# BluePrint

Volume 8 | 2017

**Duke** Anesthesiology

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**A COMMITMENT TO CRITICAL CARE**

## Growing a Division with Dr. Raquel Bartz at the Helm

**FEATURE**

Perioperative Strides

**FACULTY SPOTLIGHT**

Bringing Humanity to Medicine

Dr. Paul Wischmeyer

# What We Do Changes The World

Duke Anesthesiology
Duke University School of Medicine

**MISSION:** Extraordinary care through a unique culture of innovation, education, research, and professional growth.

# BluePrint

Volume 8 | 2017

## In This Issue

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# Message From the Chair

This July marked the start of my 20th year at Duke. As is often the case, it is hard to believe that time has passed by so quickly, but the passage of this milestone in my life also gave me reason to reflect back.

When I interviewed at Duke in 1998, I was impressed and attracted by the endless possibilities that Duke Anesthesiology offered – the "land of opportunity" it seemed at a time when the specialty was undergoing a contraction of its academic mission on the national stage. Now, 20 years later, much as many immigrants (including myself) view our country as truly a place of incredible opportunity, built on a foundation of hard work, Duke Anesthesiology is still the land of opportunity. The opportunity for career development, in particular, remains a significant strength of our department.

Another reason for my reflection was the impending departure of Dr. Mark Newman to his new job as the Executive Vice President of Health Affairs at the University of Kentucky. He was, of course, the one who recruited me by casting that vision of endless possibilities and served as my mentor these past 20 years so that many of those possibilities became reality. Building on what Dr. Jerry Reves started, Dr. Newman has been largely responsible for transforming the department into an academic powerhouse while building the resources necessary to sustain that success for the long-term. Along the way, many careers have been built, scientific knowledge has been advanced, patient care has improved, and leaders have been developed. To cement his legacy at Duke, we plan to launch the campaign for the Mark F. Newman Professorship at the American Society of Anesthesiologists Annual Meeting this October in Boston. A foldout at the end of this edition of *BluePrint* speaks to the pending campaign, and I want to take the opportunity to encourage all of you to help us honor Dr. Newman while protecting what he has always been passionate about – the academic mission.

Featured in this edition of *BluePrint* is another example of the opportunities that Duke Anesthesiology offers. On September 1, 2015, Raquel Bartz, MD, MMCi, assumed her role as the chief of the formally established Critical Care Medicine Division. She joined the Duke Anesthesiology faculty in 2008 and is now in the midst of molding this division to preeminence. That Duke Anesthesiology is still the "land of opportunity" is reflected also by the election of Dr. Madhav Swaminathan in June of this year as the FIRST anesthesiologist to serve as the Vice President of the American Society of Echocardiography (ASE). In June 2019, he will be the FIRST anesthesiologist to become ASE President. Opportunities abound for trainees as well. This November, Dr. Nathan Waldron, a critical care fellow, will become the FIRST Duke anesthesiologist to present during the Late Breaking Clinical Trials Session at the American Heart Association (AHA) Annual Meeting on his study evaluating the efficacy and safety of Botox in preventing postoperative atrial fibrillation. This year, he also became the FIRST Duke anesthesiologist to be granted "fellow" status at the Duke Clinical Research Institute. The AHA and ASE accomplishments, recognition afforded by largely cardiology-dominated organizations, come on the heels of Dr. Quintin Quinones' receipt of the Vivian Thomas Young Investigator Award from the AHA two years ago – the FIRST anesthesiologist to be recognized with this award.

Of course, opportunity by itself is often insufficient to achieve success. However, opportunity mixed with equal parts of talent, teamwork, mentors, vision, and plain hard work can result in greatness. In fact, we should all remember Thomas Edison's description of opportunity: "Opportunity is missed by most people because it is dressed in overalls and looks like work." All of the people I have mentioned above are characterized by a strong work ethic - it is the foundation upon which success is built.

In the pages that follow, you will read of the many ways in which Duke Anesthesiology is taking advantage of the opportunities before us to change the face of anesthesiology. Each accomplishment that is highlighted further paints the face of anesthesiology with a bit of Duke blue. Thank you for your support of our department and its efforts to change the world.

**Joseph P. Mathew, MD, MHSc, MBA**

# A Tradition of Excellence

## DUKE ANESTHESIOLOGY ALUMNI ASSOCIATION

At Duke, we believe that continued engagement with our alumni is the key to our future success. We take great pride in these talented men and women who play an integral role in strengthening our department and making it an ideal environment in which future generations of trainees can learn, work and achieve excellence.

As a graduate of Duke Anesthesiology, you are automatically enrolled as a member of the Duke Anesthesiology Alumni Association! Help us grow our department's alumni outreach by staying connected to your peers, fellow alumni and faculty.

- Register or update your profile in our Alumni Database to receive special offers, our annual BluePrint publication by mail, and invitations to exclusive department events
- Consider continuing your legacy with a donation to the Duke DREAM Campaign and have your name featured on our website's Donor Honor Roll

Duke Anesthesiology
Alumni Association

DUKE ANESTHESIOLOGY ALUMNI ASSOCIATION

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# Perioperative **Strides**

By Stacey Hilton

In a quest to be the future of the perioperative specialty and improve patient outcomes, Duke Anesthesiology took two major steps forward this year in achieving that mission; the opening of the Duke Perioperative Pain Care (DPPC) clinic and the official launch of the Duke Perioperative Medicine Fellowship, a collaboration with University College London (UCL).

## Introducing Duke Perioperative Pain Care

On March 6, Dr. Padma Gulur opened a first-of-its-kind clinic in the nation where the same team of pain specialists see patients before, during and after surgery with a focus on optimizing their functional recovery. "To have the ability to help patients minimize their risk of developing persistent or worsening pain after surgery is very meaningful," says Dr. Gulur, the medical director of DPPC, a clinic she says is addressing two well-established gaps in the health care delivery system: the pre and postoperative care of patients.

**1** IN **10 AMERICANS** HAS EXPERIENCED PAIN EVERY DAY FOR 3+ MONTHS

Studies show that certain surgeries are linked to a higher risk of patients developing ongoing pain, even after their wounds have healed, and that proper pain management can contribute to a quicker recovery and reduced hospital stay. Of the 40,000 surgeries performed annually at Duke, the Department of Anesthesiology found that only one in 10 patients who were among the top third tier of those who need the most support, benefit from the resources currently in place. Within the first three months of opening its doors, Dr. Gulur noticed a trend in preoperative care – of the patients seen at DPPC 10 days before their surgery, they noted on average, a **10 percent reduction in opioid doses** preadmission and an improved observed length of stay vs. expected, compared to patients who were referred postoperatively.

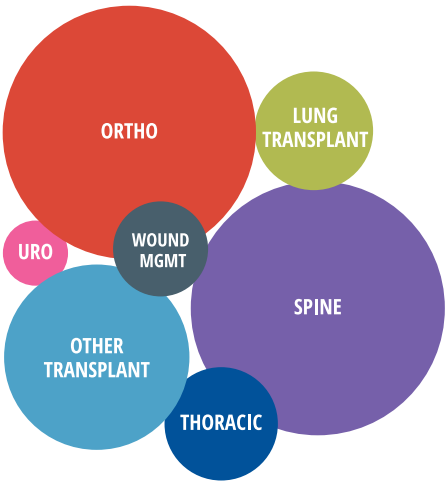
"These numbers are not a perfect science, but they are a strong indication of an acknowledged need for this type of value-based health care, and yet we are the only institution so far to implement this model of pain care. It's a commitment we have made to improve population health."

The department's goal of improving clinical outcomes not only includes the reduction of opioid consumption using multimodal pain management strategies, but optimizing personalized care plans for each patient at DPPC; these plans identify pain management needs prior to and following surgery that reduce the risk of developing chronic pain, allowing patients to return to full function after surgery and transition back into their community. Services at DPPC include wellness strategies, physical activity assessment and exercises, pain medication management, and behavioral coping techniques developed to align patients' pain management and surgical goals.

"As we research health care delivery models to improve patient outcomes, a key focus is to identify opportunities for improvement," says Dr. Gulur. The new model implemented at DPPC, with assistance from Dr. Arun Ganesh, includes staffing the clinic by the same group of pain physicians that oversee the Inpatient Pain Service at Duke University Hospital; this ensures that patients' pain control plans are coordinated and communicated to all involved physicians.

"Inpatients benefit from a continuity of care, which didn't exist until now," Dr. Gulur adds. "This clinic is the ideal solution because we can see patients before surgery to identify and optimize their care, follow them while they are in the hospital and then continue to provide support as needed for up to 90 days after their surgery."

While Dr. Gulur realizes that DPPC is one component of a complete population health strategy, she hopes it will be used as a model for other hospitals throughout the nation to help all surgical patients achieve their best outcomes; it has already become a regional referral for patients across the southeast. "We are the leading perioperative program in the nation, and this clinic has been one of the driving forces in achieving that goal."




**REFERRING DEPARTMENTS**

Drs. Padma Gulur and Timothy Miller at Duke University Medical Center.

## POM Fellowship Kicks Off

Perioperative medicine is a rapidly-evolving specialty that emphasizes the care of patients from the time surgery is contemplated until full recovery, and anesthesiologists are uniquely positioned to touch each phase of this pathway of care. A typical patient today is evaluated only a day or two prior to a scheduled procedure with little opportunity to improve their baseline state. Ideally, the "re-engineered pathway to surgery" should entail **up to one to two months of individualized preoperative patient optimization** *(see table)* and has two key functions: to ensure surgery is the best option of care and help patients maximize their resilience to the physiological stress of surgery.

In effort to transform the preoperative encounter at Duke and abroad, and develop the next generation of leaders, the Department of Anesthesiology and UCL launched the Perioperative Medicine (POM) Fellowship. The program director, Dr. Timothy Miller, welcomed the inaugural fellows in July.

**TABLE:** Opportunities Presented by Earlier Preoperative Patient Engagement

1. Collaborative decision-making to address fixed and modifiable risk factors
2. Collaborative behavioral change: "lifestyle modification"
3. Targeted comorbidity management
4. Expectation management and psychological preparedness for surgery

ADAPTED FROM: (June 2017). Re-designing the pathway to surgery: better care and added value. *Perioperative Medicine.*

"This is an exciting opportunity for our first two POM fellows to reach outside of the operating room and not only gain a better understanding of perioperative medicine and how it can improve the management of chronic disease and lead to safer surgeries for patients, but to see the broader picture of the challenges and successes in a different health care system overseas with interaction from renowned experts in this field from around the world," says Dr. Miller.

The POM Fellowship curriculum includes the unique opportunity to enroll in UCL's master's program in perioperative medicine (MSc), the largest in the world, which provides distance learning to earn a postgraduate degree in one to two years. Core modules in the MSc include an understanding of this new model of care, how to effectively use data, and the evolving paradigm in perioperative pain, cancer and cardiac disease. This innovative online course is taught by faculty from UCL, Duke University and other leading institutions around the world. Fellows can also take part in international collaborations, working alongside mentors and peers during a two-week core rotation in London.

According to Dr. Miller, about 25 percent of surgical patients have complications that don't necessarily occur in the operating room. He says in an effort to reduce that percentage, anesthesiologists need to be involved in the entire perioperative journey, particularly risk-assessment, as they care for an advanced aging population. Clinically, the POM Fellowship is designed for trainees to better understand the physiologic processes (as well as the physical and psychological impact of surgery) that occur in the perioperative period, develop management strategies with a view to risk stratification, and learn how to implement those processes into clinical practice.

"There are numerous processes, such as poor glycemic control, that can occur before a patient ever enters the operating room," adds Dr. Miller. "Duke Anesthesiology is leading the way in this specialty with the continued development of pre-assessment clinics and programs which will only continue to grow and our fellows will be an integral part of that process."

AMBULATORY ANESTHESIA

# Duke Anesthesiologists and Military Join Forces

In February, the Ambulatory Anesthesia Division attended the 5th Annual Acute Pain Medicine and Regional Anesthesia Course in Baltimore, Maryland. The course is designed for military and civilian anesthesiologists interested in trauma and perioperative pain management, focusing on indications, anatomical considerations and techniques for each block.

This year's attendees worked in small groups directly with renowned faculty during hands-on instruction, and with non-embalmed cadaver specimens at multiple workstations in a state-of-the-art anatomical teaching laboratory.

The meeting was attended by Drs. Mike Kent, Steve Melton and Karen Nielsen of the Ambulatory Anesthesia Division, along with fellows, Drs. James Kim, Amanda Kumar and Neda Sadeghi. The course was presented in collaboration with University of Maryland School of Medicine and the Henry M. Jackson Foundation for the Advancement of Military Medicine, Inc. and has been significant in developing chronic pain research between Duke, Veterans Affairs and the military.

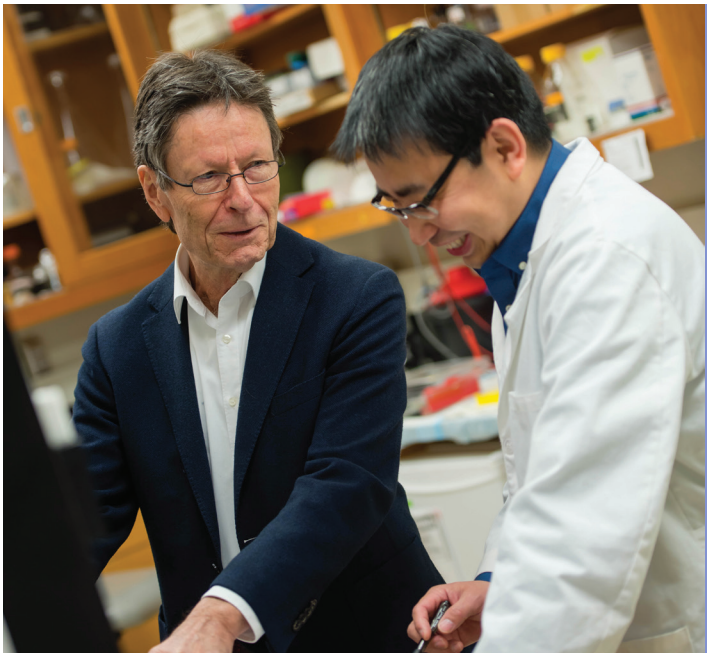
BASIC SCIENCES

# Grant Awarded to Improve Stroke Outcomes

The National Institute of Neurological Disorders and Stroke awarded Wei Yang, PhD, a 5-year, $1,739,065 National Institutes of Health grant to pursue his study, titled "The Unfolded Protein Response and Neuroprotection in Stroke."

The goal of this project is to determine the role of endoplasmic reticulum (ER) stress and the unfolded protein response (UPR) in stroke. The UPR is a pro-survival response that restores ER function impaired by stroke, and facilitates recovery of cellular protein homeostasis, which is critical to the survival of stressed cells. Understanding how UPR pathways define the fate and function of post-ischemic neurons is expected to inform the development of new therapeutic strategies to boost this pro-survival response and improve stroke outcome. To complete this study, novel UPR-selective and neuron-specific knock-out and knock-in mouse models as well as various pharmacologic tools will be used.

Dr. Yang's mentor, Dr. Wulf Paschen, and Dr. Huaxin Sheng, both of Duke Anesthesiology, are co-investigators on this project.



From left: Drs. Wulf Paschen and Wei Yang in the Molecular Neurobiology Laboratory.

## CARDIOTHORACIC ANESTHESIA

Alina Nicoara, MD, FASE

# Dr. Nicoara Receives Inaugural Echocardiography Award

The Society of Cardiovascular Anesthesiologists (SCA) selected Duke Anesthesiology's Alina Nicoara, MD, FASE, as the recipient of the inaugural Echo Week Co-Directors' Award.

This honor is awarded to a mid-career anesthesiologist. Dr. Nicoara was chosen to be the first-ever recipient of this award based on her nationally-recognized expertise in perioperative echocardiography, her contributions to research in this field, and her potential to continue performing at this high level.

"I am honored to receive this award from friends and mentors, people I try to emulate every day in many ways," says Dr. Nicoara.

Madhav Swaminathan, MD, FASE, FAHA

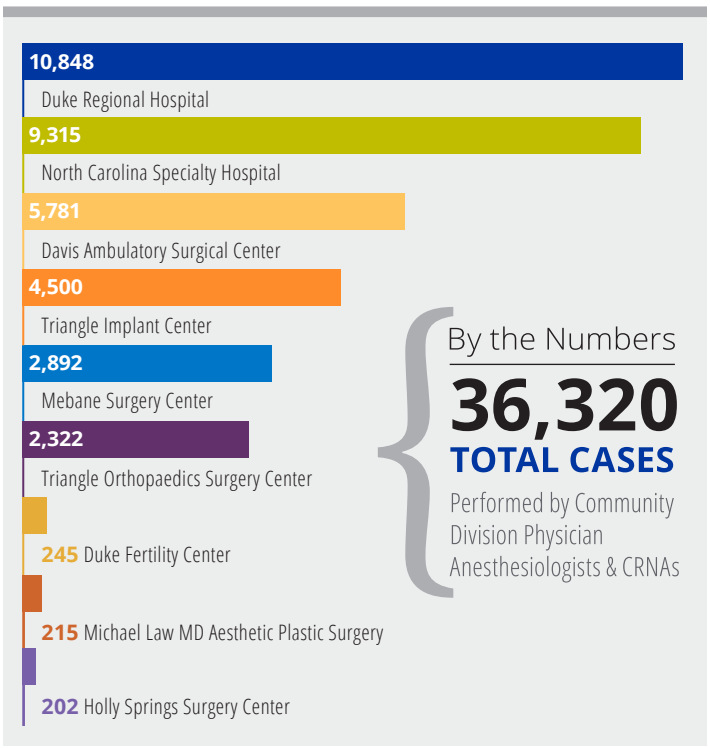
# Dr. Swaminathan Elected Vice President of ASE

On June 4, Duke Anesthesiology's Madhav Swaminathan, MD, MMCi, became the first anesthesiologist to be appointed as vice president of the American Society of Echocardiography (ASE) in the organization's 42-year history.

In his new role as vice president on ASE's Board of Directors, Dr. Swaminathan says he hopes to continue some of the work that they have been doing in the society – expanding its global presence in echocardiography and reaching out to non-traditional users of cardiovascular ultrasound, such as critical care medicine practitioners, through educational initiatives.

