Gut Reaction
A Full-Service Menu for Overeating-Related Disease

HEADMASTERS
THE NEW TEMPLE HEAD & NECK INSTITUTE

EPIGENETIC THERAPY
A SEA CHANGE FOR CANCER?
Doctoring: True to Essence

In May, I will have the privilege of conferring the MD degree on the first group of medical students I welcomed to Temple when I joined the organization four years ago. I promise you a topnotch medical education, I told them. I promise you the knowledge and skills befitting the title “doctor.”

Over time, I watched this group of students develop into true professionals, absorbing concepts and practicing techniques. I also watched some of them struggle. No matter how hard they worked, their faculty—and especially their patients—seemed to want something more.

In time, those students recognized what was missing—and then realized that it had actually been there all along: the very thing that called them to medicine in the first place, that innate desire to help and heal. And thus young professionals learn medicine’s most sacred lesson: patients assume their physicians are competent. But they need to know that we care.

In May, at graduation, I will encourage the Class of 2015 to keep doctoring from this very deep core. It will distinguish every chapter of your career, touch every patient you touch, I will tell them. It’s been the essence of doctoring since ancient times—and will remain so, no matter what changes in health care may unfold.

Larry R. Kaiser, MD, FACS
Senior Executive Vice President for Health Sciences, Temple University
Dean & Professor of Surgery, Temple University School of Medicine
President & CEO, Temple University Health System
FEATURES

10 Gut Reaction
A Full-Service Menu for Overeating-Related Disease
BY GISELLE ZAYON

16 Saving Steps
On the March to End Amputation
BY KARA ROGERS

20 Headmasters
The Head & Neck Specialty: A Resident’s Story
BY STEVEN ZUNIGA, MD

24 Home Delivery
Population Health Programs for At-Risk Patients
BY GISELLE ZAYON

28 Epigenetic Therapy
A Sea Change for Cancer?
BY KARA ROGERS

DEPARTMENTS

32 Change Agent
Scott Charap: Anti-Gun Violence

34 Quest
Marla Wolfinson: Liquid Air

36 Tools of the Trade
Sewing Lesson: Surgical Needles & Suture

38 Timeline
Fanwell: "Old Mud"

44 So Noted
Quips and Counts

45 Artful Ending
The Ultimate Selfie

IN EVERY ISSUE

1 Agenda
Larry Kaiser, MD, FACS

4 Currents
News Roundup

40 Alumni News

45 So Noted
Quips and Counts

45 Artful Ending
The Ultimate Selfie
At Your Service

CONCIERGE SERVICE HONORED

The concierge service managed by Temple University Physicians is the first Philadelphia health-care organization to be accepted into the National Concierge Association, a distinction we’re honored to receive, says Lisa Fino, Chief Operating Officer, Temple University Physicians. Membership, which is reviewed annually, is contingent on maintaining high standards. “In addition to helping make physician appointments for our guests, we assist with hotel and travel plans. We even escort patients to their physicians’ offices,” Fino says.

RAPID ACCESS AT FOX CHASE

Taking patient-centered responsiveness to the next level, Fox Chase Cancer Center now offers physician appointments to new patients within 24 hours of their first call. “Patients should not have to wait several days to see a cancer specialist,” says Richard Fisher, MD, President and CEO of Fox Chase. Through the Rapid Access Service, new patients are seen within 24 hours of their first call (or on Monday if they call on Friday) – even if they don’t have a definitive diagnosis yet. Since the program was launched in March 2014, Fox Chase has seen a significant increase in new patient appointments.

Close to the Far East

Expanding its prominence as a collaborative partner for medical education and research in Asia, Temple University School of Medicine has established an affiliation with Fu Jen Catholic University School of Medicine in Taiwan. The five-year agreement reserves four MD-PhD program slots per year at Temple for Fu Jen students (who will earn their MD from Fu Jen and their PhD from Temple), and also features a medical student exchange program for six students at each institution per year. The new affiliation follows in the footsteps of the partnership forged in 2013 with China’s Jiao Tong University School of Medicine in Shanghai — an alliance that’s seen much growth and activity, including two cross-cultural academic symposia held last fall, one at Hong Kong Adventist Hospital and another in Shanghai at Jiao Tong University’s Renji Hospital. Both showcased next-generation innovations that are changing the way medicine is practiced in the 21st century.

The Shanghai symposium was held in conjunction with the 170th anniversary celebration of China’s second-oldest western-style healthcare facility, Renji Hospital. Hong Kong’s Secretary for Food and Health, Dr. Ko Wing-man, was the guest speaker of honor, and Temple’s Larry Kaiser, MD, FACS, was the only American medical school dean invited to speak at the event, which attracted international dignitaries.

On Trial

Research is the linchpin to progress in medicine – especially clinical research, which moves innovations from the laboratory into testing with real patients. Two new initiatives continue to intensify the power of Temple’s clinical research engine.

INSTITUTE ESTABLISHED: “Each step of the clinical research process — from conceptualization of an objective to dissemination of study results — must be supported by a system that optimizes efficiency, productivity, and quality,” says Susan G. Fisher, PhD, Director of the newly established Temple Clinical Research Institute. Investigators now have ready access to a team focused on accelerating the process, with staff to coordinate projects, foster partnerships with industry sponsors, manage regulatory compliance processes, and provide services like bioinformatics support.

BE THE BREAKTHROUGH: Last summer, Fox Chase launched “Be the Breakthrough,” a patient-focused campaign designed to increase awareness of clinical trials for cancer among patients, caregivers, and families. Since its launch, approximately 60 percent more patients have been enrolled in clinical trials at Fox Chase than during the previous year. “Clinical trials have the potential to result in better treatments and outcomes” says Evelyn Gonzales, Senior Director of Health Communications and Health Disparities. Approximately 125 clinical trials are active at Fox Chase at any given time.

Dual Roles as CEO

Marc Hunziz, DO, FAAFP, has been named CEO of Jeanes Hospital. A physician executive with over two decades of leadership experience, Hunzitz joined Temple in 2009 and concurrently serves as CEO of Temple Physicians, Inc., the Health System’s network of community-based physician practices. At Jeanes, he succeeds Linda Benfield Grass, MBA, FACHE, who was CEO for 25 years, and in all devoted three decades of outstanding service to Jeanes in a variety of positions.
New Home Base for Temple Heart and Vascular Institute

With the opening of our new facility, we now have physical space reflective of our world-class capabilities in heart and vascular care,” says Daniel Edmundowicz, MD, FACP, FACC, Medical Director of the Temple Heart and Vascular Institute. “Centralizing our experts and technologies in one location optimizes care and convenience for our patients—and streamlines our clinicians’ ability to provide prompt diagnoses, timely interventions, and effective treatment and follow-up care.”

One of the most respected heart programs in the Delaware Valley, the Institute offers the full range of treatment options for patients with heart disease. Its innovations include:

- Next-generation cardiac monitoring with the smallest implantable device available—a monitor just one-third the size of an AAA battery.
- The City of Philadelphia’s only program for familial cardiomyopathy, which offers specialized services such as a minimally invasive robotic approach to septal myectomy surgery, which reduces the bulk of hypertrophic muscle and improves the ability of the heart to pump blood.
- The region’s only hybrid operating room dedicated exclusively to cardiac electrophysiology, which improves the treatment of atrial fibrillation.
- Total heart transplantation and implantation of devices that serve as a lifeline for patients awaiting a donor heart—including ventricular-assist devices for patients with either left or right ventricle failure—and total artificial hearts for patients with failure of both.

Lung Update

FIRST-EVER GUIDELINES

Last fall, the American College of Chest Physicians and the Canadian Thoracic Society released new guidelines for COPD. “Previous guidelines addressed management of COPD exacerbations. The new ones aim to prevent them,” says Temple Lung Center Director Gerard J. Criner, MD, FACP, FACC, who chaired the panel that developed the guidelines. COPD is the third leading cause of death in the U.S. and the fourth in Canada.

PROMISING NEW DRUGS

Two new investigational drugs that could be game-changers for idiopathic pulmonary fibrosis (IPF) are being offered by Temple in an expanded access program in advance of the drugs’ FDA approval. Both pirfenidone (InterMune) and nintedanib (Boehringer Ingelheim Pharmaceuticals) show promise in slowing the progression of IPF, a debilitating condition that affects about 140,000 Americans. “Previously, there wasn’t effective drug therapy for IPF,” Criner said.

DRUG FOR EMPHYSEMA

Temple is one of four institutions in the country using the new da Vinci® Xi Surgical System, a successful minimally invasive robotic mitral valve repair. The new robotic technology has broader capabilities and features not previously available, including advanced endoscopic digital architecture; smaller, thinner arms with greater range of motion; and longer instrument shafts for greater operative reach.

In another advance in surgical robotics, Temple recently became one of a handful of hospitals in the country using the new da Vinci EndoWrist™ Stapler, a high-precision, computer-guided device that helps surgeons improve patient outcomes.

Cancer Notes

SKIN PAIN & ITCH

Research led by Gil Yosipovitch, MD, Director of the Temple Itch Center, found that itching in pain in a suspicious skin lesion could indicate skin cancer. In his study, published by JAMA Dermatology, nearly 37 percent of skin cancer lesions were accompanied by itching, while 28.2 percent involved pain. Basal cell and squamous cell carcinomas are more likely than melanoma to involve itch or pain. Skin cancer is the most common cancer in the United States, with more than 3.5 million non-melanoma lesions diagnosed annually.

LYMPHEDEMA TREATMENT

Fox Chase is one of only two institutions in the Philadelphia region to offer an innovative surgery called vascularized lymph node transfer, a new treatment for lymphedema, the painful fluid build-up and swelling in soft body tissues common among patients who have had lymph nodes removed during cancer treatment. Sameer Patel, MD, and Eric Chang, MD, who specialize in plastic and reconstructive surgery for cancer patients, transplant lymph nodes from other parts of a patient’s body to the affected area to help drain excess lymphatic fluid.

