Ahead of the Game

**Duke Urology Keeps an Eye to the Future Through Innovative Clinical Techniques, Research, and Education**

We’ve been a top ten program for the last 15 years and it’s the exciting, forward-thinking work we’re doing with patients and in the lab that helps us retain that spot and attract the best residents and fellows year after year.”

Those are the words of Duke Surgery’s, Urology Division Chief Glenn M. Preminger, MD, and he’s referring to the Duke Urology program’s U.S. News & World Report ranking. Top ten is a coveted place to be, and Dr. Preminger has reason to be proud. As a veteran urologist who has been a member of Duke Urology for the last 20 years and leading the Division since 2011, Dr. Preminger, who is also a Professor of Surgery, knows the field and knows well what his faculty members are doing—delivering the best care for current patients and through research, education, and innovation, changing the practice of urology for the patients of the future.

“We have many major areas where we are performing cutting-edge research and offering innovative patient care,” he says. Three of those areas are cancer survivorship; targeted, tissue-sparing treatments for urologic cancers; and pediatric urology.

**Life After Cancer**

“We are curing more and more people of urologic, gynecologic, and gastrointestinal cancers, which is wonderful, but many of these individuals, while free from their disease, have urologic complications after their surgery or radiation therapy,” Dr. Preminger says.

Common issues include urine leak after prostatectomy or other pelvic surgery, voiding dysfunction after radiation therapy, and infertility.

That’s where the Genitourinary Cancer Survivorship Program comes in, under the direction of Andrew C. Peterson, MD, Associate Professor, Division of Urology.

Survivors of any kind of cancer who have genitourinary symptoms as a result of their cancer treatment are eligible for therapy through the Survivorship Program, the popularity of which has soared—what started as a half-day, once-a-month clinic will probably be a two-to-three day, full-day offering before long.

“We are really a leader in this area,” says Dr. Peterson, acknowledging an upcoming American College of Surgeons Commission on Cancer (CoC) requirement for all accredited programs to offer a survivorship program by 2015.

And the need is there. According to the National Cancer Institute, there are almost 14 million people living with cancer in the United States, who are either cured, in remission, or actively undergoing treatment.

“All of those people are considered cancer survivors,” says Dr. Peterson. “And, there are a lot of things we can do to help them.”

The clinic is designed to meet the quality-of-life needs of the growing number of cancer survivors, Dr. Peterson says. Minimally invasive treatments, for example, can help patients with leakage of urine and voiding dysfunction. Infertility can be addressed as well with many new and effective therapies. The team is also actively involved in research to assess new treatments—such as the male sling for incontinence (the procedure involves placement of a synthetic mesh in the groin to elevate the
Duke Surgery Implements Maestro Care

Maestro Care

As all of Duke Surgery's faculty and staff are well aware, on June 22, 2013 Maestro Care was implemented—Duke’s brand of the country’s leading electronic health record (EHR) system. Duke’s Maestro Care was EPIC System’s largest and most successful implementation to date. More than two years of planning and extensive training preceded Surgery’s go-live date. In March 2014, Duke Raleigh and Duke Regional Hospitals will be brought on-line to complete the full system integration.

Key to the Department of Surgery’s success was the leadership of Richard L. Scher, MD, Professor, Division of Otolaryngology–Head and Neck Surgery, and Associate Vice-Chair for Clinical Operations and Patient Services. Dr. Scher, Surgery Super User for the Maestro Care implementation, organized approximately one hundred additional Surgery Super Users, including physicians, nurses, nurse practitioners, physician assistants, and staff assistants to lead their peers in training on the new system. Due to this strong communication matrix and the determination and leadership of our faculty and staff, Duke Surgery maintained clinic and operating room volumes during and post implementation.

Though we are presently working through minor system issues, overall, having one system for medical records and billing provides a necessary platform for our ability to continue to meet the challenges in our healthcare environment—accurate quality metric measurements, ICD-10 regulations, reporting demands of our payers, and additional challenges we are sure to face.

I am confident that Duke Surgery will continue to meet future challenges with the same energy, determination, and demand for excellence as we approach the tremendous undertaking of the electronic health record adoption.

Theodore N. Papadou, MD

Distinguished Professor of Surgical Innovation
Interim Chair, Department of Surgery
Duke University Medical Center

Ahead of the Game

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urethra and after its position)—and outcomes studies that evaluate patient perceptions of surivory before and after treatment in the clinic.

The field has become so hot that Duke now offers a fellowship in suivory, and it’s the only one in the country so far. The fellow, who has completed a residency in general urology, spends one year focusing on genitoriopathy survivorship issues.

“Tis a completely new way of thinking about care of patients after they complete their treatment,” Dr. Peterson says. “We have been so focused on saving and prolonging life, and now we need to think about maximizing quality of life.”

Targeted Therapy

So how are doctors getting more and more patients to the surivory phase? Targeted, focal therapy is one way—tissue and organ-sparing procedures that preserve as much healthy tissue as possible while removing the cancer. At Duke, urologists are applying these methods to both the diagnosis and treatment of prostate and other genitoriopathy cancers.