"My appointment to the leadership of the ASE is unprecedented and reflects years of hard work by leaders in our specialty," says Dr. Swaminathan.

## COMMUNITY




## CRITICAL CARE MEDICINE

# Dr. Knudsen Appointed Assistant Dean for Learning Environment

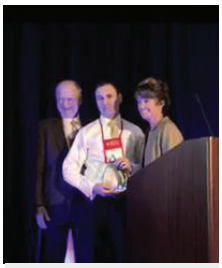
Nancy Knudsen, MD

On March 13, Duke Anesthesiology's Nancy Knudsen, MD, was named the assistant dean for learning environment by the Duke University School of Medicine. In her new role, she serves as the academic leader for programs and strategies to assure positive learning environments for all aspects of medical student education.

"My passion lies in engaging more deeply with undergraduate medical education and using my talents to shape the attitudes and development of professionals at an earlier point in their journey," says Dr. Knudsen.

NEUROANESTHESIOLOGY, OTOLARYNGOLOGY AND OFFSITE ANESTHESIA

# Dr. Berger Receives Inaugural Research Accolade



Miles Berger, MD, PhD

The Society for Neuroscience in Anesthesiology and Critical Care (SNACC) awarded Duke Anesthesiology's Miles Berger, MD, PhD, the inaugural William L. Young Neuroscience Research Award at its 44th annual meeting in Chicago on October 22. This award offers support to academic physicians and/or scientists who conduct either clinical or laboratory-based research in neuroanesthesiology or neurologic critical care.

The SNACC established an eponymous research award following the untimely death of Dr. Young in 2013 to honor his career and life, particularly his accomplishments as a clinical and basic-research neuroscientist. Dr. Young was a longstanding SNACC member who was viewed as one of the most productive researchers, influential mentors and memorable personalities in neuroanesthesiology's history.

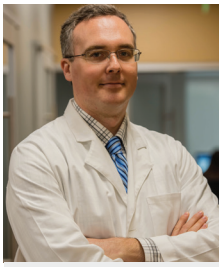
Dr. Berger is an assistant professor of anesthesiology with the Neuroanesthesiology, Otolaryngology and Offsite Anesthesia Division. His research focuses on 1) understanding the cause of postoperative cognitive dysfunction (POCD) and delirium and whether these disorders are caused by perioperative changes in Alzheimer's disease pathways, and 2) whether delirium or POCD are associated with an increased long term risk of developing Alzheimer's disease. Dr. Berger is dedicated to improving long term outcomes for the more than 16 million Americans over the age of 60 who undergo anesthesia and surgery each year. He is also notably a 2014 DREAM Innovation Grant recipient for his project, titled "Determination of the Role of Alzheimer's Disease Pathways in Post-Operative Cognitive Dysfunction."

PAIN MEDICINE

# Drs. Liedtke and Putilin Join Duke Innovative Pain Therapies

Duke Innovative Pain Therapies, a Duke Health multispecialty practice, welcomed two new providers in June, Drs. Wolfgang Liedtke and Dimitri Putilin.

Wolfgang Liedtke, MD, PhD



Dimitri Putilin, PhD

Their expertise added two new services at this location, clinical neuroscience-guided treatments and clinical psychology with stress management.

Duke Innovative Pain Therapies opened in September 2016 and is dedicated to transforming the way patients suffering from chronic pain receive care using advanced pain therapies with a focus on non-opioid treatment. ■

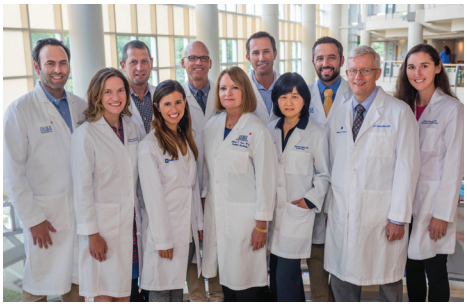

Open house celebration (on June 14) of the multispecialty practice, Duke Innovative Pain Therapies, developed by Duke Anesthesiology.

**Treatments and Services Offered:**

- Musculoskeletal/Neuropathic Pain Management
- Acupuncture and Asian Medicine
- Orofacial Pain Management and Sleep Disorders
- Physical Therapy
- Primary Headache Disorders Management
- Clinical Psychology for Pain and Stress
- Medical Pain Management
- Clinical Neuroscience-Guided Treatments

PEDIATRIC ANESTHESIA

# Continued Success for Pediatric Anesthesia



## Newly Certified:

Duke Children's Hospital & Health Center is one of only five centers in the country designated as a top-level performer under a new certification program by the American College of Surgeons. This Level 1 designation was made possible with the collaboration of the Pediatric Anesthesia Division and the Duke departments of surgery, pediatrics and radiology. Together, they aim to improve care maps for patients with congenital heart disease, scoliosis, sickle cell disease, mitochondrial disorders and craniofacial syndromes.

## Fellowship Expansion:

The Pediatric Anesthesia Division welcomed its first two-position fellowship class in 2017-18 under the leadership of Dr. John Eck. The fellowship combines research and academics while increasing exposure to the pediatric cardiac cath lab and pediatric pain. This year's focus is on alleviating pediatric pain and developing faculty collaboration. Drs. Lisa Einhorn and Andrea Udani are leading the efforts of the division that will ultimately include pediatric faculty and fellows as part of the Duke Pediatric Anesthesia Pain Initiative. International experts in pain management at Duke will collaborate with Duke pediatric experts in psychiatry and palliative care to provide an educational experience while delivering pain management to children.

ORTHOPAEDICS, PLASTICS AND REGIONAL ANESTHESIOLOGY

# Inaugural Workshop Positions Duke as Nation's Leader in POCUS

Dr. Jeff Gadsden demonstrating ultrasound techniques.

Duke Anesthesiology hosted a first-of-its-kind, intensive hands-on course designed around one of the hottest topics in health care. In November, the inaugural Point-of-Care Ultrasound for the Perioperative Physician workshop drew in 26 attendees from across the southeast. A mix of faculty, attending physicians, residents, and fellows from a variety of disciplines were provided the basic knowledge and skill set required to perform a focused, diagnostic ultrasonographic assessment of different body systems – a skill that will help physicians and other health care providers better manage their perioperative and critically ill patients.

The concept of the Point-of-Care Ultrasound (POCUS) workshop evolved from a regional anesthesiology divisional retreat in February 2016, where faculty identified the need for this type of educational activity. According to the group, POCUS has the potential to revolutionize value-based patient care, save health systems millions of dollars on an annual basis and improve patient outcomes. They say the once bulky ultrasound machines have shrunk drastically over the years and are now being replaced by portable, diagnostic ultrasonography at the patient's bedside in the form of laptops and tablets. As these devices are becoming less expensive, they're also becoming more accessible to physicians and specialists. Thus, there is a current demand for specialized training courses, such as the POCUS workshop, but very few opportunities for perioperative physicians to acquire these skills.

"We're flying the flag here at Duke for perioperative medicine," says Dr. Jeffrey Gadsden, course program director, who also noted that Duke Anesthesiology is at the leading edge of the curve for using these new ultrasound techniques. "We're very proud to be one of the first to offer this kind of perioperative-focused workshop, but there will be others as the need grows."

Ten faculty from Duke Anesthesiology presented at the conference with the hope that participants will use this workshop as a starting point for the integration of POCUS into their daily practice. "We were extremely fortunate to make this a cross-divisional collaborative effort and feature the amazing talents of faculty within other Duke Anesthesiology divisions," notes Dr. Gadsden. "We had designed this to be a taste of POCUS and hopefully inspire medical professionals to go on to learn more."

GENERAL, VASCULAR AND TRANSPLANT ANESTHESIA


Left: Drs. Eugene Moretti and Richard Moon lead Duke Anesthesiology at Extreme Everest 2017. Right: The team poses with the Duke Anesthesiology banner at Kala Patthar, Nepal. The Everest Base Camp is 1,000 feet below, visible on the left side of the picture.

# Reflections From Extreme Everest 2017

On March 30, Drs. Richard Moon and Eugene Moretti, along with other members of Duke Anesthesiology, left Durham to participate in Extreme Everest 2017, a scientific expedition to the Everest Base Camp and Kala Patthar in the Himalayas. The trip was organized by a British team, including Professors Monty Mythen and Mike Grocott, who summited Mount Everest and performed numerous groundbreaking studies in 2007 and 2013. This year, the team headed for Nepal for the second time, joined by a Duke Undersea and Hyperbaric Medicine (UHM) fellow, Dr. Chris Martin, a former Duke UHM fellow, Dr. Nicole Harlan, Dr. Joe Wiater and Fran Cullen. The aim was to trek from Lukla to Everest Base Camp over 11 days while measuring pulse oximetry continuously in a cohort of 14 individuals.

What can be achieved from an observational study during the field expedition? No one knows the lower limits of acceptability on blood oxygenation. While tens of thousands of individuals have trekked to Everest Base Camp without a problem, their oxygen saturation values have largely been unknown. Several studies have incorporated spot measurement of SpO2, but no published studies thus far have measured it continuously. In 2013, they obtained some data using wrist oximeters; the plan this year was to extend those studies.

The data is still being analyzed, but the team clearly observed that normal hikers trekked at altitudes for long periods of time at SpO2 values, which if seen in any hospital patients would elicit panic. They hope that the eventual publication, which might be entitled, "Oxygen Saturation: How Low Can You Go?" will elicit conversations as to alternative strategies for treating hypoxia in patients.

VETERANS AFFAIRS ANESTHESIOLOGY SERVICE

# Dr. Raghunathan Implements Perioperative Music

Karthik Raghunathan, MD, MPH

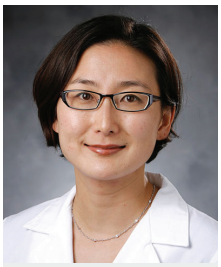
Complementary Integrative Health (CIH) programs are working to integrate safe and effective treatments for veterans who have an increased risk of opioid abuse. These treatments give additional options to veterans in need of long-term pain management. This year, the Durham VA adopted perioperative CIH programs into routine practice with help from Dr. Karthik Raghunathan.

First, Dr. Raghunathan considered the evidence for music as a perioperative treatment, as well as the possibility of implementing this option at the Durham VA. After examining data from electronic health records, evidence was strong for music therapy. The majority of veterans at the pre-anesthesia clinic responded "yes" to music in a perioperative setting (>70% of ~3000). Additionally, most owned smartphones (>62% of ~2000), suggesting the potential for use of the free, VA-developed application, "Mindfulness Coach." Acceptability was also greater in veterans with prior mental health, pain, and substance abuse clinic visits.

After analyzing the survey results, the Durham VA implemented music as a perioperative option and is now working on additional CIH approaches.

WOMEN'S ANESTHESIA

# Multidisciplinary Obstetric Simulation



Zaneta Strouch, MD

Simulation has long been recognized as a helpful educational tool for crisis resource management (CRM), especially in the specialty of anesthesiology, and residents have an enviable degree of exposure to this mode of learning. Simulation is a crucial component of the evolution of medical training, and there are few environments where simulation can be more impactful than in the labor and delivery ward.

Emergencies such as eclamptic seizures, amniotic fluid embolism, umbilical cord prolapse, shoulder dystocia, placental abruption, and postpartum hemorrhage require a collaborative approach from members of the Duke Birthing Center. Rapid decision-making in these very time-sensitive situations and coordination of care is required to ensure a safe outcome for the unit's women and their babies.

In the fall of 2016, with the assistance of a Duke AHEAD grant, the Women's Anesthesia Division helped introduce a multidisciplinary curriculum to the residents and staff of the birthing center. Integral to the conception and implementation of the curriculum were Dr. Chad Grotegut, medical director of the Duke Birthing Center, and RN Jennifer Justice, nursing clinical lead. Amongst the three disciplines and with the simulation center staff, they developed a curriculum with the intent of addressing the core principles of crises resource management as it pertains to clinical work on labor and delivery.

During the sessions, obstetric residents, anesthesiology residents, and labor and delivery nurses participate in a three-hour simulation course. Critical concepts of CRM, such as resource utilization and communication, are introduced, and learners participate in two selected scenarios and debriefings. In this collaborative and safe venue, they hope to provide the foundation for strong teamwork and communication that will ultimately allow them to provide optimal care for patients.

CENTERS AND PROGRAMS

CENTER FOR TRANSLATIONAL PAIN MEDICINE

# Dr. Maixner Awarded Distinguished Professorship

William Maixner, DDS, PhD

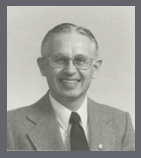
Duke Anesthesiology's William Maixner, DDS, PhD, has received one of the highest honors in academia with his appointment as the Joannes H. Karis, MD, Professor of Anesthesiology, designated by the Duke University School of Medicine. This endowed professorship recognizes Dr. Maixner's extraordinary achievements in advancing medical science, significantly shaping the field of pain research and education, profoundly impacting patient care and exemplifying superior mentorship.

Endowed professorships established within Duke Anesthesiology are awarded to the department's most distinguished physician-scientists who have exhibited both outstanding accomplishments and strong potential for future pursuits. These highly coveted, permanently named memorials, promote scientific discovery and the advancement of anesthesia care.

"It's a wonderful honor to be recognized by Duke University and the Karis family," says Dr. Maixner. "Dr. Karis was a pioneer in the area of translational research where he developed and implemented new ways of treating patients in the operating room. I hope to be able to follow in his footsteps by developing new ways of treating patients with pain conditions, an area that he was beginning to pursue late in his career. This endowed professorship will truly enable myself and my colleagues to push the frontiers forward as Dr. Karis did in his own career."

In 2012, Duke Anesthesiology proudly announced the Joannes H. Karis Professorship, made possible through the generous donations of the Karis family, including Dr. Karis' wife, Martha, and their children, Drs. Martha Karis Fikrig and John Karis, in effort to preserve his legacy.

## In Remembrance of Joannes H. Karis, MD



Duke flags were lowered after a beloved member of the Duke Anesthesiology family passed away on May 12. Dr. Karis was one of the department's most distinguished emeritus faculty who will be remembered as a remarkable leader, scientist, pioneer, and philanthropist.

PERIOPERATIVE ENHANCEMENT TEAM (POET)

# Using Nutrition Counseling to Help Prep Surgery Patients for Better Outcomes

**JUNE 17, 2017 | BY MARIA CASTELLUCCI**


Marathon runners know to carbo-load the night before a big run and the importance of replenishing electrolytes as they tick off miles. Being attuned to their bodies, exercise enthusiasts do what they can to minimize the physical stress they'll undergo during an event. Preparing for surgery should be no different, argues Dr. Paul Wischmeyer, an anesthesiologist at Duke University Hospital in Durham, N.C. Yet, patients are told to essentially starve themselves beforehand.

"Why are we doing this?" he asked.

For starters, habit. Telling patients to forgo eating or drinking before surgery has become commonplace and it is a hard pattern to break. The other issue is that nutrition just isn't top of mind for doctors when their patients go into surgery. Most physicians only took one class during medical school on the importance of nutrition. But it's closely related to how a patient will recover after a procedure, according to Wischmeyer.

Studies show that a well-nourished individual is more likely to survive and is quicker to recover from many kinds of surgery, especially abdominal and vascular procedures. Despite this, an estimated 30% of patients are malnourished before surgery.

Duke University Hospital is part of a growing movement tackling malnutrition for surgical patients. Called Enhanced Recovery After Surgery, it mimics common practices in Europe that encourage food before and after procedures to improve outcomes.

Some studies have shown that these interventions can reduce infection rates by 40% and shorten length of stay by two days, Wischmeyer said.

Duke recently established a clinic focused on helping patients improve their nutritional health before they undergo procedures. Patients are referred to the Perioperative Screening Clinic if they are found to be malnourished right before a non-emergency surgery.

A clinical decision-support function was added to the electronic health record to help physicians identify malnourished surgical patients. The EHR prompts physicians to complete three steps to determine if their patient is undernourished before a scheduled procedure.

- Weigh the patient to know if his or her body mass index is too low for their height and age.
- Ask the patient if he or she has lost more than 10% of their weight in the past six months.
- Ask if the patient has been eating less than 50% of their normal diet in the past week.

Patients with an abnormally low BMI score or who respond affirmatively to either question are referred to the nutrition clinic and their surgery is postponed.

"We know that if you have low muscle mass in your body, and you undergo chemotherapy or surgery, your chances of dying are much, much higher," Wischmeyer said.

Duke also plans on screening patients for vitamin D deficiency soon since it's an effective way to know if patients suffer from weak bone mass, which also can impact healthy surgical outcomes.

At the clinic, the patient typically meets with a dietitian for about a month to get healthy. A big part of the meetings are focused on nutritional education. The dietitian will recommend high-protein foods to eat before and after their surgery. Protein supplements are also administered. Once it has been determined the patient is healthy enough to undergo surgery, the procedure is rescheduled.

All surgical patients at Duke are told to have a liquid supplement loaded with carbohydrates two hours before their surgery. This goes against common practice at most hospitals around the country which usually inform patients not to eat or drink anything 8 hours before a procedure.

After they awake from surgery, they are again given another protein supplement. A patient usually isn't hungry shortly after surgery, but it's important to encourage patients to have nutrients in their body to improve their likelihood of a speedy recovery, Wischmeyer said. A dietitian will also call the patient about a month after their surgery to ask about their eating habits and if they have lost or gained weight since the procedure.

So far, physicians at Duke have been receptive to the program, Wischmeyer said. "They want to better serve their patients," he said.

