

UF Health Pancreatic Surgery Program

Among Best in the Nation

Pancreatic cancer is one of the most deadly forms of cancer, thanks to its so-called silent nature.

Because most cases of pancreatic cancer do not cause symptoms until the disease is advanced, five-year survival rates among patients are abysmally low. From 2003 to 2009, only 6 percent of people with pancreatic cancer lived five years after their initial diagnosis, according to the National Cancer Institute.

For some patients, seeking a cure is impractical and oncologists recommend palliative care, focused on alleviating discomfort. In other cases, surgery accompanied by chemotherapy, radiation or both is necessary to give patients the best chance of beating cancer or extending life.

Steven Hughes, M.D., chief of the division of general surgery and an associate professor, is one of a few surgeons nationwide who laparoscopically performs high numbers of an operation called the Whipple procedure. This complex surgery involves removing about 60 percent of the pancreas, portions of the bile duct and small intestine and sometimes part of the stomach. The surgeon then connects the remainders of the pancreas, bile duct and stomach to the small intestine to allow digestive system function. Hughes also performs this operation through the traditional, open method for patients, depending on how much cancer is present, the patient's surgical history, organ inflammation and tumor proximity to blood vessels.

The laparoscopic method requires inserting long, slender tools through five small incisions in the abdomen. It foregoes a large incision and, according to Hughes' research, is just as effective as the traditional version in removing tumors.

Hughes said he does this operation about five times monthly and expected to perform his 100th at UF Health in 2014. In total, he has performed nearly 400 of these operations.

"I guess I am considered one of the pioneers of the laparoscopic Whipple," he said. "I taught myself how to do it while talking to the only two other people in the world, at the time, who were doing it."

He also helps other surgeons learn to perform the laparoscopic Whipple.



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The surgery carries significant risks and once had a mortality rate around 25 percent. Today, that rate is much lower. But, for a good outcome, the surgeon's experience and collaboration with a panel of other surgical and cancer specialists is still of utmost importance.

"If you're at a hospital that doesn't have the volume that can support a team that's devoted to these types of surgeries, quality is going to be affected," Hughes said.

Of the 120 academic medical centers in the University HealthSystem Consortium, UF Health ranked 16th for the 2012-2013 academic year in the number of surgeries performed to remove some portion of the pancreas, and fourth in overall outcomes for such operations.

"We're one of the highest volume centers in the nation, but most importantly, we are among the best when it comes to our results," Hughes explained.

UF Health pancreatic surgeons also investigate the causes of pancreatic cancer. **Kevin Behrns, M.D.**, chair of the department and the Edward R. Woodward professor, and **Jose Trevino, M.D.**, and **Ryan M. Thomas, M.D.**, both assistant professors in the division of general surgery, all are involved in this research.

"Our research group is dedicated to determining the molecular pathways responsible for pancreatic tumor initiation, development and progression," said Thomas. "I am personally interested in the initiation of pancreatic cancer from precursor lesions that start out benign or in the setting of pancreatitis, and how to slow or stop this progression."

"Coupled with the great work of Dr. Trevino looking at the cellular signals responsible for pancreatic cancer progression and metastasis, we really are focused on the whole gamut of pancreatic cancer pathophysiology, not just the surgical treatment," he continued. "When patients come to UF Health for pancreatic surgery, not only will they receive exceptional surgical care, but they also are playing a larger role in our understanding of diseases of the pancreas."

On the cover: Steven Hughes, M.D., chief of the division of general surgery, performs laparoscopic surgery.

Photo by Jesse S. Jones, UF Health Communications.

A Medical Mystery and a Rare Diagnosis

For two years starting in October 2011, Lori Gilstrap knew something was very wrong with her health.

Every time she urinated, there was a stream of bright red blood. She saw a series of doctors outside of UF Health who could not diagnose the problem. At first, kidney cancer was the suspected culprit, partly because her father had died of the disease.

"I had three procedures in the hospital where they go in and scan your bladder and go up into your kidney, because they were convinced I had kidney cancer," Gilstrap said.

A doctor who specializes in kidney care, known as a nephrologist, told her she was losing too much blood for it all to come from a kidney.

Meanwhile, the bleeding continued. Gilstrap kept working as a phlebotomist at Orange Park Cancer Center, in the Jacksonville suburb of Orange Park.

"I'm on my feet all day, and people said they could not believe that I was even up and walking," Gilstrap recalled. "On the weekends, I crashed. I sat in my chair and didn't do anything. Sometimes, I just wouldn't even get up to go to the bathroom. I was just so weak, and oh — the fatigue — it was horrible."

She became anemic due to the blood loss.

Eventually, Gilstrap received a diagnosis: arteriovenous malformation, a deformity in the vascular system in which veins and arteries are interconnected and tangled together like a bird's nest, creating blood flow problems. She saw an interventional radiologist for a minimally invasive treatment. During the procedure, the specialist told Gilstrap, who was awake, that she actually had nutcracker syndrome.

This rarely diagnosed condition occurs when the renal vein, which drains blood from the kidney, is compressed between the aorta and the artery that supplies the intestines with blood. In severe cases, the vein collapses. Blood that should flow out of the kidney and back to the heart instead backs up into the kidney and comes out in the urine.

"All of my life, these two arteries have pounded on this vein and eventually they just collapsed it so bad that I think I had like a 5 percent blood flow," Gilstrap explained.

As a very slender person, Gilstrap does not have much fat in her abdomen to help cushion the vein.

