A PORTAL Into CANCER CARE

Growing a Hepatopancreatobiliary Surgery Program Through New Treatments
A Portal Into Cancer Care
Growing a Hepatopancreatobiliary Surgery Program Through New Treatments

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MESSAGE FROM THE CHAIR

The most complex obstacles in patient care require creative solutions and the ability to translate basic science discoveries into practical therapies. Our surgical oncologists are at the forefront of developing and honing novel surgical techniques for the treatment of cancer, and our researchers are designing diagnostic techniques to detect cancer earlier, enabling patients to have the best chance of a full recovery, and to understand the fundamental biology driving malignancy in general.

In this issue, we feature our hepatopancreatobiliary (HPB) surgeons who recently introduced several novel procedures to treat conditions of the liver, biliary system, and pancreas. The HPB surgical program has significantly grown over the past two years thanks to the arrival of new faculty and new cutting-edge treatments: among them, the hepatic artery infusion pump and robotic liver surgery. These novel therapies provide an option for cancer patients when standard surgical resection is inadequate.

In addition, we focus on our transplant surgeons who are pioneering novel transplant techniques to treat patients with end-stage heart failure. In a first-of-its-kind operation in the United States, Duke surgeons performed a donation after circulatory death (DCD) heart transplant in December 2019. This surgical milestone paves the way for future transplants using a new source of organ donors and a novel perfusion method to preserve the heart outside the body, allowing surgeons to transplant more patients faster.

In another story from our cardiothoracic surgery program, we examine a new collaboration with the United States Navy to help active duty cardiothoracic surgeons maintain their readiness. This profile highlights two Navy surgeons who train with us on 3-month rotations to enhance their surgical skillsets by working on highly complex cases at Duke. We look forward to our continued partnership with the Navy.

On the research front, our cancer researchers have devised a novel fluorescence technique that illuminates cancer cells before they become malignant, potentially leading to faster detection and earlier treatment for patients. This method is also being evaluated in breast cancer.

Finally, as part of our educational mission, the Integrated Plastic Surgery Residency launched a formal soft skills curriculum to give surgical residents the foundations for a successful career in surgery, empowering them to refine their communication and leadership skills. Similarly, the General Surgery Residency launched a program to better prepare residents to assume roles as educators in a high-pressure, fast-paced environment with the help of faculty instructors.

At Duke Surgery, we continually strive to meet unique healthcare problems while preparing tomorrow’s leaders to overcome future hurdles.

Sincerely,
Allan D. Kirk, MD, PhD, FACS
David C. Sabiston Jr.
Distinguished Professor and Chair
Department of Surgery
Duke University School of Medicine
Surgeon-in-Chief
Duke University Health System

RESPONDING TO COVID-19

The global emergence of the 2019 novel coronavirus has caused an outbreak of respiratory illness around the world and rocked every aspect of daily life. At Duke Surgery, we are adapting to the outbreak with a focus on the safety and health of all patients, our Duke Health team members, and our Durham community. Our clinical operations, educational programs, and research projects have adapted masterfully to the “new normal,” providing surgical care for those with acute or progressive illness; restructuring the management of less urgent care; innovating with telemedicine, web conferencing, and other remote forms of interaction; and stepping up on the discovery front in the development of new therapeutic and vaccine strategies.

A Duke Surgery COVID-19 Task Force has been established, partnering locally with leaders across Duke Health, regionally with the surgery departments of all North Carolina hospitals, and nationally through partnership with the American College of Surgeons and other professional societies to fluidly develop and modify best practices to ensure the welfare of patients and team members.

As we continue to deal with this ever-changing situation, our goal continues as it has: to provide high-quality care to patients while maintaining the safety and well-being of our faculty, fellows, residents, and staff. We remain United for All Patients.
A PORTAL Into CANCER CARE

Growing a Hepatopancreatobiliary Surgery Program Through New Treatments

By Michelle Antoinette Macalino

Sabino Zani Jr., MD, performs HPB surgery at the controls of the robotic surgical system. Photo by Ken A. Huth | HuthPhoto.
How can a surgical program define and measure growth? The number of incoming patients? Surgical outcomes? Or is it the perioperative experience of the patient? For the section of hepatopancreatobiliary (HPB) surgery in the Division of Surgical Oncology, program growth is considered secondary to their main goal: improving overall patient care.

Focusing on all conditions of the pancreas, liver, and biliary system, HPB surgery programs are limited to highly specialized centers because of their surgical complexities. Duke is one of those centers.

A Delicate Balance

The HPB surgery program at Duke maintains a delicate balance of time between clinical and research interests. The Section of Surgical Disciplines supports faculty in maintaining this balance, allowing surgeons to research new or improved methods of treating patients.

Peter Allen, MD, Michael Lidsky, MD, and Sabino Zani Jr., MD, are passionate about improving the overall perioperative experience, especially outcomes. The team has introduced two treatments to the HPB surgical program that focus on better ways to treat patients: the hepatic artery infusion (HAI) pump and robotic liver surgery.