# Duke Anesthesiology by the Numbers

## CASES

*Billed July 1, 2016 – June 30, 2017 (FY 2017)*

**136,898 TOTAL CASES**

| | |
|---|---|
| 36,320 | Community |
| 33,329 | Pain Medicine*+ |
| 11,043 | Orthopaedics, Plastics, and Regional Anesthesiology* |
| 12,339 | General, Vascular and Transplant Anesthesia* |
| 9,775 | Pediatric Anesthesia* |
| 9,522 | VA Anesthesiology Service* |
| 7,005 | Cardiothoracic Anesthesia* |
| 5,757 | Ambulatory Anesthesia* |
| 5,156 | Women's Anesthesia* |
| 6,652 | Neuroanesthesiology* |

*At Duke University Hospital

+ Operative Cases, Clinic Visits and Inpatient Pain Service

## PUBLICATIONS

*Published July 1, 2016 – June 30, 2017 (FY 2017)*

**360 AUTHORS**

**213 PUBLICATIONS**

| | |
|---|---|
| 44 | Cardiothoracic Anesthesia |
| 36 | Basic Sciences |
| 27 | General, Vascular and Transplant Anesthesia |
| 21 | Pain Medicine |
| 18 | Pediatric Anesthesia |
| 17 | Other |
| 15 | Orthopaedics, Plastics and Regional Anes. |
| 9 | Women's Anesthesia |
| 9 | Critical Care Medicine |
| 8 | VA Anes. Service |
| 8 | Neuro-anesthesiology |
| 1 | Ambulatory Anesthesia |

## GRANTS

*Awarded July 1, 2016– June 30, 2017 (FY 2017)*

**46 NEW GRANTS** TOTALING MORE THAN **$7.5 MILLION**

| | | |
|---|---|---|
| 12 | Basic Sciences | $2,588,340 |
| 9 | Cardiothoracic Anesthesia | $1,523,029 |
| 5 | Orthopaedics, Plastics and Regional Anes. | $831,783 |
| 3 | Center for Translational Pain Medicine | $811,410 |
| 6 | Women's Anesthesia | $709,826 |
| 1 | Pediatric Anesthesia | $320,513 |
| 2 | Critical Care Medicine | $258,332 |
| 2 | VA Anes. Service | $150,588 |
| 3 | Pain Medicine | $136,351 |
| 1 | General, Vascular and Transplant Anesthesia | $97,018 |
| 2 | Neuro-anesthesiology | $74,885 |

**15 NON-COMPETING CONTINUING GRANTS** TOTALING MORE THAN **$3.5 MILLION**

**134 CURRENT OPEN GRANTS**

## RESEARCH LABORATORIES

**11 RESEARCH LABORATORIES**

**Chemical Sensing, Pain and Inflammation Research Laboratory**
Sven-Eric Jordt, PhD

**FG Hall Environmental Laboratory**
Richard E. Moon, MD, CM, MSc, FRCP, FACP, FCCP

**Human Pharmacology and Physiology Laboratory**
David B. MacLeod, MB BS

**Molecular Neurobiology Laboratory**
Wulf Paschen, PhD

**Molecular Pharmacology Laboratory**
Madan Kwatra, PhD

**Multidisciplinary Neuroprotection Laboratory**
David S. Warner, MD

**The Nackley Lab**
Andrea G. Nackley, PhD

**Nerve Injury and Pain Mechanism Laboratory**
Thomas Van de Ven, MD, PhD

**Neuroinflammation and Cognitive Outcomes Laboratory**
Niccolò Terrando, PhD

**Sensory Plasticity and Pain Research Laboratory**
Ru-Rong Ji, PhD

**Systems Modeling of Perioperative Cardiovascular Injury & Adaptation Laboratory**
Mihai V. Podgoreanu, MD, FASE

# Strategic Steps Toward Unparalleled Success

The Duke Anesthesiology business office has transformed over the past six years under the direction of Chief Administrator John Borrelli. He has made it his mission to meet the vision of the department by creating a unique culture of innovation and growth while working with an exceptional team of managers who have achieved remarkable progress in the areas of finance, information technology, grants and contracts, human resources, operations and project management.

The finance and accounting units were consolidated this year under the leadership of Sharon Taylor. According to Borrelli, the department's finance operations use a profit and loss system that allows direct and overhead costs to be broken down by division and subdivision levels, including practice sites. "Large data sets need to be organized in a certain way to allow leadership to analyze costs, and we have the ability to do that," says Borrelli. "Systems are constantly being improved to meet the evolving needs of the department. The finance and IT staff are working together to develop a new and updated financial management system that will enhance financial reporting."

In March, Borrelli recruited Dan Cantrell, a former systems engineer at Microsoft with 20 years of experience, as the IT director. One major project he and his team are working on is the Faculty Development System, originally built for Duke Anesthesiology, now being rolled out to other Duke School of Medicine clinical departments. Borrelli refers to it as a catalog of a faculty's clinical and academic progress, including accomplishments, in one system. This allows faculty and chairs to work one-on-one in developing and guiding faculty members' career paths. Each faculty can propose clinical and academic activities to accomplish and look back throughout the years to compare their progress. "This system was greatly needed and requested by our faculty, chiefs and chair who want to aid in successfully developing the careers of faculty," adds Borrelli.

Another defining characteristic of the department's IT solutions group is their ability to develop innovative applications software. A prominent example of this type of work is the Education Highway – a learning management system that holds mostly department faculty video content, offering faculty and trainees continuing medical education on mobile devices. Organizations outside of the department may also utilize this content for a fee. Borrelli says, "It's rare to find a department like ours that has the IT resources and expertise to build these types of systems."

Known for its excellence in research, Duke Anesthesiology has a grants and contracts team led by Sandra Yee-Benedetto, who has more than 17 years of administrative research experience. She works with faculty and administrative leadership to facilitate and improve the grant submission process, ensuring successful execution of research and study protocols. Borrelli says another resource the business office offers is an associate

From left: Ilene Farkas, Sandra Yee-Benedetto, John Borrelli, Sharon Taylor and Dan Cantrell

who specializes in grant writing. Kathy Gage helps faculty with the workmanship of their grants – offering assistance on how to word the science behind the research so it can best be understood by agencies. "We don't want our faculty to feel like they're just a number," says Borrelli. "We treat every grant as a priority, and this team does a great job working with faculty on each submission and getting grants out the door." In the 2017 fiscal year alone, the department's faculty was awarded 46 new grants totaling more than $7.5 million.

The HR front is led by Ilene Farkas, a 10 year veteran of the team. "Ilene has the HR skills to deal with a dynamic workforce," Borrelli says. "We've done an amazing job over the past few years restructuring our staffing model to gain high-quality staff who have helped increase the productivity of our faculty, allowing them to focus on taking care of patients and developing their academic careers." Borrelli believes they ultimately have an edge because of their recruiting process that uses a committee-approach; every position they hire, regardless of the level, must interview with several members of the business office, including faculty. This provides a more inclusive approach and offers different perspectives. Borrelli credits the implementation of this committee to recruiting tremendous talent.

The business office also coordinates the processing of numerous contracts and agreements for faculty and the department. With a project coordinator on board, the business office leadership team manages a multitude of projects, ensuring contract deliverables are met. With a diverse portfolio of projects, this is another exciting area where the business office supports both faculty and the department's mission in advancing collaborations.

"We've been able to retool and rebuild our staffing infrastructure and recruit people who are experts in their area so they can lead projects to completion at a high level," says Borrelli. "We have a great team of managers and staff, allowing the business office to move ahead the vision and mission of our leadership. We strive to be the very best business office we can be and follow our motto that change is good. If we don't change, we become stagnant, and we are anything but that."

# Academic Evening Celebrates Silver Anniversary

A special 25th anniversary edition of Duke Anesthesiology's Academic Evening was held on May 16 at the Millennium Hotel in Durham. All training levels and divisions of the department were represented by the 102 poster abstracts, presented by junior-level investigators and faculty. The annual event supports research and discovery with the overall goal of advancing anesthesia, critical care and pain management.

A key element to the evening was guest judge, Dr. Aman Mahajan, the executive chairman of the Department of Anesthesiology and Perioperative Medicine at the UCLA David Geffen School of Medicine and the Ronald L. Katz Professor of Anesthesiology and Bioengineering. Dr. Mahajan's expertise is in cardiothoracic anesthesiology, cardiac electrophysiology and echocardiography. As director of the UCLA Perioperative Services at UCLA, he coordinates a multidisciplinary team of physicians involved in the care of patients undergoing surgical and interventional procedures. Dr. Mahajan's research focuses on autonomic neural modulation of cardiac electrophysiology and assessment of cardiac mechanical function in heart failure.

After 23 years of service to Academic Evening, Dr. David Warner served as program director for the final time. Dr. Jeffrey Gadsden co-directed for the first time and will assume the event's future leadership. "It was a pleasure and honor to work alongside Dr. Warner. He essentially built this event into what it is today," says Dr. Gadsden.

"Academic Evening allows us to celebrate our academic successes and often serves to foster new and exciting research ideas and collaborations between departmental subspecialties," says senior resident, Dr. Kendall Smith, winner of the Bill White Resident Research Award. "To receive this award among the many excellent resident entries this year was both a surprise and a great honor."

At the night's conclusion, Drs. Gadsden and Warner thanked all of the participants and everyone who helped make this event possible, especially those who served as abstract judges, moderators, mentors, and support staff. "Just when you think you couldn't be more proud of the department you work in, you receive more than 100 abstracts of original research. It's humbling," says Dr. Gadsden.

Above: Dr. Warner rings the traditional Academic Evening bell.
Below: Dr. Gadsden presents Guest Judge Award to Dr. Mahajan.

Accreditation Council for Graduate Medical Education

# New Fellowship Receives ACGME Accreditation

Duke Anesthesiology's Regional Anesthesiology and Acute Pain Medicine Fellowship became officially recognized on March 30 by the Accreditation Council for Graduate Medical Education (ACGME).

Dr. Karen Nielson and Dr. Jeffrey Gadsden, program director, played an instrumental role in earning this designation. He notes this is significant because Duke is among the first group of institutions throughout the country to now have an ACGME-accredited fellowship of this kind. The goal of this new fellowship, which was previously known as the Regional and Ambulatory Anesthesiology Fellowship, is to create the leaders of tomorrow in this subspecialty and provide them with the skill set necessary to create new knowledge and advance this field of medicine.

# Innovative Educational Programs and Initiatives

Drs. Annemarie Thompson, Mark Stafford-Smith and Ashley Grantham have been working to develop novel, innovative educational programs and initiatives for Duke Anesthesiology trainees. Jessica Burkhart, GME program coordinator, has contributed greatly to moving these initiatives towards implementation.

The department launched the resident leadership program in 2016, led by Drs. Jennifer Hauck and Grantham. The program is designed to help facilitate the growth of competencies in the Duke Healthcare Leadership Model: integrity, critical thinking, selfless service, teamwork, emotional intelligence, and patient centeredness. The program sessions are taught by local experts in leadership, both from Duke and the greater Triangle community.

A resident dashboard launched in spring 2017 to provide trainees and their advisors data about their educational and clinical performance. The dashboard format provides trend information and allows trainees and their advisors to benchmark their progress against their peers.

The department has continued to innovate the residency curriculum through the application of best practices in education, including course flipping. Planning is currently underway to incorporate personalized learning and game principles into the resident didactics.

Mark Stafford-Smith, MD, CM, FRCPC, FASE

Annemarie Thompson, MD

Ashley Grantham, PhD

Jennifer Hauck, MD

Jessica Burkhart

In October 2016, Duke Anesthesiology launched Vital Signs, a residency newsletter. It provides a stage for Dr. Thompson and the residency program staff to consolidate all of the information flowing from trainees, attendings, and multiple emails into one place while highlighting resident accomplishments in research, patient care, global health outreach, advocacy, and many other activities.

These efforts echo the department's mission in providing extraordinary care and creating future leaders in the specialty. Plans for the future include continuing to innovate resident teaching and bolstering medical education research within the department.




Dr. Nate Waldron speaks at Clinical Research Day.

# Dr. Waldron Featured Trainee Speaker at Clinical Research Day

Dr. Nate Waldron, adult cardiothoracic anesthesiology fellow, was this year's featured trainee speaker at Clinical Research Day. In May, nearly 350 faculty, staff and students attended the annual event hosted by the Duke University School of Medicine, in partnership with the Duke Clinical Research Institute and the Office of Graduate Medical Education. Dr. Waldron also participated in the poster competition, which included 42 posters presented by residents and fellows representing 10 clinical departments.

# Former FDA Commissioner Robert Califf Will Head Initiatives at Duke, Verily

**MAY 17, 2017 | DUKE UNIVERSITY MED SCHOOL BLOG**


Robert M. Califf, MD

Robert M. Califf, MD, who in January stepped down as commissioner of the U.S. Food and Drug Administration, has been named to new leadership roles at Duke Health, Duke University and Verily Life Sciences.

On May 17, Califf became vice chancellor for Health Data Science at Duke Health and director of a newly created cross-campus center focused on integrated health data science. On June 1, he joined the senior management team for Verily Life Sciences, an Alphabet company. His time will be evenly split between his Duke and Verily responsibilities.

"Dr. Califf is one of the most respected figures in academic medicine today and is widely regarded as a preeminent innovator in clinical evidence generation," said A. Eugene Washington, M.D., chancellor for health affairs at Duke University and president and chief executive officer of Duke University Health System. "His lifelong pursuit of effectively applying clinical data to improving healthcare and population health uniquely qualifies him to lead these vitally important health data science endeavors at Duke."

The cross-campus center he leads will seek to advance and create inter-campus collaborations focused on science-driven research and innovation, while also amplifying Duke's role in building a nationally regarded network for generating evidence to guide clinical treatment. The center will also work to develop a stronger presence and role for Duke in Silicon Valley and other areas known for data science innovation and excellence.

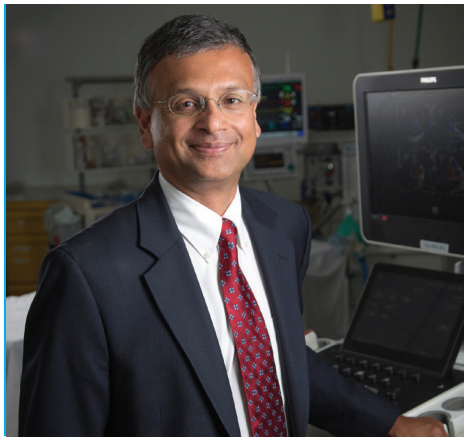
"We are most fortunate that Dr. Califf will invest his considerable expertise and energy to build a university-wide center that coalesces data science expertise and health data resources from across the campus for the improvement of human health," said Sally Kornbluth, Ph.D., Duke University provost. "I believe his commitment to this vision has the potential to create a unique engine for better understanding human health and disease."

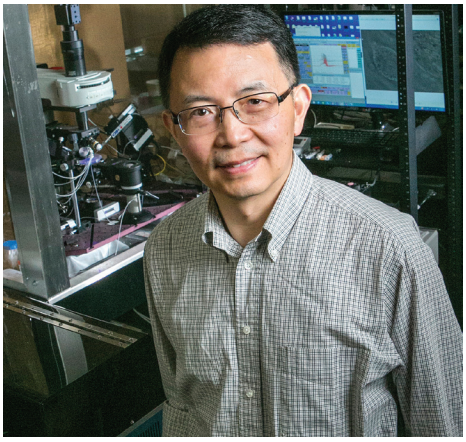
At Verily, Califf will provide guidance for transforming the growth in volume of health-related data into practical applications that will advance health and health care strategies and practice.

# School of Medicine Recognizes "Noteworthy" Faculty


Dean Nancy Andrews hosts a "Noteworthy" reception in the Dean's Suite showcasing the hanging portraits.

On Tuesday, February 21, former Dean Nancy Andrews presented 39 Duke University School of Medicine faculty members, including Dr. Joseph Mathew, chairman of Duke Anesthesiology, and Dr. Ru-Rong Ji, Duke Anesthesiology's chief of pain research, their "Noteworthy" portraits. This distinguished honor recognizes prominent Duke faculty who have reached extraordinary levels of accomplishment. All of the portraits are on display for public viewing in the Dean's Suite.


Dr. Joseph Mathew, noted for research focused on improving perioperative outcomes, particularly neurocognitive dysfunction, alterations in brain connectivity and occurrence of atrial fibrillation after cardiac surgery, and for his leadership in perioperative echocardiography.


Dr. Ru-Rong Ji, noted for studying molecular and cellular mechanisms of chronic pain; demonstrating important roles of MAP kinase signaling pathways, glial cells, and neuroinflammation in the pathogenesis of chronic pain; elucidating how immune mediators modulate neuronal activities; and identifying novel therapeutics for pain control.

# Dr. Klotman Named Dean of Duke School of Medicine

**JANUARY 30, 2017 | DUKE TODAY**


Mary Klotman, MD

Dr. Mary Klotman - a nationally renowned physician-scientist and academic leader who served as chair of Duke's Department of Medicine for almost seven years -- was named dean of the Duke University School of Medicine and vice chancellor for health affairs at Duke University. Klotman assumed these roles July 1, 2017.

Klotman's appointment follows a six-month national search that was launched when Dr. Nancy Andrews announced she planned to step down as dean. Andrews was the first female dean of a nationally acclaimed medical school, and leaves after a decade in the post on June 30, 2017.

"Mary Klotman is a visionary leader, deft executive administrator, and congenital collaborator with an unwavering commitment to excellence," said Dr. A. Eugene Washington, chancellor of health affairs at Duke University and president and CEO of Duke University Health System, in announcing Klotman's appointment. "She has amply demonstrated her exceptional ability to engage diverse groups to successfully advance all the missions of our academic health system. I am confident Mary will continue to excel in capitalizing on the enormous talent and promise of our people in Duke Health to improve health worldwide."

Klotman has been a national leader in science and academic medicine through her roles in the Alliance for Academic Internal Medicine, where she is president of the Association of Professors of Medicine, and on the Council for the Association of American Physicians. She is also a member of the National Academy of Medicine.

"The next leader of the Duke University School of Medicine needs to have keen instincts about how to best support clinical and basic research while adapting nimbly and creatively to a changing health landscape," said Duke University President Richard Brodhead. "In Mary Klotman, Duke has found a dean with all the tools to do this job brilliantly. She has impressed colleagues across the university with her strength of purpose, clarity, judgment, and love of Duke. Duke Health can look forward to a great new chapter with Mary in this new role leading the School of Medicine."

**"I am tremendously honored and humbled to have been selected as the next dean of what I know to be among the finest medical schools in the country," Klotman said. "Duke's greatest strength is its people. I look forward to working collaboratively with colleagues within Duke Health and across Duke University to further advance this institution that has so profoundly influenced me."**

# Dr. Newman to Lead University of Kentucky Healthcare

**JULY 7, 2017 | DUKE PRIVATE DIAGNOSTIC CLINIC NEWS**

Mark F. Newman, MD, PDC president, was appointed executive vice president for health affairs at the University of Kentucky. This is an outstanding opportunity for Mark to take his strategic leadership and vision to the next level and back to his home state.

