery residency and hand surgery fellowship programs. These programs—which have been fully accredited since the inception of the Residency Review Committee—offer comprehensive training in plastic surgery subspecialties.

In recent years, under Professor of Surgery Keith Brandt, MD, the programs take the innovative procedures for reconstruction implemented by our Division and extend this progress into the teaching structure of our residents and hand fellows. Faculty members are continuously evaluating and updating the program to provide the most advanced training to prepare residents and fellows to be leaders in plastic surgery and hand surgery.

We have an outstanding program because of our dedicated faculty and staff; however, all of our graduates are equally responsible for the continued development and success of this program. Without their achievements, it would not be the highly recognized and sought-after program it is each year.

I hope that from these pages, you can see that the Division is strong, productive and a source of pride for faculty, residents, alumni and friends.

Susan E. Mackinnon, MD
Sydney M. Shoenberg, Jr.
and Robert H. Shoenberg
Professor; Chief, Division of Plastic and Reconstructive Surgery

Nerve Surgery Improves Outlook

The life of Emily Mills took an unfortunate turn one fall evening two years ago. But, thanks to two Washington University plastic and reconstructive surgeons, prospects for the 19-year-old college student are looking much better.

Emily injured herself in September 2003, while doing what she loved—cheerleading for Central High School in Little Rock, AR. “As captain, I was leading my squad in a tumbling pass before a big game,” she says. “We were doing back handsprings all across the football field. On the last one, my left elbow popped.”

Emily had torn her collateral ligament and immediately felt great pain. She was taken to the hospital, but was only beginning a long journey through medical treatment, rehabilitation and recovery.

Continued on page 36
In Brief

• Of the past 30 graduates who have completed the Plastic Surgery Residency Program and are eligible to sit for the American Board of Plastic Surgery (ABPS) boards, 25 have passed both the oral and written exams and five have passed the written exam. Graduates continue their specialization in fellowships at a rate of 78 percent.

• Susan Mackinnon, MD, the Sydney M. Shoenberg, Jr. and Robert H. Shoenberg Professor of Plastic and Reconstructive Surgery and chief of the Division of Plastic and Reconstructive Surgery, serves as president of the American Association for Hand Surgery and vice president of the American Association of Plastic Surgeons. Her NIH-funded laboratory studies are in nerve grafting and regeneration.

• Keith Brandt, MD, program director of the Plastic Surgery Residency Program and Hand Surgery Fellowship, was chosen by the American Association of Chairmen of Plastic Surgery as a representative to the general surgical training programs. He also is parliamentarian of the American Association for Hand Surgery.

• Mackinnon, a world-renowned expert in peripheral nerve surgery, notes that nerve injury can be intensely painful. Thus, she asked anesthesiologist Barry Jones, MD, a pediatric pain specialist, to work with Emily in the hospital.

Over the next eight months, Emily, a senior, continued her coursework at home and graduated with her class. However, she battled pain, and much of her time was spent in physical therapy. She missed most of the social interaction that marks the senior year of high school.

Despite these struggles, events turned in a very positive direction about six weeks after the accident, when Emily was referred to Susan Mackinnon, MD, Shoenberg Professor and chief of the Division of Plastic and Reconstructive Surgery.

When Emily came to Mackinnon, she was suffering from a severe complication of major nerve injury. At the time, she could not move her hand, which was numb, swollen and discolored.

“Her fingers would just flop,” recalls Barbara Mills, Emily’s mother.

Following an initial evaluation, Mackinnon and plastic and reconstructive surgeon Thomas Tung, MD, performed a complex, 10-hour surgery. The surgeons utilized repair of the nerves to her hand, the median and ulnar nerves, nerve releases, tendon transfers, nerve transfers, and end-to-side nerve transfers to reconstruct Emily’s hand function.

Finally, the tissue is shaped into a natural-looking breast.

• Thomas Tung, MD, has been awarded a National Institute of Health (NIH) K08 grant for his research on tissue transplantation. He has developed a mouse model of limb transplantation that aids in immunologic assessment of tolerance strategies that are not feasible in any other animal model. An accomplished microsurgeon, his clinical expertise is sought by surgeons in many specialties.