“At the diagnosis phase, we want to determine which men have aggressive prostate cancers and what is the least invasive way we can treat that to preserve functional outcomes,” says Thomas J. Polascik, MD, Professor, Division of Urology.

With MRI-diagnostic tools, doctors can now see an “organ-sparing” prostate, which gives them more information than the gold standard prostate-specific antigen, or PSA, screening test, which measures the amount of PSA in a man’s blood, a possible indicator for cancer.

“Based on this new test, we can see the spots and use a targeting device to aim the needle and biopsy the lesion,” Dr. Polascik says. “We can determine if it’s cancer, where it is located, how big it is, its size and volume, and how aggressive it is.”

Treatment naturally follows. Cryotherapy, or freezing of the cancer using ultrasound to limit damage to healthy tissue, is a common therapy for prostate cancer. Dr. Polascik also serves as the principal investigator on a North American trial for the NanoKnife® procedure, which uses a method called irreversible electroporation to deliver a series of microsecond electrical pulses to open cancer cell membranes and destroy targeted cancer cells while sparing healthy surrounding tissue.

In renal cell cancer, partial nephrectomy is becoming recognized as the ideal treatment option for early-detected tumors when possible.

“Over the last five years, multiple papers have demonstrated that it’s better for a patient’s long-term health to retain as much kidney mass as possible,” Dr. Polascik says. “When you remove the whole kidney, it taxes the remaining kidney and puts the patient at an increased risk for progressive renal disease, and many patients don’t live as long.”

Achievement of partial nephrectomy is done through various methods, including robotic surgery, cryosublation, and experimental treatments such as HIFU, or high-intensity focused ultrasound, which uses heat to destroy diseased tissue.

“What we’re finding is that tissue-sparing treatments don’t compromise cancer outcomes and the patients do better functionally over the course of a lifetime,” Dr. Polascik says.

The Youngest Patients

As one of the Carolinas’ largest pediatric urology programs, Duke’s team has the freedom to sub-specialize, growing expertise in many areas that affect pediatric patients.

Through the addition of faculty members over the years, the minimally invasive and robotic surgery program has grown; a pediatric kidney stone clinic has been created; a prenatal clinic has been enhanced to address the problems of children diagnosed in utero with urinary tract obstructions; a basic science lab has been looking at urinary tract infections in children, and a pediatric urodynamic/urofeedback lab—focusing on lower urinary tract dysfunction and the only lab of its kind in North Carolina—has been using video games to help children with incontinence achieve better bladder control. To name just a few of the things the team is doing.

Sherry S. Ross, MD, Assistant Professor, Division of Urology, and Director of the Pediatric Stone Clinic, has a special interest in the increasing rate of stone disease in children; Dr. Ross’s research includes the study of how diet influences stone formation and how changes in the western diet may contribute to stone development. In clinic, Dr. Ross offers minimally invasive procedures for removal of pediatric kidney stones. Through close collaboration with Patrick Seed, MD, PhD, Associate Professor of Pediatrics, Dr. Ross has organized a team to study urinary tract infections in the neonatal urologist. The team’s novel animal model has led to a better understanding of increased susceptibility to UTIs in the neonatal period and will allow future research to help develop prevention methods.

Faculty member Jonathan C. Routh, MD, MPH, Assistant Professor, Division of Urology, is studying healthcare delivery disparities and vesicoureteral reflux—the abnormal flow of urine from the bladder to the upper urinary tract—and its role in kidney infection and damage. Dr. Routh recently received a prestigious K grant from the National Institutes of Health that provides 75 percent protected effort support. Dr. Routh will use the funds to study the population-level aspects of treatment for children with vesicoureteral reflux, trying to determine what the most efficient and most effective methods of treatment are for individual children and families.

John S. Wiener, MD, Associate Professor, Division of Urology, and Section Head of Pediatric Urology, was recently awarded a...
The Patients Speak

The Duke Center for Metabolic and Weight Loss Surgery has received many accolades from key organizations in the field of weight loss surgery. It has been designated a Center of Excellence by The American Society for Metabolic and Bariatric Surgery in recognition of good outcomes, patient safety procedures, and development of best practices. It was the first program in the region to receive a Blue Cross Blue Shield Distinction Center designation, as acknowledgement of excellence in delivering specialty care. And it is labeled a Center of Excellence with CIGNA and UnitedHealth insurance. But it may be the testimonials of patients that say the most about the way the Center and its clinicians impact people’s lives every day.

There’s Priscilla, who struggled with sleep apnea because of her weight. There’s Jennifer, a successful professional and mom, who felt like a failure because of her weight. And there’s Barbara, who reached a breaking point when she read that obese older people are more likely to die from problems related to their obesity than from complications of weight loss surgery.

Individualized Treatment Through Options

“We offer the full complement of weight loss surgery options which allow us to make the right choice for each individual patient, based on his or her specific condition and goals,” says Alfonso Torquati, MD, Director of the Duke Center for Metabolic and Weight Loss Surgery, and Associate Professor and Chief of the Division of Metabolic and Weight Loss Surgery.