Implementation and growth of the HAI and robotic liver surgery programs have been possible thanks to the support and advocacy of Dr. Allen, who assumed the role of Chief of the Division of Surgical Oncology in 2018. Prior to him, Theodore Pappas, MD, was the Chief of Surgical Oncology who helped build the foundation of the HPB section. Dr. Allen’s approach has been growing the HPB section through improving services and treatment of patients.

“The goal is not growth so much as it is to deliver these programs and treatments to our patients, therefore benefitting the entire community,” says Dr. Allen. “Because of Duke’s history and legacy, we are in a great position to continue to build and deliver new therapies to our patients.”

Adjunct Therapy

HAI surgery involves placing a subcutaneous pump and a catheter that traverses the
the arterial system of the liver via the
gastroduodenal artery. HAI therapy treats
cancer by delivering extremely high doses
of chemotherapy directly to tumors within
the liver through the hepatic artery. The
most common application of HAI is as an
adjunct therapy for colorectal cancer, in
addition to standard chemotherapy, as a
means of treating unresectable metastases
in the liver.

Many patients with unresectable metastatic
colon and rectal cancer are referred to
Duke. Often, a local oncologist tells them
that they have no other options beyond
chemotherapy for the rest of their lives.
For some patients, HAI is an option.

Dr. Lidsky, Assistant Professor of Surgery,
understood the need for this therapy and
introduced HAI therapy when he joined
the program in 2018, thus bringing hope
to patients with colon or rectal cancer.

HAI can be used in three general scenarios:
first, patients with unresectable cancers;
second, borderline resectable cancers, with
the goal of reducing them to resectable
status; and third, as an adjuvant HAI given
after complete resection of all known
cancerous tissue. In the unresectable
setting, controlling the cancer, or better,
reducing it enough to be resected, HAI
therapy contributes to improved survival.
In the adjuvant setting, HAI can delay
recurrence in the liver, and potentially
prevent it altogether. This translates into
a survival advantage as well.

"In each of these three scenarios, HAI
is associated with an improvement in
survival, which is essentially doubled
beyond that of standard therapies alone,"
says Dr. Lidsky. Unresectable metastatic
disease leaves patients with too many
tumors or tumors in areas of the liver
where resection is not possible. In these
patients, HAI, combined with standard
chemotherapy treatment, can double
chances of survival. "In the other group
of patients that have resectable disease,"

Dr. Lidsky continues, "complete surgical
resection combined with adjuvant HAI
yields 10-year survival rates that are just
as good as it would be at 5 years if they
didn’t have the pump."

Bringing Hope Closer

"Having HAI as a therapeutic option is a
nice way to restore hope and give people
more time," says Dr. Lidsky. "The quality
of life that these patients have after this
operation is quite good. Most of them
return to work, travel, and get back to the
things that bring them joy."

Dr. Lidsky has discussed the importance
of building a multidisciplinary team to
provide the best patient care possible. The
HPB section also intends to include the
HAI therapy in the Duke Raleigh Hospital,
led by Garth Herbert, MD, and Kevin
Naresh Shah, MD, which will allow patients
to receive care in multiple locations.

The results of the HAI therapy have been
promising. Since beginning in November

Hepatic artery infusion provides
a direct path to cancerous tissue
through a subcutaneously
placed pump and arterial
catheter. Illustration by
Megan Llewellyn.
2018, the Duke team had a goal of performing 10 HAI cases in their first year, but they exceeded that and completed 20 cases. The majority of these patients have achieved control of their cancer after only 3 months of HAI combined with systemic chemotherapy, and some patients who were initially deemed unresectable have converted to resection. In 2020, the team has performed six pump operations and has started using tools, such as robotics, to make the procedure less invasive.

**A New Surgical Tool**

Recent advances in technology continue to improve surgical care, and surgeons in Duke’s HPB program are utilizing a robotics liver surgery to meet their needs. Dr. Sabino Zani Jr., Assistant Professor of Surgery, leads the robotic liver surgery program. He believed that there was a need to utilize robotics from a general surgery and surgical oncology standpoint.

“I do think that patients benefit from robotic procedures,” says Dr. Zani. “It’s a minimally invasive technique that helps patients recover quicker, with less pain, and less potential complications compared to open surgery.” The goal is for patients undergoing a minimally invasive procedure to experience a reduced hospital stay and less pain, and fewer complications.

In the operating room, there is always a chance for complications. New technology requires an understanding of the major surgical procedures and intensive training to operate the machine. Dr. Zani emphasized how vital it is for surgeons to be fully prepared to operate the robot.

At the beginning, robotic surgery was used for more basic procedures, but as Dr. Zani became more familiar with the robotic equipment, he was able to use the tool to perform more complex procedures. These include the Whipple procedure and, more currently, HAI therapy and major hepatic resections.

Minimally invasive surgeries can be done laparoscopically or robotically. Dr. Zani says, “The benefits of robotics over laparoscopic surgery are multifold. One is improved vision with the use of 3D visualization as opposed to 2D. You also have instruments that have the ability to articulate so you have more degrees of freedom at your disposal.”