RESTAGING CANCER

The National Comprehensive Cancer Network Soft Tissue Sarcoma Panel, chaired by Margaret von Mehren, MD, Director of Sarcoma Oncology at Fox Chase, issued updates to the soft tissue sarcoma guidelines—specifically with regard to preoperative radiation therapy and genetic testing and counseling. Another Fox Chase expert, Richard Fletcher, MD, Co-Leader of the Breast Cancer Treatment Team, published a study in the Journal of the American College of Surgeons recommending that breast cancer staging criteria be changed, too. His study notes that patients whose breast tumors have spread to the skin are automatically diagnosed as stage III (advanced cancer with a relatively poor prognosis), a classification Fletcher finds outdated and unduly grim. “The tumor’s size—and whether it has spread to underarm lymph nodes—are more important predictors of survival than skin involvement,” he says.
What an Honor

Tassuku Akiyama, PhD, is recipient of the 2014 Ronald M. Silverman Research Prize of the International Association for the Study of Pain—an honor that’s been awarded to only 10 researchers in the world since 1993. Akiyama is Assistant Professor of Dermatology and Anatomy & Cell Biology. His research focuses on the neural mechanisms of itch and pain.

N. David Charkes, MD, was honored with the 2014 de Hevesy Nuclear Pioneer Award of the Society of Nuclear Medicine and Molecular Imaging, recognizing his outstanding contributions to the field. Charkes is Emeritus Professor of Radiology and Professor of Medicine.

John Davidooyck, MD, SFHM, has been honored as the tri-state region’s Top Academic Hospitalist by the Society of Hospital Medicine. Davidooyck is Chief of the Section of Hospital Medicine and Vice Chair of Patient Safety and Quality Improvement at Temple University Hospital.

Hormoz Elyah, MD, Chief of Cytopathology at Fox Chase Cancer Center, received the 2014 L.C. Tio Educator Award of the American Cytopathology Society. This award recognizes exemplary contributions to cytopathology education.

Larry R. Kaiser, MD, FACS, Temple University’s health system CEO and medical school dean, was named one of Becker’s Hospital Review’s top 100 “Physician Leaders of Hospitals and Health Systems,” 2014.

New Leaders

Robert Lux, Senior Vice President and Health System CFO, was named one of Becker’s Hospital Review’s 150 “Hospital and Health System CFOs to Know” for 2014, signifying excellence in financial management.

Stephen Permut, MD, JD, has been appointed Chair-Elect of the American Medical Association, the nation’s largest and most influential physician organization. Permut is Chair of Family and Community Medicine and former Senior Associate Dean of Academic Affiliations at Temple.

Elias Siraj, MD, FACP, FACE, received the American Association of Clinical Endocrinologists Outstanding Service Award for significant contributions to endocrinology education in Ethiopia. Director of the Endocrinology Fellowship Program at Temple, Siraj played a key role in the launch of Ethiopia’s first endocrinology fellowship training program.

David Wald, DO, received the 2014 Distinguished Educator Award of the Clerkship Directors in Emergency Medicine, a national organization committed to enhancing medical student education in emergency medicine.

Robert Utzus, MD, FACS, received the 2014 American Urologic Association Fellowship Committee Chair’s Teaching Award, recognizing outstanding urology educators. Utzus is Chair of the Department of Surgery and the G.W. Pepper Chair in Cancer Research at Fox Chase.

Genomics Jumpstart

Glenn Gerhard, MD, a translational genomics expert, has joined Temple as the Joseph and Rebecca Goodfriend Endowed Chair in Genetics. His recruitment — and the establishment of a new Department of Medical Genetics and Molecular Biochemistry, supported by a $6.5 million bequest from Vera Goodfriend, a 1940 graduate of Temple’s College of Education. From risk assessment in healthy individuals to genome-guided treatment for patients with complex diseases, the expanding field of genomics is opening new territory in nearly every aspect of medicine. Gerhard comes to Temple from Penn State College of Medicine where he was Co-Director of the Penn State College of Medicine Institute for Personalized Medicine.

Hot Numbers

Top 100: Discover Magazine listed the news of Temple’s HIV eradication research among its “100 Top Stories of 2014.”

Top 5%: Temple University Hospital-Episcopal Campus earned the 2014 Press Ganey Guardian of Excellence Award — sustaining scores in the top five percent of all inpatient behavioral health hospitals in the nation.

No. 1: Temple University Hospital was named Pennsylvania’s top-ranked hospital in the 2014 Pennsylvania Donate Life Hospital Challenge, for its success in increasing organ donor awareness and designation among patients and their families.

1 of 44: For the second consecutive year, the Joint Commission named Temple University Hospital among the nation’s Top Performers on Key Quality Measures. It is one of just 44 hospitals in the nation — and one of four in Pennsylvania — to not only meet, but exceed, the rigorous thresholds required.

Top 100: Fox Chase Cancer Center is one of Becker’s Hospital Review’s “100 Hospitals and Health Systems with Great Oncology Programs,” 2014. In addition, last year U.S. News & World Report named Fox Chase Cancer Center one of the top 20 cancer hospitals in the United States.

Guiding National Research

Seasoned experts, such as the Temple faculty listed below, are invited to serve on panels of the National Institutes of Health and other federal agencies.

Joseph Cheung, MD, PhD - Electrical Signaling, Ion Transport & Arrhythmias Study Section
Edna Cukierman, PhD - Tumor Progression & Metastasis Study Section
Dolna Ganea, PhD - Cellular & Molecular Biology of Glia Study Section
Laurie Glimcher, Ph.D. - Inflammation, Infection & Immunity (Chair)
Jean-Pierre Issa, MD - Molecular & Cellular Hematology Study Section
Suzanne M. Miller, PhD - Behavioral Medicine, Interventions & Outcomes Study Section
Deborah E. Nisonoff, PhD - Infectious Diseases, Reproductive Health, AIDS & Polymicrobial Conditions Study Section
Michael Ruggieri, PhD - Urologic & Genitourinary Physiology & Pathology Study Section
Rosario Scalia, MD, PhD - Integrative Physiology of Obesity & Diabetes Study Section
Naveen Sharma, MD - Endocrinology Study Section
Xiao-Feng Yang, MD, PhD - Atherosclerosis & Inflammation of the Cardiovascular System Study Section

TEMPLE UNIVERSITY HEALTH SYSTEM IS A $1.8 BILLION ACADEMIC HEALTH SYSTEM
Everyone knows that Americans like to eat. According to the Journal of the American Medical Association, more than 78.6 million American adults are obese. Likewise, most of us know that obesity translates into higher rates of type 2 diabetes, high blood pressure, and a host of other problems. But less well-publicized are the effects of overeating on the engine of digestion itself — the stretch of the body that includes the esophagus, stomach, pancreas, liver, gallbladder, biliary tract, small intestine, and colon.

“A properly functioning gastrointestinal tract is the keystone of good health,” says Oleh Haluszka, MD, Chief of Gastroenterology and Professor of Medicine at Temple.

BY GISELLE ZAYON
ILLUSTRATIONS BY SCIEPRO
Continual overeating, Haluszka says, stresses the entire gastrointestinal (GI) tract, overworking and damaging its organs. “The body was not made to handle large quantities of food,” he says. “Moreover, eating too much ‘healthy’ food is just as bad as too much ‘junk.’”

When we eat too much, food can stretch the stomach. Fatty foods slow down the stomach’s ability to empty, making us feel bloated and nauseated. Over time, overeating, particularly overindulgence in things high in fructose and sucrose) leads to far-ranging consequences for the entire GI tract, not to mention excess body fat.

Overeating, especially when it comes to too much meat, is particularly hard on the liver, the organ that digests fat, stabilizes blood sugar and cholesterol levels, and detoxifies the blood. Over time, the liver itself can become fatty, a condition presaging nonalcoholic steatohepatitis (NASH), which can lead to liver failure or liver cancer.

With millions more Americans diagnosed every year, type 2 diabetes is probably the most prevalent and alarming consequence of overeating. The risk of diabetes rises as body mass index increases. Diabetes results when the pancreas exhausts itself attempting to keep high blood-glucose levels in check. And diabetes, of course, ushers in a host of serious health problems itself.

Even the most obvious vestige of overeating, accumulated body fat, imperils the digestive system, Haluszka says. Abdominal fat increases the probability of gastroesophageal reflux disease (GERD), which in turn can lead to a precancerous condition called Barrett’s esophagus. Excess body fat can also be a factor in gastroparesis, delayed emptying of the stomach. "Eventually, overeating can cause every organ in the body to malfunction," Haluszka notes.

**FIRST STOP, ESOPHAGUS**

A common and distressing condition linked to overeating and obesity is GERD, in which refluxed stomach content causes the lining of the esophagus to “burn.” The resultant damage sometimes leads to Barrett’s esophagus, a precancerous condition in which the cells lining the esophagus actually change in character. About five to ten percent of people with GERD develop Barrett’s esophagus, which places them at risk of developing esophageal cancer.

“The more reflux, the more risk of developing Barrett’s esophagus, and the more risk of developing esophageal cancer,” says Michael S. Smith, MD, MBA, Medical Director of Temple’s Esophageal Program and Associate Professor of Medicine.

Smith uses cutting-edge techniques to detect and remove precancerous cells from the esophagus. So, in addition to employing traditional endoscopic forceps biopsies to look for Barrett’s cells that may be undergoing dysplasia, or advanced precancerous changes, Smith employs a high-tech method called WATS® — wide-area transepithelial sampling with computer-assisted three-dimensional analysis. After a special stiff-bristled brush removes hundreds of thousands of esophageal cells for testing, advanced computer technology is used to identify the 200 most abnormal-appearing cells to determine whether dysplasia or cancer is present. “The WATS® brush improves our ability to detect cancer or dysplasia up to 65% when it is added to standard forceps biopsies,” Smith says.