Roux-en-Y gastric bypass is the most common procedure performed at the Center. During Roux-en-Y gastric bypass surgery, a new gastric pouch is created at the bottom of the esophagus, utilizing about five percent of the stomach and sealing off the rest. The pouch is connected to the small intestine. A sleeve gastrectomy is the second most common procedure performed at the Center. The procedure removes about 85 percent of the stomach, creating a sleeve or tube connecting to the intestines. Stomach function is preserved.

Gastric banding is another common procedure performed at the Center. The procedure reverses the stomach smaller through an adjustable band that can be loosened or tightened as needed in order for a patient to reach weight loss goals.

Duodenal switch alters the digestion process through removal of part of the stomach and adjustment of the small intestine, limiting food absorption.

Minimally invasive procedures allow for faster healing time, smaller scars, and less time spent in the hospital. Performing over 800 procedures per year, Duke has extensive operative experience with all the procedures it offers, with more than 6,080 bariatric procedures performed as of September 2013. Since 2005, 99 percent of the Center’s surgeries have been performed laparoscopically, with some patients benefiting from single site or robotic approaches. Interdisciplinary collaboration with colleagues in gastroenterology, medical oncology, radiation oncology, and other relevant areas ensures that patients get the very finest medical and surgical care for the full range of benign and malignant disorders.

Duke has very co-operation and maximization rates and patients typically see improvement in conditions such as hypertension, diabetes, and sleep apnea in the first year and in the immediate years following their procedures.

Advancing the Field Through Research

The Center and its faculty are also actively involved in field-leading research, particularly looking at the effect of weight loss surgery on diabetes. In conjunction with the Sarah W. Stedman Nutrition and Metabolism Center at Duke, the team has recently published a study in the Annals of Surgery showing that Roux-en-Y gastric bypass surgery improved metabolic function when compared to traditional calorie reduction diets. These findings have positive implications for diabetes treatment and prevention. Another recently published collaborative study uncovered useful information on how insulin-sensitivity in morbidly obese patients with type 2 diabetes is affected by gastric bypass surgery, finding that weight loss is an influencing factor in how gastric bypass affects how blood glucose levels affect hunger and satiety.

“Our research and our collaboration with colleagues from the Stedman Center is creating an important impact on our field and helping us and other scientists understand how weight loss procedures can affect the health and well-being of patients in ways that had not been previously considered,” says Dr. Torquati.

Training the Next Generation

At 20 years old, Duke’s is one of the oldest and most established minimally invasive bariatic training programs in the country, and also one of the largest, taking three clinical fellows and one research fellow per year, with visiting research fellows participating as well.

One and two-year fellowship programs have the clinical and scientific skills and knowledge of patients and inspire them to become leaders in the field.

“Our sheer volume makes our fellowship training program attractive to prospective fellows,” says Dana D. Portenier, MD, Assistant Professor, Division of Metabolic and Weight Loss Surgery and Program Director, Duke Minimally Invasive and Bariatric Surgery Fellowship. “We are one of the top three academic bariatric programs based on volume, giving fellows a solid and busy clinical experience covering all of the different bariatric procedures, advanced techniques, single incision and robotic procedures, advanced endoscopy, endoscopic suturing, and other cutting-edge practices.”

The fellows pay it forward in clinical and research productivity.

“Last year we had a fellow win the Society of American Gastrointestinal and Endoscopic Surgeons (SAGES) research grant, from the largest minimally invasive society in the country, and at the upcoming SAGES meeting we have three podium presentations,” Dr. Portenier says.

The Duke team also had the opportunity to learn from Chinese surgeons, who presented data on the growth of surgical procedures in China.

Back home in North Carolina, the Duke Center for Metabolic and Weight Loss Surgery has been expanding more locally, to Raleigh, where the group set up shop about three years ago, with six bariatric surgeons and their team offering services to patients in Wake County and parts east.

“In Raleigh, we are offering the same comprehensive bariatric surgery program that we have had in Durham for more than 15 years,” says Jin Yoo, MD, Assistant Professor, Division of Metabolic and Weight Loss Surgery.

The program consists of education and counseling of our patients before and after their surgery so that they are well prepared and equipped to use surgery as a tool to lose significant weight in a healthy manner, Dr. Yoo says.

As it does in Durham, the multidisciplinary team in Raleigh consists of registered dieticians, clinical psychologists, physician assistants, nurses, and surgeons.

“We are the largest bariatric group in the state, which allows us to provide care for our patients all throughout the Triangle,” Dr. Yoo says. “With Duke Raleigh Hospital as a Center of Excellence for bariatric surgery, we are able to provide specialized care to our patients and give them another access point into the Duke University Health System without traveling all the way to Durham.”

“It’s an exciting time to be in this field, which is growing by leaps and bounds and making such a positive impact on patients’ lives,” Dr. Torquati says. “We’re thrilled to be right in the thick of it – treating our patients every day, educating the next generation of surgeons, contributing to important research and spreading near and far – from Durham to Raleigh, and all the way to China and beyond.”