Frustrated with her care elsewhere, Gilstrap turned to UF Health for help. She chose to seek treatment at UF Health Shands Hospital in Gainesville and initially met with **Thomas**

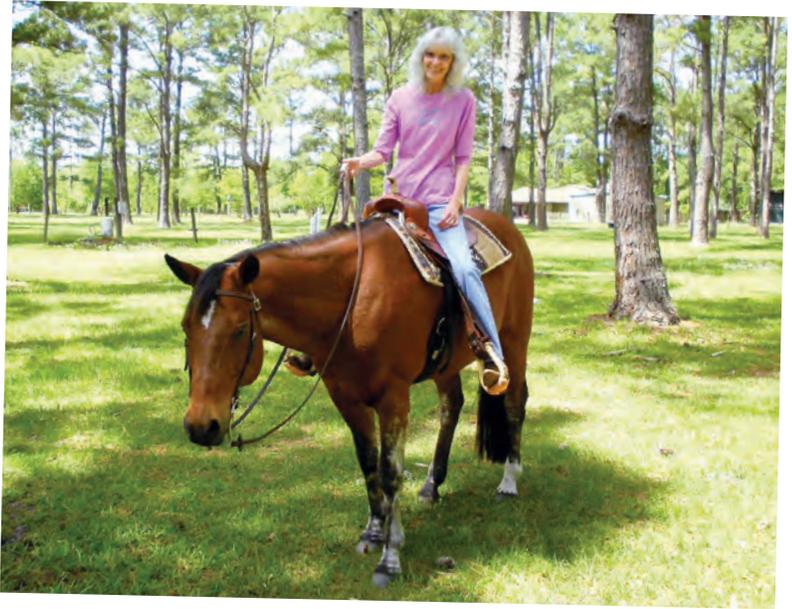


PHOTO COURTESY OF LORI GILSTRAP

Huber, M.D., Ph.D., chief of vascular surgery and endovascular therapy and a professor in the department of surgery. He referred her to **Robert Feezor, M.D.**, an assistant professor in the division of vascular surgery and endovascular therapy.

Feezor opted for a minimally invasive approach first, which works for some patients. Ultimately, because of the severity of Gilstrap's condition, she required a renal vein bypass. He took a portion of vein from Gilstrap's leg and attached both ends of it to the renal vein, creating a path for blood to flow around the problem area between the two arteries. The surgery took place in October 2013, more than two years after the bleeding began.

After the surgery, her body continued for about a week to flush out old blood that had been stuck in the renal vein. Then one day, the bleeding stopped. It has not returned since. Gilstrap continues to undergo ultrasound scans of her abdomen, to watch for narrowing of the bypass. Feezor says this is a precaution for all bypass patients. Gilstrap is only the second patient with nutcracker syndrome he has treated in his career.

In February 2014, she returned to horseback riding, a favorite activity made difficult by the fatigue accompanying her illness, and one she gave up temporarily after surgery.

Gilstrap is glad to have moved past nutcracker syndrome and on with her life, and says she is grateful for the very personal, high-quality care she received at UF Health Shands Hospital.

"I couldn't say enough good things about Dr. Feezor," she said. "If I ever need anything else like that done, I will drive all the way to Gainesville."

Long-time UF Surgeon Becomes Chief of Thoracic and Cardiovascular Surgery

Thomas Beaver, M.D., M.P.H., has been named the new chief of the UF College of Medicine department of surgery's division of thoracic and cardiovascular surgery.

Beaver, who has worked at UF Health since 2000, is a professor of thoracic and cardiovascular surgery, holds an endowed chair position in the department of surgery and has a joint appointment in the department of anesthesiology's division of cardiovascular anesthesia. Before becoming chief, he served as interim chief of thoracic and cardiovascular surgery.

"We have an outstanding team — we always have — and now we're looking forward to great things in the future," Beaver said.

UF Health's plan to build a new tower housing a heart and vascular hospital as well as a neuromedicine hospital is a highlight for the division, he said. UF Health officials say they aim to open the facility in 2018.

Beaver also emphasized his team's focus on replacing aortic valves through a procedure that uses a catheter inserted through a small incision and guided toward the heart, rather than open-heart surgery.

As of August, UF Health was one of the busiest institutions in the Southeast for transcatheter aortic valve replacement, according

"We plan to stay on the leading edge with new technologies."

— Beaver

to the manufacturer of the catheter and valve used in the operation.

"We plan to stay on the leading edge with new technologies," Beaver said. "We've had an explosion in our transcatheter valve program. We've now done over 125 of these procedures in just over a year. We see expansion of that technology to the mitral valve and other platforms as well, in the future."

He said he wants to hire two new faculty members for the division in the next few years to serve in the lung



MARIA FARIAS/UF HEALTH COMMUNICATIONS

transplant program and to expand the program for patients with thoracic tumors. UF Health thoracic and cardiovascular surgeons collaborate with UF gastroesophageal surgeons to treat patients with these tumors.

Beaver earned his medical degree at the University of Wisconsin-Madison, completed his general surgery residency at the University of Colorado, and completed both his fellowship in thoracic and cardiovascular surgery and a master of public health degree at the University of Florida. He is board-certified in general surgery and thoracic surgery. Beaver was a lieutenant colonel in the U.S. Army Reserve medical corps from 1992 to 2005 and served in Iraq and Afghanistan in 2004. He and his wife, Michelle, have two children.

His clinical and research interests include outcomes following thoracic aortic surgery and the surgical treatment of atrial fibrillation, as well as renal-protection strategies during cardiac surgery. He is the lead investigator on a trial evaluating a new minimally invasive surgical technique for patients with stroke and atrial fibrillation, which is funded by the National Institutes of Health.

"Thomas Beaver is an outstanding academic surgeon with stellar credentials in clinical care, research and education," said **Kevin Behrns, M.D.**, a professor and chair of the UF department of surgery. "His knowledge of the rich tradition of the division and department will provide a springboard for further successes. We are particularly excited about his innovative approaches to care and his success as an NIH-funded researcher. We look forward to growing clinically and academically under his leadership."

UF Health Surgeons Involved in Trials of New Devices for TAVR

Transcatheter aortic valve replacement is becoming increasingly available to patients who are too frail to undergo open heart surgery to replace severely narrowed heart valves.

UF Health cardiothoracic surgeons and cardiologists are participating in a series of trials, called the PARTNER trials, to test the newest versions of the artificial valve used in the procedure. The procedure involves inserting a catheter carrying an artificial valve and metallic stent into a small incision either in the side of the chest or in an artery in the groin.

The new iterations of the original valve include larger and smaller versions to fit the various sizes of patients' heart anatomies, as well as other developments.

