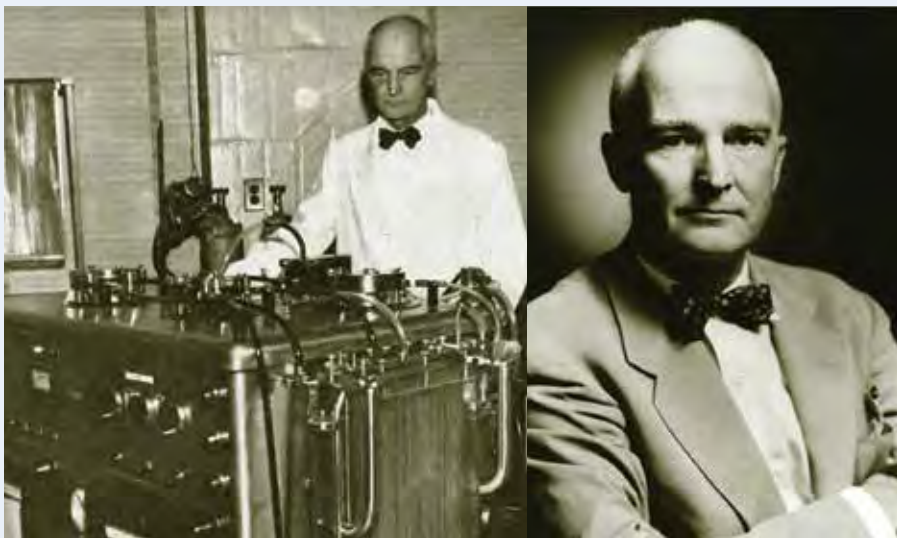


Surgical Solutions

A publication for
friends and
colleagues of
Jefferson's Department
of Surgery
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60 Years of Cardiothoracic Surgery at Jefferson: From the Heart-Lung Machine to the 'Portable' Total Artificial Heart



John H. Gibbon, Jr., MD, poses with his "Model II" heart-lung machine on the tenth anniversary of the world's first successful extracorporeal cardiac surgery. On May 6, 1953 at Jefferson Medical College Hospital, Dr. Gibbon and his staff, closed a very serious septal defect between the upper chambers of the heart of eighteen-year-old Cecelia Bavolek. Ms. Bavolek was connected to the device for three-quarters of an hour and for 26 crucial minutes she totally depended upon the machine's artificial cardiac and respiratory functions. (Images courtesy of Thomas Jefferson University Archives, Scott Memorial Library.)

On May 6, 1953, John H. Gibbon, Jr., MD – the third Samuel D. Gross Professor and Chair of the Department of Surgery (1946–1967) and Director of Experimental Surgery at Jefferson – performed the first successful surgery with the groundbreaking heart-lung machine he developed. With this operation, Dr. Gibbon launched a new era in cardiac surgery.

As we commemorate the 60th anniversary of Dr. Gibbon's milestone, patients of the Division of Cardiothoracic Surgery continue to benefit from Jefferson's commitment to continual innovation under the leadership of James Diehl, MD, FACS, and two highly specialized programs.

State-of-the-art life support

The Adult Extracorporeal Membrane Oxygenation (ECMO) Program boasts survival rates that far exceed reported national rates. Established in 2010 by

Nicholas Cavarocchi, MD, FACS, FCCP, Director of the Cardiac and Vascular Intensive Care Unit, the program's leading-edge equipment provides both cardiac and respiratory support (oxygen) to individuals with severely diseased or damaged heart and lungs.

At present, Jefferson is the only hospital in the area to utilize two transport devices – the SERVO-i ventilator and the CARDIOHELP (portable) ECMO machine. Using these devices, the Jefferson ECMO team (comprised of physicians and mid-level providers in the Cardiac ICU, JeffSTAT medical transportation staff, and respiratory therapists) is able to transport critically ill patients and place patients on ECMO before they are transferred to Jefferson. By placing patients on ECMO earlier than usual, we improve their chances of being successfully weaned from ECMO or having surgery with fewer complications.