• A study by the American Academy of Facial Plastic and Reconstructive Surgery reveals that cosmetic and reconstructive surgery increased exponentially among minorities from 1999 to 2001—more than quadrupling among Asian-Americans and African-Americans and tripling among Hispanics. For the past three years, James Lowe III, MD, has been researching aesthetic attractiveness for various ethnic groups. He is one of only a handful...
of scientists worldwide who are scientifically studying how to preserve ethnicity in plastic surgery procedures.

By measuring the position of facial features, such as the lips, brow lines, cheekbones and noses of people from various ethnic groups ages 18 to 65, Lowe and his team are determining attractive facial features for each group. His study includes African-Americans, Middle Easterners, Hispanics and Native Americans along with a breakdown of Asian subcultures into Chinese, Japanese, Vietnamese and Hawaiian.

Lowe also has developed the first large animal model to evaluate nerve reconstruction after prostatectomy. This research work has important implications for the clinical management of prostate cancer.

- Alex Kane, MD, is engaged in leading-edge research on functional MRI assessment of speech problems associated with cleft palate. He serves as director of the Cleft Palate and Craniofacial Deformities Institute at St. Louis Children’s Hospital.
- Christine Cheng, MD, limits her practice to problems relating to hand injury; she has developed a pediatric and congenital hand practice, care not previously offered by the Division.
- After completing his plastic surgery residency at Washington University School of Medicine, Terence Myckatyn, MD, joined the faculty as an instructor. In a short period of time, he has become one of the Division’s busiest clinical surgeons. With his exceptional research background, he also has been awarded grants from major hand and plastic surgery education associations.
- Joseph G. McCarthy, MD, was the 2005 James Barrett Brown Visiting Professor for the Resident Research Day Lecture. McCarthy is the Lawrence D. Bell Professor of Plastic Surgery and director of the Institute of Reconstructive Plastic Surgery at New York University Medical Center. His main professional interests are in the field of craniofacial surgery, and he has been a champion of patients with facial deformities.
The Division of Urologic Surgery, consistently ranked among the very best nationally, continues to develop its traditional strengths in prostate cancer screening, prevention and treatment, minimally invasive surgery, and novel management of stress urinary incontinence.

Barnes-Jewish Hospital is one of the few centers nationally performing laparoscopic nerve-sparing radical prostatectomy for the majority of prostate cancer patients. This minimally invasive procedure significantly shortens hospital stay, speeds recovery and return to work, and leads to improved overall outcomes for patients.

The minimally invasive approach also is applied to kidney cancer, bladder cancer and reconstructive urology. Our urologic surgeons routinely perform laparoscopic partial nephrectomy for small kidney cancers. This is a technically demanding operation offered to patients who need kidney function preservation. This approach, in comparison to open and partial nephrectomy procedures, results in substantially less pain, less renal scarring, shorter hospital stay and shorter recovery time. Over the past year, the Division’s surgeons have developed innovative techniques for intrarenal cooling, intraoperative laparoscopic ultrasound, and suturing and repair of renal

Above: Gerald Andriole Jr., MD, and Ralph Erickson, who underwent a laparoscopic prostatectomy.
parenchyma that have expanded the indications for laparoscopic partial nephrectomy. Laparoscopic approaches also are used for adrenal abnormalities and bladder cancer.

Urinary stone disease, female bladder problems, male infertility and pediatric urology also have remained important conditions treated at Washington University School of Medicine. We have developed a Stone Center that allows comprehensive medical and surgical evaluation of patients with recurrent kidney stone disease. Female urinary incontinence is managed with the latest techniques of neural stimulation and bladder suspension surgery. Male infertility is managed with a wide range of advanced treatments including all applicable forms of microsurgery. At St. Louis Children’s Hospital, similar programs are offered to pediatric patients.

Clinical and basic research are integral parts of the Division. Faculty members lead national and international studies evaluating screening for prostate cancer (the NCI-funded Prostate, Lung, Colorectal and Ovarian [PLCO] Cancer Screening Trial and the industry-sponsored REDUCE Trial evaluating prevention of prostate cancer with dutasteride). The Urological Research Center, housed at Barnes-Jewish West County Hospital, has been active in prostate cancer, benign prostatic hyperplasia, erectile dysfunction and urinary incontinence trials. Overall, more than 20 such studies are underway.