Smith also utilizes volumetric laser endomicroscopy, in which a special laser device scans the walls of the esophagus for microscopic signs of precancerous change. “In a short period of time, we can see where dysplasia or cancer might be hiding, and target those locations for testing and treatment,” Smith says, adding that Temple is the only institution in Philadelphia equipped with the technology.

To eradicate Barrett’s and help reduce the risk of esophageal cancer, Smith draws on a number of high-tech treatment options. These include radio frequency ablation, which utilizes microwave energy, and liquid nitrogen spray cryotherapy — both of which kill off abnormal cells during outpatient endoscopic procedures. “In fact, Temple was the first institution in the world to use the latest liquid nitrogen cryotherapy system to treat Barrett’s esophagus,” Smith says. Following use of both techniques, normal esophageal cells replace the precancerous or tumor cells as the tissue regenerates.

**NEXT STOP, STOMACH**

Another ailment made more prevalent by overeating and obesity is gastroparesis, delayed emptying of the stomach. The condition, which causes nausea and vomiting, leads to what Henry Parkman, MD, Professor of Medicine and Director of Temple’s GI Motility Program, calls an ironic situation: overweight people who have trouble eating.

Parkman employs novel techniques to diagnose and treat gastroparesis. One diagnostic tool is called Endoflip®, a device that measures the stomach’s internal pressure, diameter, and distensibility. “These factors help clinicians decide what treatment might be best. To treat gastroparesis, Parkman sometimes injects Botox to relax the band of muscles at the end of the pyloric channel to speed emptying — or performs surgery to adjust the overly constricted muscle. Frequently, the condition improves with the installation of a gastric pacemaker that stimulates the stomach to empty.

One of the largest centers for gastric motility in the country, Temple’s gastric pacemaker program is among the busiest in the nation. “Patients are referred to us because we have access to investigational medicines that are not available at most hospitals,” Parkman says. One such drug is domperidone, which speeds up stomach emptying. Another, aprepitant, is currently approved for chemotherapy-induced nausea. Parkman is determining its efficacy for nausea related to gastroparesis. Another, metoclopramide, can be delivered by nasal spray to help with nausea, heartburn, and vomiting. “Since patients with gastroparesis have trouble digesting medications in pill form, a spray that absorbs through the nasal membranes might work better,” Parkman explains.

**LIVER & GALLBLADDER WOES**

Overeating and obesity have definitely increased the number of people with fatty liver disease, says Abdullah Al-Osaimi, MD, FACP, FACG, AGA/S, Temple’s Chief of Hepatology. A common, often “silent” liver disease, nonalcoholic steatohepatitis (NASH) resembles alcoholic liver disease, yet occurs in people who drink little or no alcohol. The major feature in NASH is fat in the liver, along with inflammation and damage that can lead to cirrhosis, permanent damage and scarring that may result in the need for liver transplantation. Incidence of fatty liver disease has doubled in adults and tripled in children over the past 10 years. In 2013, Nature magazine predicted that it will be the next global epidemic.
People with digestive disorders need every advantage they can get. For some it’s the next-generation devices. For others, clinical research trials offer hope for improved health. Multiple investigations of new drugs and devices are underway at Temple, some sponsored by government and others by industry. Research is central to the Digestive Disease Center mission. Teaching is, too.

“Developing new treatments and training new specialists are building blocks of superior patient care,” Haluszka says.

Temple is one of just 173 hospitals in the U.S. certified to educate GI specialists. The advanced, three-year training programs are called fellowships. Their rigorous, comprehensive curricula are designed to produce GI specialists who meet the highest standards.

“The goal in fellowship training, Bandini explains, is to produce superior diagnosticians, technically accurate and expert clinicians, who are great with patients — and in command of new procedures and technology.

Under the direct supervision of full-time faculty, fellows assume increasingly larger roles in the initial workup, evaluation, and management of patients. They are involved in making therapeutic recommendations. They learn to perform routine and complex diagnostic and therapeutic procedures using state-of-the-art equipment.

Another aim is to ground fellows in scholarly research. It is essential that they are not only familiar with developments on the horizon, but personally contributing to them through their own research. “Our fellows have won many awards in regional and national research competitions,” Bandini says.

“At the end of the day, it all adds up to one thing: optimal patient care,” says Haluszka. “Giving patients comfort, answers, options — and results.” **

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Haluszka says the gallbladder, part of the biliary tract, is a common target of trouble as well. Here, the primary disorder associated with overeating and excess weight is the development of gallstones, in part because cholesterol production is closely tied to body fat.

When a high concentration of cholesterol is secreted into the bile (the fluid stored in the gallbladder that aids digestion), “sludge” and gallstones can form. These conditions can lead to pain, infections, and even life-threatening attacks of pancreatitis. “It is important to note that rapid weight loss can alter concentrations of cholesterol as well — sometimes precipitating gallstone formation,” Haluszka says.

Gallstones and their complications have been the driving force behind many of today’s endoscopic advances. With tools such as endoscopic ultrasonound and endoscopic retrograde cholangiography (ERCP), endoscopy combines diagnostic and therapeutic modalities that enable experts like Haluszka to access the biliary tree and pancreatic ducts.

“Temple’s success rate — even when treating patients with surgically altered anatomy — ranks among the highest in the nation,” Haluszka says.

Under the direction of Michael Edwards, MD, FACS, Temple’s Bariatric Surgery Program, has also had great results. “It’s not just about weight-loss surgery,” says Edwards. “It’s a full menu of services to help patients achieve better health.

THE BOWEL & BEYOND

Although inflammatory bowel disease (IBD) is not linked directly to obesity, recent studies suggest its possible link to overconsumption of processed foods — which make up most of the typical American diet.

IBD includes two chronic inflammatory conditions: ulcerative colitis, which affects the colon, and Crohn’s disease, which can affect any portion of the intestinal tract. Characterized by changes in the intestine, IBD brings on pain, diarrhea, and fatigue. The condition often strikes young people and it is difficult to treat.

“Our IBD patients get a multifaceted approach — surgeons, radiologists, and GI clinicians all ready to help,” says Robin D. Rothstein, MD, Medical Director of the Inflammatory Bowel Disease Program.

At present there is no medication that cures IBD, but Rothstein and colleagues are looking at new medicines and using new techniques to biopsy the intestinal lining to help detect precancerous change. This is important because people who have the disease for eight to ten years are at greater risk for developing cancer of the lining of the colon.

Temple also offers IBD patients complementary techniques like biofeedback, stress management, diet therapy, and acupuncture — which make some patients feel more comfortable and help with symptom control. “The better able we are to control the disease, the better we can help people feel,” Rothstein says.

Increasingly, gastroenterologists can cure existing early-stage GI cancer using endoscopic mucosal resection and other tissue-removal techniques, which often limit the need for radiation, surgery, or chemotherapy treatments. If, however, cancer has already progressed to a later stage, care of the highest order is provided by GI cancer experts at Temple and Fox Chase Cancer Center.

THE BIG PICTURE

Advanced expertise and advanced technology go hand in hand. Temple works closely with industry partners to offer the most advanced endoscopic services in the region, and in 2014 added a multimillion-dollar therapeutic endoscopy room to its suite of procedure rooms, a cutting-edge facility that’s just one step short of an operating room. In addition, the team just opened another high-tech suite at Temple’s ambulatory patient care center in the Port Richmond section of Philadelphia.

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Chlothar Haluszka, MD, Chief of the Digestive Disease Center

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**TO MAKE AN APPOINTMENT WITH A GI SPECIALIST AT TEMPLE, CALL 1-800-TEMPLEMED.**
SAVING STEPS
ADVANCES TO END AMPUTATION
BY KARA ROGERS • PHOTOGRAPHY BY CLINT BLOWERS
NEW STEPS

On October 14, Temple University Hospital became the first hospital in the Philadelphia region to use an innovative new device to re-open arteries in the thigh and knee in a patient with PAD. In fact, the device had been approved by the U.S. Food and Drug Administration just days before one of the center’s experts, Rizay Bashir, MD, Director of Vascular and Endovascular Medicine, used it in a procedure to help save a patient’s leg.

The new device marks a major improvement in angioplasty, a technique that involves inflating a tiny balloon inside a narrowed vessel to open it up. With traditional angioplasty, however, scarring can develop in the area where the balloon was placed, causing the vessel to narrow again. The balloon in the new device Bashir used, however, is coated with a low dose of a drug that prevents the vessel from re-stenosing. “Technological advances have changed the landscape of limb salvage,” Bashir says.

Other devices used at the Center employ drugs or ingenious mechanisms to break up clots, or even remove them wholesale. There are also devices that enable physicians to access lower-limb vessels from the wrist or foot instead of using the groin artery as the point of access. Studies show that the new access points reduce complications and post-operative pain. Other techniques enable surgeons to remove the blockage from the body with lasers or devices that shave the blockage away. Blockages can also be broken up with ultrasound, or be suctioned out. Drug-coating stents became available for PAD in 2013, and bio-absorbable stents will be available at Temple soon.

Four ultramodern catheterization labs — facilities equipped with technologies designed specifically for the visualization, diagnosis, and treatment of vascular disease — have been built at Temple in the last two years. “With advanced imaging equipment, we can see blockages better — which means we can do a better job of fixing them,” Bashir says.

Certain cases are performed in Temple’s brand new hybrid operating rooms, high-tech facilities that combine the imaging and diagnostic functions of a “cath” lab with the surgical functions of a traditional operating room. The blending of technology enables the team to treat multiple issues at the same time — an approach designed to limit extra procedures, shortened hospital stays, and reduce the chances of complications.