For more information about the Duke Metabolic and Weight Loss Surgery Program, visit weightloss.surgery.duke.edu
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three-year grant from the Centers for Disease Control and Prevention to include Duke as one of 18 spina bifida clinics in the pilot study of the National Spina Bifida Patient Registry.

“Having a larger program with more faculty members has really allowed us to pursue our individual interests and be prolific with research while offering the latest, most cutting-edge treatment options to our pediatric patients,” Dr. Weiner says.

Expanding to the East

Duke Urology of Raleigh is in its third year of providing the same excellent level of care to patients in Raleigh as the team provides at Duke University Hospital in Durham. The practice in Raleigh consists of four urologists, one nurse practitioner, and 12 support staff under the direction of Cary N. Robertson, MD, Associate Professor, Division of Urology.

A multidisciplinary genitourinary oncology clinic is offered at the Duke Raleigh Cancer Center, and it focuses on renal cell carcinoma, testicular cancer, bladder cancer, and high-risk prostate cancer, drawing on the expertise of urology, medical oncology, and radiation oncology for complex treatment planning. Duke Urology of Raleigh was also the first Duke Raleigh practice to have a full-time resident.

“We provide care in Raleigh for both benign and malignant urologic conditions and perform hundreds of urologic surgeries each year,” says Aaron C. Lentz, MD, Assistant Professor, Division of Urology. “Our practice is especially proud that we can offer subspecialized care in oncology, reconstructive urology, endourology, and sexual dysfunction, in a community environment close to home for our patients. This has opened the doors to new patients through better access for the people of Wake County and eastern North Carolina.”

Response from patients has been overwhelmingly positive, Dr. Lentz says. “They love that they don’t have to leave the Raleigh area to get excellent, sub-specialized care in a very personal environment.”

Educating the Clinicians of the Future

Through its continuing medical education (CME) offerings and its residency and fellowship training programs, Duke Urology is able to take its knowledge and experience and educate today’s clinicians as well as those who will be taking care of tomorrow’s patients.

The Urology residency program is training four residents per year, and residents have the opportunity to learn at Duke’s main Durham medical center in addition to time spent in Raleigh and at the Durham and Asheville Veterans Affairs Medical Centers. Besides the fellowship offering in genitourinary cancer survivorship, Duke Urology offers fellowships in Endourology, Metabolic Stone Disease, Laparoscopic, and Robotic Surgery, Reconstructive Urology, and Urologic Oncology.

The Duke Tuesday in Urology conference series continues to be a popular CME offering, as does the long and storied Duke Urologic Assembly, which is in its 46th year. The 2014 event, which will be held in Pinehurst, North Carolina, in April, will feature urologic experts participating in a comprehensive scientific program encompassing cutting-edge updates on the most effective and efficient diagnosis and treatments in the sub-specialties of urology. As always, this conference serves as an integral part of continuing education for healthcare professionals nationwide who manage urologic disorders.

“One of the things I was worried about was it would take an inordinate time,” he says. “It adds about an hour to the time the patient spends in the operating room.”

The groundbreaking use of the intraoperative MRI – the first such device in North Carolina – occurred September 4 during brain tumor surgery performed by Allan Friedman, MD, Chief and Guy L. Odom Professor of Neurological Surgery.

“The intraoperative MRI allows us to see what we have done while the patient is still in the operating room and before the final wound closure,” says Dr. Friedman. “So you take an operation that’s a good operation and you make it better. At Duke we have an international reputation for the quality of our tumor resections. If the intraoperative MRI scan shows a small amount of residual tumor, the surgeon decides whether the residual tumor can be safely removed or whether its removal will harm the patient. Once the patient leaves the operating room, their surgery has been completely optimized to the best of the surgeon’s ability.”

In the era before the intraoperative MRI, surgeons would operate and get an MRI scan hours later. If the scan revealed remaining tumor tissue, the surgeon would decide whether it was necessary and safe to take the patient back to the operating room, put the patient back to sleep, reopen the wound, and remove additional tissue. In cases where there was a small amount of residual tumor, the surgeon would decide that removal was not worth the risk of another operation.

Dr. Friedman says he has been impressed by how quickly the intraoperative MRI system works.

Duke Medicine Pavilion Opens Intraoperative MRI, CT Suites

Following its July opening, the Duke Medicine Pavilion (DMP) recently reached another major milestone with the opening of its new intraoperative suites.

The suites feature the latest in imaging technology – one with a ceiling-mounted intraoperative magnetic resonance imaging (MRI) system, and one with a ceiling-mounted intraoperative computed tomography (CT) system.

Five neurosurgeries have already been performed using the MRI system, including two patients who were awake during their surgeries. The CT system has just completed testing and is scheduled to be used soon for the first time. Duke University Hospital is the first in the country with both types of ceiling-mounted systems.