Continued innovation in treating advanced heart failure

The Cardiac Transplantation and Mechanical Circulatory Support Program, led by director John Entwistle, III, MD, PhD, offers several leading-edge treatment options to patients with advanced heart failure. Options include the latest-generation left ventricular assist devices (LVADs) and the SynCardia temporary Total Artificial Heart (TAH).

In 2012, the program acquired the SynCardia TAH device, which now boasts a mobile software driver (just recently approved by the FDA) to operate the device outside of a hospital setting. This allows some patients awaiting a heart transplant to return home and, in some cases, resume their normal activities.

Treatment options for end-state heart failure are a permanent LVAD, LVAD as a bridge to transplant, or a heart transplant. But LVAD options are viable only for patients with failure of the left side of the heart. For those with failure of the right side or both sides of the heart, and for those with cardiac amyloidosis ("stiff heart syndrome"), there has not been a good option for returning patients home. SynCardia's portable driver should change that, and Jefferson is working to identify an optimal candidate for the first implant procedure.

"Because of these advanced therapies – from the SynCardia TAH device and our LVAD capabilities to our unique ECMO equipment – Jefferson is able to successfully treat a sicker group of patients who otherwise would have a very poor prognosis," concludes Dr. Diehl. "We are honored to continue Dr. Gibbon's legacy of innovative patient care."

A lecture on May 2nd will highlight the anniversary – see page 4.

Surgeon Speaks



Dr. Entwistle demonstrates the orientation of a Left Ventricular Assist Device.

"The surgical options for treating advanced heart failure are continually evolving. In addition to the introduction of new devices, such as the SynCardia Total Artificial Heart, we're finding new ways to manage patients previously thought untreatable.

"For example, Jefferson is joining heart centers across the country in learning how to better select patients for the Left Ventricular Assist Device (LVAD). Historically, patients with heart failure had not explored surgical treatments until their condition had progressed significantly. Thus, most patients receiving the LVAD were quite sick.

"Today, we're discovering that if we can catch some patients earlier in the process, we can obtain better results. For certain patients, the LVAD pump can support a high quality of life. In fact, I've had patients who have traveled abroad with the pump and others who have been able to get back to work just a few months after surgery."

John Entwistle, III, MD, PhD
Surgical Director, Cardiac Transplantation and Mechanical Circulatory Support, and Associate Professor of Surgery

To learn more visit:
www.jeffersonhospital.org/cardiothoracic

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Charles J. Yeo, MD, FACS

Samuel D. Gross Professor and
Chair, Department of Surgery

Jefferson and Change-Redux

*"Laws and institutions must go hand in hand
with the progress of the human mind..."*

– Thomas Jefferson, July 12, 1810

Our American health care system is under pressure to change from many directions: the government, the media, the economists, and others. In a recent Surgical Grand Rounds, I discussed my Baker's Dozen list of key topics: (1) health care spending is flattening out, (2) physicians and hospitals will be paid less for what they do, (3) payers are getting aggressive on cost and quality, (4) hospitals are targets for cost cuts, (5) cost reduction will entail standardization and elimination of variations, (6) waste control will be crucial, (7) current payment systems are mal-aligned with quality, health and wellness improvement, (8) Accountable Care Organizations exist, (9) the 5-50 rule reigns (the sickest 5% of the population consume 50% of the resources), (10) hospital systems will necessarily morph to Total Care systems, (11) physician elements are under transition, (12) physician integration (and leadership) will be crucial, (13) aspirational items for hospital corporate leaders have evolved.

We have much to do. The mantras will no longer be – "business as usual" or "increase volume to cover expenses". The focus needs to be on individual health, wellness and population health... We're working toward a new paradigm – "Livewell Jefferson" – a cooperative venture of Thomas Jefferson University Hospital, Thomas Jefferson University, Jefferson Medical College, the Jefferson Women's Board, Jefferson Health System and our communities: eliminate unhealthy cafeteria and vending choices, expand our non-smoking perimeter, increase wellness services, institute a maximum 30-minute meeting rule and mandate daily 30-minute on-the-job treadmill walking, freshen our stairways and label them "vertical exercise corridors", track BMI quarterly, and work with the city to design and maintain safe, measured walking routes around our campus. We have much to do to effect change!