Dan Blazer III, MD, Program Director for the HPB fellowship, ensures that HPB fellows are offered the chance to train to operate the robotic equipment. The team agreed it was important that the fellows are given the opportunity to experience robotic surgery so that they may use it in the future.

Technology is evolving quickly, and Dr. Zani believes that it is important that surgeons at Duke continue to understand how to safely use that technology so that their patients can benefit.

**Team Effort**

For any decision made in the HPB section, the surgeons do so as a team. When a patient is evaluated, they build a treatment plan catered for that specific patient.
“We all discuss things and say, well, how can we make things better? What can we do differently? Where should we be pushing the envelope and advancing?” says Dr. Zani. With respect to the use of robotics for HPB surgery, “It was a discussion based on what is the best method to treat a patient.”

Determining the best method to treat their patients requires a strong team and strong leadership.

“In the modern era, with a leader like Peter Allen, a group of surgeons with a diverse set of skills, unique therapies such as HAI, and surgical approaches including open surgery, robotic surgery, or laparoscopic surgery, we are the total package as an HPB program,” says Dr. Lidsky.

New programs and tools are just the first steps to improved patient care and—eventually—growth within the HPB section.

“The best way to not only carry out the mission, but to provide the best care to the patients in North Carolina and the surrounding states, is to really invest in quality people who will bring novel programs and quality care to patients,” says Dr. Allen. “As an organization, Duke has this mentality of continual quality improvement. Always trying to deliver better quality care to the patient and that is something that the HPB program is very much a part of.”

Next Issue: Fall 2020

Be on the lookout for Surgery’s Fall 2020 issue, which will feature recent advances in Duke’s world-class Section of Breast Surgery, a program that treats over 1,200 patients per year.

Shelley Hwang, MD, MPH, and Lola Fayanju, MD, MA, MPH, Division of Surgical Oncology, perform a bilateral mastectomy and lymph node biopsy.
A serendipitous meeting led to a collaboration between the Duke Department of Surgery and the Navy, bringing two new surgeons into rotation: Robert G. Strange Jr, MD, and J. Chad Johnson, MD. Having done his cardiothoracic surgery residency at Duke from 2010–2013, Dr. Johnson was thrilled to run into Dr. Thomas D’Amico and Dr. Peter Smith at a conference, where they discussed the difficulties in maintaining surgical skillsets while deployed, particularly in a specialized medical field. From this, and a lot of hard work behind the scenes from both the Navy and Duke University Medical Center, the agreement was reached for Dr. Strange and Dr. Johnson to alternate 3-month rotations here at Duke.

Currently staff cardiothoracic surgeons and assistant professors of surgery at the Naval Medical Center in Portsmouth, Virginia, both Dr. Strange and Dr. Johnson knew that they wanted to practice medicine at an early age. Dr. Johnson knew from the first time he dissected a fetal pig in high school, while Dr. Strange’s interest came after he had a benign osteochondroma excised as child. He was fascinated when the doctors explained the surgical instruments and what goes on in the operating room, and he knew he wanted to help others with medicine too.

This is not the first instance in which the Navy maintains readiness among surgeons in subspecialties through civilian partnerships. In particular, it has been a benefit for Drs. Strange and Johnson to work at not only a training institution, but also “a well-known center of excellence for cardiothoracic surgery.” Dr. Johnson says that working with Duke has been “both a challenge and a reward, a bit like drinking from a fire hydrant.” The process of onboarding was busy but offered the opportunity to work on higher acuity cases, multiple procedures, and be in the operating room every day. Dr. Strange said that it was a bit overwhelming at first, to have such big names in the specialty suddenly introducing themselves in the halls and offering to help. “It wasn’t like I showed up and had to fend for myself,” Dr. Strange says. “Everyone was very supportive and respectful.”

While Dr. Johnson is excited about this trade-off on a small scale, he is also excited about the prospect of the bigger picture, the prospect of this program serving as a model for other branches of the military and medical specialties. In the interest of providing the best possible medical care for active duty soldiers, the military encourages different solutions for each specialty. The high volume of cases he has the opportunity to work on allows him to be a better-prepared surgeon and at a higher state of readiness for the Navy, says Dr. Strange. “The experience is just incredible.”

“ It wasn’t like I showed up and had to fend for myself. Everyone was very supportive and respectful.”

Robert G. Strange Jr., MD
Approximately 6 million patients in the United States live with heart failure. Of those, 10% will progress to end-stage heart failure. While there is no cure, heart transplantation can bring hope to patients when other treatments no longer can. But due to the nationwide organ shortage, most patients do not receive life-saving transplants fast enough. In 2019, only 3,551 heart transplants were performed, with patients waiting up to a year or more for a transplant.