During his three years as PDC president, Mark has led the development of the PDC's first strategic plan, construction of the first PDC-built medical office building, and unprecedented growth in physician workforce and patient care. Prior to becoming PDC president, he served 13 years as chair of the Department of Anesthesiology.

# Forbes Names Duke a 'Best Employer in U.S.'

**MAY 10, 2017 | DUKE TODAY**

Forbes named Duke University among its 2017 list of "Best Employers," ranking the university 27th of 500 large institutions and companies across 25 industries.

Forbes worked with an online statistics partner to survey 30,000 American workers to gather their opinions of their employers. Respondents were asked how likely they were to recommend their employer to family and friends and what other employers they would recommend.

"We are proud to be listed among the top employers in the nation," said Kyle Cavanaugh, vice president for administration. "It is a reflection of the commitment our faculty and staff bring to their work every day. The quality of our people is why Duke is the exceptional place it is."

A total of 25 education-based employers, from city school districts to universities, were included in the 500 best large employers. Duke was the second-highest university. ■

# Doximity Ranks Duke Anesthesiology Residency Program 5th in the Country


Each year, Doximity and *U.S. News & World Report* collaborate to release residency program rankings. On June 29, Doximity launched its 2017-2018 Residency Navigator, ranking the Duke Anesthesiology Residency Program #5 in the country.

This online social networking service provides information about more than 4,000 residency programs across the nation. Residency Navigator combines objective data on residency programs across 28 specialties and offers physician members the opportunity to contribute nominations, ratings and reviews of residency programs.

According to Doximity, more than 70 percent of U.S. physicians and about 90 percent of graduating medical students are members. ■


# Duke University School of Medicine Ranked in Top 10

**MARCH 14, 2017 | DUKE HEALTH NEWS & COMMUNICATIONS**

The Duke University School of Medicine is ranked 7th among all medical schools in the nation, up from 8th last year. The rankings were published by *U.S. News & World Report*.

"This is a proud day for Duke Health," said A. Eugene Washington, M.D., chancellor for health affairs at Duke University and president and chief executive officer of the Duke University Health System. "These rankings are yet another indication of the excellence, depth and breadth of outstanding faculty and staff within both schools."

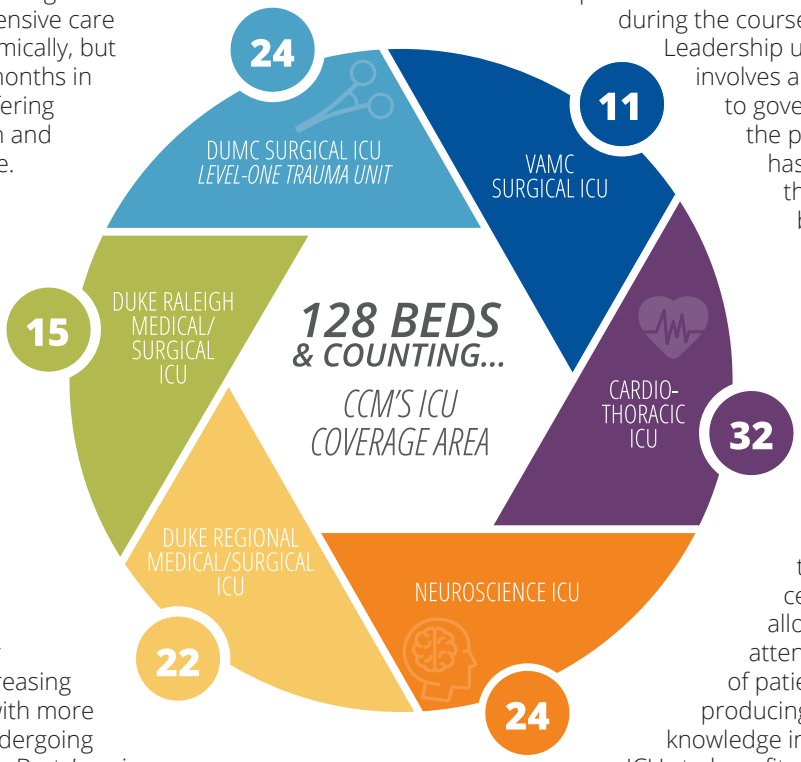
Duke's School of Medicine, established in 1930, is the youngest of the nation's top-rated medical schools. It includes more than 2,200 academic and clinical faculty members in 22 departments, drawing nearly $700 million in sponsored research expenditures annually. ■

# A Commitment to Critical Care

## Growing a Division with Dr. Raquel Bartz at the Helm

By Stacey Hilton

The evolution of the Critical Care Medicine Division within Duke Anesthesiology was set in motion in the 1980s with the vision of Dr. Robert Sladen, an international leader in critical care. Under his direction, anesthesiology progressed beyond the operating room (OR), marking the beginning of anesthesiology intensive care in the Duke University Health System (DUHS). Under Dr. Sladen's direction from 1986 -1997, anesthesia-trained critical care physicians began caring for patients in the surgical intensive care units (SICU). It was during this time in 1994 that Dr. Raquel Bartz entered her first year of medical school at the University of Washington in Seattle. Her initial exposure to the intensive care unit (ICU) occurred not academically, but personally; her father spent months in a cardiothoracic ICU after suffering an acute myocardial infarction and severe congestive heart failure. He was an early recipient of mechanical circulatory support (MCS) and is now a long-term survivor of heart transplantation. This personal experience ignited Dr. Bartz's passion for becoming an intensivist. She went on to first become trained in internal medicine followed by a pulmonary critical care fellowship before receiving additional training in anesthesiology at Duke, all during a time when the climate of health care was rapidly changing; the need for critical care expertise was increasing as people were living longer with more chronic illnesses and were undergoing more complex procedures. Dr. Bartz's unique training and synergistic nature, coupled with a personal motivation to improve intensive care, made her an obvious choice for chief of Critical Care Medicine, a position she assumed on September 1, 2015, formally launching the division. Since then, she has embarked on a mission to integrate the delivery of care across multiple anesthesia divisions, providing world-class care for critically ill patients spanning six ICUs with 128 beds throughout three hospitals in the health system and the Durham Veterans Affairs Medical Center.




"Dr. Bartz is particularly well-suited to lead this division because of her vast knowledge in anesthesiology, internal medicine, and pulmonary/critical care medicine. This positions her to facilitate and collaborate with a variety of disciplines, such as pulmonologists and surgeons, and to truly understand the clinical realm of the different backgrounds across the ICUs," says Dr. Michael "Luke" James, a Duke Anesthesiology faculty who cares for patients in the Neuroscience ICU.

Approximately 40 percent of adult patients admitted to inpatient units across the DUHS have an ICU stay during the course of their hospitalization*. Leadership under Dr. Bartz's direction involves a multidisciplinary approach to governing those ICUs. Over the past two years, this division has significantly expanded the footprint of anesthesia by providing critical care services and identifying and stabilizing needs more than ever before, including the addition of anesthesia critical care faculty at Duke Regional Hospital and Duke Raleigh Hospital providing coverage for 48 intensive care beds outside of Duke University Medical Center. Dr. Bartz says this increasing role at the center of acute hospital care allows anesthesia trainees and attendings exposure to a variety of patient illnesses, subsequently producing and applying new knowledge in the OR and across different ICUs to benefit all of their patients.

Caring for the critically ill is a central tenet of the department's perioperative focus. Anesthesiologists are well-equipped to treat this patient population and well-prepared to function in a multidisciplinary environment where critical thinking, rapid response to crisis management and multispecialty collaboration are essential. "The pathophysiologic processes that arise in the ICU have a much broader differential diagnosis than they do in the OR," says Dr. Bartz. "The skill


**"We have always been committed to caring for critically ill patients. The inception of this division simply formalized our allocation of resources to establish a remarkably-coordinated team effort."**

**Raquel Bartz, MD, MMCi**
Chief, Critical Care Medicine
Co-Director, SICU
Assistant Professor, Anesthesiology/Medicine

## Background

- Grew up in Indonesia
- Attended University of Washington School of Medicine
- Internal medicine residency at University of Wisconsin
- Pulmonary/critical care medicine fellowship at Duke University
- Completed the clinician/scientist track in the Duke Anesthesiology Residency Program
- Joined Duke Anesthesiology faculty in 2008
- Practices as an attending anesthesiologist and intensivist at the Veterans Affairs Medical Center in Durham and the CTICU and SICU at Duke University Hospital
- Serves as the co-director of the SICU at Duke University Hospital

"It's rewarding to connect with patients and provide their families help during their walk down a path they never expected to be on."

**Michael L. James, MD, FAHA, FNCS**
Associate Professor of Anesthesiology
Associate Professor in Neurology

From left: Drs. Michael L. James, Raquel Bartz and Jerrold Levy at Duke University Hospital.

set that an anesthesiologist brings into an ICU is the ability to immediately care for acute problems and quickly stabilize patients." Additionally, she says anesthesiologists are seeing more patients with chronic diseases and acute medical illnesses in their operating rooms and understand how to partner with surgical colleagues to provide the best care for patients with complex medical needs. "Anesthesiologists are intensivists by nature and the ICU is a natural extension of the OR," adds Dr. James. "We all realize that engaging anesthesiology intensivists with our surgical colleagues has a positive impact on the care of critically ill patients."

Another unique aspect within this division that Dr. Bartz continues to address with faculty recruitment is high patient volume. Nationally, the number of critical care beds has increased 15 percent from 2006 to 2010. Locally, in fiscal year 2016, there were 212 adult ICU beds in service across the three hospitals that encompass DUHS**. The number of adult ICU beds has grown by 72 percent in five years (123 adult ICU beds in 2012)**. Beds in Duke's Cardiothoracic Intensive Care Unit (CTICU) alone have increased from 20 to 32 within four years, allowing for a better coverage model, according to Dr. Jerrold Levy, co-medical director of that unit. He adds that the severity of illness seen at Duke is much higher than many other places, noting that Duke University Hospital (DUH) is a major referral center for other hospitals when their high-risk patients require additional management strategies.

One of the driving factors in the Critical Care Medicine Division's growth is the ongoing expansion and innovation in providing MCS to patients with life-threatening cardiac and respiratory dysfunction throughout the health system, of which extracorporeal membrane oxygenation (ECMO) is one component. In 2016, Duke University Hospital was designated as an Extracorporeal Life Support Organization (ELSO) Platinum Center of Excellence, the only center in the state and one of only five centers throughout the world. In that year alone, DUH supported 228 ECMO cases in four ICUs – the CTICU being the busiest with 153 patients requiring extracorporeal life support (ECLS).

"These patients, specifically those with cardiopulmonary decompensation, require intensive care support until ECMO can be discontinued or until organ recovery occurs. The advantage intensive care physicians, particularly anesthesiologists, have in this domain is our multidisciplinary expertise, understanding the innovative cannulation and management strategies, along with our expertise in and the availability of transesophageal echocardiography needed for the ongoing management of patients on ECMO," notes Dr. Levy, an internationally-recognized expert on anaphylactic shock and the coagulation system who was recruited to Duke Anesthesiology as faculty five years ago. His expertise in acute cardiopulmonary dysfunction, particularly his knowledge of blood coagulation, extracorporeal circulation, and inflammation provides a unique adjunct to the management of ICU patients at Duke.

According to Dr. Levy, a key component of care for these patients is to spend as little time as possible on ECMO in an effort to avoid the risk of long term coagulation issues, blood loss and infection. "Our team has the visual tools, the clinical judgement, and a vast understanding of hemodynamic function of the ECMO circuit which helps determine positive patient outcomes."

## Research Development Goals Within the Division

→ Electronically capture data from all critically ill patients at Duke

→ Understand the pathophysiologic processes that lead to sepsis and acute respiratory distress syndrome

→ Elevate the comprehension of metabolic requirements during critical illness

Overall, Duke's ECMO outcomes exceed all internationally-reported data for survival to discharge (70 percent for adult respiratory patients and 51 percent for adult cardiac patients in 2016; about 12 percent higher as reported by ELSO). And, due to newer ECMO devices' portability, patients are being safely transported from hospitals that are unable to offer this level of care. Last year, 86 patients were transported to DUH on ECMO support. "Because surgeons have increased their willingness to go to other hospitals and place patients on ECMO, we've been able to help manage the daily care of these patients, allowing ECMO service growth. We are able to impart our knowledge of how to best care for these complicated patients. It really is a team-based process," says Dr. Bartz. "Decisions to be transferred to an ELSO center like ours are crucial. We are internationally known for our ECMO services. When seconds matter and organ function is at risk, Duke is where you as a patient want to be to receive your complex operations. We have the ability to provide innovative life-saving ECLS when required." The biggest challenge for Dr. Bartz initially was to reorganize, and still today, coordinate patient care across multiple ICUs while culminating the shared goals of discovery, clinical care and education. She coordinates the schedules of more than 30 faculty members from divisions within Duke Anesthesiology, partnering with faculty from other Duke departments, such as surgery, medicine and neurology – one of the aspects that make this Critical Care Medicine Division unique on a national level. "We must function as a team to save patients' lives and provide them with the best chance of recovering from their illness, which we do very well here at Duke," Dr. Bartz says. She is also mindful that ICU physicians have one of the highest burnout rates among physicians. "There is an element in the ICU of unpredictability. Often, our patients are acutely deteriorating and it's our job to try and reverse that process. Regularly dealing with end-of-life issues in the ICU and helping families through this process can lead to emotional burnout. I strive to ensure the well-being of our division as we continue to grow our team."

Throughout the development of this division, Dr. Bartz has remained steadfast in her desire for her team to consistently assess and question the care they're delivering and bridge that with research and education to become a leader in the discovery of knowledge in perioperative critical illness and optimize patient outcomes. Research is one of the main drivers of this division, and also of Dr. Bartz, who strives to support not only bench science, but clinical researchers and clinicians. She has earned national attention for her research in sepsis and mitochondrial dysfunction, and more recently has organized and led a national study on severe acute respiratory distress syndrome as part of the Society of Critical Care Medicine's Discovery Network. With the arrival of Dr. Paul Wischmeyer, the division further expanded its expertise in managing the nutritional challenges in critically ill patients *(see feature story, page 24).* Two key strategies that Dr. Bartz believes will bring this division to new heights and improve the care of critically ill patients are growing both National Institutes of Health and industry-funded research bringing clinical trials into the ICUs, along with the recruitment and retention of academically and clinically-gifted trainees and faculty. She specifically is striving to enhance her division's research in these areas: develop the capability to electronically capture data from all Duke critically ill patients, understand the pathophysiologic processes that lead to sepsis and acute respiratory distress syndrome, and elevate the comprehension of metabolic requirements during critical illness.

"My goal is to provide a better understanding of what is considered a normal trajectory of our patients' disease and healing, and how we can intervene to provide them a better quality of life, long term." To achieve this, Dr. Bartz says it will require not only epidemiologic research, but basic science and translational research. "Recruiting clinicians with a scientific mindset and intensivists from a multiplicity of institutions with long histories of critical care has been and will continue to be an important part of our growth in the ICU setting," adds Dr. Levy. Consolidation of critical care education for medical students, residents and fellows has proven to be another crucial component in cultivating this division. Bolstered under Dr. Bartz's leadership, the department's Critical Care Medicine Fellowship provides trainees with the skill set to recognize and manage acutely ill patients with single or multiple organ system failure in both medical and surgical illnesses. It not only produces academic leaders in critical care, but plays an integral role in recruiting future critical care faculty. This ACGME-accredited fellowship was originally implemented within the SICU by Dr. Sladen and has since expanded the presence of fellows into the CTICU. With the guidance of its program director, Dr. Christopher Young, it has grown from four to eight fellows per year; they receive comprehensive training and certification in both transthoracic and transesophageal echocardiography, a unique aspect of this fellowship nationally.

"Dr. Bartz has a vision of how to make this division the best in the nation," says Dr. James. "Developing the ICUs around the three tenets of excellence in research, clinical care and education puts Duke in an exceptional position. Through Dr. Bartz's leadership, we have new translational and clinical research opportunities that have a high likelihood of blossoming in the next couple of years. She is committed to long term goals and is patient enough to allow the process to unfold to achieve her vision."

*Data based on inpatient discharge data from NC DHHS for FFY 2015 for DUHS. "ICU stay" qualified as inpatient discharges with ICU charges on patient billed encounters.
**Data based on DUHS hospital licensure renewal applications provided to NC DHHS.

FACULTY SPOTLIGHT

# BRINGING HUMANITY TO MEDICINE

By Stacey Hilton

Dr. Paul Wischmeyer's journey to becoming an internationally-renowned critical care and perioperative nutrition researcher and clinician began at the age of 15 when a bout of strep throat and a prescription for antibiotics led to persistent gastrointestinal bleeding. He was ultimately diagnosed with ulcerative colitis, a chronic, inflammatory bowel disease that causes inflammation in the digestive tract, and admitted to the hospital where he stayed for the next six months, enduring a battery of tests in which he says he "got the sense that medicine was about treating people as jobs to be done, not patients to be cared for."

After receiving 40 units of blood over two weeks, not being allowed to eat for three months and losing 65 pounds, Dr. Wischmeyer's colon perforated and he was diagnosed with septic shock from a life-threatening condition called peritonitis, a severe infection of the abdomen. It was then that his doctor told him that he must have surgery or he wouldn't see tomorrow. A year later, he was one of the first children at University of Chicago to undergo an ileal J-pouch operation. Due to recurrent pouch infections and chronic antibiotic use and resistance, his J-pouch failed, and he had an ileostomy placed while in college. These were the first of more than 20 abdominal surgeries that Dr. Wischmeyer has undergone to-date; surgeries that left him with less than half of his intestinal tract.

His hardships throughout his personal perioperative experiences have not only propelled his passion to study the role nutrition plays in pharmacology, physiology and improving surgical outcomes, but remain the driving factor of transforming how physicians care for critically ill patients.