The basic research portfolio has grown dramatically in the last few years with the addition of NIH-funded investigators. The focus of these investigations includes mammalian target of rapamycin (mTOR) in the development of prostate cancer, the role of BCL-x in the development of prostate cancer and of chemotherapy resistance of tumors, the evaluation of genetic markers to molecularly characterize aggressive prostate cancers, and the role of bladder outlet obstruction and the development of bladder function in children.

Resident and medical student education remain important parts of our mission. The urology training program is one of the most sought after in the country, and residents and fellows have garnered awards from national organizations. We have expanded the training to include outpatient and office urology as integral parts of the program.

Gerald L. Andriole Jr., MD
Chief, Division of Urologic Surgery

Pilot Back at Controls After Laparoscopic Prostatectomy

When Ralph Erickson learned he had prostate cancer, he had an idea of where to go for medical care.

“I’d heard about Dr. Andriole through friends of mine who’d come to him in the past,” says Erickson, a 52-year-old airline pilot from New Melle, MO.

“Dr. Andriole” is Gerald Andriole Jr., MD, chief of Urology at Washington University School of Medicine and Barnes-Jewish Hospital. Andriole specializes in laparoscopic prostatectomy, which offers all the typical advantages of minimally invasive surgery: less pain, a shorter hospital stay and a quicker return to normal activities. It also allows the surgeon to remove the prostate without damaging the nerves and muscles that control erectile function and urination.

“Laparoscopic prostatectomy is now the procedure of choice for men who...” Continued on page 40

Laparoscopic surgery provided a faster return to his duties as an airline pilot for Ralph Erickson.

Gerald L. Andriole Jr., MD
Chief, Division of Urologic Surgery

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need to have their prostate removed,” says Andriole. “From a surgeon’s point of view, it’s preferable because there is less blood loss, and the magnifying lens on the laparoscope allows you to see better. The prostate can be removed with less risk of damaging vital structures.”

Erickson was a good candidate for the surgery because his cancer was confined to the prostate; in that situation, removal of the prostate is usually curative, according to Andriole. The pilot also had a family history of prostate cancer, with the disease spreading from the prostate to the bone in both his father and his uncle.

For Erickson, the advantages of the laparoscopic procedure were important. “I knew someone who had some real problems after the traditional surgery, and he said if you are going to find the best you can, do some research,” he says. “Another consideration was getting back to work sooner. Being a pilot, I needed to make sure it was in remission before going back to work.”

After the surgery, Erickson was surprised at how quickly he recovered. “I was home in a couple of days, and I only needed to use regular Tylenol for a day or so,” he says. “I’ve been in a motorcycle accident and had orthopaedic surgery. Some of that pain was pretty intense—the laparoscopic surgery was nothing compared to that.”

Along with Andriole, Washington University urologists Sam Bhayani, MD, and Adam Kibel, MD, perform laparoscopic prostatectomy. Yet the procedure is just one element in a comprehensive approach that makes the urology division a center of excellence in prostate cancer treatment and research.

Washington University urologists draw from extensive experience when considering options for prostate cancer patients. “Radiation is certainly acceptable for patients who are not surgical candidates—as long as they don’t have evidence of a family history or multiple tumors,” says Andriole.

“Surveillance, or so-called watchful waiting, is a good idea for men with slow-growing tumors if their life expectancy is less than 10 to 15 years. If such a man in his mid-seventies has a heart condition and diabetes, I would say the chances of the prostate cancer causing him significant problems are small, so we could probably afford to just watch.”

The Urology Division is an international leader in prostate cancer research. It started the Washington University PSA screening study—one of the earliest prostate cancer screening programs—and today is active in screening and prevention research. Andriole is national chairman for the prostate portion of the Prostate, Lung, Colorectal and Ovarian (PLCO) Cancer Screening Trial. The study, which will continue until 2019, will allow researchers to determine whether current screening practices reduce death from prostate cancer.