On December 1, 2019, Drs. Jacob Schroder, Benjamin Bryner, and Carmelo Milano, Division of Cardiovascular and Thoracic Surgery, performed the first heart transplant in the United States using a heart from an adult donor after circulatory death (DCD). This type of organ donation has been well established for kidney, liver, pancreas, and lung transplants, but hearts from DCD donors have not been used for transplant until now. With the introduction of DCD hearts to the donor pool, more patients could receive heart transplants faster.

“There’s a whole group in the middle,” says Dr. Jacob Schroder, Director of the Duke Heart Transplantation Program. “The status 4’s especially, patients who have left ventricular assist devices who have been on the list for years. I think that’s how we will transplant those patients.”

**Donating After Circulatory Death**

Heart transplants are typically performed using hearts from organ donors after brain death when neurological function is lost following a devastating injury, such as a trauma, stroke, or drug overdose. DCD organ donors experience the same injuries that leave them on life support with no chance of recovery, but they do not meet the strict criteria for brain death. After the patient’s family agrees to honor their wishes to donate their organs, the patient is taken off life support.

While the United States does not yet have long-term data on DCD heart transplants, institutions in the United Kingdom and Australia have performed this type of transplant for years. In April 2019, Royal Papworth Hospital in Cambridgeshire, United Kingdom, published the results of their first 50 patients following DCD transplant. They compared DCD heart transplants with donation after brain death (DBD) heart transplants and found a 100% 30-day survival rate in both groups with other similar outcomes. According to Dr. Schroder, their wait list time and size plummeted.

“Of all the DCD donors in the last 5 years, if you segregate older donors and donors who have known heart conditions, we still think that the donor pool should expand by approximately 30% if we use all those donors,” says Dr. Schroder. “That’s a big deal for us. This will reduce wait list time and wait list mortality with what we hope to be exactly the same survival and clinical results.”

**Bringing the Heart Back to Life**

The DCD heart transplant was performed at Duke as part of the 2-year EXPAND trial to test a new device that keeps the heart alive outside the body. The TransMedics® Organ Care System™ (OCS™) perfuses the heart with warm, oxygenated blood, simulating conditions in the body. The “heart in a box” device offers a novel method of preserving hearts for transport that reduces ischemia time when the organ lacks oxygen and blood flow. This window of time is critical because patient...
outcomes worsen when hearts exceed 30 minutes of ischemia because of the onset of heart dysfunction.

“There’s 25 minutes of ischemic time when the heart is not being perfused and then, no matter how far you go with the OCS \textsuperscript{TM}, it’s being perfused the whole time,” says Dr. Schroder. “To put that into context, if we get a donor at WakeMed, unless we use the helicopter, it takes 30 minutes to drive, and 45–60 minutes to implant the heart. If we go to Puerto Rico using the OCS, the actual ischemic time is shorter than WakeMed. That is the biggest benefit is decreasing that ischemic time.”

In addition to resuscitating the heart, the device allows the surgeons to assess its functional quality. Duke researchers are now looking at ways to improve heart function using novel perfusion methods, including gene therapy and perfusate additives, to rehabilitate the heart before transplantation.

Duke is one of five centers in the United States currently performing DCD heart transplants as part of the trial, which will compare DCD hearts with DBD hearts in terms of patient and graft survival. Following the results of the trial, expected in 2021, TransMedics will seek Food and Drug Administration approval to allow for the wider application of DCD heart transplants in the United States.

“A Gift in a Time of Tragedy”

Donating an organ at the end of life is a selfless act to save the life of a stranger. According to the Organ Procurement and Transplantation Network, one organ donor can save eight lives. This is a difficult decision often made during the most painful moment for a patient and their loved ones. Individuals who wish to donate their organs can communicate their wishes to their loved ones early on to ease the burden.

“This is only possible out of the generosity of donors and their families,” says Dr. Schroder. “This is a gift of life in a time of tragedy. We’re using them because we think these are good hearts to transplant. Our job is to transplant our patients with a good heart as soon as possible, and that’s our goal.”

While the team aims to perform 53 DCD transplants by 2021, Dr. Schroder says they will perform “as many as possible.”

Want more information about transplant innovation at Duke?

Scan the QR codes to read these related articles.

Nature vs. Nurture: Transforming Medicine with Gene Therapy

Out of Body Experience: Rejuvenating Organs Using Ex Vivo Perfusion
Even before cancer is detectable, glow-in-the-dark cells show mutations driving malignancy

By Sarah Avery, Duke Health News

Duke Cancer Institute researchers have observed how stem cell mutations quietly arise and spread throughout a widening field of the colon until they eventually predominate and become a malignancy.

Using an innovative modeling system in mice, the researchers visually tagged colon cancer mutations by causing stem cells to glow. Mutations found in colon cancer were then visualized in the animals, illuminating a sort of tournament-to-the-death underway in the intestine in which one or another mutation prevailed over the others to become the driving force of a malignancy.

“This study provides new insight into the previously invisible process in which mutant precancerous stem cells spread throughout the colon and seed cancer,” says Joshua Snyder, PhD, Assistant Professor in the Departments of Surgery and Cell Biology at Duke and corresponding and co-senior author of the study published December 2 in the journal Nature Communications.