These state-of-the-art, SUV-sized intraoperative systems travel on overhead rails between adjoining operating rooms on DMP Level 3, allowing the surgical patient to remain stationary on the operating table while being imaged in real-time.

“Improved safety is another advantage, for both patients and staff working in the operating room, especially with increasing use of less invasive surgical techniques. “Less invasively means that we’re exposing our team to more and more radiation,” Dr. Richardson says. “The intraoperative CT allows us to decrease dosages to us and to patients and the staff in the room, while allowing us to do more precise surgery, minimally invasive, with less radiation risk to the patient and staff.”

“One of the things I was worried about was it would take an inordinate time,” he says. “It adds about an hour to the time the patient spends in the operating room.”

Meanwhile, the intraoperative CT now undergoing testing is the first ceiling-mounted system in the country deployed in an operating room, says William Richardson, MD, Associate Chief Medical Officer for Duke University Hospital and Vice Chairman of the Department of Orthopaedic Surgery. FDA approval of the CT system came in July.

“The real advantage is better image quality,” Dr. Richardson says. “In the past, we used a ‘C-arm’ 3D scanner or fluoroscopy. There are ‘C-arms’ that can create three-dimensional images, but the image quality is not as good as with the intraoperative CT. Ours is a 64-slice CT scanner, state-of-the-art, with very precise image quality and resolution that will allow us to see the bones in complicated cases and be able to insert instrumentation.”

For more information on the Division of Urology’s programs, contact Dr. Preminger at 919-681-5506 or visit urology.surgery.duke.edu.
Surgeons at Duke Implant Bioengineered Vein
Kidney dialysis patient first in U.S. to receive blood vessel grown in laboratory

In a first-of-its-kind operation in the United States, a team of doctors at Duke helped create a bioengineered blood vessel and transplanted it into the arm of a patient with end-stage kidney disease.

The procedure, the first U.S. clinical trial to test the safety and effectiveness of the bioengineered blood vessel, is a milestone in the field of tissue engineering, in which a vessel is an off-the-shelf, human cell-based product with no biological properties that would cause organ rejection.

Using technology developed at Duke and at a spin-off company it started called Humacyte, the vein is engineered by coaching donated human cells on a tubular scaffold to form a vessel. The vein is then cleansed of the qualities that might trigger an immune response. In pre-clinical tests, the veins have performed better than other synthetic and animal-based implants.

“This is a pioneering event in medicine,” says Jeffrey H. Lawson, MD, PhD, Professor, Division of Vascular Surgery, and vascular biologist at Duke Medicine who helped develop the technology and performed the implantation. “It’s exciting to see something you’ve worked on for so long become a reality. We talk about translational technology – developing ideas from the laboratory to clinical practice – and this only happens where there is the multidisciplinary support and collaboration to cultivate it.”

Clinical trials to test the new veins began in Poland last December with the first human implantation. The U.S. Food and Drug Administration recently approved a phase 1 trial involving 20 kidney dialysis patients in the United States, followed by a safety review. Duke researchers enrolled the first U.S. patient and serve as study leaders.

The initial trial focuses on implanting the vessels in an easily accessible site in the arms of kidney hemodialysis patients. More than 350,000 people in the United States require hemodialysis, and nearly 400,000 people in the United States a year, and to treat blocked blood vessels in the limbs.

“We hope this sets the groundwork for how these things can be grown, how they can incorporate into the host, and how they can avoid being rejected immunologically,” Dr. Lawson says. “A blood vessel is really an organ – it’s complex tissue. We start with this, and one day we may be able to engineer a liver or a kidney or an eye.”

The bioengineered vein is the product of a 15-year collaboration between Dr. Lawson and Laura Niklason, MD, PhD, co-founder of Humacyte and a former faculty member at Duke who is now at Yale. Drs. Lawson and Niklason teamed up in the late 1990s after discovering they shared an interest in engineering blood vessels.

Building on work Dr. Niklason began as a bioengineering post-doctoral student, the duo worked to perfect the technology in tissue engineering, animal models and eventually moved to develop veins for human implantation.

“The bioengineered blood vessel technology is a new paradigm in tissue engineering,” says Dr. Niklason, Professor and Vice Chair of Anesthesia, Professor of Biomedical Engineering, Yale University, and founder of Humacyte. “This technology is a key step for patients with end-stage renal disease and can potentially avoid surgical interventions and hospitalizations. The fact that these vessels contain no living cells enables simple storage onsite at hospitals, making them the first off-the-shelf engineered grafts that have transitioned into clinical evaluation.”

Overtaking setbacks and frustrations, the researchers notchded numerous advancements, starting with the biodegradable mesh as the scaffolding for the veins. The mesh, easily manipulated into any shape, is formed into a blood vessel of varying lengths and widths.

When seeded with smooth muscle cells, the mesh gradually dissolves as the cells grow in a special medium of amino acids, vitamins and other nutrients. One key improvement, which strengthens the bioengineered tissue, is a pulsing force introduced during the growth process, in which the nutrients are pumped through the tube in a heartbeat rhythm to build the physical properties that are similar to native blood vessels.