BEYOND THE LIMB

Surgical expertise and next-generation technologies are musts — but the real secret to saving a limb goes way beyond toes, feet, and legs. It’s about treating the whole person, about getting a handle on the disease that produced the limb-threatening crisis in the first place,” Choi says.

Therefore, patients at the Limb Salvage Center benefit from the coordinated care of a multidisciplinary team — specialists in foot health, cardiovascular health, diabetes, wound care, and many other fields. In all, nearly two dozen highly trained personnel contribute to the effort: podiatrists like Dr. Andrew Meyer, vascular surgeons like Drs. Ravi Dhanisetty and Paul van Bemmelen; and their colleagues in orthopedic surgery, plastic surgery, endocrinology, cardiology, and physical medicine and rehabilitation.

New patients undergo immediate evaluation, with testing and care centralized in one convenient, comfortable location. On-site services include one of the largest accredited vascular laboratories in the Delaware Valley, a radiology suite, blood lab, and physical therapy studios. “We develop a prioritized treatment plan — usually by the end of the patient’s first or second appointment,” Choi says.

Choi says that restoring blood flow is always the priority, but that’s just the start. “We employ a comprehensive strategy that might include medical management, physical therapy, shoe-modification — whatever it takes,” he says.

Nutrition counseling and other forms of patient education are also key. “Things like quitting smoking and eating a healthy diet can have dramatic impacts on preventing disability,” Bashir adds.

Sometimes investigational therapies are part of the picture. In neo-angiongenesis, for example, cells extracted from a patient’s own bone marrow are implanted in the ischemic leg to encourage new blood vessels to grow. These innovative options are especially important for patients who are not good candidates for traditional approaches.

When Shirley Griswold traveled from Johnson City, NY, to see Dr. Choi, she was close to losing her right foot to amputation. Because the 72-year-old suffers from critical limb ischemia and heart failure, she was not an appropriate candidate for traditional vascular procedures. Therefore Choi performed her angioplasty under local anesthesia. “He opened a blood vessel in my foot and saved my leg,” Griswold says. “It was unbelievable, what Dr. Choi did for me.”

STEPPING UP

When Eric Choi was recruited to head vascular surgery at Temple, he set out to see things differently. Like most people who suffer from limb-threatening diseases often have diabetes, and heart and kidney problems, too. Nevertheless, he was passionate about moving ahead — and finding a groundwork of support among his colleagues. Today, more than a third of the patients who seek help at the Center come from distant states and cities. Norris drives an hour and half to visit the Limb Salvage Center. Griswold drives three. Choi hopes to see patients fly in to Philadelphia — a journey worth every minute, every mile, when limb and foot are saved.

“While major amputations are still essential in certain life-threatening situations, the evidence is clear that must can be prevented,” Choi states. More than two million people in the United States have already had a limb amputation. Half could have saved their remaining leg — or died — within five years if vascular disease proceeds unchecked. “Any patient with limb-threatening diseases should be evaluated at a center like ours,” Choi says. “We have helped many patients who believed their limbs could not be saved.”

“Dr. Choi and his staff are phenomenal,” Griswold says. “He let me see a better side to life.”

“These professionals go above and beyond,” Norris adds. “The nurses, the doctors, the entire Limb Salvage team couldn’t be better. We wouldn’t go anywhere else.”

Kathy Rogers has written for the International Journal of Cancer.

To see a specialist at the Limb Salvage Center, call 1-800-TEMPLEMED.
The notion that form follows function is a concept presented to all medical students. This is the idea that the structure and shape of each part of human anatomy is intimately tied with its purpose. Nowhere in the human body is this demonstrated more vividly than in the head and neck. Although they comprise a mere one-tenth of the body, their intricacy and complexity outstrip the rest of the body combined.

Herein lies a great tragedy of medical education: a vast volume of information to master, and only four short years to accomplish the task. Many aspects of medicine cannot be represented comprehensively during medical school. One of them is otolaryngology, or ENT (ears, nose, throat) as it is generally known. Medical students receive an overview of the head and neck. Thus it is left to motivated individuals to explore the beauty and depth of this region of the body on their own.

By Steven Zuniga, MD
Illustration by Serge Bloch
before discovering the true scope of an otolaryngologist’s practice, I shared the common belief that ENT docs simply removed children’s tonsils and prescribed “Flonase” for stuffy noses. Learning their actual role was a revelation in career-defining eye-opening experience for me. Our specialty covers disorders as varied as dizziness, vocal cord nodules, swallowing disorders, sleep apnea. We address cleft palate, hearing loss, thyroid abnormalities, facial trauma, cancer, and a wide range of other disorders, both common and rare.

The head and neck houses the organs responsible for our ability to experience the world. Enabling someone to hear after a lifetime of deafness, taking away chronic dusty snoring, and curing debilitating cancer are just a few of the motivations that inspired me to select this specialty. But the path to becoming an otolaryngologist is not an easy one. Each year, more than 700 medical students compete for fewer than 300 open residency positions. Many extremely qualified candidates simply don’t get in. I consider myself extremely fortunate to have been accepted—and not only that, but accepted by one of my top-choice programs.

My wife and I both grew up in California, where “winter” means wearing a hoodie to the beach. Hence the prospect of heading east wasn’t the easiest of discussions. My argument for Temple was simple. Temple’s faculty boasts 20 full-time fellowship-trained faculty representing all of the otolaryngology subspecialties. Fellowship training is the highest order of medical education, establishing expertise above and beyond what’s learned in residency. Having just graduated with a master’s degree in child development, my wife soon became excited about moving to Philadelphia too, since the City offers many opportunities to work with pediatric populations. (And although she can’t say she grew up in California, I’m pretty sure Mayo, our German Shepherd, Huxsy mix, doesn’t mind the snow.)

I am now nearing completion of my first year at Temple. It’s been ideal for me in all the ways I anticipated and more. Had I known, for example, during my application process that Temple was also about to launch a brand new Head and Neck Institute, it really would have sold me. But before elaborating further, I would like to share one of our stories.

In the spring of 2014, after spending 14 months going to see my 31-year-old patient named Dana Green finally found her way to Ahmad Soliman, MD, Director of Laryngology and Associate Department Chair. Ms. Green, an elementary school teacher and mother of two young boys, was desperate, struggling to breathe. The source of her trouble had eluded many doctors—but Dr. Soliman pegged it the moment he heard her breathe. Ms. Green had idiopathic subglottic stenosis (ISS), a rare condition in which the airway becomes inflamed and progressively narrows, making it extremely difficult to breathe. It’s a dangerous condition. A simple cold could push an undiagnosed, untreated ISS patient over the edge into respiratory arrest.

Five days after that initial visit, Dr. Soliman performed a minimally invasive endoscopic surgery to correct the problem. He used a laser to make four small cuts in Ms. Green’s airway tissue to keep it from tearing, then gently inflated a small balloon inside her airway to open it up again. Within days, she was back to working, playing with her sons again—all the normal things.

“I spent more than a year trying to figure this out—and after five minutes in Dr. Soliman’s office, I was diagnosed and scheduled for surgery,” said Ms. Green.

I, too, was in awe of Dr. Soliman’s deft diagnosis. ISS is rare. Only a few dozen cases are diagnosed in the U.S. every year.

As Ms. Green’s story proves, it takes rare expertise to diagnose rare conditions—which is precisely why I wanted to train here. To know that 380 physicians applied for my spot here at Temple is both heartening and humbling. There’s so much to learn in this complicated field.

To know that 380 physicians applied for my spot here is heartening and humbling.

If you say, “I’m a Triological Society fellow” in a room full of ENT docs, heads will turn. With only about 400 members in the entire United States, gaining entrance to this elite medical association is the pinnacle accomplishment in the field. While the majority of medical centers in this country don’t have any members at all, at Temple, I like to remind my wife, we have three: Dr. Soliman; Dr. Glenn Isaacson, Director of Pediatric Otolaryngology; and our Department Chair, John Krouse, MD, PhD, MBA.

“Do you know how amazing this is?” I ask her. “What’s more,” I say, “the editor-in-chief of the most important ENT journal, Otolaryngology — Head and Neck Surgery, is Dr. Krouse. My teachers are the gurus, the headmasters, of head and neck medicine. It’s like a dream.”

With 20 full-time faculty covering every aspect of head and neck medicine, Temple’s ENT program has seen tremendous growth since 2009, when Dr. Krouse was recruited as Department Chair. He has expanded the outpatient program to four clinical sites in the Philadelphia region, including a brand-new 4,200 square foot specialty center at Jeanes Hospital, to help our growing and much-in-demand group keep pace with more than 20,000 patient visits per year.

But the really exciting news is that we have taken a major step forward with the establishment of the Temple Head and Neck Institute, integrating both outpatient and hospital care at Temple University Hospital, Jeanes Hospital, and Fox Chase Cancer Center. Head and Neck Institutes are rare. There are only a handful in the country, so it’s a pretty big deal.

Institutes use a team approach to provide comprehensive, coordinated care. They bring together all the professionals that any patient might require—even specialists outside the traditional “borders” of ENT, such as radiologists, endocrine surgeons, and speech and language pathologists. Collective expertise is great for patients with unusual or misdiagnosed conditions, like Ms. Green. But you don’t have to have a rare condition to benefit from the Institute approach. Whenever multiple physicians and caregivers collaborate, patient outcomes are better.

Interestingly, the team approach can motivate patients to more fully engage in their own care. Imagine, for instance, the difference between a doctor telling you to see an audiologist, and actually having that audiologist participate in your appointment in the first place. In addition to bringing healthcare to patients, Institutes also coordinate care for them, from the first appointment through testing, procedures, and follow-up. Patients appreciate the consistent, reliable human touch.