“Our technique sets a firm foundation for testing new therapies that interrupt this early, premalignant process. We hope to one day target and eliminate these stealth
precancerous cells to prevent cancer,” Dr. Snyder says.

Dr. Snyder and colleagues—including co-senior author H. Kim Lyerly, MD, George Barth Geller Distinguished Professor, Department of Surgery—applied the molecular dyeing technique in a new way, tagging several common colon cancer mutations in the stem cells of a single tumor to create a fluorescent barcode.

When transferred to a mouse, the rainbow of fluorescent stem cells could be visually tracked, revealing the cellular and molecular dynamics of precancerous events.

In this way, the researchers found key differences in how the intestinal habitats common to babies and adults grow precancerous fields of mutant cells. At a critical period, newborns are sensitive to the effects of mutations within intestinal stem cells. This insidiously seeds large fields of premalignant mutated cells throughout the intestine—a process called field cancerization—that dramatically increases cancer risk. These fields of mutated cells can grow and spread for years without being detected by current screening technologies; often, they remain harmless, but under proper conditions, can rapidly become cancerous later in adults.

The researchers also observed that some colon cancer mutations found in patients can lead to a striking increase in the fertility of the environment surrounding precancerous fields. Ultimately, this leads to the rapid spread of fields throughout the intestine, with lethal consequences.

Certain common mutations that arise from external sources, such as an injury or an environmental exposure, could also disrupt the environment surrounding the stem cell and lead to the rapid growth and spread of precancerous fields. These occurrences can be especially lethal in adults and occur much more rapidly than previously expected—as if dropping a match on a drought-stricken forest.

“Field cancerization has been suggested to be the defining event that initiates the process of cancer growth, including cancers of the breast, skin, and lung,” Dr. Snyder says. “Our technique allows us to model how premalignant cells compete and expand within a field by simple fluorescent imaging, potentially leading to earlier diagnosis and treatment.”

Dr. Snyder says additional studies are underway using the fluorescent barcoding to view the cancer fields in breast cancer, aiming to learn more about when a precancerous condition known as ductal carcinoma in situ is driven by malignant versus benign mutations.

In addition to Drs. Snyder and Lyerly, study authors include Peter G. Boone, Lauren K. Rochelle, Veronica Lubkov, Wendy L. Roberts, P.J. Nicholls, Cheryl Bock, Mei Lang Flowers, Richard J. von Furstenberg, Joshua D. Ginzel, Barry R. Stripp, Pankaj Agarwal, Alexander D. Borowsky, Robert D. Cardiff, Larry S. Barak, and Marc G. Caron.

The work was supported by the National Cancer Institute (512-CA100639-10, 1K22CA212058, R21CA173245, 1R33CA191198, NICHD ST32HD040372), Sage Biosciences (3U24CA209923-01S1), the Department of Defense (W81XWH-12-1-0447), and Duke Surgery.

We hope to one day target and eliminate these stealth precancerous cells to prevent cancer.”

Joshua Snyder, PhD

Duke Surgery Ranks Third Nationwide in NIH Funding

“Once again, we are proud to announce that Duke is one of the top five surgical departments in NIH funding, ranking #3 for 2019 with $43,528,737 awarded to Duke Surgery researchers, as well as $11,780,967 in industry, foundation, and other federal awards. Congratulations to our surgeon–scientists!”

Dr. Shelley Hwang, Vice Chair of Research, Department of Surgery
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Machine Learning for Surgeons
American College of Surgeons
Nonhuman Primate Reagent Resources
University of Massachusetts Medical School
National Institutes of Health
Donor Apoptotic Cell Infusion for Tolerance to Monkey Kidney Allografts
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Stuart J. Knechtle, MD
ITNO89ST Measuring Allospecific Impact of Belatacept/Carfilzomib Desensitization Protocol Chair
Immune Tolerance Network
National Institute of Allergy and Infectious Diseases

Debra L. Sudan, MD
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Department of Defense

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Joseph W. Turek, MD, PhD
Enzyvant Monkey Study
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Development of a Pediatric, Long-Term, Minimally Invasive Circulatory Support Device (PediPulse) to Treat Heart Failure
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Office of Naval Research

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Preventing an Incurable Disease: The Prevention of Progression to Pancreatic Cancer Trial (The 3P-C Trial)
National Institutes of Health

Lola Fayanju, MD
Using Modifiable Risk Factors to Predict Inferior Care and Survival after Breast Cancer Diagnosis: A Novel Approach to Addressing Health Disparities National Institutes of Health

Rachel A. Greenup, MD, MPH
A Shared-Decision Tool to Improve Communication About Breast Reconstruction
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Shelley Hwang, MD, MPH
Molecular and Radiologic Predictors of Invasion in a DCIS Active Surveillance Cohort
Breast Cancer Research Foundation

Sabino Zani Jr., MD
MedBlueData - Deidentified Laparoscopic and Robotic Surgical Video
MedBlue Incubator, Inc.