After a couple of months, a life-like vein results.

Originally, the researchers sought to develop veins using a person’s own cells to seed the scaffolding, reducing the risk that the patient’s body would reject the implanted tissue. But growing personalized veins took too much time and ruled out mass production, so the researchers changed tack to develop a universal product.

Using donated human tissue to seed the tubular matrix, they wash the resulting vein in a special solution to rinse out the cellular properties, leaving a collagen structure that does not trigger an immune response.

“At the end of the process, we have a non-living, immunologically unreactive graft that can be stored on the shelf and used in patients whenever they need it,” Dr. Niklason says. “Unlike other synthetic replacements made of Teflon or Dacron, which tend to be stiff, our blood vessels mechanically match the arteries and veins they are being sewn to. We think this is an advantage.”

When implanted in animals, the vein grafts actually uptake the cellular properties of a blood vessel. They don’t just elude rejection; they become indistinguishable from living tissue as cells grow into the implant.

“They are functionally alive,” Dr. Lawson says. “We won’t know until we test it if it works this way in humans, but we know from the animal models that the blood travels through the blood vessels and they have the natural properties that keep the blood cells healthy.”

Dr. Lawson’s first patient, a 62-year-old man from Danville, Virginia, who has renal failure, received the bioengineered vein graft in a two-hour procedure on June 5, 2013.

For more information, contact Dr. Lawson at 919-681-2533.
SURGERY RESEARCH GRANT ACTIVITY

Basic and Translational Research

Dawn E. Bowles, PhD, Assistant Professor, Division of Surgical Sciences, was awarded a grant from National Aeronautics and Space Administration for “Heart Risk Model.”

Seth M. Cohen, MD, MPH, Associate Professor, Division of Otolaryngology-Head and Neck Surgery, was awarded a grant from Vanderbilt University Medical Center for “Collaborative Applied Research on Treatment Outcomes and Health Services in Patients with Phonotraumatic B Lansing Vocal Fold Lesions.”

Gayatri R. Devi, PhD, Associate Professor, Division of Surgical Sciences, was awarded a grant from the Department of Defense for “Use of SMAC Mimetics to Overcome Breast Cancer Resistance to chemotherapy.”

Stephen J. Freedland, MD, Associate Professor, Division of Urology, was awarded a grant from the National Institutes of Health for “Duke KUnP Program.”

Li Huang, PhD, Assistant Professor, Division of Surgical Sciences, was awarded a grant from the National Institutes of Health for “Regulation of PD-1 as a Strategy Against Chronic HIV-1 Infection.”

Bruce M. Klitzman, PhD, Associate Professor, Division of Plastic, Maxillofacial and Oral Surgery, was awarded a grant from Medtronic MiniMed, Inc. for “Quantification of Foreign Body Response to Different Medtronic MiniMed Sensors.” Dr. Klitzman was also awarded a grant from Canare Vision, Inc. for “A Replaceable Cartridge for a Glaucoma Drainage Device.”

Jeffrey Lawson, MD, PhD, Professor, Division of Vascular Surgery, was awarded a grant from Humacyte, Inc. for “Test the Utility of the VasTech Arterial Graft for Revascularization of Limbs in Primate Models.”

Shu S. Lin, MD, PhD, Associate Professor, Division of Cardiovascular and Thoracic Surgery, was awarded a grant from the American Society of Transplant Surgeons for “The Role of Mast Cells in Pulmonary Allograft Dysfunction.”

Herbert K. Lyerly, MD, Professor, Division of Surgical Sciences - Applied Therapeutics Section, was awarded a grant from AlphaVax Inc. for “A Pilot Study of Active Immunotherapy with CEA VRP vaccine in patients with Stage III Colon Cancer.”

William Parker, PhD, Associate Professor, Division of Surgical Sciences, was awarded a grant from Coalition for Safe Minds for “Neutralizing Antibody & Adeno-Associated Virus (AAV) VIX Gene Therapy.”

Debora L. Tucci, MD, MS, Professor, Division of Otolaryngology – Head and Neck Surgery, was awarded a grant from the National Institutes of Health for “Moving American Academy of Otolaryngology – Head and Neck Surgery Foundation (AAO-HNSF) Guidelines into Practice: The Sudden Hearing Loss (SHL).”

Kent J. Weinhold, PhD, Professor and Chief, Division of Surgical Sciences, was awarded a grant from Fred Hutchinson Cancer Research Center for “HVTN Mucosal Study” and “HVTN Protocol 505 Supplement.”

David L. Witte, MD, Associate Professor, Division of Otolaryngology – Head and Neck Surgery, was awarded a grant from the American Academy of Otolaryngology – Head and Neck Surgery for “Moving AAO-HNS Clinical Practice Guidelines into Practice.”

Clinical Trials

Charles J. Geraldo, MD, Associate Professor, Division of Emergency Medicine, was awarded a grant from BTG International, Inc. for “A Randomized, Double-Blind, Placebo-Controlled Study comparing CroFab® versus Placebo with Rescue Treatment for Copperhead Snake Envenomation.”