To view Dr. Yeo's recent mini-Grand Rounds lecture on this topic visit:

www.jefferson.edu/surgerylectures

Jefferson Vascular Center Among the First to Implant Fenestrated Aortic Grafts

The Jefferson Vascular Center brings together surgical and medical specialties to provide comprehensive care to patients with vascular diseases (diseases of blood vessels) and thrombotic (blood-clotting) disorders, as well as care of complex vascular wounds.

The multidisciplinary center, launched in July 2009, is co-directed by Paul J. DiMuzio, MD, FACS, the William M. Measey Professor of Surgery and Director of the Division of Vascular and Endovascular Surgery; Geno Merli, MD, Senior Vice President and Chief Medical Officer of Thomas Jefferson University Hospital; and Laurence Needleman, MD, Associate Professor of Radiology and Director of the Division of Abdominal Imaging. In the first few years, the center directors have focused on implementing innovative surgical devices and techniques, building a strong team of specialists, and expanding the service area beyond Jefferson and Methodist Hospital.

As Dr. DiMuzio explains, Jefferson recently became one of the first centers in the United States to implant the new FDA-approved fenestrated aortic graft (Cook Medical, Inc.) to treat juxtarenal aneurysms via a minimally-invasive technique. This type of aneurysm occurs in the abdominal aorta up to and including the area where the renal arteries branch off to supply the kidneys.

"Previously, the surgical approach required a large abdominal or thoracic incision," Dr. DiMuzio says. "With the new grafts, we're able to use a minimally invasive – including a totally percutaneous – approach that can result in less pain and scarring and support a faster recovery."

In a percutaneous procedure, the surgeon punctures the skin of the groin area to access a blood vessel through which they insert and place the graft.

In addition to incorporating new devices, the Center has welcomed two new surgeons, Babak Abai, MD, FACS, and Dawn M. Salvatore, MD. The new faculty members are both fellowship-trained vascular surgeons board certified in General Surgery and Vascular Surgery. Both will be practicing in Center City and at satellite locations. Dr. Salvatore is expanding the Center's reach to Voorhees, NJ, while Dr. Abai will be providing care to patients in Northeast Philadelphia.

On the medical side, Dr. Merli's vascular medicine team treats many conditions, including deep vein thrombosis, peripheral artery disease and chronic venous



Members of the multidisciplinary Jefferson Vascular Team (from l to r): Drs. Paul J. DiMuzio, Luis Eraso, Taki Galanis, Dawn Salvatore, Alejandro Perez, Walter Kraft, Babak Abai, and Geno Merli.

insufficiency, and it staffs the Wound Care Program component of the Jefferson Vascular Center. The wound care specialists can diagnose and treat all types of wounds, such as surgical wounds that have not healed properly, radiation injuries and diabetic ulcers. Treatment options include debridement, application of skin substitutes and hyperbaric oxygen treatment, which involves the therapeutic use of oxygen to promote faster, more effective healing. The program has now attained 100 percent certification for hyperbaric wound care, meaning all five physicians have completed a series of tests to become board certified in this technique.

Finally, Dr. DiMuzio says, the Jefferson Vascular Center is anticipating its expansion later this year to a state-of-the-art space on the sixth floor of the Gibbon Building at 111 South 11th Street. In addition to tripling the Center's footprint, this next phase of development makes the patient experience even more streamlined. The new office will be adjacent to a new multidisciplinary center devoted to angioplasty.

For more information about the Jefferson Vascular Center visit: www.jeffersonhospital.org/JVC

Faculty Profile

Herbert E. Cohn, MD, FACS

One might say if you don't know Dr. Herbert Cohn, you don't really know Jefferson. Dr. Cohn arrived at Jefferson Medical College in 1951 as a medical student (JMC '55). Since that time, he has left only for his intern year at Atlantic City Hospital and two years of service in the U.S. Air Force. After graduating from the medical school, he completed his residency training on the service of John H. Gibbon, Jr., MD and his fellowship training in cardiovascular surgery. He was appointed to the faculty in 1962 and that was just the beginning.