## A Novel Perspective

"I went into research to try and find ways to treat people that didn't create more

> "When I was 15, I began my mission to cure my disease and teach doctors how to actually "care" for patients."
>
> **Paul Wischmeyer, MD, EDIC**
> Professor of Anesthesiology
> Associate Vice Chair for Clinical Research

suffering than the disease itself," says Dr. Wischmeyer, who studied his own disease for his first research project in medical school at the University of Chicago. He examined the makeup of the stools of people with pouchitis – inflammation of the ileal J-pouch (an artificial rectum surgically created from the ileum) which is created to manage patients with ulcerative colitis. His research revealed deficiencies in the nutrients that made up the guts of those with pouchitis. Dr. Wischmeyer developed suppository drugs out of those nutrients, and at 19-years-old, he performed his first clinical trial with patients at the Mayo Clinic. This research led to a major discovery that amino acids can induce fundamental heat shock proteins to protect the cells in our guts from injury – one of the first findings of a nutrient turning on a protective stress pathway and serving as a stress signal to the cells of the body to induce recovery.

Dr. Wischmeyer's interdisciplinary research and translational approach to challenges in perioperative and critical care medicine have garnered international recognition throughout his 21-year career. His research focuses on perioperative optimization, nutrition therapy, post-illness lean body mass and functional recovery, and the role of probiotics and the microbiome. He helped develop the first large-scale multicenter perioperative, ICU and nutrition trials group to examine the role of glutamine and antioxidants in critical illness, and conceived the first multi-center description of the effects of nutrition and critical illness on the microbiome, a rapidly emerging field in medicine in which he continues to apply scientific rigor, specifically exploring why ICU patients significantly lose the diversity of their gut microbiome and the role of stool transplants and probiotics in recovery. According to Dr. Wischmeyer, 99 percent of the genetic material in the human body is bacterial. When we become ill, undergo surgery and take antibiotics, those microbial populations shift, resulting in major implications on our physiology, cognition and neurology, and the way we recover. "We have never scientifically addressed these effects and how to track and restore patients' bacterial signatures in illness. Applying real science to what makes us human and then applying that knowledge to help our patients prepare and recover from surgery is what makes my research unique."

Dr. Wischmeyer also brings a unique perspective to the field of critical care by comparing the stress of surviving surgery and acute/chronic illnesses to the stress of extreme athletic performance. "We as humans are not evolved to survive critical illness or surgery and regain function; it's superhuman," he says. "Athletes and their trainers are masters of achieving superhuman feats, and we must learn from them." His novel concept is that physicians can prepare patients for stress and injury and optimize their ability to recover by learning from those who are on the elite cutting-edge of exercise, sports nutrition and protein delivery. One such innovation in nutrition and exercise physiology is a muscle glycogen scanner, traditionally used by Olympic athletes, that is now helping patients avoid ICU-acquired weakness. Dr. Wischmeyer's findings with this device proved crucial, revealing many ICU patients have zero glycogen in their muscles shortly after ICU admission. He believes this technology may soon guide optimal use and timing of nutrition delivery, exercise, and anabolic recovery agents (such as testosterone derivatives and beta-blockers) used to counteract prolonged catabolism and hypermetabolism.

## The Duke Podium

"Duke is the kind of place you come to change the world." On October 31, 2016, Dr. Wischmeyer joined Duke Anesthesiology as the associate vice chair for clinical research and the co-director of the Academic Career Enrichment Scholars (ACES) Resident Research Program. He also practices on Duke University Hospital's (DUH) critical care and nutrition clinical teams,

### KEYS TO PERIOPERATIVE NUTRITION

- 01 NUTRITION SCREENING IS ESSENTIAL
- 02 PROTEIN IS MORE IMPORTANT THAN CALORIES
- 03 STOP FEEDING LATE PRE-OP & RESTART EARLY POST-OP
- 04 CONSIDER ORAL NUTRITION SUPPLEMENTS FOR ALL
- 05 ORAL BEFORE ENTERAL BEFORE PARENTERAL
- 06 NUTRITION MANAGEMENT IS A TEAM GAME


### THE FUTURE OF ANESTHESIOLOGY

**1** Perioperative Enhancement Team (POET) Clinics
**2** Postoperative Cognitive Dysfunction/ICU
**3** Enhanced Recovery After Surgery
**4** Pain Program
**5** Critical Care Medicine Division

serving as the director of its Nutrition Support Service, and was named director of perioperative research at the Duke Clinical Research Institute (DCRI), the largest academic research organization in the world.

Duke Anesthesiology has provided Dr. Wischmeyer a podium to bring perioperative optimization and nutrition to the forefront of surgery and critical care across a variety of platforms. Since his arrival, he and key departmental leaders have put his lifelong goal in motion - the chance to meaningfully address "the silent epidemic of hospital malnutrition" by establishing a medical nutrition model for inpatient nutrition services across the health system. Together, they've designed a financially viable, multidisciplinary, nutrition consult service for hospital patients that is physician-driven, utilizing existing advanced practice provider roles, such as dieticians and pharmacists. "Research shows physicians who screen for malnutrition and provide treatment before surgery have better patient outcomes, but only one in five patients are being screened," says Dr. Wischmeyer. "I've been the patient suffering from septic shock and delirium in the ICU, on steroids, with prolonged ileus, receiving now-avoided benzodiazepine sedation with no physical therapy. Duke Anesthesiology has given me a unique opportunity to design a revolutionary nutrition and perioperative/ICU recovery service model and build out my passion for all hospitals across the country to implement."

**65%**

of GI surgery patients are malnourished at admission

Another model Dr. Wischmeyer helped launch this year is the Preoperative Nutrition Program *(see page 12)*, one of more than 50 initiatives of Duke Anesthesiology's Perioperative Enhancement Team which strives to manage surgical risk by partnering with providers to develop data-driven models that can be replicated at the benefit of patients nationwide. "This department is passionate about taking anesthesia to the next frontier. We are changing the very foundation of how we care for people with programs like POET and Enhanced Recovery After Surgery. It's like nothing I've experienced anywhere else."

The podium at Duke has also allowed Dr. Wischmeyer the opportunity to help shape the department's Critical Care Medicine Division, led by Dr. Raquel Bartz. And, his role in the DCRI enables him to improve the overall quality of perioperative research by conducting both basic laboratory studies and novel clinical trials, putting real science into how patients' lives can be improved with interventions such as nutrition and exercise, and educate providers worldwide with this new knowledge.

On August 4, 2014, Dr. Wischmeyer became a patient once again, after being admitted to the hospital with an emergent small bowel obstruction with marked bowel edema and a rising blood lactate level. He was placed in the SICU for fear of bowel ischemia, hospitalized for 23 days, lost 40 pounds, and was unable to walk down the hallway or pick up his own child; it took him two years to recover. These personal struggles and triumphs are key to his hands-on, proactive mentorship style to help develop the next generation of physician anesthesiologists who can improve surgical outcomes and the care of critically ill patients.

Mentoring is a top priority for Dr. Wischmeyer – the initial reason he says he went into medicine; 94 percent of his mentees remain in academic medicine. He is a member in the FAER Academy of Research Mentors in Anesthesiology. And now, as co-director of Duke Anesthesiology's ACES program, he lectures around his patient experience, hoping to instill in his trainees three main takeaways: 1) ICU/hospital recovery begins on the day of admission, 2) quality of life must become the focus of future trials, and 3) to never stop asking, "Are we creating survivors...or victims?"

PRE-ILLNESS
JULY 2014

POST-SURGERY
AUGUST 2014

## HOW I WOULD CHANGE CARE

- ALL IVs STARTED WITH LIDOCAINE
- NG TUBES NEVER USED POST-OP OR REMOVED EARLY
- SEDATION PROVIDES COMFORT, NOT CONFUSION
- PROCEDURES INCLUDE "REAL SEDATION" *(CENTRAL LINES, FEEDING TUBES & DRAIN INSERTIONS)*
- OPIATE & SEDATIVE WITHDRAWAL IS RECOGNIZED & TREATED

"Making people better doesn't mean getting the central line in, performing a successful procedure and discharging them from the hospital; we should be fighting to give them their life back when a disease or injury has taken that away. By sharing my story, I hope all medical professionals begin to see their patients as people, who are often anxious and afraid; and each time they perform a procedure, ask themselves, how would I want to be cared for."

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## Duke DREAM Campaign Funds Medical Discovery

Wei Yang, PhD

Dr. Wei Yang, an associate professor in the Basic Sciences Division, is among the three Duke Anesthesiology faculty to be awarded an inaugural DREAM Innovation Grant (DIG) in 2011 during the launch of the Duke DREAM Campaign. At that time, Dr. Yang was investigating the role of small ubiquitin-like modifier (SUMO) conjugation in neuronal cell death after stroke, but he needed genetically modified mouse models to generate preliminary data that would support applications for substantial extramural funding. DIG seed funding made it possible for him to develop a SUMO knockdown transgenic mouse model and then successfully apply for grants from the American Heart Association and the National Institutes of Health.

Six years later, Dr. Yang has established a strong platform for exploring SUMO conjugation as a novel therapeutic target for neuroprotective strategies after stroke. His collaboration with Duke Anesthesiology's Dr. Wulf Paschen has resulted in a significant discovery that provides novel insights into the origin of age-related differences in stroke outcome. Stress-response pathways, including SUMO conjugation and the unfolded protein response, constitute a delicate and complex network that restores protein homeostasis (proteostasis) impaired by stress. Drs. Yang and Paschen have discovered that activation of these pathways after transient ischemia is immediate and effective in young brains, but is severely weakened in aged brains. Importantly, impaired proteostasis has been associated with many age-related diseases.

Based on these results, Dr. Yang is currently using experimental stroke models to study age-related effects on proteostasis impaired by ischemic stress. His findings reveal that a key pathway involved in restoring proteostasis impaired by stress, is activated in the stroke penumbra of young brains, but not aged brains. Importantly, he has also shown that this age-related decline in the brain's self-healing capacity can be rescued pharmacologically. Together, these findings are expected to inform the development of novel combination therapies to restore proteostasis after stroke and improve patient outcomes.

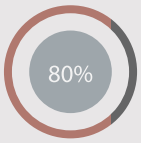
"I joined Duke Anesthesiology to help continue to build a department where the specialty of anesthesiology continues to evolve. The Duke DREAM Campaign allows me to reinvest in supporting investigators in our own department as we continue to build one of the most unique academic anesthesiology environments in the country. I feel that I will receive a better return on investment when supporting a local research effort like DREAM."

**Dhanesh K. Gupta, MD**
Chief, Division of Neuroanesthesiology, Otolaryngology and Offsite Anesthesia
Professor of Anesthesiology

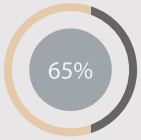
dream

**439**
TOTAL DONORS


DONATED $1,000+




DONATED MORE THAN LAST YEAR




FIRST TIME DONORS

**December**
Month with most donations

# 2017 CAMPAIGN UPDATE

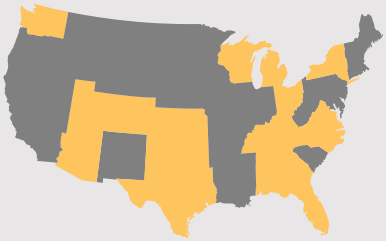
## Who are our **donors?**

20% DEPARTMENT FRIENDS

50% FACULTY & STAFF

30% ALUMNI

## **DREAM donors** across America



MORE THAN

**$1.6**

MILLION

**RAISED TO-DATE**

## Campaign Goals

**1.** Establish endowed professorships to invest in world-class faculty who would, in turn, secure extramural funding. Interest dollars from these endowments are to be used to support investigator salaries and provide them with the time and resources necessary to develop research programs.

**2.** Raise funds to support research through the DREAM Innovation Grant, known as DIG.

**3.** Establish philanthropic support as a long-term mechanism of limiting the adverse consequences of cyclical federal funding.

## DUKE ANESTHESIOLOGY'S ENDOWED PROFESSORSHIPS

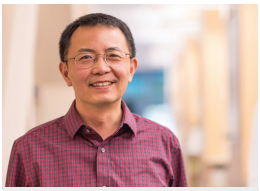
The Duke University School of Medicine's endowed professorships honor exceptional achievement, fuel scientific discovery, and invest in teaching and mentoring the next generation of leaders. For philanthropic individuals and organizations, these permanent partnerships provide an extraordinary opportunity to make a difference. They confer one of academia's highest honors upon our most accomplished medical scientists and educators, allowing these dedicated individuals to pursue research that improves human health and cultivate the bright young minds who will lead future innovations in medicine and health care.

Joseph P. Mathew, MD

**Jerry Reves, MD, Professor of Cardiac Anesthesiology**

Mark F. Newman, MD

**Merel H. Harmel Professor of Anesthesiology**



Ru-Rong Ji, PhD

David S. Warner, MD

**Distinguished Professors of Anesthesiology, School of Medicine**

William Maixner, DDS, PhD

*NEW!* **Joannes H. Karis, MD, Professor of Anesthesiology**

Visit our DREAM web pages to read more about the campaign and make a gift online!

**DREAMCAMPAIGN.DUHS.DUKE.EDU**

# DREAM Innovation Grant 2017 Recipients


## What is the "DIG?"

The DREAM Innovation Grant (DIG) supports innovative high-risk and potentially high-reward investigations to accelerate anesthesia and pain management research. Funding provided by DIG will support each researcher for one year, during which pilot studies can be conducted. DIG recipients can receive up to $30,000 in seed money for their innovative pilot studies, which ultimately helps them apply for and obtain extramural funding. This grant creates an avenue for healthy competition among faculty, inspires ingenuity, promotes the careers of young physician investigators, enhances donor communication, and furthers the department's academic mission.

To-date, **$602,900** in DIG donations have led to...

**NEARLY $8 MILLION**

**EXTRAMURAL FUNDING RECEIVED TO-DATE**

DREAM Innovation Grants are funded by:

- Private donors
- Private companies
- Alumni
- Faculty
- Board members

## Kamrouz Ghadimi, MD

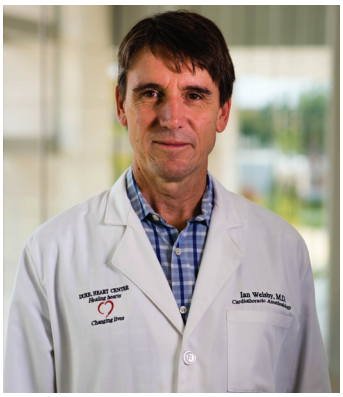
**2017 DIG RESEARCH PROJECT:** ROLE OF SIRTUINS IN PLATELET AGING AND PERIOPERATIVE THROMBOCYTOPENIA AFTER MECHANICAL CIRCULATORY SUPPORT

Dr. Kamrouz Ghadimi's research interests involve acquired disorders of hemostasis and thrombosis and the perioperative care of patients undergoing mechanical circulatory support and transplantation. His long-term goals are to establish new perioperative care guidelines and develop novel therapeutic strategies to prevent adverse bleeding events in recipients of mechanical circulatory support (MCS) devices. Dr. Ghadimi is grateful to have received a DREAM Innovation Grant (DIG), which in part allows him to pursue a preclinical investigation while being embedded within two basic science laboratories with solid track records of training and mentoring junior faculty in order to pursue a future pilot clinical study of reduced platelet counts (thrombocytopenia) which commonly occur in patients who experience cardiac surgery and mechanical circulation. Low platelet counts have been associated with increased acute kidney injury, increased blood transfusion, increased complications related to bleeding, and increased mortality in patients after cardiac surgery and MCS. Dr. Ghadimi is developing adequate preclinical support for his hypothesis by using a clinically-relevant experimental model of MCS through his active participation within the Cardiovascular Systems Modeling Laboratory of Dr. Mihai Podgoreanu (Duke Anesthesiology's chief of the Cardiothoracic Anesthesia Division and a 2012 DIG recipient) and the Molecular Basis of Thrombocytopenia and Platelet Analytics Laboratory of Dr. Gowthami Arepally (Duke Department of Medicine).

The results of this research will help establish new mechanisms by which low platelet counts develop during cardiac surgery and serve as the basis for the development of new drug therapies which may help prevent this known complication. The partnership with the various laboratories will serve to optimize the bench-to-bedside understanding of the interplay between cellular aging and resilience, as well as coagulation and inflammation, in the ever-growing population of critically ill patients.

### Background

- MD from Boston University School of Medicine
- Surgical internship at the University of California Irvine
- Residency in anesthesiology at the Allegheny Health Network in Pittsburgh, Pennsylvania
- Completed an advanced clinical and research fellowship in adult cardiothoracic anesthesiology and critical care medicine at the University of Pennsylvania School of Medicine
- Received the prestigious Joel A. Kaplan, MD, Award for Outstanding Fellow in Cardiothoracic Anesthesiology and Critical Care



## Ian Welsby, MB BS

**2017 DIG RESEARCH PROJECT:** RED CELL REJUVENATION FOR OPTIMAL TISSUE OXYGEN DELIVERY

Dr. Ian Welsby's research interests focus on perioperative transfusion and hematology/coagulopathy/thrombosis. He has dedicated his career to improving the outcome of patients undergoing cardiothoracic surgery, understanding perioperative coagulopathy and optimizing transfusion practice.

Dr. Welsby's DREAM Innovation Grant will generate essential preliminary data to test whether rejuvenated blood will outperform standard blood re-transfused to volunteer donors undergoing VO2max testing before and after their transfusions. If so, further clinical studies may be merited, and the DIG data will bolster the resubmission of an R-21 to the NHLBI in 2018 to conduct a definitive, volunteer study.