William Parker, PhD, Associate Professor, Division of Surgical Sciences, was awarded a grant from Christopher Reeve Paralysis Foundation for “Understanding the Microbial Community of the Neurogenic Bladder.”

John H. Sampson, MD, PhD, MBA, Professor, Division of Neurosurgery, was awarded a grant from the National Institutes of Health for “Brain tumors with regulatory T cells treated with EGFRvIII-specific T-cells. Dr. Sampson was also awarded a grant from Miami Brain Tumor Coalition, Inc. for “EGFRvIII-targeted Bispecific Antibody Therapy for Malignant Glioma.”

Bruce A. Sullenger, PhD, Associate Professor, Division of Surgical Sciences, was awarded a grant from the University of North Carolina for “Neutralizing Antibody & Adeno-Associated Virus (AAV) VIX Gene Therapy.”

Debora L. Tucci, MD, MS, Professor, Division of Otolaryngology – Head and Neck Surgery, was awarded a grant from the Academy of Otolaryngology – Head and Neck Surgery for “Moving American Academy of Otolaryngology – Head and Neck Surgery Foundation (AAO-HNSF) Guidelines into Practice: The Sudden Hearing Loss (SHL).”

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Contact: Stacey Welsh, 919-684-2037
For an up-to-date listing of Duke Surgery research, visit surgery.duke.edu/research.
Dr. Murphy was in practice for 17 years as a cardiovascular surgeon at Duke Regional Hospital, and during that time he held many physician leadership positions including Chair of the Department of Surgery and President of the Medical Staff. Dr. Murphy’s early patient safety leadership experience also began at Duke Regional Hospital where, in his role as Medical Director of the Medical-Surgical ICU, he helped implement a very successful comprehensive unit-based safety program.

In 2012, after completing formal training in Critical Care Medicine, Dr. Murphy became the Medical Director of the Cardiothoracic ICU and Stepdown Units at Duke University Hospital. In this role, he leads the CT Surgery Subcommittee Heart Center Outcomes Program and other key patient safety and quality initiatives. These include a multidisciplinary Comprehensive Unit Safety Program and monthly Safety WalkRounds. He has also completed the Duke Patient Safety Leadership Training and Certification Course.

Blake S. Wilson, Pioneer in the Development of Cochlear Implants, Receives Lasker Award

The Albert and Mary Lasker Foundation announced that Wilson will share the award with Graeme M. Clark of Australia and Ingeborg J. Hochmair of Austria, who also played critical roles in developing the device that restores hearing to individuals with profound deafness. With continuous improvements in both hardware and software, cochlear implants have become widely used and have proven to be especially beneficial to children in recent years. The Lasker Awards are among the most respected science prizes in the world. Eighty-three Lasker laureates have received the Nobel Prize, including 31 in the past two decades.

In addition to leading the Duke Hearing Center with co-director Debarla L. Tucci, MD, Wilson is an Adjunct Professor in three departments at Duke: Surgery, Biomedical Engineering, and Electrical and Computer Engineering. His many other connections with Duke include helping to establish the Duke Cochlear Implant Program in 1984—one of the first such programs of its kind in the world—and receiving the Distinguished Alumnus Award from the Pratt School of Engineering in 2007. Wilson also worked full-time from 1974–2007 at the Research Triangle Institute (now RTI International), with which Duke maintains close ties.

About 17 percent of American adults, or 36 million people, report some degree of hearing loss, including nearly half of those aged 75 years or older, according to the National Institutes of Health. Large numbers of children are also affected. Men are more likely...
**HONORS :: AWARDS :: ACCOMPLISHMENTS**

**DUKE SURGERY CME COURSES**

**HONORS**

Duke Surgery Contributes to Duke University Hospital Honors

U.S. News & World Report has ranked Duke University Medical Center as #12 in its Best Hospitals 2013-2014 Honor Roll and #1 in North Carolina. The magazine assesses 16 medical specialties at each of the 5,000 hospitals in the nation that are evaluated. Duke Surgery specialty areas ranked as follows:

- #18 in Cancer
- #6 in Cardiology and Heart Surgery
- #43 in Gastroenterology and GI Surgery
- #11 in Nephrology
- #25 in Neurology and Neurosurgery
- #8 in Urology

Thomas A. D’Amico, MD, Professor, Division of Cardiovascular and Thoracic Surgery, was awarded the Gary Hock Family Surgery Professorship. This Duke Medicine endowed professorship honors our most distinguished physician-scientists who have demonstrated extraordinary academic excellence in advancing medical science and human health.

Detlev Erdmann, MD, PhD, MHSc, Associate Professor, Division of Plastic Maxillofacial, and Oral Surgery, was nominated as a member of the scientific committee of the Southeastern Society of Plastic and Reconstrucitive Surgeons (SESSPR) and the American Society of Reconstrucitive Microsurgery (ASRM) for their 2014 meetings.