In the following decades, Dr. Cohn's surgical practice focused on endocrine and thoracic surgery. He earned a reputation as an exceptional educator with high expectations, and an excellent clinician with a gentle bedside manner. Dr. Cohn has made immeasurable contributions to the educational initiatives at Jefferson and trained hundreds of surgeons. He received the Lindback Award for Distinguished Teaching in 1980, was named the first Anthony E. Narducci, MD Professor of Surgery in 1998 and was appointed to the JMC Academy of Distinguished Educators in 2011. He has also been a tireless advocate for patient safety and performance improvement,



most recently as Surgeon Champion of the National Surgical Quality Improvement Program (NSQIP) and the Vice Chair for Quality in the Department of Surgery.

Last summer Dr. Cohn initiated a phased retirement with plans to fully retire in 2014. It will be an end of an era, literally and figuratively. Dr. Cohn's presence has provided today's young surgeons with one-degree of separation from Dr. John Gibbon, Jr. – a neatly dressed, perfectly polite living connection to a surgical pioneer and a physician who has made his own indelible mark on Jefferson.

A video about Dr. Cohn is available on www.jefferson.edu/SurgeryChairs. The tribute was shown at the Jefferson Awards Gala in 2009 and features several Jefferson colleagues along with his three sons and his wife of 59 years, Natalie. Sadly, she passed away on February 4, 2013.



Dr. Shruti Lal, PhD is conducting groundbreaking research on how the HuR protein regulates cell growth in pancreatic cancer cells.

Plant Biologist Shruti Lal, PhD, Identifies New Molecule That Could Prove Key in Treating Pancreatic Cancer

When Shruti Lal, PhD, joined the Division of Surgical Research as a post-doctoral researcher, she brought an intriguing blend of experience to the lab.

A veritable Renaissance woman, Dr. Lal has earned Master's degrees in both Botany and Computational Biosciences. She holds a two-year diploma in e-commerce and web design, and has more than six years of professional experience in software development, teaching and research. She also studied Molecular Biology techniques at the U.S. Department of Energy's Joint Genome Institute and explored microarray printing, scanning and hybridization at the University of California, San Francisco.

As a doctoral student at the University of California, Riverside, Dr. Lal studied the molecular mechanism that controls floral specification in the model plant *Arabidopsis thaliana*. Her goal was to establish the gene regulatory networks (GRNs) that promote flowering and floral specification in *Arabidopsis*. She applied a variety of approaches – including molecular, genomic and bioinformatics – to understand these networks.

As Dr. Lal explains, plants and animals have a fundamental difference. While human children are essentially

miniature versions of human adults, a young plant is not simply a mini-model of an adult plant: “The plant at juvenile stage has leaves and stems, but upon transition to adult stage it initiates new organs such as flowers,” Dr. Lal says. “My doctoral research was focused on understanding what changes occur that drive plants to start producing flowers.”

Despite opportunities to work in the field of plant research, Dr. Lal was eager to apply her skills to studying human disease. That desire led her to Jonathan Brody, PhD, Director of the Division of Surgical Research, who offered Dr. Lal a position focusing on cancer research. While it might not seem like the most logical career move, Dr. Brody explains, “Dr. Lal brings an intense dedication and fresh perspective to my research team that is invaluable.” From the outset, he posed two challenging questions to her: How do pancreatic cancer cells live with genetic mutations, and how do they become resistant to chemotherapies?

Identifying a novel HuR-regulated molecule

Jefferson scientists previously identified the RNA binding protein HuR (**H**uman **a**ntigen **R**) as a key molecule in pancreatic cancer cells. More than half of patients with pancreatic cancer express high cytoplasmic levels of HuR

Randi Altmark, RN, BSN, CNOR

Through the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP®), the Department of Surgery continually searches for ways to further improve the quality of surgical care delivered to our patients. As our NSQIP Surgical Clinical Nurse Reviewer, Randi Altmark plays a pivotal role in collecting and maintaining the data necessary to identify and act on opportunities for improvement.