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University of California at Davis

AAV-Exosomes: Escaping Neutralizing Antibody and Enhancing Delivery
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Awakening Endogenous Retroviruses with the Space Environment
National Aeronautics and Space Administration

Zachary C. Hartman, PhD
Investigation of Stimulating Stress Response Mechanisms to Enhance Antibody-Dependent Cellular Phagocytosis
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Enabling Effective Anti-Tumor Immunity From Targeted Antibodies Through Dual Innate and Adaptive Immune Checkpoint Blockade in Non-Immunogenic Cancers
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Bruce A. Sullenger, PhD
Cas9 RNP Delivery to Immune Cells In Vivo via Molecular Targeting
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UROLOGY
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Synergistic Immuno-Photo-Nanotherapy for Bladder Cancer
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Michael E. Lipkin, MD
Stone Clearance Effectiveness of Miniperc Probes
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John S. Wiener, MD
Urologic Management to Preserve Renal Function Protocol - Component C Centers for Disease Control and Prevention

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Antibody Fc effector functions and IgG3 associate with decreased HIV-1 risk.

Cancer outcomes in DCIS patients without locoregional treatment.

A cancer rainbow mouse for visualizing the functional genomics of oncogenic clonal expansion.

CRISPR genome editing in stem cells turns to gold.

DNA priming and gp120 boosting induces HIV-specific antibodies in a randomized clinical trial.

Enhancing and shaping the immunogenicity of native-like HIV-1 envelope trimers with a two-component protein nanoparticle.

Immune correlates of the Thai RV144 HIV vaccine regimen in South Africa.

Isolation and structure of an antibody that fully neutralizes isolate SIVmac239 reveals functional similarity of SIV and HIV glycan shields.

Jumping at the chance for precise DNA integration.

The lineage determining factor GRHL2 collaborates with FOXA1 to establish a targetable pathway in endocrine therapy-resistant breast cancer.

Overcoming steric restrictions of VRC01 HIV-1 neutralizing antibodies through immunization.

Perturbed myoepithelial cell differentiation in BRCA mutation carriers and in ductal carcinoma in situ.

Portable normothermic ex-vivo lung perfusion, ventilation, and functional assessment with the Organ Care System on donor lung use for transplantation from extended-criteria donors.

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Viela Bio Inc., VIB4920 Drug Study for Kidney Transplant Patients
Viela Bio, Inc.

Stuart J. Knechtle, MD
IM101-823 - Abatacept for treatment of recurrent or de novo autoimmune hepatitis
The Bristol-Myers/Sanofi Pharmaceuticals, Inc. Partnership
IMAGINE
Vitaeris, Inc.

Kadiyala V. Ravindra, MBBS
Talaris Therapeutics - FCR001A2301 FREEDOM-1 Study
Talaris Therapeutics, Inc.

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Transplant Genomics - TruGraf testing
Transplant Genomics, Inc.

CARDIOVASCULAR AND THORACIC SURGERY

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RelayBranch System
Bolton Medical, Inc.

Carmelo A. Milano, MD
Network for Cardiothoracic Surgical Investigations in Cardiovascular Medicine: Safety & Efficacy of Intramyocardial Injection of Mesenchymal Precursor Cells on Myocardial Function in LVAD Recipients
Icahn School of Medicine at Mount Sinai, National Institutes of Health (NIH)
Jacob N. Schroder, MD
OCS DCD HEART
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Network for Cardiothoracic Surgical Investigations in Cardiovascular Medicine: Anticoagulation for New-Onset Post-Operative
Icahn School of Medicine at Mount Sinai, NIH

METABOLIC AND WEIGHT LOSS SURGERY

A. Daniel Guerren, MD
Short-term Impact of Bariatric Surgery on Systemic Inflammation in Obese Asthma
American Society for Metabolic and Bariatric Surgery

Jin S. Yoo, MD
ULTRAVISION
Alesi Surgical, Ltd.

SURGICAL ONCOLOGY

Shelley Hwang, MD
Lumicell - Pivotal Study of the Lum Imaging System
Lumicell, Inc.

UROLOGY

Andrew C. Peterson, MD, MPH
Artificial Urinary Sphincter Clinical Outcomes Boston Scientific Corporation

VASCULAR AND ENDOVASCULAR SURGERY

Mitchell W. Cox, MD
BEST-VIVA Registry (vCLI)
DCRI-Duke-Site
In their years of training, surgical residents acquire a broad spectrum of technical skills; however, textbook knowledge and muscle memory alone are insufficient to guarantee a successful career in surgery. Even residents with strong clinical talent may fall short in providing the highest-quality care, unless they cultivate ancillary abilities—often not explicitly taught—in teamwork, communication, resilience, and accountability.

Recently, Duke’s Plastic and Reconstructive Surgery Residency Program has pioneered a formal “soft skills” curriculum that aggressively expands professional development and training that is broadly applicable outside the OR and clinic.