In the area of prevention, Andriole serves as chairman of the steering committee for the international REDUCE study examining whether dutasteride—already approved for treating benign prostatic hyperplasia—

In Brief

- Washington University urologic surgeons at Barnes-Jewish Hospital were ranked sixth in urology by U.S. News & World Report in 2005.
- The Division of Urologic Surgery is a participant in the Prostate, Lung, Colorectal and Ovarian (PLCO) Cancer Trial. Division Chief Gerald Andriole Jr., MD, is chairman of the Prostate Committee and was lead author of a manuscript in the Journal of the National Cancer Institute reporting the initial results of the trial.
  Begun in 1993, the PLCO study has screened 34,244 men across the United States, aged 55 to 74, for prostate cancer with planned follow-up through 2019.
- Assistant Professor Sam Bhayani, MD, received second prize from the World Congress of Endourologists in an international competition for significant advances in minimally invasive surgery. His topic was cost analysis of laparoscopic pyeloplasty versus robotic pyeloplasty.
- Assistant Professor Arnold Bullock, MD, received the Washington University School of Medicine Distinguished Service Teaching Award.
- Assistant Professor Ramakrishna Venkatesh, MD, and Fellow Caroline Ames, MD, were awarded first prize in the essay contest at the World Congress of Endourology.
- The Division was selected as a development and training center for an
innovative, three-dimensional laparoscopic camera that substantially facilitates complex laparoscopic procedures. A study conducted at the Division’s annual “Frontiers in Minimally Invasive Urology” course in June 2005 showed that urologists who were learning laparoscopy performed surgical tasks more than 20 percent faster when they used the three-dimensional camera compared to a standard two-dimensional camera.

• Ralph Clayman, MD, Chair of the Department of Urology at the University of California—Irvine, was the 31st Justin J. Cordonnier Visiting Professor. Clayman formerly was Professor of Urology and Radiology at Washington University School of Medicine, where he served on the faculty for 17 years. The lecture-ship honors the first urologic surgery division chief. Next year’s Visiting Professor will be James Montie, MD, Chairman of Urology at the University of Michigan.

• Charles Nicolai, MD, an instructor in urology, recently retired after a long association with Washington University School of Medicine. He earned his medical degree at Washington University and completed his urologic residency at Jefferson Barracks Veterans Administration Hospital. Together with Justin Cordonnier, MD, Nicolai helped start the Division of Urologic Surgery at Washington University. After a 30-year hiatus, he returned to the urology faculty in 1990 and continued his practice in general urology.

“arachne. We have a total approach to prostate cancer—prevention, screening and minimally invasive treatments,” says Andriole.
Washington University Medical Center

Washington University School of Medicine makes its home on a 130-acre medical campus which covers portions of 12 city blocks. The campus is adjacent to Forest Park, a large urban park with many cultural and recreational attractions. The medical school is part of Washington University Medical Center, which also includes Barnes-Jewish Hospital, St. Louis Children’s Hospital, the Alvin J. Siteman Cancer Center and Central Institute for the Deaf. The school’s Department of Surgery provides clinical services and offers training to residents and fellows at a number of area hospitals and clinical centers.

Barnes-Jewish Hospital is the largest hospital in Missouri and is consistently on the Honor Roll of America’s best hospitals published by U.S. News & World Report. It has a medical staff of 1,784 physicians, many of whom are recognized in the “Best Doctors in America.” They are supported by a house staff of more than 750 residents, interns and fellows, along with nurses,
technicians and other health-care professionals. The medical staff of the hospital consists exclusively of faculty members of Washington University School of Medicine.

St. Louis Children’s Hospital is one of the premier children’s hospitals in the United States—serving not only the children of St. Louis but children throughout the world. The hospital provides a full range of pediatric services to the St. Louis metropolitan area and a primary service region covering six states. In 2005, the hospital was named one of the nation’s 10 best pediatric hospitals by Child magazine.

Patients with cancer are seen at the Alvin J. Siteman Cancer Center at Barnes-Jewish Hospital and Washington University School of Medicine. The facility—located in the Center for Advanced Medicine—is an international leader in patient care, cancer research, prevention, education and community outreach.

The Department’s general and urologic surgeons also maintain clinical practices at Barnes-Jewish West County Hospital, which offers a complete range of health care services to residents of West St. Louis County. Among the services offered at this hospital are comprehensive kidney stone care and treatment of benign colorectal and pelvic floor disorders.

General surgery residents rotate through the St. Louis VA Medical Center—a 115-bed medical-surgical hospital located in midtown St. Louis—for training in general and vascular surgery and oncology. Meanwhile, cardiothoracic surgeons maintain a heart program at Christian Hospital in North St. Louis County, which also serves as a rotation for cardiothoracic surgery residents.