Charles Klodell, M.D., an associate professor in the division of thoracic and cardiovascular surgery, and **Thomas Beaver, M.D., M.P.H.**, a professor and chief of thoracic and cardiovascular surgery, are part of the TAVR team that performs the procedures at UF Health Shands Hospital. The TAVR team also includes cardiologists **R. David Anderson, M.D.**, an associate professor; **Anthony Bavry, M.D.**, an assistant professor; and **John Peterson, M.D.**, also an assistant professor, all from the department of medicine's division of cardiovascular medicine. About 215 patients have undergone the TAVR procedure at UF Health since it was first offered in March 2012, and the TAVR team also reports active

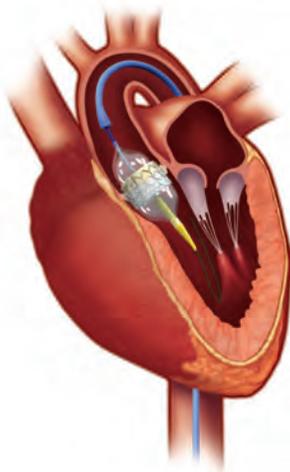
engagement and enrollment in the PARTNER trials. UF Health joined the trials last year.

The introduction of additional sizes "allows us to treat a greater spectrum of patients, some of whom we were unable to offer TAVR to because of lack of that valve size availability," he said.

Another improvement in some of the valves being tested is a smaller delivery system, Klodell said, which allows surgeons to more often insert the catheter through the femoral artery. Doing so does not require making an incision in the heart, as insertion through the side of the chest does. The last upgrade is a guard around the stent to help prevent blood from leaking around the valve's exterior and back into the heart, a potential complication of the procedure that can reduce long-term survival.

Currently, about 130 patients undergo a TAVR at UF Health per year, Klodell estimated. He anticipates he and his colleagues will be able to help 30 or 40 more people annually — patients with no other options — thanks to the new devices.

"These are new patients that are coming to the surgical service," he said, "patients that otherwise were being untreated, that now have something other than hospice. They can be treated for their aortic stenosis, when previously they were likely denied surgery or felt to have particularly high risk."



A catheter delivers the Edwards SAPIEN Transcatheter Heart Valve into place, where a balloon inflates to expand the valve so it is ready to use. Afterward, the catheter and balloon are removed. *Diagram provided by Edwards Lifesciences LLC.*

Split Liver Transplants Save Two Lives

UF Health transplant surgeons performed their first partial liver transplant in November 2013, splitting an adult liver donated to a little girl, then transplanting the remainder into a man.

Adult livers donated to children are often divided in a procedure called reduced volume transplant, to accommodate the recipient's size. Unlike other organs, livers heal themselves after splitting. If the liver is healthy, a procedure called a true split liver transplant is an option.

Whether a split liver transplant can be performed depends on the health of the donated liver and how it is divided, said **Jeffrey Fair, M.D.**, a professor and chief of transplantation surgery at UF Health.

In the November 2013 case, an adult received the larger portion of the liver that the child could not use. An adult receiving a new liver also can opt to have the liver split and a small portion given to a child needing a transplant.

If a healthy liver is split correctly, split liver transplant can save two lives. Surgeons at Cedars-Sinai Medical Center and UCLA College of Medicine have performed many of these procedures, said Fair, who used to work at the two institutions.

"They very much showed that the results can be quite equivalent" to regular liver transplants, he said.

Fair anticipates UF Health transplant surgeons will perform about four split liver transplants per year in which the child is the primary recipient, and also will ask adult recipients if they are willing to share donated livers with ailing children.

Mast Joins Journal Editorial Board

Bruce Mast, M.D., chief of the department of surgery's division of plastic and reconstructive surgery and an associate professor, has been appointed deputy editor-in-chief of the journal *Annals in Plastic Surgery*. The publication is the only independent journal related to plastic and reconstructive surgery, according to its website.

UF Plastic and Reconstructive Surgeon to Serve on National Surgical Advisory Board

Loretta Coady-Fariborzian, M.D., an assistant professor of plastic and reconstructive surgery at UF Health and section chief of plastic surgery at the Malcom Randall VA Medical Center, has been accepted by the Veterans Administration National Surgery Office as a member of the Plastic Surgery Surgical Advisory Board. The duties and responsibilities of advisory board members include providing readily available subject matter expertise to National Surgery Office and Veterans Health Administration leadership, performing site visits of surgical programs within their subspecialty and participating in established meetings and conferences.

American College of Surgeons 2013 Inductees

One UF Health surgeon and two graduates of UF's surgical residency program were initiated in October 2013 as fellows in the American College of Surgeons. The convocation took place in Washington, D.C., the location of the college's 2013 meeting.

New fellows include:

UF Health Surgeon

Chasen Croft, M.D., assistant professor of surgery, division of general surgery, acute care surgery team

UF Surgical Residency Program Graduates

Peter I. Ellman, M.D., thoracic and cardiovascular surgery
Graduation date: 2009

James M. Lopes, M.D., minimally invasive bariatric and general surgery

Graduation date: 2010

From the Chairman

The last several months have been a time of reflection in the department since we conducted a five-year review and, more importantly, created a strategic plan to set the course for our future.

Our review looked back over the time period 2008-2013, coinciding with my chairmanship. The faculty, residents and staff have performed remarkably well and have led the efforts to increase our clinical volume, bolster our research portfolio and improve our educational outcomes. Data from our review show that clinic visits increased 28 percent, operative volume is up more than 13 percent, NIH funding increased dramatically by 85 percent and our first-time pass rates for general surgery residents on the American Board of Surgery qualifying (written) examination and certifying (oral) examination are 96 percent and 95 percent, respectively. Clearly, we have been collectively on the move over the last five years.

The accomplishments are wonderful and set the stage for the future, which requires substantial planning given the dynamic nature of health care. To this end, we recently conducted a department-wide strategic planning exercise over several months. Our faculty, residents and staff brought forth several new ideas for growth in our clinical, research and education missions. Over the next several years, we will embark on opportunities to improve access to our unique clinical services, develop more team-based research initiatives and further stimulate our trainees to continue developing their critical thinking skills.

The five-year review and strategic planning exercise demonstrated the strength of our personnel and their commitment to the future. We look forward to the challenges of the future in our quest to deliver top-value care to an increasing number of patients, while we simultaneously conduct clinical translational research and provide continually improving training for our residents and fellows. The future looks bright, and we welcome the challenges.

Kevin E. Behrns, M.D.
Chairman



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Department of Defense Grant Covers Skin Regeneration Research by UF Surgeon

MARIA FARIAS/UF HEALTH COMMUNICATIONS



The U.S. Department of Defense awarded \$1.2 million in 2013 to the UF department of surgery for skin regeneration research that may benefit injured troops and also may help civilians.