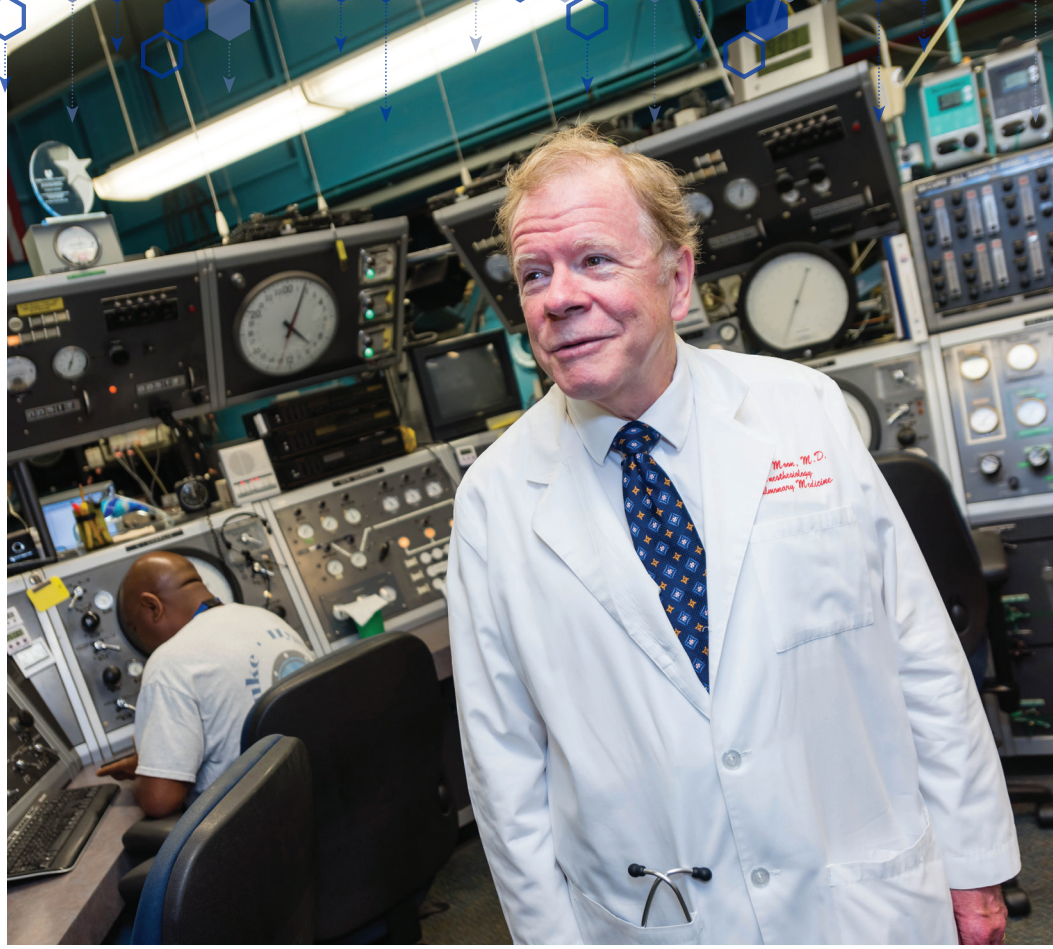
The results of this DIG-sponsored research will help establish new mechanisms by which essential oxygen delivery can be optimized in patients with anemia or limited cardiac output, potentially improving the outcome of cardiac surgical patients and sparing the blood inventory. If one unit of rejuvenated blood, for example, is as effective as two units of standard blood, this could revolutionize transfusion medicine.

Further optimizing the red blood cell product continues to be a focus of new research. Dr. Welsby is currently evaluating point-of-care, bedside washing of packed red blood cells to reduce perioperative lung injury. He is also studying rejuvenated red blood cell transfusions in chronic recipients of red blood cell exchange to treat their sickle cell anemia.

### Background

- MB BS from University College and Middlesex School of Medicine
- Completed an anesthesiology residency at North East Thames School of Anaesthesia and a fellowship at the Royal College of Anaesthetists
- Joined Duke Anesthesiology as a Critical Care Medicine fellow in 1996
- Leader in establishing management of transfusion approaches to major cardiac surgery
- Championed novel approaches to dealing with perioperative heparin-induced thrombocytopenia, such as plasmaperesis

# Triathlete Deaths Possibly Linked to Fluid in the Lungs



Dr. Richard Moon in the Duke Center for Hyperbaric Medicine and Environmental Physiology.

Heart abnormalities linked to immersion pulmonary edema were present in a greater-than-expected proportion of triathletes who died during the competition's swim portion, according to a study led by researchers at Duke Health.

The findings, published August 29 in the journal BMJ Open Sport & Exercise Medicine, are based on an analysis of autopsy reports of people who died in the United States and Canada between 2008 and 2015 while participating in triathlons. Triathlon competitions involve consecutive races of swimming, bicycling and running.

Study investigators identified 58 deaths during the time period, with 42 of those occurring during the swim. Researchers examined autopsy reports on 23 of the 42 deaths.

Richard Moon, M.D., the study's first author and a professor of anesthesiology and medicine at the Duke University School of Medicine, said he and co-investigators reviewed the autopsy reports to identify whether conditions were present that may have made the athletes susceptible to immersion pulmonary edema (IPE, in the study abbreviated as IPO based on the Greek spelling of oedema).

IPE, also known as swimming-induced pulmonary edema, occurs when the lungs suddenly fill with body fluids during activities in cold water, such as swimming and diving. IPE can lead to difficulty breathing, wheezing and confusion, which can be serious and even fatal.

While IPE can occur in healthy individuals, Moon said its onset is often seen in those with left ventricular hypertrophy (LVH), a condition where the heart muscle becomes thickened or heart mass increases. LVH typically occurs in people with high blood pressure and is a marker for susceptibility to IPE. A mildly enlarged heart — commonly referred to as athlete's heart — can also develop among endurance athletes, although athlete's heart is not believed to predispose to swimming-induced pulmonary edema.

Moon and co-researchers compared figures from the autopsy reports in the current study to data from previous studies, including one published in 1997 led by Pamela Douglas, M.D., professor of medicine at Duke. Douglas' investigation looked at the prevalence of LVH in 225 athletes who completed a triathlon in Hawaii from 1985-95.

"Among the autopsy reports of the deceased triathletes, we found a much higher prevalence of LVH than the healthy athletes in Dr. Douglas' study," Moon said. "The degree of enlargement was also much greater in the triathletes who died."

Specifically, the 16 triathletes who died from unclear causes had higher measures of heart wall thickness. The autopsy reports showed abnormal cardiac septal thickness in 67 percent of the deceased athletes and abnormal posterior wall thickness in 50 percent. In the Douglas study, it was one percent and one-half percent, respectively.

While it cannot be definitively concluded that IPE was the cause of the triathlete deaths during swimming, Moon said the autopsy reports demonstrate a plausible link. He recommended that potential triathletes and their health-care providers be aware of the known connection between LVH and the potential risk of immersion pulmonary edema.

"The message is that if people have untreated hypertension or they're known to have ventricular hypertrophy, they need to get evaluated and treated before they embark on this sport," Moon said.

In addition to Moon, study authors include Stefanie D. Martina and Drs. Dionne F. Peacher and William E. Kraus of Duke.

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Source: Duke Health News and Communications press release (Durham, N.C. – September 1, 2016).

# Research Seeks to Stop Poison Ivy's Itch

Scientists at Duke Health and Zhejiang Chinese Medical University have developed a strategy to stop the uncontrollable itch caused by urushiol, the oily sap common to poison ivy, poison sumac, poison oak and even mango trees.

Sven-Eric Jordt, PhD

The team found that by blocking an immune system protein in the skin with an antibody, they could halt the processes that tell the brain the skin is itchy. The research was done in mice and is described in the November 7 issue of Proceedings of the National Academy of Sciences. They hope their model could lead to potential treatments for people who are allergic to poison ivy — an estimated 80 percent of the population.

For most people, contact with poisonous plants is painful but not life-threatening. Still, there are significant health care costs associated with more than 10 million people in the U.S. affected each year, said senior author Sven-Eric Jordt, Ph.D., associate professor of anesthesiology at Duke.

"Poison ivy rash is the most common allergic reaction in the U.S., and studies have shown that higher levels of carbon dioxide in the atmosphere are creating a proliferation of poison ivy throughout the U.S. — even in places where it wasn't growing before," Jordt said. "When you consider doctor visits, the costs of the drugs that are prescribed and the lost time at work or at school, the societal costs are quite large."

Some symptoms of the fiery, blistering rash can be alleviated with antihistamines and steroids. But in recent years, scientists have determined that the most severe itching doesn't go away with antihistamines, because it arises from a different source, Jordt said.

Jordt and collaborators determined the itch is triggered by interleukin 33 (IL-33), a protein in the skin involved in immune response.

All people have IL-33 in their skin, but the protein is elevated in people who have eczema and psoriasis, Jordt said. The protein is known for inducing inflammation, but these new experiments show the protein also acts directly on the nerve fibers in the skin, exciting them and telling the brain that the skin is severely itchy.

The researchers used an antibody to block IL-33 and found that it not only reduced inflammation, but also cut down scratching in mice with poison ivy rashes. An antibody that counteracts human IL-33 is currently being evaluated in humans through a Phase 1 clinical trial to determine its safety and potential side effects.

In an additional approach tested in the mouse experiments, the researchers also found they could also alleviate itch by blocking a receptor for IL-33, called ST2.

"There could be translational significance here," Jordt said. "So our next step will be to look at human skin to see if we see the same activity and the same pathways. We will also look at anti-inflammatory drugs that are already approved to see if they have the potential to alleviate itch."

In addition to Jordt, study authors include Boyi Liu; Yan Tai; Satyanarayana Achanta; Melanie M. Kaelberer; Ana I. Caceres; Xiaomei Shao; and Jianqiao Fang.

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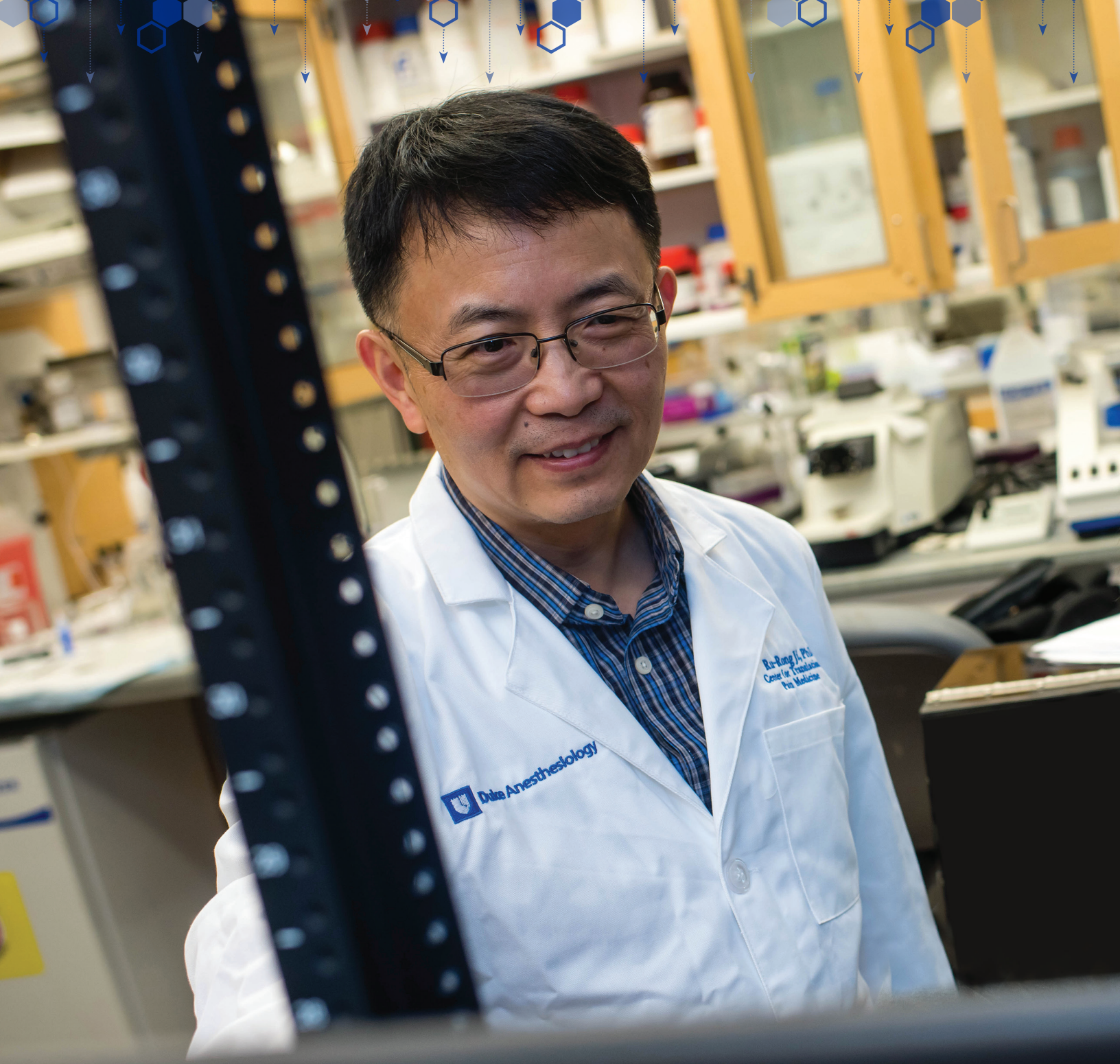
Source: Duke Health News and Communications press release (Durham, N.C. – November 7, 2016).

**10** MILLION PEOPLE

AFFECTED BY POISON IVY EACH YEAR




"We showed that this well-known molecule can mask pain, so that cancers can grow without setting off any alarms before metastasis."

**Ru-Rong Ji, PhD**
Chief of Pain Research
Distinguished Professor of Anesthesiology
Professor in Neurobiology

# Immunotherapy Target Suppresses Pain to Mask Cancer

Once hailed as a breakthrough in cancer treatment, immunotherapies are now raising concerns as doctors note new side effects like severe allergic reactions, acute-onset diabetes and heart damage.

These drugs, which work by unleashing the immune system to fight cancer, are only effective in about a fifth of cases, prompting many patients to wonder if they are worth the risk.

But a new study from Duke University researchers suggests there may be a quick and easy way to predict which cancer patients are likely to benefit from immunotherapy treatments.

The researchers showed that a molecule called PD-L1, which is blocked by the popular immunotherapy drug nivolumab, acts not only on immune cells but also on the nerve cells that signal pain. That insight could lead to a simple test that measures subtle differences in pain sensitivity to gauge whether or not the body is responding to treatment.

The findings, published May 22 in Nature Neuroscience, underscore the surreptitious nature of cancer, which uses a variety of tricks to evade detection by the body's natural defense mechanisms.

"Cancer cells are smart. We already knew that they produced PD-L1 to suppress the immune system," said senior study author Ru-Rong Ji, Ph.D., professor of anesthesiology and neurobiology at Duke University School of Medicine. "But there's another defense system at play as well, and that is pain. We showed that this well-known molecule can mask pain, so that cancers can grow without setting off any alarms before metastasis."

In its early stages, when cancer cells are just starting to grow and multiply in a given tissue or organ, the disease is not usually painful. But as the cancer becomes more aggressive and spreads throughout the body, these cells secrete thousands of pain-inducing chemicals, which either trigger pain-sensing nerve fibers or, in the case of molecules like nerve growth factor, generate entirely new ones. The pain can become so unbearable that some cancer patients die from opioid overdoses.

Ji has been studying pain for over twenty years. Recently, his group noticed that mouse models of melanoma didn't show the typical signs of pain that he observed in mice with other kinds of cancer, which would flinch or lick their hind paws whenever they were in discomfort.

Ji also knew that melanoma cells could produce a molecule called PD-L1, which latched onto a receptor called PD-1 on the surface of white blood cells, effectively putting the brakes on the immune response. Ji wondered whether there was a connection. So his team treated mice with nivolumab, a drug that prevents PD-L1 from binding to PD-1. Then they poked the animals' hind paws with a calibrated filament and measured how much force it took for them to withdraw their hind paws. They found that the mice responded to much lower forces than before treatment, indicating they had become more sensitive to pain. In addition, they also found that nivolumab caused spontaneous pain in mice with melanoma, which made them tend to their affected hindpaws like never before.

Next, the researchers performed the opposite experiment. They injected PD-L1 -- the pain-masking factor in this equation -- into the hind paws or spinal cord of mouse models of three different kinds of pain -- inflammatory, neuropathic and bone cancer pain. In every case, the injections of PD-L1 had an analgesic effect, deadening the mice's sensitivity to pain.

"The effect was surprisingly fast," said Ji. "We saw a reduction of pain in under half an hour."

To figure out the mechanism behind this quick response, Ji's team examined the sensory neurons of the dorsal root ganglion (DRG), a collection of nerves and neurons near the top of the spinal cord. They isolated these cells from mouse DRGs as well as human DRGs from donors and cultured them in a dish, with or without PD-L1, and then recorded their electrical activity. The researchers found that PD-L1 impaired the ability of sodium channels to fire neurons (action potentials) in response to pain.

Ji believes the finding could potentially lead to new treatments for pain, as well as new ways to predict the efficacy of already existing treatments based on PD-1 and PD-L1. "The response to cancer drugs can take a long time, weeks to months," he said. "The response to pain happens in minutes to hours."

In the future, Ji would like to explore whether the mechanism uncovered in this study also applies to other immunotherapy treatments. He is also interested in working with clinicians to measure changes in patients' pain sensitivity after treatment, a first step toward developing a diagnostic test.

The study was a collaboration between Duke University and two Chinese universities, Fudan University and Nantong University. Professor Yu-Qiu Zhang from Fudan University, the co-senior author of the paper, is a well-known expert in cancer pain. The lead author, Dr. Gang Chen, was an Assistant Professor at Duke and is now a Professor at Nantong.

*CITATION: "PD-L1 inhibits acute and chronic pain by suppressing nociceptive neuron activity via PD-1," Gang Chen, Yong Ho Kim, Hui Li, Hao Luo, Da-Lu Liu, Zhi-Jun Zhang, Mark Lay, Wonseok Chang, Yu-Qiu Zhang, and Ru-Rong Ji. Nature Neuroscience, May 22, 2017. DOI: doi:10.1038/nn.4571*

Source: Duke Today (Durham, N.C. – May 23, 2017).

LEARN MORE:
ANESTHESIOLOGY.DUKE.EDU/GLOBALHEALTH.HTML

**This year marked extraordinary accomplishments in global health for Duke Anesthesiology's faculty and trainees who embarked on three mission trips to Ghana, Guatemala and Haiti where they not only provided clinical care, but desperately needed mentorship and basic life support (BLS) training to those who need it the most.**

"Our achievements just confirm the promise we've made as a department - to allow our residents and fellows to be exposed to the bigger world while continuing to build our portfolio as an institution," says Dr. Adeyemi Olufolabi, an obstetric anesthesiologist who plays a key role in the department's global heath missions overall, with a specific interest in reducing maternal mortality in Ghana. "We have continued to expand our expertise to help people who don't have the same strengths and resources that we have here at Duke."