A Track Record of Leadership

The Plastic Surgery residency program at Duke began in the 1940s. In its first decades, the program produced a great number of leaders in national and international plastic surgery organizations. Jeffrey Marcus, MD, Professor of Surgery and Chief of the Division of Plastic, Maxillofacial, and Oral Surgery, hopes to honor this legacy of success by giving residents the tools they need to become influential leaders in today’s healthcare landscape.

“There’s this history, a track record of producing leaders,” Dr. Marcus says, speaking of the first decades of Duke’s Plastic Surgery residency. “My question is, what’s the secret sauce? There was something in the program in that time that made that happen. It’s important to our legacy that we continue to produce great leaders, and great leaders need to be great team members, and great team members need to have certain skills.”

What Skills Create Great Leaders?

What are these skills that create leaders, and how can they be taught to residents? Alexander Allori, MD, MPH, Assistant Professor of Surgery and director of the soft skills curriculum, describes how the division seized the opportunity of a planned change to launch the soft skills program. Historically, plastic surgery training was an “independent” residency program, comprised of plastic surgical training following a general surgical residency program, or similar. In 2013, the residency began the transition to an “integrated” model, six years of plastic surgical training directly following medical school. In 2018, Dr. Allori thought the time was ripe to redefine the program’s vision.

“The first integrated residents had ascended the ranks and were now chief residents,” says Dr. Allori. “It seemed like a momentous occasion to do something grand.” Focus groups convened to get a feel for problem areas, then built cohesion about the mission, guiding principles, and shared values as well as codifying the vision for the program. “Then we devised a strategy map for how to achieve that vision,” Dr. Allori continues. “The biggest challenge was to actually foster genuine, lasting culture change.”

Dynamic Rather Than Didactic Learning

Soft skills are often best learned through experience, so the team planned a curriculum of interactive workshops and flipped classrooms. Residents receive resources and readings to learn skills required in collaborative teamwork, crucial conversations, and conflict resolution. This academic training is complemented by timely feedback and debriefings related...
One long term initiative, dubbed the “Know Thyself Project,” builds resident self-awareness through 360° reviews, learning-style surveys, personal assessments, resiliency training, and goal-setting.

A weekly newsletter supports all of these efforts by featuring inspirational messages from Dr. Marcus, listing accolades for exemplary performance by housestaff and faculty, and a “Soft Skills Soundbites” section that recommends additional readings, publications, or podcasts of interest.

Cultural Impact

Former chief resident Kate Krucoff, MD, graduated from the program in 2019 and speaks to the positive impact the new cultural focus had during her final year of residency.

“We are taught that as surgeons we are the leaders in the operating room, yet we never get formal leadership training,” says Dr. Krucoff. “We are placed in high stakes situations while getting little sleep and having little personal time, yet we are expected to communicate fluidly at all times.” Dr. Allori’s work, she says, helps residents get training in leadership and communication, as well as dealing with their own and others’ weaknesses. “We learned about feedback, dependability, mentorship, and team building. By taking the time to identify and then commit to a shared set of beliefs and goals, our sense of team became more real, and the sense of pride we had for our residency swelled.”

The success and quality of the program can be judged based on the success of its graduates—not only their skill, but their strength of character. For Drs. Marcus and Allori, this is the difference between great surgical technicians and great surgical leaders.

“The goal here is that we are giving residents a greater opportunity for personal success,” says Dr. Marcus. “When that happens, our division, and the residency group as a whole, will succeed. We keep in mind that that’s why we wanted to make this change. That was our intention.”
NEW FACULTY

WILLIAM S. LAO, MD, CM
Medical Instructor, Division of Trauma, Acute, and Critical Care Surgery
Clinical interests include acute care surgery and emergency general surgery. Research interests include quality improvement, epidemiology, trauma and critical care, and acute care surgery.

FACULTY PROMOTIONS

JONATHAN C. ROUTH, MD
Division of Urology, promoted to Associate Professor of Surgery with Tenure

JEFFREY R. MARKS, PhD
Division of Surgical Sciences, promoted to Professor of Surgery with Tenure

JEFFREY R. GINGRICH, MD
Professor of Surgery, Division of Urology
Selected to serve on the VA National Surgery Office Urology Surgery Surgical Advisory Board.

ALLAN D. KIRK, MD, PhD
David C. Sabiston, Jr. Distinguished Professor of Surgery and Chair, Department of Surgery, Vice Dean, Section of Surgical Disciplines, Duke University School of Medicine
Admitted into American College of Surgeons Academy of Master Surgeon Educators™.

FACULTY AWARDS

GEORGIA M. BEASLEY, MD, MHS
Assistant Professor of Surgery, Division of Surgical Oncology
Inducted into the Alpha Omega Alpha Medical Honor Society and named Co-Director of the Duke Cancer Institute’s Melanoma Disease Group.

LINDA C. CENDALES, MD
Associate Professor of Surgery, Division of Plastic, Maxillofacial, and Oral Surgery
Elected to the Organ Procurement and Transplantation Network (OPTN) Board of Directors.