Highlights

Washington University School of Medicine ranked third in nation

Washington University School of Medicine is rated the third best medical school in the nation, according to the most recent U.S. News & World Report rankings of graduate and professional programs.

The School of Medicine ranked third after Harvard University and Johns Hopkins University, which moved into the second spot in this year’s ranking. For the eighth consecutive year, the School of Medicine’s students had the highest undergraduate grade-point averages and highest scores on medical school entrance exams.

Siteman Cancer Center advances to NCI’s comprehensive status

The Alvin J. Siteman Cancer Center at Washington University School of Medicine and Barnes-Jewish Hospital has joined the highest ranking cancer research and treatment institutions with a designation by the National Cancer Institute as a Comprehensive Cancer Center. This distinction recognizes Siteman’s broad-based research, outreach and education activities, and provides Siteman with research funding of $21 million.

To achieve comprehensive status, a cancer center must succeed in a rigorous, multistage review process. Siteman was awarded this status because of its strong basic science and clinical trial research endeavors; programs in cancer prevention, cancer control, and population-based research; and a body of interactive research bridging these areas. It also was recognized for its outreach and education for residents of the St. Louis region and for health-care professionals.

Learning at the Crossroads

Farrell Learning and Teaching Center opens

Washington University School of Medicine is known for providing a collaborative, collegial atmosphere for learning. In the summer of 2005, the school further enhanced this environment with the addition of a new centralized, dedicated teaching facility. The Farrell Learning and Teaching Center creates a “hearth” for learning that both students and teachers can call home. Located at the heart of the Medical Center, the striking six-story structure now serves as the main venue for teaching and events at the school.
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Gifts to the Department of Surgery

The Department of Surgery welcomes your support. Ways to make a gift include annual unrestricted giving including membership in the Eliot Society, gifts for education of residents and fellows, support for research and endowment, and planned gifts and bequests.

For additional information, please contact the Medical Alumni and Development Office at (314) 286-0027.

Washington University encourages and gives full consideration to all applicants for admission, financial aid, and employment. The University does not discriminate in access to, or treatment or employment in, its programs and activities on the basis of race, color, age, religion, sex, sexual orientation, national origin, veteran status, or disability. Present Department of Defense policy governing ROTC and AFROTC programs discriminates on the basis of sexual orientation; such discrimination is inconsistent with Washington University policy. Inquiries about compliance should be addressed to the University’s Executive Director of Human Resources, Washington University, Campus Box 1184, One Brookings Drive, St. Louis, MO 63130-4899, (314) 935-5990. The School of Medicine is committed to recruiting, enrolling and educating a diverse student body.
1840: Missouri Medical College founded as part of Kemper College. Noted surgeon Joseph Nash McDowell was its dean. 1842: St. Louis Medical College founded as part of Saint Louis University (separated from SLU in 1855). Its early lead surgeon was Charles Alexander Pope.

1840-1899

1902: Jewish Hospital opens.
1910: Training of urologic surgeons begins with appointment of John Caulk as professor of clinical genitourinary surgery.
1914: Barnes Hospital opens. Frederick Murphy appointed surgeon-in-chief.

1924: Department researchers develop cholecystography for visualization of the gallbladder.
1925: Vilray Blair appointed first division chief of plastic and reconstructive surgery.
1931: Construction completed on Rand-Johnson Surgical Wing at Barnes Hospital.
1933: Evarts Graham performs first successful one-stage pneumonectomy for cancer.

1940-1959

1942: James Barrett Brown joins U.S. Army as European Senior Consultant in Plastic and Maxillofacial Surgery. Brown assembles a large team of plastic surgeons to treat wounded veterans returning from World War II, leading to new techniques and strengthening plastic surgeons’ role in hand reconstruction.


1972: Pediatric surgery division established.
1973: Kidney transplant program established at Barnes Hospital.

1980-2005


2001: Opening of Center for Advanced Medicine adjacent to old Jewish Hospital as site for providing state-of-the-art outpatient care. 2004: New minimally invasive procedure for atrial fibrillation—developed by Washington University cardiologists—shown to be as effective as traditional open procedure.

2005: Alvin J. Siteman Cancer Center designated a Comprehensive Cancer Center by National Cancer Institute. Twenty-eight new operating rooms, cardiothoracic ICU open at Barnes-Jewish Hospital as part of three-year renewal project.