Adam Katz, M.D., a UF Health physician and an associate professor in the division of plastic and

reconstructive surgery, has worked as a researcher for the Armed Forces Institute of Regenerative Medicine, also known as AFIRM, since 2008. As part of the institute's skin regeneration research group, he investigates possible techniques to help wounds heal more effectively and to improve the appearance of existing scars by using patients' own excess fat tissue and the stem cells it holds.

The new round of funding for the institute, which began in September 2013 and will last for five years, marked the start of AFIRM II. The Institute for Regenerative Medicine at Wake Forest University School of Medicine leads AFIRM II, which brings together 32 separate institutions to work with the U.S. Army Institute of Surgical Research and Walter Reed National Military Medical Center. The institute's goal is "to develop advanced treatment options for our severely wounded servicemen and women," according to its website.

For one project, Katz and his team are working in the laboratory to explore whether they can prompt the body to heal wounds faster and with less scarring. The researchers extract "a particular cell fraction from a patient's fat and then combine it with other biological components to create a novel wound healing therapy that essentially 'recycles' a patient's own excess fat tissue into a sophisticated but personalized bioactive adhesive bandage," Katz said.

The so-called adhesive bandage actually would be a paste applied to the scar or wound to improve healing and prevent excessive contraction. Contraction, the pulling inward of wound edges, is a normal aspect of wound healing.

But, too much contraction can cause problems, such as skin that's overly tight and can restrict movement. These scar contractures can be painful and disfiguring, and may result in loss of function.

"In the case of wounded warriors, we're usually talking about otherwise young, healthy patients who are in good shape," Katz said. "They may have a big wound on their face. We're trying to prevent or treat excessive contraction, because if the wound heals by too much contraction, then it will distort other parts of their face as it does so."

Katz's other project, aimed at making existing scars

look and "feel" better, involves removing fat tissue from one part of a patient's body using liposuction techniques, and injecting it under a scar at another site. Katz and his team are currently testing this potential procedure, called fat grafting, through a clinical trial funded under the first phase of AFIRM. The trial, which is still

enrolling patients, has sites at UF Health and at Brooke Army Medical Center at Fort Sam Houston in San Antonio, Texas.

In essence, Katz and his team harvest fat from a patient through several small incisions in the skin. They then wash the fat tissue and prepare it for immediate reinjection under an existing scar or skin graft at a different location, but on the same patient, he said.

"The goal is to determine if this fat transplantation procedure can improve the appearance and/or quality of existing scar tissue," he said.

If successful, this method would be used to help ease contraction that already has occurred.

Both strategies Katz is exploring fall into a focus area that AFIRM describes as "skin regeneration." UF Health is currently enrolling patients into the fat grafting clinical trial, while the cell-based therapy for wound healing is currently in the laboratory development stage.

People ages 18 to 65 who have at least one disfiguring scar may be eligible to participate in the trial. For more information on the trial, contact Justine Pierson at 352.273.9193.

"The goal is to determine if this fat transplantation procedure can improve the appearance and/or quality of existing scar tissue." — Katz

Circumcisions in Older Boys, Related Costs Skyrocket in Florida, UF Study Shows

Circumcisions in Florida boys over the age of 1 have increased dramatically in recent years, doubling costs to the state, a study by UF surgical researchers shows.

Saleem Islam, M.D., an associate professor in the department of surgery's division of pediatric surgery, said he and his study collaborators believe the state's decision to terminate Medicaid funding for routine circumcisions in babies under 1 month old has led to the increase in circumcisions for older boys. The study was published in the September 2013 issue of the journal *The American Surgeon*.

Islam said families should decide for themselves whether to have their sons circumcised, but emphasized that circumcision in the newborn period is preferable for several important reasons.

"The benefits are that the child does not have to undergo general anesthesia, there is much less cost to public monies, it's safer for the kids to get it done and that's the right age, as well," he said.

Because newborns require only local anesthesia for a circumcision, newborn circumcisions are safer and much less expensive. They also have a lower risk of complications. Circumcising older boys requires general anesthesia to ensure the patient remains still during the procedure.

Florida was one of numerous states to stop Medicaid coverage for routine newborn circumcisions after a 1999 report from the American Academy of Pediatrics said the procedure may not be medically necessary.

Islam explained that circumcisions can increase hygiene in the penis, and some uncircumcised males suffer from recurrent urinary tract or penile infections. Some parents will choose circumcision because of these potential problems or for religious or cultural reasons. Islam said he does not take a firm stance either for or against circumcision, but prefers for parents to decide.

The state cut off Medicaid coverage for the procedure in 2001. Many insurance companies also stopped paying for newborn circumcisions after the report. Funding remains available for circumcisions in older males when the procedure is deemed medically necessary, such as when repeated infections occur. In 2012, the American Academy of Pediatrics reversed its stance on routine newborn circumcisions, citing



research indicating they may help protect against HIV and provide other benefits.

UF researchers' study of data from 2003 to 2008 shows publicly funded circumcisions increased at a rate more than six times greater than the increase in privately funded circumcisions. They also cost approximately \$111.8 million over the five-year time period, an amount estimated by medical facility charges during the study period. Fees for health care providers were excluded from the study, meaning the actual amount paid for the procedures was probably greater. The study results also showed that circumcisions in boys older than 1 were more common each year than those performed on newborns.

By 2008, yearly Medicaid costs for circumcision in boys through age 17 reached \$33.6 million, compared with \$14.9 million in 2003. Meanwhile, private charges for circumcisions in Florida rose from \$9.3 million to \$14.1 million. Circumcisions in 2008 accounted for 30 percent of the estimated total costs for the procedure during the five-year window.

Islam said the increase in circumcisions among older boys likely stemmed from parents, supported by referring physicians, who had hygiene or medical concerns but were unable or unwilling to pay for the procedure during the newborn period. UF Health pediatric surgeons noted they had talked with some of their own patients' parents about the decision to have an older boy circumcised and found that many parents would have opted for newborn circumcision if public funding were available.

The American Academy of Pediatrics' new stance on the issue may lead states and insurance companies to restore funding for the procedure in newborns.

"It would make a lot of sense to offer it (newborn circumcision) to families who otherwise perhaps may not be able to afford it," he said, "and then say, 'Here, we are offering it to you when your child is a newborn. You have a choice to make here. If you choose to get it done now, there are a lot of benefits over having it done later.'"