Watching the Institute come to fruition has been a great step forward with the establishment of the Temple Head and Neck Institute, integrating both outpatient and hospital care at Temple University Hospital, Jeanes Hospital, and Fox Chase Cancer Center. Head and Neck Institutes are rare.

One final aspect of ENT training completes the package here: exposure to research. Several of our faculty are funded investigators. For example, Jeffrey Liu, MD, FACS, one of our fellowship-trained head and neck cancer surgeons, is working on a $1.7 million American Cancer Society grant to investigate why a disproportionate number of African American patients are affected by head and neck squamous cell cancers.

In a National Cancer Institute-funded project, Omera Assa’ad, MD, a facial plastics and reconstructive surgeon, is mapping out the process by which head and neck cancer invades bone. Fascinatingly, it’s different from bone metastasis in other parts of the body—a big reason why the mortality rate for head and neck cancer basically has not improved in 50 years. A Temple University School of Medicine alumna, a well-known ENT physician named Dr. Eugene Myers, contributed to the funding of her research. Dr. Myers is Emeritus Chair of the Department of Otolaryngology-Head and Neck Surgery at the University of Pittsburgh Medical Center.

Temple alumni tend to stay connected with the program after they graduate. Several came back for a reunion last year. Farrel Buchinsky, MD, a pediatric otolaryngologist in Pittsburgh, a 1999 graduate of my program, was among them. “An education at Temple will stay with you forever,” said Farrel. “Dr. Glenn Isaacson was my mentor here, and I still hear his voice in my head when I’m performing certain procedures.”

A sentiment like this is music to a resident’s ears. I feel very fortunate to be learning from true headmasters.

HAIL TO THEE, JACKSON

In the early 20th century, America’s leading center for esophageal and upper airway disorders was The Jackson Clinic at Temple—headed by Chevalier Jackson, MD (1865-1956). Innovator and inventor, Jackson created “the first tube laryngoscope” with its own light, a bronchoscope that could be passed through the larynx to visualize the bronchi. Patients from all over the world traveled to Temple to have foreign bodies removed from their throats and airways. In fact, more than 2,000 objects Jackson extracted are displayed at the Mutter Museum in Philadelphia. Jackson is also credited with leading the crusade behind the Federal Caustic Poison Act of 1937 mandating that poisonous and corrosive substances be labeled. Jackson’s son, Chevalier Lawrence Jackson, MD (1920-2002) succeeded his father as chair of the department at Temple University.
HOME DELIVERY
Personalizing Care in the Community

By GISELLE ZAYON
Photography by DUSTIN FENSTERMACHER

Tiffanie Mebane has had four heart attacks — and she’s only 33. In 2008, cardiologists implanted a defibrillator in her chest to jumpstart her heart, just in case. “It’s already saved my life at least once,” she says. With congestive heart failure, Mebane must minimize stress, take 22 different medications daily, and see several different physicians monthly to keep flare-ups at bay. During the past nine years, she’s been hospitalized 33 times.

Mebane is in a difficult situation, and she’s not alone. Across the nation, especially in socioeconomically challenged regions, people suffer from chronic health conditions that, when not well controlled, prompt frequent emergency trips to the hospital. Treating them in this intensive, episodic manner consumes a huge chunk of healthcare spending in the United States. In fact, according to the Agency for Healthcare Research and Quality, 50 times more money is spent on every chronically sick person than every healthy one.

“This pattern cannot be sustained — and has made healthcare delivery and finance reform a national priority,” says Susan Freeman, MD, MS, Chief Medical Officer, Temple University Health System, and President and CEO of the Temple Center for Population Health. “We need to shift the focus from a reactive, crisis-oriented approach to a proactive, ongoing, coordinated, and preventive one. It’s the right thing to do for patients. And enables the cost-containment principles inherent in high-value care.”

To this end, healthcare insurers, both commercial and government-run, are ramping up incentives for hospitals, physicians, and care providers to work together to deliver high-quality, preventive-oriented care at a lower cost.

“This enhances our ability to stratify patients into low-, medium-, and high-risk populations,” Freeman says.

Programs for high-risk patients have top-shelf importance in the health reform tool chest. These programs target patients like Mebane, patients who have histories of frequent, expensive emergency hospitalizations — and provide them with medical and social supports to help minimize exacerbations of their chronic conditions.

Tiffanie Mebane (seated) says the bond she shares with her community health worker, Desiray Savage, does her heart good.

By GISELLE ZAYON
Photography by DUSTIN FENSTERMACHER
Steven R. Carson, RN, BSN, MHA, Chief of Operations for the Temple Center for Population Health, says that proactive outreach makes population health programs effective. “We go beyond hospital walls to engage patients. We work with patients, physicians, and community resources to support each patient’s plan of care,” says Carson, who is also VP for Clinical Integration.

The program’s aim is to keep patients on track with their physicians’ instructions, staying a step ahead of disease.

In between visits, Savage checks on Mebane by phone. At any given time, about 150 patients ranging in age from their 20s to their 90s, are in the program’s care. Some patients, like Mebane, are also visited by a registered nurse.

“Desire it and I hit it off right away,” says Mebane, smiling. Savage asks Mebane a lot of questions: Do you need refills on any of your medicines? Have you taken all the right doses?

When is your next appointment with your primary care doctor and your cardiologist? Is it time to get groceries?

Because the things that influence health go beyond medical care, community health workers address child care, social services, food, and housing difficulties. For example, Savage arranged door-to-door transportation for Mebane’s doctors’ appointments—a service covered by insurance. “I had no idea I could even get that,” says Mebane.

Mebane has missed a lot of appointments over the years simply because she could not get to them. She has no car, and with a such a weak heart can barely walk to the nearest bus stop.

“Health can absolutely be swayed by things this simple. Identifying and mitigating barriers to wellness—that’s what we’re all about,” says Jeffrey Slocum, RN, MSN, the Community Health Worker program’s director.

Imagine trying to maintain good health if your home lacks a working kitchen, heat, or plumbing. In the most recent census, 24% of all households in Philadelphia reported such conditions.

In Philadelphia, 26% percent of residents live at or below the federal poverty line; 23% smoke and 17% drink heavily; and the unemployment rate is above average.

In fact, Philadelphia County ranked last, 67 out of 67, in a population affected, heart disease takes a big toll in North America.

Both Terry and Mebane remain in the program’s care. Some patients, like Mebane, are also visited by a registered nurse at Temple, who would then use FaceTime to video-chat with Terry on Franco’s large tablet. Being able to see one another, to ask and answer questions, Reeves explains, helps alert the nurse to issues that might require physician intervention or treatment protocol change. In this way, Grand Aide® programs extend professional nursing care at lower cost.

Another population health program underway at Temple and other hospitals demonstrates a 58% reduction in 30-day hospital readmission rates nationally. It’s called the Grand Aide® program.

“The Grand Aide® model was originally developed at the University of Virginia. Dozens of Grand-Aide® programs are operating across the nation, but Temple’s is the first to be implemented in an urban setting for an at-risk population,” says the program’s principal investigator, Kathleen Reeves, MD, Director of Temple’s Center for Bioethics, Urban Health and Policy.

Grand Aide® programs certify specially trained workers like Juan Franco to visit patients at home to teach and reinforce the self-care behaviors recommended by their physicians.

Leonard Terry, a 78-year-old retired Philadelphia dockworker, recently participated in the program. Ho, too, has congestive heart failure. With more than 30 percent of the population affected, heart disease takes a big toll in North Philadelphia. For Terry, it’s triggered numerous visits to the emergency department over the years.

“According to Medicare data, in 2011, before we launched our Community Health Worker Program, Temple University Hospital’s 30-day readmission rate was 22.2%,” says Slocum.

“Now it’s 16.2% for patients in the program—and the rate at which these patients follow up with their physicians has also improved.”
Epigenetic Therapy

A Sea Change for Cancer?

By KARA ROGERS
Photography by CLINT BLOWERS
need two years,” a patient we’ll call Mrs. G, recalls telling Patricia L. Krof, MD, a specialist in hematologic malignancies at Fox Chase Cancer Center. “Okay,” said Krof. “I’ll give you two years.”

“I didn’t take it as gospel,” Mrs. G recalls. “But since the prognosis for my disease is usually metered out in months, the doctor’s words hung hope and light in the air.”

Mrs. G is participating in a Phase 2 clinical trial at Fox Chase that is designed to test the effectiveness of a drug called SGI-110. In June 2014, she had been diagnosed with acute myelogenous leukemia (AML), a cancer that can steal life away quickly. At age 80, she is especially vulnerable to that rapid advance. Conventional therapies often are too toxic for older patients. But SGI-110 is breaking with convention.

As one of the scientists and clinicians overseeing the SGI-110 trial, Krof has been keeping tabs on the drug’s effects for Mrs. G and other trial participants. It is too soon for conclusions, but she is hopeful that SGI-110 will extend and improve patients’ quality of life. “Early results are promising,” says Krof, who is also assistant Director of the Temple Fox Chase Bone Marrow Transplant Program.

In the world of drug development, SGI-110 is riding a wave of revolutionary change in the way scientists think about cancer and cancer therapies. That shift, which has been taking shape for nearly two decades, pertains to the study of chemical modifications to DNA and DNA-associated proteins that dictate gene activity. The field is called epigenetics. And one of the experts at its leading edge is Jean-Pierre Issa, MD, MD, American Cancer Society Professor of Medicine and Director of the Fels Institute for Cancer Research at Temple. As the principal investigator on the SGI-110 trial, Issa has been working to characterize the drug’s clinical activity in collaboration with AstraZeneca Pharmaceuticals.