When she returned to Jefferson to assume this role in 2006, Altmark brought more than 20 years of experience in nursing – including seven years as a Jefferson OR nurse and experience as an OR manager and business manager for surgical services as well as labor and delivery.

Altmark maintains Jefferson's ACS NSQIP database by abstracting relevant clinical data from patient charts. With data points spanning pre-op, intra-op and post-op variables, the database enables Jefferson to generate risk-adjusted reports and trend the quality of surgical care. As a participant in this program, Jefferson can benchmark itself against other hospitals in order to evaluate its own performance and cultivate best practices. In addition to maintaining the database, Altmark works closely with Surgeon Champions Herbert E. Cohn, MD, Scott Cowan, MD, and Stacey Milan, MD and other health care providers to develop and execute process improvements.

and those patients are more likely to respond well to the drug gemcitabine than those with relatively low levels of HuR. While this knowledge is important, understanding exactly *how* HuR functions in pancreatic cancer cells is critical. This has been the focus of Dr. Lal's research since joining the Jefferson team in November 2011.

“...if a chemotherapy drug can be designed to inhibit the interaction between HuR and WEE1, pancreatic cancer cells will be much more likely to die.”

In that time, Dr. Lal has identified the mechanism by which HuR regulates the WEE1 molecule (a gate keeper of cell growth) when cancer cells are exposed to certain chemotherapeutic drugs. “When chemotherapy is used, pancreatic cancer cells with the HuR protein incur some damage but protect themselves by putting themselves on ‘hold,’ and thereby prevent cell death,” Dr. Lal explains.



The NSQIP program enables surgeons, anesthesiologists, nurses and other clinicians to view summaries of patient outcomes based on objective clinical data. Working with others, they can modify their practice to provide improved care to surgical patients. For example, NSQIP data has been used to help drive improvements in rates of surgical site infections.

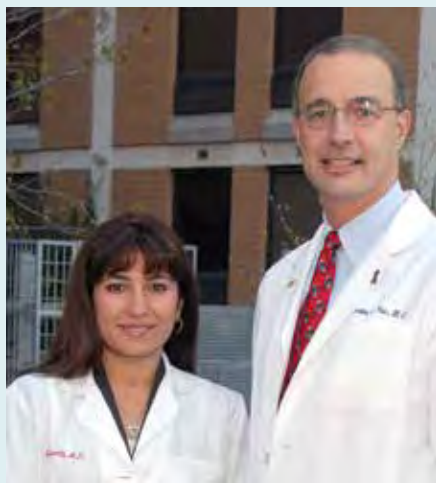
“It's rewarding to know that my relatively small but vital contribution can greatly benefit patients receiving surgical care,” Altmark says. “And, I enjoy collaborating with surgeons and clinicians, who all contribute their expertise and unify around a common goal of providing the best-quality care possible for Jefferson patients.”

“Above all, I'm very grateful to work in a collaborative environment with people who recognize that while we're doing a great job, we can always do better,” she concludes.

Through the research, Dr. Lal has found that removing the HuR protein impairs WEE1 function and promotes cell death. Thus, Dr. Lal explains, if a chemotherapy drug can be designed to inhibit the interaction between HuR and WEE1, pancreatic cancer cells will be much more likely to die.

With her groundbreaking manuscript currently in review, Dr. Lal's long-term goal remains clear: “We want to quickly get this information from the bench to the bedside,” she says, noting that pancreatic cancer deaths are rising at an alarming rate, while other types of cancer deaths are steadily declining. “Our objective is to reverse that trend.”

Recent Residency Program Graduate Pledges Ongoing Support



Recent residency graduate, **Negar Golesorkhi, MD**, with **Charles J. Yeo, MD**, Chair of Surgery, in 2008.

After graduating from Jefferson's surgical residency program in 2008, Negar Golesorkhi, MD, went on to complete a prestigious breast surgical oncology fellowship at Allegheny

Medical Center. She has since returned to her native Virginia where she is in private practice at the National Breast Center in Lorton. Just a few years into her practice, Dr. Golesorkhi has already pledged to support the surgical residency program that trained and prepared her so well.