UF Researchers to Test Method for Predicting Complications in Trauma Patients



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UF researchers have received a four-year, \$1.8 million grant from the National Institutes of Health to verify the effectiveness of a new genomic screening method that could help predict possible infections and complications in patients with severe traumatic injuries.

These complications, which often appear in the lungs and kidneys, can develop suddenly and are notoriously difficult and costly to treat, causing death or preventing full recovery for hundreds of thousands of trauma patients in the United States each year. UF researchers helped develop the new technique.

“In a world of limited resources, the new test is going to help identify those patients, within hours of their injury, who are likely to have problems and require more aggressive management,” said **Lyle Moldawer, Ph.D.**, a professor of surgery and the department’s vice chair for research. “We’re going to know before their symptoms appear whether they’re at risk of getting complications. What we know with trauma and infection is, the earlier you intervene, the better the results are.”

The researchers predict the test will allow clinicians to more effectively allocate health resources to patients at the greatest risk of infection and organ problems, and will help them save tens of thousands of lives each year. It also might help reduce health care costs by several billion dollars annually, UF researchers estimate.

Researchers from UF and other institutions collaborated to develop the technique based on research done and data collected through a research program that lasted until 2010 and was funded by the National Institute of General Medical Sciences.

The process involves screening small samples of a patient’s blood for the abnormal expression of 63 specific genes. Each gene in the body carries chemical instructions that direct cells to build proteins and perform essential functions. Normal gene expression occurs when chains

of nucleic acids chemically transmit these instructions to a cell, which then completes the assigned task. Abnormal expression occurs when a cell produces too much or too little of the specified protein.

By collecting and analyzing 10 years’ worth of patient data, the researchers identified 63 specific genes associated with increased risk of complications. These genes are expressed abnormally in trauma patients whose recoveries are plagued by organ problems and related difficulties. They also created a testing metric to allow clinicians to evaluate a patient’s genomic expression based on a single score, rather than 63 individual ones. A May 2013 article in the journal *Critical Care Medicine* describes the group’s creation of the metric and their previous verification of the testing method in about 150 trauma patients. The NIH grant will fund efforts to verify it in

about 250 additional patients.

The test requires isolating white blood cells from a blood sample taken within the first 24 hours

after trauma, then inspecting how the genes in question are expressed within them. To remove the white blood cells from the sample, the researchers use a miniature cassette, called a microfluidics cassette, developed several years ago by investigators from Harvard Medical School and Massachusetts General Hospital. UF scientists helped test the cassette during its development.

The test produces results in less than 12 hours. Before the cassette, the process of analyzing body fluid samples for gene or protein expression took as long as a week. The new technique’s quick turnaround time provides timely treatment for patients whose results indicate they will suffer serious complications during recovery. Interventions that may help these patients include existing drugs, as well as some in development or testing, and a special diet.

Such drugs will not help patients whose injuries are too extreme to survive, or those who are not genomically inclined to experience complications in their recoveries, said Moldawer, the senior author of the journal article. By using the new testing method to find patients who will benefit

“What we know with trauma and infection is, the earlier you intervene, the better the results are.” — Moldawer

Visit surgery.med.ufl.edu/about-us/news-archive/ for news about other research initiatives.

from the drugs, health care providers can administer the drugs early to the right people. Because these drugs can cause significant side effects, patients don't typically receive them until they exhibit signs of persistent organ problems and are very ill.

Researchers say weeding out patients who should not receive the medications because they are not prone to such organ problems would allow trials of the drugs to be conducted with much smaller groups than are currently used.

"What we would expect is that if this is validated, then we can reduce the size and the cost of clinical trials in patients with trauma and sepsis by 60 to 70 percent," Moldawer said. "So, a \$100 million clinical trial with 2,000 patients could be done with 800 patients for less than half the cost and time."

If viable, the new test would bring a solution to trauma patients and health care providers that researchers have sought unsuccessfully for decades.

"This is going to personalize medicine," Moldawer said. "Every patient with trauma is going to be admitted and they're going to get this test done. With some of them, providers are going to say 'That patient looks OK. But, well, look at the score he's got. That tells me something's likely going to happen. We better aggressively get him off the ventilator, look closely for evidence of persistent organ problems, consider additional therapies.' Because we didn't wait until persistent organ problems appeared and the patient crashed, the probable results for that patient are better outcomes and less hospital expense."

Intravenous Blood Clot and Tumor Removal

UF Health surgeons are using a new tool to treat some patients with blood clots, tumors or other masses in the large veins of the abdomen, in the pulmonary arteries (located in the lungs) or in the heart itself. The AngioVac catheter allows vascular and cardiovascular surgeons to suction masses and clots out of the body through a minimally invasive procedure. The device is used along with venous bypass that returns blood into the body after the clot or tumor has been filtered out. These problems previously required "a large, open operation," said **Adam Beck, M.D.**, an assistant professor in the division of vascular surgery and endovascular therapy. Ten patients had undergone the procedure at UF Health as of March 2014.

UF College of Medicine Plans Surgical Training Program for Physician Assistants

Starting in fall 2014, the UF College of Medicine will offer a surgical residency program for physician assistants.

Such programs are not common, but exist at several top medical institutions in the United States, including Yale University, The Johns Hopkins University and others, said **Georgios Rossidis, M.D.**, medical director of the program at UF and an assistant professor in the division of general surgery.

The program will focus mainly on teaching P.A.s about the "management and care of complex surgical patients," Rossidis said, and also will provide opportunities for them to learn to perform a wide variety of surgical procedures. P.A.s with sufficient training often perform surgical procedures under the supervision of a surgeon. Four people will be admitted to the program each year.

Participants will rotate for six weeks each in the following clinical services: general surgery, transplant surgery, acute care surgery, critical care surgery, cardiothoracic surgery, vascular surgery and orthopedic surgery, with another six weeks of an elective area of practice. Each P.A. will choose from plastic surgery, neurosurgery, E.N.T. and urology for the elective segment. Simulation labs will offer additional opportunities to learn surgical procedures.

Alumna of the program "will be able to take care of the most complex and the most challenging surgical patients that any surgeon will face," Rossidis said. "We feel we will be able to graduate P.A. residents that will be huge assets to any surgical program, either in the community or in academic settings."