“Epigenetics” means “upon or attached to.” Epigenetics, therefore, focuses on the internal environment surrounding genes, the chemicals that attach to DNA to turn on or off gene activity. Changes in that environment can activate or inactivate disease processes that are kick-started by genes. Cancer, for example, is not triggered solely by mutations in DNA. The way DNA is affected by its epigenome is just as important. “The epigenome is what tells DNA to turn an undifferentiated cell into a skin, hair, blood, or kidney cell,” Issa explains. “The epigenome is what tells DNA to start or to stop uncontrolled cell replication — a hallmark of cancer.”

Targeting the Epigenetic Code

It is hard not to be excited about SGI-110. It is a frontier in cancer therapy. The goal, Issa explains, is not to wage war against cancer cells, killing them with toxic doses of chemotherapy, but rather to reprogram those cells to make them behave like normal cells — this time utilizing low doses of a very different kind of drug.

In technical terms, SGI-110 is known as a second-generation epigenetic inhibitor. It blocks an enzyme called DNA methyltransferase (DNMT), which attaches methyl groups to DNA. Methyl groups are not permanent fixtures on DNA. In actively dividing cells, methyl groups become active again. But when SGI-110 takes DNMT out of the picture, tumor-suppressor genes that were rendered out-of-service by misCopying of DNA are no longer able to do their job of preventing cancer. Issa was behind much of the research that led scientists to that realization and, in fact, has spent much of his career at the crossroads of cancer and epigenetics. In the early 1990s, he and Stephen Baylin, MD, now Deputy Director of the Johns Hopkins Sidney Kimmel Comprehensive Cancer Center, uncovered one of the first associations between cancer and changes in DNA methylation and DNMT activity. “By 1997 it had become clear that epigenetic abnormalities were a cause of cancer,” Issa said. “So, we asked: can we intervene therapeutically?”

That question led Issa to decitabine, a compound that was shelved in the 1960s. Decitabine is an analog of the chemotherapeutic agent cytarabine, but produces unusual effects, such as an ability to slow tumor growth at concentrations well below those required by other chemotherapeutic drugs. In the early 1980s, the drug was found to inhibit DNA methylation. Issa and colleagues found that decitabine was effective, particularly in hematologic malignancies. He worked to get the drug into clinical trials for myelodysplastic syndromes (MDS), and in Phase 1b/2A trials he observed its dual ability to slow tumor growth at high doses, decitabine kills cells. At low doses, it allows cells to survive but slows tumor growth. Decitabine was so successful that it is now approved by the FDA, but at the standard of care in MDS. It also helped spark a big change in the way researchers think about cancer therapy.

The Cancer–Epigenetics Crossroads

SGI-110 is at the forefront of epigenetic drug discovery,” says Majid Abou-Gharbia, PhD, FBRC, Director of Temple’s Moulder Center for Drug Discovery Research, who is collaborating with Issa to develop other drugs like SGI-110. He believes that there are other therapeutically useful epigenetic inhibitors that are out there. To find them, he and Issa are screening a compound library with more than 40,000 compounds. “We used an assay developed in Issa’s lab to identify compounds that induce tumor suppressor reactivation,” Abou-Gharbia says. “Matching it with excitement that several compounds have already shown promise in preclinical studies.

Fulfilling Dreams

Issa and Krof are part of the Epigenetics Dream Team, an international group of top epigenetics researchers brought together by funding from the organization Stand Up To Cancer to help bring epigenetic drugs center stage. The Dream Team has facilitated their collaboration with other leaders in cancer epigenetics research. Of course, FDA approval of SGI-110 would mark a major step toward achieving the team’s goal. Issa says that if the current Phase 2 study fulfills expectations, a Phase 3 trial to proceed toward the drug’s approval for AML or MDS could come relatively soon. Eventually, it could also be approved for use in combination therapies with conventional drugs and possibly even for solid tumors. And now a new grant makes the Dream Team’s possibilities all the more exciting — a commitment of $7.5 million from the Van Andel Research Institute to underwrite more extensive research.

“Although we cannot change our DNA, we may be able to turn on the activities of the genes that promote better health and turn off the ones that drive disease,” Issa says. For Mrs. G, despite the struggle of her disease, the trial at Fox Chase has been an uplifting experience. A few months into her therapy she had an opportunity to fulfill her own dream, traveling far away to visit her brother. “Looking out at the sea, being with my brother — it was the happiest I’ve been,” she says. “I couldn’t have been more impressed with Fox Chase, to say nothing of the results,” she says.

Another patient in the trial, Nora George, diagnosed with AML in 2011, said SGI-110 helped put her cancer into remission. In an interview with CBS television in Philadelphia, George said, “It absolutely saved my life. Never stop fighting. Stand up to cancer and say, ‘Hey, you’re not going to beat me. I’m going to beat you.’”

**For more information about clinical trials for cancer, visit www.tccs.org/cancer/clinicaltrials**

Kara Rogers is a science writer based in Madison, WI.
Q: When trauma surgeons are able to save a patient who is near death, they call it a “good save.”
A: The ultimate “good save” is when the patient leaves the hospital less likely to be shot again or to shoot someone else. If not, we aren’t giving a second chance at life, we’re giving a second chance at death. Amy Goldberg, Temple’s chief trauma surgeon, brought me here to try to make the good saves even better.

Q: You and Dr. Goldberg created Cradle to Grave, the violence-prevention program that’s illustrated the medical realities of gun violence to more 10,000 teenagers.
A: In this program, I take the teens into a trauma bay at the hospital. We surround a gurney, harsh lights blaring overhead. I then “introduce” them to Lamont Adams, a 16-year-old raised by his grandmother just a couple miles from Temple. One September evening during his junior year in high school, a 17-year-old jumped out of a car and shot Lamont more than a dozen times. The motive was unclear. I tell the group that we are standing in the very kind of room where Lamont had been. I ask one of the participants to lie on the gurney. I place red stickers all over his clothing to show all the places Lamont was shot: arms, hands, chest, thighs, back, and legs. I describe how feverishly the doctors worked — but within 15 minutes, Lamont was dead. The kids stare at the boy covered in red stickers. We then go to a classroom. I show photos depicting gunshot injuries and the methods used to treat them. Throughout, I ask kids to reflect: Who wanted you to attend this program? Are you willing to spare their suffering? I take them to the morgue where Lamont’s body had been. I ask one of the participants to lie on the gurney. I place red stickers all over his clothing to show all the places Lamont was shot: arms, hands, chest, thighs, back, and legs. I describe how feverishly the doctors worked — but within 15 minutes, Lamont was dead. The kids stare at the boy covered in red stickers. We then go to a classroom. I show photos depicting gunshot injuries and the methods used to treat them. Throughout, I ask kids to reflect: Who wanted you to attend this program? Are you willing to spare their suffering? I take them to the morgue where Lamont’s body had been. Ultimately, they listen to a recording of Lamont’s grandmother talking about the child she raised, the man she will never know. I want the young people to see themselves, to see the truth. Are they worried about paralysis, losing a kidney, a limb? Hell no. Can you think of a movie or hip-hop song about the long-term consequences of being shot? Dying, I tell them, that’s easy. You only have to die once, but the people you leave behind will die a little bit every day for the rest of their lives.

Q: You had a challenging childhood. Did you ever imagine your work would be on The Today Show or that you would receive a Robert Wood Johnson Foundation Community Health Leader Award?
A: When I was nine, my father died. A year later, my sister shot herself to death. Several years later, my oldest brother died of AIDS, and another brother of a drug overdose. My remaining brother, as was once the case for me, is working to overcome a drug addiction. My mom fought hard for me, but I was gone. I was in my early 20s when an aunt and uncle helped me turn it around. I’m here today because they offered me unconditional love and tangible opportunities. This is the work I need to do.

Q: You also counsel gunshot patients in the hospital.
A: No one wants to be seen as a victim or take a hit to his reputation. So they harden themselves, determined not to be a victim again. I do my best to speak with every gun victim — to help them imagine possibilities other than retaliation.

In 2012, we developed Turning Point, an intervention that attempts to formalize the kind of unconditional love and opportunities that helped save me. We connect victims of gun violence with resources like psychiatry, education, employment, and housing that can change their circumstances. I’ve given my cell number to hundreds of gunshot victims. I want them to feel that they have a lifeline.
**Liquid Air**

In the 1989 James Cameron film *The Abyss*, Ed Harris plays a scuba diver who breathes a space-age liquid that permits him to plumb astounding depths without worrying about compression sickness. Cameron said the concept was inspired by a science lecture he had seen in which an animal breathed a liquid. Ed Harris did not really breathe liquid in the film, but it absolutely is possible. This synthetic liquid is called perfluorocarbon (PFC). It belongs to the Teflon® family and has a range of unique properties.

One of the world’s leading experts on PFC is Marla R. Wolfson, PhD. The pulmonary physiologist has been studying the biomedical applications of PFC at Temple for 30 years.

“PFC is a core technology with a variety of uses: respiratory care, brain injury treatment, diagnostic imaging, drug administration, and other applications,” says Wolfson, who holds professorships at the School of Medicine in physiology, pediatrics, and medicine.

Neonate lung support is the focus of Wolfson’s longest-running PFC research. With their delicate, underdeveloped lungs, preterm infants aren’t ready to breathe. In fact, 85% of infants with birth weights of 3.3 pounds or below develop chronic lung disease. “They are an underserved population,” says Wolfson, determined to break the cycle of iatrogenic lung disease.

Iatrogenic disease is disease caused by medical intervention. While mechanical ventilation helps neonates breathe, it can also harm their fragile lungs. The pressure of forced air causes trauma to tissue. Even the oxygen itself can be perceived as “toxic” by the underdeveloped lungs, triggering an inflammatory response. Often, infants develop bronchopulmonary dysplasia, a condition in which the lungs fail to mature normally, compromising overall health. “PFC can break the cycle,” Wolfson says.