Dr. Golesorkhi's commitment to the newly established Surgical Alumni for Education Fund will support academic enrichment for a surgical resident each year. "Surgical residency education is dual-faceted," she says, "One aspect is focused on hands on clinical practice of general surgery and the other aspect is preparing to be credentialed." Dr. Golesorkhi recalls the challenge of studying for the boards on her own, with assistance from the attendings and her fellow residents. She ultimately decided to take a formal preparatory course and feels strongly that such programs can be very beneficial for some people.

"I knew I had the clinical knowledge, but I had to learn how to apply it to a standardized examination. These programs helped me pass my boards, but they are very expensive." Tuition for preparatory courses can cost several thousand dollars – a significant price to pay on a resident's salary.

"Because of Negar's generosity, we will be able to support residents better in the credentialing process."

Dr. Golesorkhi decided to contact her former mentors, including Dr. Karen Chojnacki, to express her interest in providing financial support and put the wheels in motion. Dr. Chojnacki, director of the surgical residency program, explains, "Because of Negar's

generosity, we will be able to support residents better in the credentialing process. One of our recent graduates was given the first stipend from the fund to take board review courses in preparation for the American Board of Surgery certifying exam. We are so grateful to Negar for this gift and the great opportunity afforded to our residents."

Dr. Golesorkhi feels that she has a duty to give back and hopes others will feel the same. "It is a family there – the residents, the attendings, everyone – and I'm so proud of my education at Jefferson. The program has given me so much that I feel that I have to give back in some way."

For additional information about the Surgical Alumni for Education Fund, or to make a contribution to the Department of Surgery, please contact Lara Goldstein in the Jefferson Foundation at 215-955-8797 or lara.goldstein@jefferson.edu



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News in Brief



Benjamin Phillips, MD, FACS, has joined the Division of Colon and Rectal Surgery. Dr. Phillips completed residency training in 2005 at University of Tennessee Medical Center in Knoxville

and fellowship training in colorectal surgery in 2009 at Jefferson. He is dual-certified in General Surgery and Colon and Rectal Surgery and will practice in Center City and at Methodist Hospital.

Kudos: **Drs. Paul J. DiMuzio** and **Scott D. Goldstein** have been promoted to Professor of Surgery, **Drs. Scott Cowan** and **Harish Lavu** have been promoted to Associate Professor of Surgery, and **Dr. Gurjyot Bajwa** has been promoted to Assistant Professor of Surgery.

Michael Weinstein, MD, co-director of the Jefferson Center for Critical Care will be awarded the 2013 Philip J. Wolfson Outstanding Teacher Award by the Association of Surgical Education at the annual meeting in April. The award is posthumously named for Dr. Wolfson, the former Chief of Pediatric Surgery and Director of Undergraduate Medical Education at Jefferson.

Jonathan Brody, PhD, director of the Division of Surgical Research, is the Chair-Elect of the Peer Reviewed Cancer Research Program at the Department of Defense. As the program chair for fiscal years 2014 and 2015, Dr. Brody will co-chair pre-application and programmatic review meetings which serve to allocate congressional funding to scientific research projects.

Cataldo Doria, MD, PhD, FACS has been named a Knight of the Italian Republic by Italian President Giorgio Napolitano. Dr. Doria will be invested into the Order of Merit of the Italian Republic this summer.

To mark the 60th anniversary of Dr. Gibbon's heart-lung machine, **Dr. Herbert Cohn** will present a historic Grand Rounds lecture entitled "Fond Memories" on Thursday, May 2, 2013 at 7 a.m. in Foerderer Auditorium in the College Building at 1025 Walnut Street.

Save the Date: The John Y. Templeton, III, MD Grand Rounds will be held on May 9, 2013 at 7 a.m. in BLSB 101 at 233 South 10th Street. Dr. Douglas J. Mathisen, Chief of Thoracic Surgery at Massachusetts General Hospital and the Hermes C. Grillo Professor of Surgery at Harvard Medical School, will deliver a presentation entitled "Tracheal Surgery".