To learn more about the program, visit bit.ly/1tsLLT2



Five New Faculty Members Join UF Department of Surgery



E. Thomas



R. Thomas



Brakenridge



Taylor



Mohr

The UF College of Medicine's department of surgery has welcomed five new faculty members: **Elizabeth Thomas, D.O.**, an assistant professor in the division of transplantation surgery; **Ryan M. Thomas, M.D.**, and **Scott Brakenridge, M.D., M.S.**, both assistant professors in the division of general surgery; **Janice Taylor, M.D.**, an assistant professor in the division of pediatric surgery; and **Alicia Mohr, M.D.**, an associate professor in the division of general surgery and director of the UF surgical critical care residency program.

Elizabeth Thomas earned her osteopathic medical degree from the Midwestern University's College of Osteopathy in Glendale, Arizona and completed her surgical residency at the University of Texas Health Science Center at San Antonio. Prior to joining UF Health, she completed an abdominal transplant and hepatobiliary fellowship at the University of Southern California in Los Angeles, where she also was a clinical instructor in surgery.

Her clinical interests include living donor surgery, hepatocellular carcinoma and adult and pediatric liver and kidney transplantation, while her research focuses on liver transplantation outcomes and surgical techniques in high-risk recipients.

Ryan M. Thomas earned his medical degree from Loyola University Chicago and completed his surgical residency at the University of Cincinnati. For two years during his residency, he was a National Institutes of Health T32 research fellow, studying cell signaling that leads to pancreatic cancer progression. Following residency, he completed a two-year surgical oncology fellowship at the University of Texas MD Anderson Cancer Center, which included an additional laboratory year studying chemotherapy delivery and resistance in pancreatic cancer.

Ryan M. Thomas holds a dual appointment with the UF College of Medicine and the North Florida/South Georgia Veterans Health System. He will continue his interest in pancreatic cancer research at UF Health, investigating the molecular mechanisms of tumorigenesis and chemoresistance in pancreatic cancer.

Brakenridge earned his medical degree from Rush University and completed his general surgery residency at the University of Texas Southwestern,

Parkland Memorial Hospital, where he also served as a clinical research fellow in the department of surgery's burn/trauma/critical care division and a clinical research scholar in the department of clinical sciences. He completed a fellowship in trauma and surgical critical care at the University of Washington, Harborview Medical Center. In addition to acute care surgery, trauma surgery and surgical critical care, his clinical interests include acute cholecystitis, appendicitis, necrotizing soft tissue infection, bowel obstruction, sepsis and hernia. Brakenridge's main research interests include traumatic injury, surgical infections, surgical sepsis, inflammation and venous thromboembolism.

Taylor earned her medical degree and a master's degree in biomedical engineering from The Ohio State University and completed her residency in general surgery at the University of Cincinnati. She also was a research fellow in pediatric surgery at Cincinnati Children's Hospital Medical Center and a pediatric surgery fellow at the University of Texas Medical School at Houston, where she also worked as an assistant professor in pediatric surgery.

Taylor focuses on all aspects of pediatric surgery, with special interests in neonatal surgery and minimally invasive surgery, while her main research interest is surgical education.

Mohr earned her medical degree from the New Jersey Medical School and completed her general surgery residency training at the affiliated University Hospital. Following her residency, Mohr was a fellow in surgical critical care and trauma at the University of North Carolina at Chapel Hill. She served as director of the surgical critical care fellowship and the surgical intensive care unit at University Hospital in Newark, New Jersey.

She also worked as the director of trauma/critical care research at Hackensack University Medical Center and an associate professor of surgery in the division of trauma/critical care at Rutgers New Jersey Medical School's department of surgery.

Mohr's clinical interests include trauma surgery, surgical critical care and emergency general surgery. Her research interests include the impact of stress following injury and shock on red blood cell production. Her research is funded by the National Institutes of Health.

BRAKENRIDGE PHOTO BY MARIA FARIAS/UF HEALTH COMMUNICATIONS; ALL OTHER PHOTOS BY JESSE S. JONES/UF HEALTH COMMUNICATIONS

Breast Center Reaccredited, Recognized for Quality Initiatives and Clinical Trial Enrollment

By Lindy Brounley

The UF Health Breast Center received reaccreditation in December 2013 from the National Accreditation Program for Breast Centers. The three-year reaccreditation continues the center's original 2011 accreditation, earned after a rigorous, 18-month program review and site visit.

The UF Health Breast Center, part of the UF Health Cancer Center, is the only accredited breast center in North Central Florida.

"The benefit to patients of being treated by a team of experts in a nationally accredited breast center is they know they'll receive the highest quality care available anywhere, including minimally invasive breast biopsies, breast conservation and the most advanced diagnostic mammography," said **Christiana Shaw, M.D.**, an assistant professor in the division of general surgery and leader of the breast program. "Patients can also feel confident that an accredited breast program will provide them with the best treatment options personalized to their needs, which avoids unnecessary, invasive treatments and over-treatment."

Accreditation requires compliance with 24 standards leading to excellence in treating women with the full spectrum of breast disease. According to the National Accreditation Program for Breast Centers — a consortium of professional organizations dedicated to quality breast care — these include criteria for center leadership, clinical management, research, community outreach, professional education and quality improvement.

The UF Health Breast Center met all 24 compliance standards and received commendations for best practices in the areas of quality initiatives and patient enrollment in clinical trials.

"One area in which we are proud to have far exceeded the national standard is patient enrollment in clinical trials," Shaw said, "because the newest, most advanced treatments are frequently only available on clinical trial. We want to assure our patients have access to the best treatments to be found anywhere."

The center also is committed to multidisciplinary patient care. The multidisciplinary team includes surgeons, radiation oncologists, medical oncologists, radiologists, pathologists, nutritionists, physical therapists and a nurse. They meet weekly to discuss every patient's treatment plan and progress.

"Achieving and maintaining national accreditation is a tremendous investment of effort and demonstrates the profound dedication of the entire breast team to patient care," said **Paul Okunieff, M.D.**, chair of the UF department of radiation oncology and director of the UF Health Cancer Center. "It's an expression of the deep commitment our doctors and institution have to treating breast diseases in a genuine way that always places the best interests of the patient at the forefront."