Odorless, colorless, and chemically inert, PFC is twice as dense as water, but can hold three times more oxygen than air. Therefore, it enables the exchange of oxygen and CO₂ at much lower pressure than ventilator-supplied air. What’s more, PFC bathes every nook and cranny of the lung, opening up more alveoli for more efficient gas exchange. In addition, PFC directly reduces pulmonary inflammation, and provides a novel route for the administration of drugs.

And it isn’t just for kids. Over the years, Wolfson has received more than $25 million in grants from industry, the National Institutes of Health, and the Office of Naval Research to study PFC. Her recent studies aim to benefit military personnel who sustain blast-related injuries of the brain and lung. To help reduce injury to the brain following a blast, Wolfson developed a novel technique to administer aerosolized PFC through the nose, cooling the brain.

Such cooling is neuroprotective. It helps to reduce swelling, which is particularly dangerous for the skull-encased brain. She has also tested PFC’s ability to protect lungs from the effects of high altitude—a common problem for soldiers swiftly deployed to high-altitude areas, where the atmosphere’s oxygen content is low and the body has not had time to acclimate. Again, Wolfson found that PFC delivered by aerosol spray promotes more efficient distribution of low-level oxygen in the lung, improving ventilation.

What’s more, drugs can be added to the formulation to reduce the blood vessel narrowing and fluid buildup associated with high-altitude stress.

“We need better approaches for troops injured in combat. This technology is easy to use in the field. The ability to treat a problem immediately can make all the difference,” says Wolfson. With 1.4 million Americans sustaining brain injury every year from strokes, accidents, and cardiac arrest, which interrupts blood flow to the brain, the technology has great potential to aid civilians, too.

Wolfson’s contributions to science are substantial. She has 14 patents to her credit, including several related to lung support with alternative respiratory media. Nevertheless, she won’t rest until the Food and Drug Administration approves PFC for neonatal respiration.

In small-scale clinical trials, PFC has shown immediate, positive impact on infant health, which is critical for the prevention of long-term negative consequences on child development. “That’s why I’m still at it,” Wolfson says. “I’m in it for the long run.”
Easy to close that surgical incision or create vascular hookups for that transplanted organ? There are many types of suture material and needles out there. You want the best.

The best depends on many factors,” says James Bradley, MD, Chief of Plastic & Reconstructive Surgery at Temple University Hospital. “The composition of the tissue in question, the health of the patient, the goals of the surgery — many factors. There’s no single best.”

Bradley has his own favorites. Antonio Di Carlo, MD, Chief of Abdominal Organ Transplant Surgery, has go-to’s of his own. A completely different set.

The two surgeons do very different kinds of surgery. Organ Transplant Surgery, has go-to’s of his own. A completely different set.

Yet regardless of choice of material, sutting has one goal: to serve a place-holding step in the body’s healing process. “The goal is to keep tissues in proximity until they adhere on their own,” Di Carlo explains. The goals of suturing (known as Halsted’s principles) are to obliterate space between tissues, achieve proper alignment of the planes to be joined, distribute tension evenly along suture lines, minimize trauma to the tissue and maintain blood flow, and minimize risk of infection and scarring.

SELECTING SUTURE

“Several factors influence suture choice,” notes Di Carlo. The first choice is between absorbable and non-absorbable suture. Absorbable suture, which gradually disappears, is used for tissues that heal rapidly, like mucosa. Non-absorbable suture is for tissues that heal slowly, like blood vessels. It will remain permanent unless removed. Both types are made in many different sizes — some much thinner than human hair, some surprisingly thick. Surgeons generally choose the thinnest suture that will hold into place. “The unique properties of each material suit it for some surgeries, yet not others,” Bradley says. Memory, for instance, is the suture’s tendency to return to its original shape. The more memory, the less pliable. You want a low-memory suture for closing an inflamed wound, because it will gradually “shrink” in tandem with tissue as the swelling goes down. Although more difficult to handle than “cloth type” suture, steel suture is strong, flexible, and pathogen-repellent, ideal for joining tissues that undergo the stress of movement (hence a good choice for closure of the sternal and tendon repair). Both cloth and steel suture come in a range of sizes.

Here again, there are many factors to consider, including the location of the anatomy. The needle must fit the “working space” available — even the extremely tight space inside a portal or catheter for laparoscopic and robotic surgery.

Made of strong, corrosion-resistant stainless steel, surgical needles come in various shapes and sizes (one-quarter inch, three-eighths inch, half inch, five-eighths inch). There are two basic needle body types: Straight-body needles, used for tissue that can be manipulated directly by hand, and curved-body needles, used for “tight spaces.” There are three types of curved body shapes: the half-curved ski, the curved body, and the compound curved body (whose tight curvature at the tip gradually widens). Needles also come in a variety of point types. Standard cutting needles have three cutting edges. Side-cutting needles were designed initially for ophthalmologic procedures but are now used in many types of surgeries. With sharp points that gradually widen, taper-point (round) needles “spread” tissue without actually cutting it. Blunt-point needles have points that are rounded and blunt, ideal for suturing delicate tissue.

Now, for surgical sites that are impossible to reach by hand (and/or that require incredibly tiny sutures), you’re going to need a needle holder, which enables suturing of far greater precision, in far tighter spaces, than can be managed by the unaided hand. You’ll want to wear loupes, too, to magnify the target anatomy.

All this, and we have not yet begun to think about what stitch and knot patterns to use: running, locking, interrupted, vertical, mattress, and other types of closures; surgeon’s knot, square knot, granny knot, Aberdeen knot, etc. Perhaps a future lesson.

TOOLS OF THE TRADE

SEWING LESSON

Sutures & Needles

Ready to close that surgical incision or create vascular hookups for that transplanted organ? There are many types of suture material and needles out there. You want the best.

The best depends on many factors,” says James Bradley, MD, Chief of Plastic & Reconstructive Surgery at Temple University Hospital. “The composition of the tissue in question, the health of the patient, the goals of the surgery — many factors. There’s no single best.”

Bradley has his own favorites. Antonio Di Carlo, MD, Chief of Abdominal Organ Transplant Surgery, has go-to’s of his own. A completely different set.

Yet regardless of choice of material, suturing has one goal: to serve a place-holding step in the body’s healing process. “The goal is to keep tissues in proximity until they adhere on their own,” Di Carlo explains. The goals of suturing (known as Halsted’s principles) are to obliterate space between tissues, achieve proper alignment of the planes to be joined, distribute tension evenly along suture lines, minimize trauma to the tissue and maintain blood flow, and minimize risk of infection and scarring.

SELECTING SUTURE

“Several factors influence suture choice,” notes Di Carlo. The first choice is between absorbable and non-absorbable suture. Absorbable suture, which gradually disappears, is used for tissues that heal rapidly, like mucosa. Non-absorbable suture is for tissues that heal slowly, like blood vessels. It will remain permanent unless removed. Both types are made in many different sizes — some much thinner than human hair, some surprisingly thick. Surgeons generally choose the thinnest suture that will hold into place. “The unique properties of each material suit it for some surgeries, yet not others,” Bradley says. Memory, for instance, is the suture’s tendency to return to its original shape. The more memory, the less pliable. You want a low-memory suture for closing an inflamed wound, because it will gradually “shrink” in tandem with tissue as the swelling goes down. Although more difficult to handle than “cloth type” suture, steel suture is strong, flexible, and pathogen-repellent, ideal for joining tissues that undergo the stress of movement (hence a good choice for closure of the sternal and tendon repair). Both cloth and steel suture come in a range of sizes.

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On October 15, 1930, one year into the Great Depression, Temple University School of Medicine celebrated the opening of a handsome, eight-story, 155,000-square-foot medical education and research building. It was the first brand-new structure ever built exclusively for the school. The Class of 1934 was the first to receive all of its didactic instruction there.

Designed by William H. Lee, a protégé of acclaimed Philadelphia architect Frank Furness, the building cost $1.5 million to build (approximately $58 million in today’s dollars). Situated directly across from Temple University Hospital, it contained everything modern medical education required: ample classroom space; an amphitheater where students observed work-ups and surgeries; a special floor for the teaching of human anatomy; multiple research laboratories; a well-appointed library with private enclaves for reading and study; and contemporary “dispensaries” where students learned clinical medicine in a dozen fields — even “new” ones like physical medicine and rehabilitation.

Throughout, oversized windows let in plenty of natural light, and elegant wrought-iron balconies became inviting places to step out for air. With lounges and a fully equipped kitchen reserved strictly for student use, the building became a beautiful and functional second home.

Over the years, to meet demand for additional laboratory and office space, the building underwent multiple renovations. Its natural light and sense of spaciousness gradually diminished, but its Broad-Street façade long remained a thing of beauty, with Temple owls and the names of medical giants rendered in stone and concrete, set into brick.

Although originally called the “1930 Building” for the founding year, once other facilities were erected for the school in the 1960s and 1970s, the building became known as “The Old Med School,” or “Old Med.” It remained functional until 2014 when, after much study and discussion, it became clear that the structure must be razed to make way for more modern facilities.

“This building served an epic purpose for 84 years — helping to transform students into physicians and scientists,” reflects Larry R. Kaiser, MD, FACS, medical school dean and health system CEO. “While it’s hard to see it go, the magnificent building we opened in 2009, thanks to the generosity of the university and scores of donors, is a fantastic recompense.”

In June 1930, the laying of the building’s cornerstone (L-R): William N. Parkinson, MD; Dean; Temple University President Charles Beury, PhD, and Dr. Beury’s daughter and wife. In October 2014, during demolition, a time capsule was opened that had been hidden by the cornerstone for more than eight decades. The relics it contained are now housed in the University archive.