Duke Anesthesiology has offered CA-3 residents an American Board of Anesthesiology accredited, month-long global health residency rotation for the past five years, allowing them the opportunity to play significant roles, including teaching BLS and fundamentals of anesthesia, establishing an anesthesia database and learning ultrasound principles. Through engagement with many collaborators, including nurse anesthetists and other Duke departments, maternal mortality at Ridge Hospital has decreased by 34 percent and still births have decreased by 36 percent; a significant decline in case fatalities related to obstetric hemorrhage and preeclampsia.* Spinal anesthesia usage for cesarean section also increased from six percent to more than 90 percent.**

In 2009, members of Duke Anesthesiology played an instrumental role in starting only the third nurse anesthesia school in Ghana. This school has since put more than 160 nurses through the program, and as Dr. Olufolabi found this year, has doubled in class size (80 students) with a significant need for tutors. "Ghana has less than 30 clinical physician anesthesiologists which doesn't leave time for them to teach. These students were just waiting to be taught. That was our biggest success this year. If we had not been there, I don't know how this school would have coped," he says.

As portrayed in these reflections from abroad, the department continues to build on the enthusiasm of its faculty, CRNAs and trainees who see the need and insist on the opportunity to go beyond their world to make a difference across the globe and make Duke Anesthesiology a recognized leader in global health.

*(January 2012). Advancing obstetric and neonatal care in a regional hospital in Ghana via continuous quality improvement. *International Journal of Gynecology & Obstetrics.*

**(June 2015). Teaching neuraxial anesthesia techniques for obstetric care in a Ghanaian referral hospital: achievements and obstacles. *Anesthesia & Analgesia.*

# Reflections from Abroad

## GHANA

### DR. BRIAN ROGERS, FORMER CA-3 RESIDENT

The goal of the trip to Ghana was to create a project that could show an incremental measurable gain in the delivery of health care. We arrived in Accra, Ghana at Ridge Regional Hospital during a very interesting time. We worked with three groups of trainees: first year nursing anesthesia students, CRNAs and house officers.

It became apparent that there was a huge deficit in people qualified to lecture at the hospital's nurse anesthesia school, and my project included providing required lectures to the house officers. To generate excitement, I pitched "flipping the classroom." Each day, a new house officer gave a 20-30 minute lecture, then I filled in the gaps. The house officers immediately engaged, and in a short time, it was easy to see their excitement for the field of anesthesiology.

During the month, the team also provided basic life support training to 40 SRNAs, 30 certified anesthetists, and seven house officers. I was able to find the missing working defibrillator, the only one in the hospital.
After work, there were opportunities to debrief and see Ghana. We met with a group of Americans living in Ghana, many who were just granted dual citizenship. Adam Flowe, Derrick King, and Kent Smith joined us for the last week of the mission trip and helped with teaching and providing valuable supplies. Kent was able to tour the hospital with the technical support staff and provide insight on ways to improve efficiency.

Overall, the trip was a great success. I have grown so much as a global citizen, a human and a physician. It is safe to say that quality anesthesia care is one of the largest health care disparities in Africa. Dr. Olufolabi (Duke) and Dr. Medge Owen (Wake Forest) are literally saving the lives of women and children around the world. Their work has forever changed Ghana.

"The resourcefulness of our clinic was impressive. Our equipment was safe, but streamlined. This helped us appreciate the clinical pearls we learned in our training, but have largely been replaced by access to labs and imaging. To realize my commitment to service was humbling."

**Dr. Anushree Doshi**
CA-3 Resident

## GUATEMALA

DR. BRAD TAICHER

We traveled to Guatemala City, Guatemala for the sixth time in six years to help evaluate and care for a group of children undergoing general and urologic surgeries. This year's anesthesia team was comprised of Stephanie Jones (fellow), Dayna Seguin (CRNA) and Becky Motykiewicz (CRNA), as well as three local anesthesia residents. On our first day we saw more than 80 children come through the clinic to be evaluated by our surgical team for appropriateness, and by our anesthesia team to ensure they were medically optimized, and plan for the week ahead.

Guatemala is the poorest country in Central America, and one of the poorest in the world. The public health system in Guatemala is well-developed but bankrupt. It lacks sufficient resources to provide care for all in need, creating an enormous backlog of patients. About 4.5 million people live in the area, and more than 90 percent rely on the public system. Only two significant public hospitals handle major surgeries and are only provided enough funding to purchase supplies to do elective operations in the mornings for about half a year. When they run out of supplies, it's emergency surgery only.

Guatemala is a country of children, with greater than 50 percent of the population younger than 18-years-old. There is no pediatric fellowship training, so when I'm there I'm usually the only pediatric anesthesiologist in the country. Pediatrics is an interest for many here, but a job for few. Our mission brings hope to families while simultaneously seeking a sustainable model by supplementing pediatric training for local providers and collaborating on research and quality improvement endeavors with local institutions.

We are grateful for the phenomenal support provided by our department, hospital, and university over the past six years and the opportunity to include our own trainees and CRNAs. We are excited to continue our collaboration in Guatemala and look forward to another successful trip!

## HAITI

DR. ANUSHREE DOSHI, CA-3 RESIDENT

We spent a week in Jacmel, Haiti providing anesthesia care and helping to improve the education of Haitian doctors and nurses caring for patients in the perioperative period.

To be able to realize my commitment to service in an area of acute need and limited resources was fulfilling. Our 14-hour days were often full of challenges, but we gained strength in knowing that we fostered a sense of community among the scrub nurses, circulators, anesthesiologists, surgeons, and staff members.

I learned that while good will and intentions are important, global health missions require thoughtful planning and precise leadership. I feel lucky to have been part of an experienced group that did not have to learn firsthand which medications are easily denatured in the heat or how to refurbish donated anesthesia machines. I got an up-close look at pathology such as thyroid storm, acute hypocalcemia, and the emergency airway management of an expanding neck hemotoma (luckily we had access to a video laryngoscope). The emphasis on low resources was never more clear than needing patients to spontaneously ventilate during their surgeries, as controlled ventilation consumed precious oxygen.

Each patient was followed in a clinic both preoperatively and postoperatively, enabling us to feel safe in our anesthetic environment and certain that patients would not be left stranded after their procedures (for example, our thyroidectomies all received free, lifelong synthroid and thyroid management postoperatively). We always had translators on-hand as well as community workers who were familiar with what was required for each surgery, to ensure that our intraoperative and PACU resources were appropriate. Because of this mission, my interest in global health has become concrete and tangible, and is something I hope to integrate into my future practice.

"I learned that it's possible to provide a safe and effective anesthetic without relying on the materials we use every day at Duke. I put my training to good use for a patient population that really needs it."

**Dr. Stephanie Jones**
Fellow

## Dr. Olufolabi Earns Fulbright Global Scholar Award

Duke Anesthesiology's Adeyemi Olufolabi, MB BS, has earned a prestigious Fulbright Global Scholar Award for his commitment to research and teaching.

This award is part of the Core Fulbright U.S. Scholar Program which offers more than 500 teaching, research or combination teaching/research awards in at least 125 countries. Dr. Olufolabi proposed to educate anesthesia providers and students in Rwanda on high-risk obstetrics in a main tertiary hospital in that country. This award will allow him to train leaders within the field of anesthesia in the management of obstetric anesthesia service due to the high maternal mortality experienced. Dr. Olufolabi will also conduct a study to examine the impact of maternal death on male partners/spouses and the family.

"It has been my dream to spend extended time in Africa to see how I can make a difference," says Dr. Olufolabi. "I am so grateful for this opportunity."

# $13,242

**TOTAL PIE IN THE FACE FUNDS RAISED SINCE 2014**

## A Record-Breaking Global Health Fundraiser

For the third year in a row, a crowd gathered for Duke Anesthesiology's Pie in the Face fundraising event to watch the top donor throw the honorary pie at the contest "competitor" who raised the most money, all in the name of global health!

This year's winner, Dr. Eddie Sanders, came prepared as Katie Galbraith, president of Duke Regional Hospital, threw two honorary pies on behalf of the top donor, Shawn West, administrative director for Regional Anesthesia, PLLC. The tables then turned as last year's contestants, John Borrelli and Dr. Sol Aronson, made quite the entrance and surprised Dr. Sanders with two additional pies to the tune of KISS, Dr. Sanders' favorite rock band. And, there was no escaping a pie in the face for each of the runner-up contestants, Drs. Stuart Grant and Dhanesh Gupta!

This year's three "competitors" raised $6,366 – the largest Pie in the Face fundraising total to-date which will go toward departmental residents' travel expenses for their global health missions. Dr. Sanders raised $4,280, Dr. Grant raised $1,291 and Dr. Gupta raised $795. Thank you to all of the donors for their generosity and the contestants for participating in this year's fundraiser!



Drs. Richard Moon, Eugene Moretti and their team at Mount Everest's Base Camp.


Dr. Brad Taicher and his team in Guatemala City, Guatemala.

# Residency Program Director Reveals Match Day Highlights

This year's Match Day brought an element of growth to the annual event known as an exciting rite of passage in the lives of thousands of medical students around the world. Not only was this the largest Main Residency Match® in history, it was a record-breaking recruitment season for the Duke Anesthesiology Residency Program that welcomed 15 interns as its Match Class of 2021.

Annemarie Thompson, MD

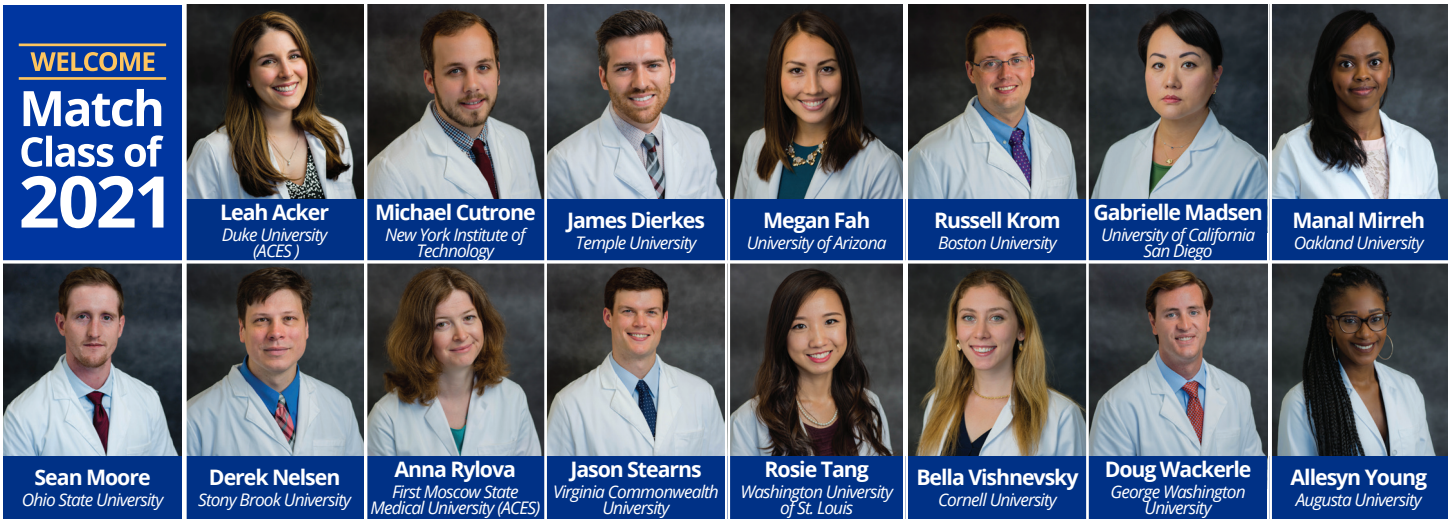
"We were incredibly excited to open that envelope and see the names on our list. In fact, some of our faculty were so excited they began contacting some of the Matches they interviewed along the way which I think is unique and pretty remarkable," says Dr. Annemarie Thompson, Duke Anesthesiology's residency program director. "It was so satisfying to watch how happy my colleagues were during the unveiling and how enthusiastic they were to welcome these individuals to our team. It was one of the most special moments of Match Day for me."

Dr. Thompson was in her office, surrounded by her colleagues, when her Match list was revealed this year. But her memories of the drama, the tears and the sheer joy at her Match Day celebration are never too far away. "It still feels like a whole lifetime in a minute when you open that envelope; medical students learn where they're going to train and spend the next few years of their lives, and we learn who will join our program."

Selecting the Match class is no small feat. A dedicated team of faculty and residents is committed to recruiting the best and the brightest during interview season at Duke Anesthesiology. "I'm always looking to improve the process," adds Dr. Thompson, "but my guiding principal is to give potential Matches an authentic view of what it's like to be a resident at Duke Anesthesiology." She does so by creating an environment of authenticity during the interview process; talking about the program and personally showing applicants the potential and opportunities they can have training at Duke and living in Durham.

According to the National Resident Matching Program, 35,969 U.S. and international medical students and graduates vied for 31,757 positions, the most-ever offered in the Match. Dr. Thompson keeps a close eye on these numbers, specifically noting that this year, there were more anesthesiology positions available in the Match which means programs grew, including Duke Anesthesiology's, which offered one more intern position for 2017. The Duke Anesthesiology Residency Program also received more applications than ever before, reaching a high of 1,013 applicants, an increase that Dr. Thompson partially attributes to Duke's size and faculty.

"Duke has a unique position compared to other residency programs and we have enjoyed a reputation for having an innovative program that people want to join," says Dr. Thompson. "We're a large, international medical center, but contained within it is a medium-sized, very supportive residency program located in a fun and affordable place to live. We truly have world-class faculty here. We have people in every single field who are nationally and internationally recognized. For residents to have the opportunity to work one-on-one with our faculty, get involved in their projects and patient care, and receive advice during particular periods of their career is a treasure. Our faculty is what makes our program so special. I'm very proud of what we have to offer as an institution."



# The Bill White Award Goes to...

Dr. Mahajan presenting Dr. Smith the Bill White Award.

At a special 25th anniversary edition of Academic Evening, Dr. Kendall Smith, then CA-3 resident, was the first place winner of the Bill White Award, the only award of the evening specifically designated for resident research. Drs. Jon Andrews and Rebecca Anderson, then CA-1s, were runner-ups.

The annual event supports research and discovery with the overall goal of advancing anesthesia, critical care and pain management.

# Duke Anesthesiology Represented by Residents at Clinical Research Day

On May 18, Drs. Josef Pleticha and Julien Cobert, CA-1 residents, presented their research at the School of Medicine's annual Clinical Research Day. Nearly 350 students, staff and faculty attended the event, which was hosted in partnership with the Duke Clinical Research Institute and the Office of Graduate Medical Education. The poster competition featured 42 projects presented by residents and fellows representing 10 clinical departments.

Resident Class of 2017 posing for the camera before graduation day.

## By the Numbers

ranked **#5** *in the nation by* doximity

**15** matched positions

**100%** board certification since 2009

**Duke** University School of Medicine ranked **#7** *in the nation* for research


ranked **#7** **Best Place to Live** in the USA

## DUKE ANESTHESIOLOGY ALUMNI SPOTLIGHT

Duke Anesthesiology takes pride in those who play an integral role in strengthening the department and bring the anesthesia specialty to new heights. Its leaders believe that continued engagement with alumni is key to innovation and future success.

By Stacey Hilton

# Dr. Dan Berkowitz

## Johns Hopkins University

**For Dr. Dan Berkowitz, becoming a "Dukie" is one of the highlights of his life. "I look back 25 years and realize that Duke was a bit of a sleeping giant that was just about to emerge on this stratospheric trajectory to becoming a top ten medical institution, and I was honored to be taken along for the ride," he says.**

Dr. Berkowitz received his MBBCh from the University of the Witwatersrand Medical School in South Africa but aspired to study at Duke. He joined the Department of Anesthesiology as it was on the cusp of legendary leadership with the recruitment of Dr. Jerry Reves as chief of the Cardiothoracic Anesthesia Division who then became the chairman in 1991 and has produced "some of the most important clinical and translational cardiovascular researchers, ultimately defining this field of medicine spanning three decades." When Dr. Berkowitz was offered a position in the Duke Anesthesiology Residency Program in 1988, he says he never looked back and has always been grateful for these opportunities that launched his career; he currently serves as the director of the Cardiac Anesthesia Division and the vice chair for research at Johns Hopkins University School of Medicine.

After completing residency, Dr. Berkowitz became one of only two trainees accepted into Duke's Adult Cardiothoracic Anesthesiology Fellowship, a program that is regarded as one of the top in the nation and internationally-recognized. He says it was a unique concept at the time because Dr. Reves was the first to institute a two-year fellowship. "I believe this is one of Jerry's biggest contributions. He understood the importance of creating a fellowship that dedicated an entire year to research which allowed us to develop a robust academic career."

One of Dr. Berkowitz's fondest memories from his time at Duke is working with his primary research mentor, Dr. Debra Schwinn, as the first postdoc in her lab studying molecular physiology and biology, which he says was just becoming incorporated into the vernacular of anesthesia. "The innovative spirit within this department was and still is remarkable; it permeates throughout the entire institution. But for me, the Duke Anesthesiology legacy is its invaluable mentorship." He recalls the time when he misread the deadline to submit his application for a competitive Foundation for Anesthesia Education and Research grant. He called Dr. Schwinn, who he says despite being ill, sat at the computer with him for eight hours on a Sunday to help him complete his application for the grant he was ultimately awarded (the focus of the project was to understand the differences in the molecular signaling mechanisms between the alpha 1 adrenergic receptor subtypes). "That type of dedication is priceless and speaks to the investment that this department provides its trainees. These mentors become your lifelong coach in many ways, which is how Duke leaves its legacy and why it has been such an important influence in my life."