Several Surgery Clinics Move to Northwest Gainesville

UF Health's outpatient practices for plastic surgery, vein surgery and breast, melanoma and endocrine surgery have moved to UF Health Springhill. The UF Health Plastic Surgery & Aesthetics Center moved from the Millennium Center on Newberry Road to the new location in September 2013, while the UF Health Comprehensive Vein Center moved in November 2013. Breast, melanoma and endocrine surgery also moved from their previous location at UF Health Shands Hospital. That practice is now named UF Health Surgical Specialists and shares space with plastic surgery and vein surgery on the third floor of the Springhill building.

"We are excited to announce the move of several of our services to the new Springhill location in northwest Gainesville," said **Kevin Behrns, M.D.**, a professor and chairman of the department of surgery. "The plastic and reconstructive surgery, vein surgery and breast/melanoma/endocrine surgery service relocations provide easy access for patients in the community. Many patients may require simultaneous care through these clinics, in addition to the services of the breast imaging center, also located at Springhill. This beautiful, new care venue will offer patients multidisciplinary and coordinated care in one location."

UF Health Springhill is located in Northwest Gainesville, on the north side of Northwest 39th Avenue, approximately one mile east of Interstate 75 at exit 390. Free and convenient parking is available.

Cosmetic Procedures Increasingly Popular Nationwide and at UF Health



Cosmetic plastic surgery procedures are becoming increasingly popular in the United States, according to a report released in February 2014 by the American Society of Plastic Surgeons.

The same is true at UF Health, where surgical and nonsurgical cosmetic procedures have been on the rise each year since at least 2010.

The total work product from UF Health plastic and reconstructive surgeons and physician assistants for cosmetic surgery and aesthetic skin care procedures was nine times greater in 2013 than in 2009, billing data show. Nationwide, cosmetic surgery procedures increased 3 percent in 2013 over the previous year, coming in at 15.1 million procedures.

Breast augmentation and abdominoplasty (tummy tuck surgery) with liposuction were the two most popular cosmetic procedures at UF Health from April 2012 through March 2014. UF Health plastic and reconstructive surgeons stand out in their performance of these procedures in several ways, said **Bruce Mast, M.D.**, chief of plastic and reconstructive surgery and an associate professor in the UF department of surgery.

- ▶ UF Health's plastic and reconstructive surgical procedures take place at the UF Health Florida Surgical Center, a full-service surgical center. Operating in a facility like this allows surgeons to combine breast augmentation or abdominoplasty with some other procedures, helping patients avoid multiple procedures in some cases.
- ▶ Surgical centers also provide for more extensive

patient safety measures than office surgical settings, where some other institutions perform many of their surgical cosmetic procedures.

- ▶ For some abdominoplasty patients, UF Health plastic surgeons are able to close the incision with a special suturing method that promotes better healing and avoids the use of surgical drains.
- ▶ UF Health abdominoplasty patients receive medication before and after surgery to help avoid deep vein thrombosis, a complication more common among abdominoplasty patients than among patients who have undergone other types of plastic surgery. Current medical guidelines call for administration of medication after abdominoplasty, but UF Health plastic surgeons' research shows benefits for patients who begin anti-DVT medications before surgery, Mast said. This research has been published by *Annals of Plastic Surgery*.
- ▶ UF Health plastic surgeons use a database sponsored by the American Society of Plastic Surgeons to track patient outcomes and evaluate treatment methods for quality assurance.

"It is estimated that less than 15 percent of plastic surgeons in the U.S. use this database," Mast said. "Patient information is recorded monthly and outcomes, including complications, are also entered. The data can then easily be accessed to evaluate results and outcomes. This facilitates changes in techniques and care that improve patient satisfaction."

Honorary Fellow

Edward M. Copeland, M.D., a distinguished professor of surgery in the UF College of Medicine and a previous chair of the department of surgery, was named an honorary fellow of the Southern Surgical Association at the organization's 2013 annual meeting.

James O'Neill, M.D., former council chairman for the association and a professor in the department of pediatric surgery at Vanderbilt University, nominated Copeland for the accolade. His nomination was unanimously approved.

"Honorary fellowship is conferred on fellows of the association who have served the association with special distinction and who have been recognized for their contributions not only to the association, but to American surgery," O'Neill explained. "The other person named this year was J. Alex Haller, who pioneered pediatric trauma care in our country. Dr. Copeland has an enviable list of accomplishments and contributions to American surgery, not just in oncology, but in surgical education, research and national surgical leadership."

George Sarosi, M.D., an associate professor and the Robert H. Hux professor in the department's division of general surgery, and **Kfir Ben-David, M.D.**, an assistant professor of general surgery and the director of bariatric surgery, spoke at the association's annual meeting about esophageal perforations. **David Kays, M.D.**, chief of the department's division of pediatric surgery and an associate professor, made a presentation about congenital diaphragmatic hernias.

Assistant Professor Earns UF Excellence Award

Zhijua Jiang, Ph.D., an assistant professor in the department of surgery's division of vascular surgery, was a 2013 recipient of an Excellence Award for Assistant Professors from the UF provost's office. Each of the 10 honorees performed exceptionally in research and received \$5,000 for research-related expenses. The National Institutes of Health also funds Jiang's research, which focuses on the causes of problems such as vein graft failure, aortic aneurysms and re-narrowing of arteries after treatment.

New Vice Chair, Director of Administration Joins UF Department of Surgery

PHOTO COURTESY OF LONN MCDOWELL



The department of surgery in UF's College of Medicine welcomes **Lonni McDowell, M.H.A.**, as the new vice chair and director of administration. McDowell, who earned his master's degree in health administration and his bachelor's degree at UF, is a fellow in the American College of Medical Practice Executives.

He previously worked in the health care division of Navigant Consulting, providing practice management services and leading performance improvement initiatives at health systems and medical practice groups in at least seven different states, as well as supervising other consultants. In addition, McDowell has worked in health administration at Munroe Regional Health System, the Florida division of the American Cancer Society and two North Central Florida specialty practice groups.

He served as an adjunct faculty member at UF's College of Public Health and Health Professions from 2005 to 2010, teaching masters of health administration students in the department of health services research, management and policy.

McDowell also is a member of the American Society for Quality, the American College of Healthcare Executives and several other organizations.