Great teachers like John A. Kolmer, MD, who headed the School’s public health and preventive medicine programs, held court in the building’s amphitheater to teach the art and science of medicine and surgery.

Details from architect William H. Lee’s beautiful hand-drawn plan for the library of the building.

The pharmacology laboratory — one of more than a dozen state-of-the-art research facilities in the building.

In 1930, the building's cornerstone.
Don’t Wait; Create

The Lesson of Opportunity

Most universities and most physicians can only dream of having a friend and mentor like Athole Jacobi, MD. Her support of Temple spans two decades — and her devotion to her protégé, Vincent Cowell, MD, Clinical Associate Professor of Anesthesiology at Temple, spans decades, institutions, and title changes — for both of them.

In the 1980s, Jacobi, an attending physician at the Medical College of Pennsylvania, took a personal interest in Cowell, an anesthesia nurse assistant there at the time. Impressed with his talent, diligence, and intelligence, she encouraged him to enroll in medical school, which he did. It was Jacobi who enabled him to continue working part time at the Medical College of Pennsylvania while he pursued his degree. Throughout his career, it was Jacobi who advised him on matters big and small.

Cowell says it was Jacobi’s unflinching belief in his potential that helped him navigate the myriad challenges of a medical career. “She was a backer, an educational resource, a role model, an inspiration — basically everything I needed,” says Cowell, a member of the Temple faculty since 2004.

“It’s a mutual admiration society,” Jacobi says with a smile. Now 84 and retired, the vivacious Scotswoman enjoys an active life, zipping in her sports car between appointments as vice chair for the Philadelphia Police Athletic League (PAL) and chair of its education committee, secretary of the board of the Methodist Home for Children, and volunteer consultant on medical malpractice cases. And let’s not forget, her involvement with Temple athletics. The longtime Owl fanatic is one of the biggest Temple basketball and football fans around. She likes to invite players (and Hooter the Owl) to PAL events, to the awe and delight of the kids there.

“I’ve always been particularly impressed by how the coaches at Temple are true makers of women and men — not just athletes,” she says.

Jacobi herself knows something about being self-made. She first came to the United States in 1961 after completing her medical degree and anesthesia training — less of a rarity in the United Kingdom at the time than it was in the United States, but still an unusual achievement. At the Medical College of Pennsylvania, Jacobi was the first-ever female chair of an academic anesthesiology department in the United States. She prides herself on never having asked for special treatment. “I’ve always thought that if you want equality, you need to act equal,” she says.

“Her involvement with Temple is consistent with the ideals she holds in high regard: creating opportunities for people who are willing to work hard,” Cowell says. “That’s Athole. That’s Temple.”

As evidence, Jacobi has been the principal supporter of the Department of Anesthesiology’s Chairperson’s Fund at Temple, which gives the chair discretionary funds to support things like resident education, travel, and research. It’s her way of contributing to the education of anesthesiology residents at an institution she admires today — and she makes those contributions in honor of Cowell.

During her 20-year association with Temple, Jacobi has supported numerous initiatives — in media and communications, in athletics, and in medicine. It seems completely natural to her, seeing and seizing the chance to make a difference.

Both Cowell and Jacobi have created a home away from home at Temple. “I’m always very impressed with what I see going on here, and I enjoy being a part of it. Temple and I, we’ve adopted each other,” Jacobi says.

It’s an important life lesson. Don’t wait for opportunity to come along; create it. A little initiative can go a long way toward transforming lives and careers.

Want to consider including Temple Health in your philanthropic plans? Contact the Advancement Office: (215) 707-4868 or supportmed@temple.edu.
A Reunion, Every Day

Walk into the Colon and Rectal Associates surgical practice in Abington, PA, and you might think you’d accidentally wound up 10 miles too far south on Route 611, at Temple, on Broad Street. Regardless of which of the five surgeons you were there to see, you’d find a Temple diploma on the wall. Indeed, with so much common history, familiar stories, and inside jokes, these doctors celebrate something like a mini-reunion every day.

“It wasn’t as though we only considered adding fellow alumni to our practice,” says D. Mark Zebley, MD ’89. “In fact, the partners interviewed the graduates of many different medical schools as their practice grew. But at the end of the day, all five surgeons, like Zebley, are Temple graduates. MD ’95; Steven Harper, MD ’83; Joseph A. Nejman, BA ’75, MD ’79; and Soo Kim, MD ’97. Although most did not know each other during their student days, now they share not just an alma mater but a budding practice as well. “It just sort of happened this way,” Zebley says. Harper sees the somewhat acci-
dental collaboration as a result of the attitude they share about the practice of medicine—an attitude he attributes to Temple. “Coming together isn’t so much about the shared degree or a sense of boosterism, but about values. “There’s just something about Temple MDs,” Harper says. “It’s a character you can see in Temple students even now. That down-to-earth, hard-working, everyman attitude. The lack of preten-
tiousness. The emphasis on always put-
ting the patient first. That’s something we all have.” It was only natural, then, that as they went looking for other surgeons, they gravitated toward people who shared that philosophy.

Besides working alongside one another, they maintain their ties with Temple in a number of ways, big and small. They all hold, or have held, teaching appointments at Temple. They go to football and basketball games. They reminisce about their fa-
vorite professors (the name “Schneck” comes up a lot). They’ve helped oversee medical student community service projects funded by the Alumni Association. They try to make financial contributions every year (Nejman recently chaired the School’s annual giving program, the Convell Society). And this year, they have an added reason to reflect fondly on their Temple-ness: three of the five are celebrating their reunions. Zebley and Nejman are celebrating their 25th and 35th reunions, respectively, and Fassler his 20th, a celebration he happily agreed to chair. Most reunion classes make gifts to support student scholarship in their class’s honor, so contributing means grooming the next generation of medical Owls—a central part of their office culture. All these things pay homage to the institution that helped make them the surgeons they are today.

“Temple’s in my blood,” says Nejman, whose parents worked for Temple and whose daughter is also a School of Medicine grad. “I always felt I should do what I could to support the school.”

An Auxiliary? We Think Not.

When most people think of hospital auxiliary groups, things like bake sales come to mind. “But this is not your grandmother’s auxiliary,” says Mary McNamara, President of the Temple University Hospital Auxiliary. “We are a diverse group of movers and shakers who support Temple’s amazing work.”

Founded in 1944, the Auxiliary’s mission is to assist Temple University Hospital through volunteering, fund raising, and honoring outstanding members of the hospital community and staff. The group has been tenacious in raising funds over the years, producing nearly $2.5 million over the past decade alone, to support projects such as the new reference section of the Ginsburg Health Science Library and the Mary F. and John M. Daly Ambulatory Surgical Center. “In an age of limited industry support for hospitals, the monies raised by the Auxiliary are no small contribution,” McNamara notes.

On May 2, the Auxiliary will host its annual Acres of Diamonds Gala, one of the Health System’s premier events and fund raisers. Another premiere fund-raising event, In Vino Vita, planned by, and for the benefit of, Fox Chase Cancer Center, will be celebrated by just a few days prior, on April 30.

“These amazing events and the advocates who plan them are not auxiliary; they’re central,” says Tina Weisbard, the Health System’s chief philanthropy officer.

For more about the Auxiliary, visit tuhauxiliary.templehealth.org. For more information about In Vino Vita, visitavinovita.org.
“Seeing opportunities where others see obstacles: that’s what fuels healthcare transformation.”
– LARRY R. KAISER, MD, FACS (DEAN & CEO)

“When you apply scientific discoveries to novel treatments, you generate information from the bedside that drives new clinical trials. This is the essence of translational science: continually revealing new information that helps clinicians work faster and more efficiently to find effective treatments for challenging diseases.”
– GERARD CRINER, MD, FCCP, FACP (DIRECTOR, TEMPLE LUNG CENTER)

“At the core of who I am as a physician is what I learned at Temple. It’s a place where you learn humanity and humility, not just medicine.”
– BRIAN MCDONOUGH, MD (ALUMNUS AND EMMY-WINNING MEDICAL REPORTER)

“The root of the word doctor comes from the Latin: docere, to teach. Good physicians are always teaching. They teach themselves, their colleagues, their patients, and communities.”
– VERDI DISESA, MD, MBA (VICE DEAN & CHIEF OPERATING OFFICER)

“DURING THE PAST 10 YEARS, MORE THAN 270,000 PATIENT ENCOUNTERS AT TEMPLE UNIVERSITY HOSPITAL HAVE BEEN AIDED BY 327 LANGUAGE-PROFICIENT STAFF.

459 RESIDENTS and 92 FELLOWS train in 38 DIFFERENT MEDICAL & SURGICAL SPECIALTIES at Temple University Hospital.
The Ultimate Selfie

Have a daughter or son who's snapped thousands of selfies? Bet they don’t have a selfie like this. Feroze Mohamed, PhD, created this “selfie” of his own brain with a technology called diffusion tensor imaging. “Combining magnetic resonance imaging with specialized computer modeling, this technique uses color image processing to depict the neural circuitry in the brain,” says Mohamed, Professor of Radiology. The colors indicate the orientation of the fibers in three-dimensional space. Red indicates white matter tracts in the X axis (right-left); green, the Y axis (posterior-anterior); and blue, the Z axis: (bottom-top).
Temple Health researcher Joseph Cheung, MD, PhD, makes key discoveries that shed light on how the body's cells react to traumatic events such as heart attack and kidney failure. His findings may help accelerate the testing of new therapies for preventing permanent organ damage and potentially helping millions of patients live longer, healthier lives.

Hundreds of researchers at Temple Health are pushing the boundaries of science to help reduce the devastating effects of heart and lung disease, cancer, neurological disorders, and other serious conditions.

Translating scientific discoveries into better treatments.

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