LOLA FAYANJU, MD, MA
Assistant Professor of Surgery, Division of Surgical Oncology
Elected to the Board of Directors of the Surgical Outcomes Club and invited as the 2020 Selwyn M. Vickers Visiting Professor at the University of Alabama at Birmingham.

JEFFREY R. GINGRICH, MD
Professor of Surgery, Division of Urology
Selected to serve on the VA National Surgery Office Urology Surgery Surgical Advisory Board.

RACHEL A. GREENUP, MD, MPH
Associate Professor of Surgery, Division of Surgical Oncology
Appointed to Clinical and Health Services Research Committee for the Association of Academic Surgery.

WILLIAM S. LAO, MD, CM
Medical Instructor, Division of Trauma, Acute, and Critical Care Surgery
Clinical interests include acute care surgery and emergency general surgery. Research interests include quality improvement, epidemiology, trauma and critical care, and acute care surgery.

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RACHEL A. GREENUP, MD, MPH
Associate Professor of Surgery, Division of Surgical Oncology
Appointed to Clinical and Health Services Research Committee for the Association of Academic Surgery.

JOHN MIGALY, MD
Associate Professor of Surgery, Division of Surgical Oncology
Elected into the Southern Surgical Association.
<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Contributions/Activities</th>
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</thead>
<tbody>
<tr>
<td>LEILA MUREEBE, MD, MPH</td>
<td>Associate Professor of Surgery, Division of Vascular and Endovascular Surgery</td>
<td>Appointed Technical Associate Medical Director of the Society for Vascular Surgery Patient Safety Organization.</td>
</tr>
<tr>
<td>ANDREW C. PETERSON, MD, MPH</td>
<td>Professor of Surgery, Division of Urology</td>
<td>Inducted into the Alpha Omega Alpha Medical Honor Society.</td>
</tr>
<tr>
<td>JENNIFER K. PLICHTA, MD</td>
<td>Assistant Professor of Surgery, Division of Oncology</td>
<td>Appointed to the Editorial Board for Breast Cancer Research and the Duke Academic Council in the Clinical Sciences Division.</td>
</tr>
<tr>
<td>CHARLES D. SCALES JR., MD</td>
<td>Associate Professor of Surgery, Division of Urology</td>
<td>Appointed Director of Duke Surgical Center for Outcomes Research.</td>
</tr>
<tr>
<td>RANDALL P. SCHERI, MD</td>
<td>Associate Professor of Surgery, Division of Surgical Oncology</td>
<td>Selected to participate in the 2020 Duke Clinical Leadership Program.</td>
</tr>
<tr>
<td>RANJAN SUDAN, MD</td>
<td>Professor of Surgery and Vice Chair of Education, Department of Surgery</td>
<td>Admitted into American College of Surgeons Academy of Master Surgeon Educators™.</td>
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**DUKE SURGERY ADVANCED EDUCATION COURSES**

For a complete list of courses and up-to-date information, including new dates and cancelations due to COVID-19, please visit surgery.duke.edu/cme-courses.

- **2020 Leading Edge Urology: 52nd Duke Urologic Assembly & Urologic Cancer Symposium**
  - Omni Oceanfront
  - Hilton Head, SC

- **2020 Duke Masters of Minimally Invasive Bariatric Surgery**
  - May 31–June 2, 2020
  - Hotel Emma
  - San Antonio, TX

- **Duke Tuesday in Urology**
  - July 7, 2020
  - Duke Searle Conference Center
  - Durham, NC

- **Sea Pines CME: Duke General Surgery Course**
  - July 13–16, 2020
  - Sea Pines Resort
  - Hilton Head, SC

- **Workshop in NasoAlveolar Molding (NAM) for Cleft Lip and Palate**
  - July 18–20, 2020
  - Duke Center for Living Conference Center
  - Durham, NC

- **2020 Duke Flap Course**
  - July 31–August 2, 2020
  - Duke Human Fresh Tissue Laboratory
  - Durham, NC

- **13th Annual Duke Masters of Minimally Invasive Thoracic Surgery**
  - September 25–27, 2020
  - Waldorf Astoria
  - Orlando, FL

- **Duke Advanced Practice Provider Transplant Bootcamp**
  - October 9, 2020
  - Duke South Clinic Amphitheater
  - Durham, NC

- **Duke Solid Organ Transplant Summit**
  - October 10, 2020
  - Duke School of Medicine
  - Durham, NC
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VISION

Duke Surgery: United, for All Patients

MISSION

Through sustainable, multidisciplinary teams we:

1. Provide insight regarding the fundamental nature of patient health and disease
2. Empower all patients, trainees, and colleagues with knowledge
3. Provide safe and high-quality care based on an advanced understanding of and respect for our patients' needs and guided by best practices

DUKE SURGERY ALUMNI

Keeping in touch with our alumni is important to us. Please update your Duke Surgery alumni profile via the online form below: surgery.duke.edu/alumni-update