"We are delighted to have Lonni McDowell join us," said **Kevin Behrns, M.D.**, chairman of the department and the Edward R. Woodward professor of surgery. "We will be the beneficiary of his experience managing large physician practices, and his unique perspective will help us develop innovative administrative approaches. Importantly, he strives for engagement of faculty and staff, and his teamwork-first approach will add synergy to our efforts. We welcome Lonni back to his roots as a Gator alumnus."

Working Toward a Cure for Genetic Liver Disease



Imagine a cure for hemophilia that could grow healthy new liver cells inside the patient’s liver, where the defective cells that should produce a blood-clotting protein reside.

That’s exactly what **Jeffrey Fair, M.D.**, a professor and chief of transplantation surgery, is trying to achieve with his research team. The group’s goal is to find a safe cure for genetic liver diseases that can be used for patients who do not yet have widespread liver damage, or who have diseases such as hemophilia that originate in the liver but do not damage the organ. Genetic liver diseases affect a wide variety of body functions, and some can be fatal.

Such diseases could currently be cured by a liver transplant, but the procedure and anti-rejection medications it requires are considered too risky for the benefit of curing these illnesses. Many patients with hemophilia, for example, receive regular infusions of blood-clotting protein to manage the disease, but the risk of serious, even life-threatening, complications remains for some people.

Fair’s work to find a cure starts with induced pluripotent stem cells, also called iPSCs.

“They’re your own cells and you can differentiate them into whatever cells you want — so liver cells of a particular type, of a particular age,” he explained.

Fair and his team have been producing and experimenting with iPSCs from both mice and humans, with the help of **Naohiro Terada, M.D., Ph.D.**, an expert in iPSCs and a professor in the UF College of Medicine’s department of pathology, immunology and laboratory medicine, and **Bryon Peterson, Ph.D.**, a professor in the department of pediatrics. Creating them requires taking cells from the body — there are several types of cells that will work for this — and manipulating them with gene therapy and drugs. Unlike embryonic stem cells, which also can differentiate into any type of body cell desired, the iPSCs do not require the use of embryos.

The team’s latest work with the human cells focuses on creating liver cells that are at just the right stage of development to thrive inside a patient’s liver — not an easy task.

“It has been known for 30 years that the liver is a very inhospitable place to park new cells,” Fair said. “The liver doesn’t want those cells and it tends to shut them down. They either don’t survive or they don’t expand in a meaningful way.

“We found a version of that cell within what we call the ‘liver lineage,’ that will, for a period of time, proliferate inside the liver. It will sort of force its way in, like an unwanted houseguest, and then fill up a usable amount of that liver’s biomass.”

Fair said the work with mouse liver cells created from iPSCs has shown that, in mice at least, the cells can grow inside the organ to take up as much as 10 percent of it. That could be enough to pave the way for a type of genetic therapy not yet performed in the liver.

First, the team must prove they can do the same with human cells, starting in specially designed mouse livers. Then, they must confirm in the laboratory that gene therapy would, as believed, cause defective liver cells to function fully. In the case of hemophilia, the group would work with **Tung Wynn, M.D.**, a pediatric hematologist/oncologist and an assistant professor in the department of pediatrics.

“If someone has a genetic defect and you could take their cells out and then repair the gene, hopefully instead of doing a liver transplant, you just put the cells back in the liver,” Fair said.

Though much work remains before the method can be tested in humans or made available for patients, Fair is optimistic.

“This has a lot of indications for particular pediatric liver diseases for which transplantation is the only potential treatment at this time,” he said.

Leading the Way

in Surgical Treatment of Gastroparesis in Children

For children plagued by paralysis of the stomach, finding the help they need can be a challenge. The condition also known as gastroparesis often goes unrecognized in children, says **Saleem Islam, M.D.**, an associate professor in the division of pediatric surgery.

Chronic gastroparesis in adults is a well-known problem that typically occurs as a complication of diabetes. High blood sugar levels can damage the vagus nerve and the

smaller nerves to the gut, which together control stomach movement and the passage of food into the small intestine. But cases in children often have a little-known connection to a common ailment.

“Often we will note that they seem to get it after a viral type illness,” Islam explained. “If you get a virus, then after a while you may have gastroparesis that you don’t even know about. You have this nausea; you just don’t feel like eating. If you eat, it doesn’t usually feel very good. You get bloated. That basically just gets

better on its own, but in these patients, it doesn’t get better and persists for months and years.”

Nausea is a round-the-clock problem for children with chronic gastroparesis, who also experience pain and early feelings of fullness when they eat. These symptoms often are mistaken as signs of other health problems, leading many children to undergo serious, unnecessary investigations and treatments.

“They get their gallbladders taken out. They get surgery on their stomach. They get put on a whole host of different medications. They get a feeding tube,” Islam says. “But the main issue, gastroparesis, is never diagnosed and therefore, never treated.”

He works closely with **Chris Jolley, M.D.**, chief of the department of pediatrics’ division of gastroenterology, hepatology and nutrition and an associate professor, in caring for these patients.

After clinical evaluation, Islam treats patients with chronic gastroparesis by implanting a temporary neurostimulator, a device that sends mild electrical signals into the stomach wall to get the organ moving. Children who respond positively can then have a permanent stimulator implanted under the skin in the abdomen.

Islam was the first surgeon to implant gastric neurostimulators in pediatric patients and has performed more of these procedures in North America than anyone else, according to Medtronic, the manufacturer of the only such device on the market. The device is approved for humanitarian use in adults, and Islam’s use of it in children is considered “off-label.”

The U.S. Food and Drug Administration allows doctors to use devices off-label, which many physicians do, as long as they follow certain guidelines. A Medtronic representative said the company is working to get the device labeled as one that also is meant for children.

For some patients, neurostimulation does not relieve gastroparesis. Islam and UF Health pediatric gastroenterologists work with these patients in search of a solution.

Ultimately, Islam said, he and his colleagues want to help other doctors better understand chronic gastroparesis in children.

“Our goal is not only to treat these patients, but to also create more recognition in the primary care providers,” Islam said. “If kids are having these symptoms, don’t blow it off. Try some medical therapies, but if it doesn’t work, then consider sending them to a specialist for evaluation.”



MARIA FARIAS/UF HEALTH COMMUNICATIONS

“Our goal is not only to treat these patients, but to also create more recognition in the primary care providers.”

— Islam

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INSIDE THIS ISSUE:

Pancreatic cancer program covers all the bases
A medical mystery and rare diagnosis
Skin regeneration research for armed forces
...and more

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