David Harpole, MD, Professor, Division of Cardiovascular and Thoracic Surgery and Vice Chief of the Division of Surgical Sciences, was elected to the Duke University School of Medicine chapter of the Alpha Omega Alpha Medical Honor Society for the fall 2013. The society recognizes and advocates for excellence in scholarship and the highest ideals in the profession of medicine.

Scott T. Hollowbeck, MD, Assistant Professor, Division of Plastic, Maxillofacial and Oral Surgery, was selected for the Editorial Board of the Annals of Plastic Surgery.

Brant A. Inman, MD, MS, FRCS, Assistant Professor, Division of Urology, was awarded the Cary N. Robertson MD, Assistant Professorship. This Duke Medicine endowed professorship honors our most distinguished physician-scientists who have demonstrated extraordinary academic excellence in advancing medical science and human health.

Edward N. Rampersaud Jr., MD, Assistant Professor, Division of Urology, was selected to serve on the National Comprehensive Cancer Network Kidney Cancer Guidelines panel.

Eileen M. Raynor MD, Assistant Professor, Division of Otolaryngology – Head and Neck Surgery, became a scholar for the North Carolina Medical School (NCMS) Leadership College Class of 2013. The Leadership College is an elite program that allows physician and physician assistants to excel as leaders within organized medicine, hospitals, health care systems, medical staffs, group practices, and in the public policy arena. Dr. Raynor also became president-elect for the North Carolina Otolaryngology Society for 2013.

George D. Webster, MD, Professor, Division of Urology, was honored by the Society of Urodynamics, Female Pelvic Medicine and Urogynecology for his leadership in fellowship training for the specialty of Female Pelvic Medicine and Reconstructive Surgery.

**DUKE CENTER FOR SURGICAL INNOVATION**

The Duke Center for Surgical Innovation (DCSI) is dedicated to training surgeons using the latest surgical techniques and innovative approaches in minimally invasive surgery. Utilizing a combination of didactic lectures, live surgeries, video, and hands-on labs in minimally invasive surgical techniques, hundreds of surgeons and allied health professionals from around the world have been trained through the center. CME credit is available for a number of courses held throughout the year in a wide range of surgical specialties. Following are upcoming DCSI CME courses as well as additional Duke Surgery faculty directed courses:

- **March 6-8, 2014**
  - Masters of Minimally Invasive Bariatric Surgery
  - JW Marriott
  - Grande Lakes Hotel
  - Orlando, FL

- **April 3-6, 2014**
  - 46th Annual Duke Urologic Assembly
  - Pinheurst Village of Pinehurst, NC

- **May 15-17, 2014**
  - Cerebrovascular and Skull Base Surgery: The Battle at Pinehurst
  - Village of Pinehurst, NC

- **July 18-19, 2014**
  - Masters of Surgical Oncology
  - The Umstead Hotel
  - Cary, NC

- **September 18-20, 2014**
  - Masters of Minimally Invasive Thoracic Surgery
  - Waldorf Astoria Hotel
  - Orlando, FL

For more information, visit [innovation.surgery.duke.edu](http://innovation.surgery.duke.edu)

**Blake S. Wilson, Pioneer in the Development of Cochlear Implants, Receives Lasker Award**

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to experience hearing loss than women, and the problem can range from difficulty hearing some high-pitched sounds to total deafness.

Many patients with severe hearing loss embrace deaf culture. The development of the cochlear implant provided new medical options for those seeking to restore hearing. Wilson developed many of the processing strategies used in present-day cochlear implant systems to translate sounds into electrical signals the brain can interpret. The devices send the signals directly to the auditory nerve, bypassing sensory hair cells in the ear that are often damaged or absent in patients who are deaf or severely hearing impaired.

In describing the winners’ contributions, the Lasker Foundation wrote, “Brilliance and relentless commitment have fueled the reinvigorating success of Clark, Hochmair and Wilson. Less than a generation ago, deaf individuals had no hope of hearing again. These scientists have cracked the barriers that formerly isolated huge numbers of people from the realm of sound and have made many lives hum in new ways.”

For entire article visit, [today.duke.edu/2013/09/](http://today.duke.edu/2013/09/)

*By Stacey L. Smith, SAM News*
Mission
The Department of Surgery is committed to excellence, innovation, and leadership in meeting the health care needs of the people we serve and fostering the very best medical education and biomedical research.

Vision
As one of the leading national and international academic departments of surgery, we will assemble and integrate a comprehensive range of health care resources providing the very best in patient care, medical education, and clinical research. As the health care providers of choice in the region, we will improve the health of the communities we serve through the development of new and better models of health care. Through careful stewardship of our resources, we will preserve and promote our core missions of outstanding clinical care, discovery research, and improved health for the communities we serve.

Partners in Philanthropy
A gift to the Duke Department of Surgery is a gift of knowledge, discovery, and life. Every dollar is used to further our understanding of surgical medicine, to develop new techniques, technology, and treatments, and to train the surgeons and researchers of the future.

If you would like to make a philanthropic investment in Duke Surgery, visit surgery.duke.edu/gift.

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