Today, as director of the Integrated Vascular Biology Laboratory, which has been funded by the National Institutes of Health for the past 15 years, he studies the biology and pathobiology of components of blood vessels that contribute to disease processes, such as aging, atherosclerosis and radiation-induced vascular endothelial function. He was also notably funded by NASA to investigate the effects of deep space radiation on the vasculature in effort to discover therapeutics that can reverse the damage in astronauts who have been exposed to dangerously high levels of galactic cosmic radiation. And, he continues to initiate collaborations with Dr. Mihai Podgoreanu, the chief of the Cardiothoracic Anesthesia Division at Duke, studying proteins that are involved in epigenetic regulation and vascular function in hibernating mammals to better understand mechanisms of organ protection in humans.

### BACKGROUND

- University of Witwatersrand Medical School, South Africa
- Human Genetics Fellowship, South African Institute of Medical Research
- Microbiology Research Fellowship, Long Island Jewish Medical Center
- Anesthesiology Residency, Duke University SoM
- Adult Cardiothoracic Anesthesiology Fellowship, Duke University SoM
- Director, Cardiac Anesthesia Division, Johns Hopkins University SoM
- Vice Chair for Research, Johns Hopkins University SoM

"It's important to keep abreast with faculty at an institution like Duke which is always on the cutting edge. In some ways it's self-serving, but it's also important in terms of networking on behalf of the next generation of anesthesiologists and their future," says Dr. Berkowitz, who is currently working to reinvigorate a junior faculty exchange program with his department at Johns Hopkins and Duke Anesthesiology to enhance trainees' academic exposure and vigor through grand rounds presentations.

"There is always a feeling of loyalty and a commitment towards giving back. It's been a privilege to essentially stand on the shoulders of some of the original greats of Duke Anesthesiology, like Jerry Reves, Mark Newman and Debra Schwinn, who could demand and extract excellence from you with a relentless outpouring of recognition of your successes - the true mark of outstanding leadership."

# Dr. Hilary Grocott

## University of Manitoba

**"There is no hurdle that is too big to overcome at Duke. It was that attitude of not accepting failure, always pushing the limits, and being on the cutting-edge that not only brought me to Duke, but what kept me there."**

Dr. Hilary Grocott completed medical school and anesthesia residency in Canada before coming to Duke in 1995 where he went on to complete three years of fellowship and research training in cardiothoracic anesthesiology. His first year of clinical training and mentorship under Dr. Mark Newman and then chairman, Dr. Jerry Reves, allowed for a refining of his already developing focus on the neurologic complications associated with cardiac surgery. He spent the next two years in the lab, training under Dr. David Warner, learning the basics of cerebral ischemia research and anesthetic mechanisms of neuroprotection. Initially transitioning from Dr. Warner's lab to his own, he started working with a large animal (pig) model of cardiopulmonary bypass (CPB). Soon seeing the limitations imposed by these larger models, and by translating the knowledge he acquired while working under Dr. Warner, he developed (along with the first fellow under his supervision, Dr. Burkhard Mackensen) a novel long-term survival model of CPB in rats. This allowed applying the well-established broad spectrum of laboratory techniques already available for use in rats to study cerebral dysfunction after CPB. In doing so, it provided the opportunity to look at new paradigms for bypass management in a reproducible small animal model – a model that is still being used at Duke, and one that was adopted by numerous labs across North America, Europe and China.

"I credit the confidence and the latitude that Drs. Warner, Newman and Reves gave me to experiment on my own and ultimately establish a new pathway that allowed us to better understand how to optimize cardiopulmonary bypass management," says Dr. Grocott, who joined Duke Anesthesiology as faculty in 1998 and stayed for the next nine years of his career. "It was so exciting to be surrounded by visionaries who took on issues in a meaningful way through constant collaboration. There was an energy, a spirit of investigation and a can-do attitude that was so pervasive."

Eventually, the call to return to his roots became the driver for him to leave Duke to continue his career back in Canada. "I was concerned, professionally, about leaving the protected and vigorous academic environment at Duke," Dr. Grocott admits. "But what I learned was the foundation that Duke Anesthesiology provided me was so solid, my growth didn't stop when I left; my career took off in many fruitful directions due to the fundamental lessons I took with me that allowed me to grow independently."

Dr. Grocott is now a professor of anesthesia and surgery at the University of Manitoba in Winnipeg and the editor-in-chief for the *Canadian Journal of Anesthesia*, one of the top tier anesthesia journals in the world, where he oversees the annual peer-review of more than 800 manuscripts broadly covering the fields of anesthesia, critical care, pain and perioperative medicine. He remains a practicing cardiac anesthesiologist, and his research continues to focus on the cerebral sequelae of cardiac surgery, specifically how to utilize the latest neuromonitoring devices (i.e., near-infrared spectroscopy and electroencephalography) to essentially "open a window into the brain on bypass" and to understand how best to mitigate the impact of cardiac surgery on the brain. Recently, he has expanded his research to include areas that mechanistically cross-over with adverse cerebral outcomes including inflammation, bleeding and perioperative genomics.

While Dr. Grocott may have physically left Duke, he says he never left Duke intellectually. He continues to hold the position as adjunct professor of anesthesiology at Duke University, maintains a strong relationship with his colleagues, and remains a dedicated member of the supportive environment that Duke Anesthesiology provides its trainees and junior faculty in effort to grow the next generation.

**BACKGROUND**

- University of Saskatchewan Medical School, Canada
- Anesthesia Residency, University of Manitoba, Canada
- Adult Cardiothoracic Anesthesiology Fellowship, Duke University SoM
- Professor of Anesthesiology (with tenure), Duke University SoM
- Professor of Anesthesia and Surgery, University of Manitoba
- Adjunct Professor of Anesthesiology, Duke University SoM
- Editor-in-Chief, *Canadian Journal of Anesthesia*

"This department gave me so much that it's now my responsibility to give back and to continue to help the growth of our clinical scientists and academicians. And, at the end of the day, when I'm faced with a clinical issue that leaves me with uncertainty, I know I can always pick up the phone and ask the question, 'what do you do at Duke?' Furthermore, I can do that with confidence knowing I will then be doing the right thing."

### Alumni Spotlight Family Tree

**2015**
- Dr. Chester Buckenmaier, III
- Dr. Torijaun Dallas
- Dr. Gerald Maccioli

**2016**
- Prof. Monty Mythen
- Dr. Debra Schwinn

**2017**
- Dr. Dan Berkowitz
- Dr. Hilary Grocott

# Department**Faculty**

## Department**Chairman**

Joseph P. Mathew, MD, MHSc, MBA
Jerry Reves, MD, Professor of Cardiac Anesthesiology

## **Senior**Cabinet

Solomon Aronson, MD, MBA, FACC, FCCP, FAHA, FASE
John Borrelli, MBA
Padma Gulur, MD
William Maixner, DDS, PhD
Gavin Martin, MB ChB, FRCA, MMCi
Joseph P. Mathew, MD, MHSc, MBA
Mark Stafford-Smith, MD, CM, FRCPC, FASE

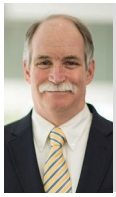
## **Executive**Team

Solomon Aronson, MD, MBA, FACC, FCCP, FAHA, FASE
Raquel R. Bartz, MD, MMCi
John Borrelli, MBA
Thomas E. Buchheit, MD
Dan Cantrell
Adam Flowe, CRNA
Jeffrey C. Gadsden, MD, FRCPC, FANZCA
Padma Gulur, MD
Dhanesh K. Gupta, MD
Ashraf S. Habib, MBBCh, MSc, MHSc, FRCA
Stephen M. Klein, MD
William Maixner, DDS, PhD
Jonathan B. Mark, MD
Gavin Martin, MB, ChB, FRCA, MMCi
Joseph P. Mathew, MD, MHSc, MBA
Timothy E. Miller, MB ChB, FRCA
Mihai V. Podgoreanu, MD, FASE
Allison Kinder Ross, MD
Edward G. Sanders, MD
Mark Stafford-Smith, MD, CM, FRCPC, FASE
Annemarie Thompson, MD

**CHIEF**
**Stephen M. Klein, MD**
Medical Director, Ambulatory Surgery Center
Associate Professor of Anesthesiology

### AMBULATORY ANESTHESIA

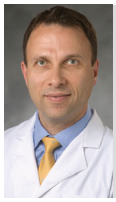
Michael Kent, MD
Steve Melton, MD
Karen C. Nielsen, MD



**CHIEF** *(Retired June 2017)*
**David S. Warner, MD**
Distinguished Professor of Anesthesiology
Professor in Neurobiology
Professor of Surgery
Faculty Network Member of the Duke Institute for Brain Sciences

### BASIC SCIENCES

Ru-Rong Ji, PhD
Sven-Eric Jordt, PhD
Madan Kwatra, PhD
Qing Ma, MD
Wulf Paschen, PhD
Noa Segall, PhD
Huaxin Sheng, MD
Niccolo Terrando, PhD
Wei Yang, PhD
Zhiquan Zhang, PhD



**CHIEF**
**Mihai V. Podgoreanu, MD, FASE**
Associate Professor of Anesthesiology
Director, Perioperative Genomics Program

### CARDIOTHORACIC ANESTHESIA

Solomon Aronson, MD, MBA, FACC, FCCP, FAHA, FASE
Brandi Bottiger, MD
Anne Cherry, MD
J. Mauricio Del Rio, MD
Michael Fierro, MD
Kamrouz Ghadimi, MD
Loreta Grecu, MD
Nazish Hashmi, MBBS
Mandisa Maia Jones-Haywood, MD
Jorn A. Karhausen, MD
Miklos D. Kertai, MD, PhD
Rebecca Klinger, MD, MS
Jerrold Levy, MD, FAHA, FCCM
Yasmin Maisonave, MD
Negmeldeen Mamoun, MD, PhD
Michael W. Manning, MD, PhD
Joseph P. Mathew, MD, MHSc, MBA, FASE
Cory Maxwell, MD
Sharon McCartney, MD
Mark F. Newman, MD
Alina Nicoara, MD, FASE

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Madhav Swaminathan, MD, MMCi, FASE, FAHA
Annemarie Thompson, MD
Eleanor Vega, MD
Ian J. Welsby, MB, BS, BSc, FRCA

**DIRECTOR**
**Richard E. Moon, MD, CM, MSc, FRCP(C), FACP, FCCP**
Professor of Anesthesiology
Professor of Medicine

## CENTER FOR HYPERBARIC MEDICINE AND ENVIRONMENTAL PHYSIOLOGY

Bruce J. Derrick, MD
John J. Freiberger, MD, MPH
Claude A. Piantadosi, MD
Hagir Suliman, DVM, PhD

**DIRECTOR**
**William Maixner, DDS, PhD**
Joannes H. Karis, MD, Professor of Anesthesiology
Vice Chair, Research
Director, Duke Innovative Pain Therapies

## CENTER FOR TRANSLATIONAL PAIN MEDICINE

Aurelio Alonso, DDS, MS, PhD
Andrey Bortsov, MD
Francis J. Keefe, PhD
Wolfgang Liedtke, MD, PhD
Jongbae Jay Park, PhD, LAc
Andrea G. Nackley, PhD
Shad B. Smith, PhD

**CHIEF**
**Edward G. Sanders, MD**
Assistant Clinical Professor of Anesthesiology

## COMMUNITY

Lu Adams, MD
David S. Bacon, MD
Rachel Beach, MD
John D. Buckwalter, MD
Eric Ehieli, MD
William J. Fortuner, MD
Joshua H. Friedman, DO
Christopher Gratian, MD
Elsje Harker, MD
Daniel Kovacs, MD
Eugene R. Lee, MD
Andrew Lloyd, MD
Debabrata Maji, MD
Scott V. McCulloch, MD
Tyler McCulloch, MD
Edward McKenzie Jr., MD
Elizabeth Nichols, MD
William P. Norcross, MD
Shannon Page, MD
Gary L. Pellom, MD
Earl S. Ransom Jr., MD
Richard D. Runkle III, MD
Siddharth Sata, DO
Michael J. Stella, MD
Evan Sutton, MD
Neel Thomas, MD

**CHIEF**
**Raquel R. Bartz, MD, MMCi**
Co-Director, Surgical Intensive Care Unit (SICU)
Assistant Professor of Anesthesiology
Assistant Professor in Medicine

## CRITICAL CARE MEDICINE

Vijay Krishnamoorthy, MD, PhD
Nitin Mehdiratta, MD
Jamie Privratsky, MD, PhD
Paul E. Wischmeyer, MD, EDIC

**CHIEF**
**Timothy E. Miller, MB ChB, FRCA**
Clinical Director, Abdominal Transplant Anesthesiology
Director, Perioperative Medicine Fellowship
Associate Professor of Anesthesiology

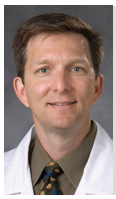
## GENERAL, VASCULAR AND TRANSPLANT ANESTHESIA

Chakib Ayoub, MD, MBA
Yuriy Bronshteyn, MD
Brian J. Colin, MD
W. Jonathan Dunkman, MD
Ehimemen Iboaya, MD
Nancy W. Knudsen, MD
Catherine M. Kuhn, MD
John Lemm, MD
Elizabeth Malinzak, MD
Richard E. Moon, MD, CM, MSc, FRCP(C), FACP, FCCP
Eugene W. Moretti, MD, MHSc
Iain C. Sanderson, MD, BM, BCh
Aaron J. Sandler, MD, PhD
Arturo Suarez, MD
Ankeet Udani, MD
Kerri M. Wahl, MD, FRCP(C)
John Whittle, MBBS, FRCA
Christopher C. Young, MD

**CHIEF**
**Dhanesh K. Gupta, MD**
Professor of Anesthesiology

## NEUROANESTHESIOLOGY, OTOLARYNGOLOGY AND OFF-SITE ANESTHESIA

Miles Berger, MD, PhD
Nicole R. Guinn, MD
Jennifer Hauck, MD
Ulrike Hoffmann, MD, PhD
Michael Luke James, MD, FAHA, FNCS
John C. Keifer, MD
Grace C. McCarthy, MD
Colleen Moran, MD
Charles Andrew Peery, MD, MPH, MA
Bryant W. Stolp, MD, PhD
Jeffrey Taekman, MD



**CHIEF**
**Thomas E. Buchheit, MD**
Associate Professor of Anesthesiology
Director, Duke Pain Medicine

## PAIN MEDICINE

Richard L. Boortz-Marx, MD
Jessica Carter, MD
Anne Marie Fras, MD
Arun Ganesh, MD
Padma Gulur, MD
Thomas J. Hopkins, MD
Steven Prakken, MD
Muhammad Yawar J. Qadri, MD
Neil Ray, MD
Lance A. Roy, MD
Scott Runyon, MD
Dianne Scott, MD

**CHIEF**
**Allison Kinder Ross, MD**
Professor of Anesthesiology
Professor in Pediatrics

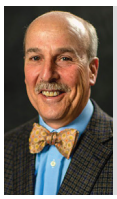
## PEDIATRIC ANESTHESIA

Warwick Ames, MBBS, FRCA
Guy de Lisle Dear, MA, MB, BChir, FRCA, FUHM
John B. Eck, MD
Lisa M. Einhorn, MD
Nathaniel H. Greene, MD, MHS, FAAP
H. Mayumi Homi, MD
Edmund H. Jooste, MB, ChB
Kelly Machovec, MD, MPH
Brad M. Taicher, DO, MBA
Andrea Udani, MD

**CHIEF**
**Jeffrey Gadsden, MD, FRCPC, FANZCA**
Associate Professor of Anesthesiology
Director, Regional Anesthesiology and Acute Pain Medicine Fellowship

## ORTHOPAEDICS, PLASTICS AND REGIONAL ANESTHESIOLOGY

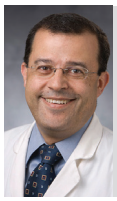
W. Michael Bullock, MD, PhD
Joshua Dooley, MD
Ellen M. Flanagan, MD
Stuart A. Grant, MB, ChB, FRCA
Amanda Kumar, MD
David B. MacLeod, MBBS, FRCA
Erin Manning, MD, PhD
Gavin Martin, MB, ChB, FRCA, MMCi
Hector Martinez-Wilson, MD, PhD
Brian Ohlendorf, MD
Stephen J. Parrillo, MD



**CHIEF**
**Jonathan B. Mark, MD**
Professor of Anesthesiology
Assistant Professor of Medicine

## VETERANS AFFAIRS ANESTHESIOLOGY SERVICE

Atilio Barbeito, MD, MPH
Joel S. Goldberg, MD
Juliann C. Hobbs, MD, MPH
Hung-Lun (John) Hsia, MD
Amy K. Manchester, MD
Srinivas Pyati, MD, MBBS
Karthik Raghunathan, MD, MPH
Rebecca A. Schroeder, MD, MMCI
Timothy Stanley, MD
Thomas Van de Ven, MD, PhD
Dana N. Wiener, MD



**CHIEF**
**Ashraf S. Habib, MBBCh, MSc, MHSc, FRCA**
Professor of Anesthesiology
Professor in Obstetrics and Gynecology

## WOMEN'S ANESTHESIA

Terrence Allen, MBBS, FRCA
Matthew Buck, MD
Jennifer E. Dominguez, MD, MHS
Jennifer Lee, MD
Abigail H. Melnick, MD
Adeyemi J. Olufolabi, MB BS
Zaneta Y. Strouch, MD, MPH
Mary Yurashevich, MD, MPH

Get to know our entire team:

Anesthesiology.Duke.edu/MeetTheTeam.html

Departmental Grants $100,000+

## BASIC SCIENCES

### Ru-Rong Ji, PhD
**Hemichannels, Astrocytic Release, and Neuropathic Pain**
Funding Agency: National Institutes of Health
Grant Amount: $100,000
**Neuronal and Glial Interactions of Neuropathic Pain**
Funding Agency: National Institutes of Health
Grant Amount: $514,246

### Sven-Eric Jordt, PhD
**Biomarkers of Lung Injury in Methyl Isocyanate Exposed Rodents and Pigs**
Funding Agency: University of Colorado - Denver
Grant Amount: $113,847

### Madan M. Kwatra, PhD
**Evaluation of Novel Anti-Cancer Agents, Either Alone or in Combination, for Activity Against Glioblastoma Subtypes: A Personalized Medicine Approach**
Funding Agency: Genzada Pharmaceuticals, LLC
Grant Amount: $763,200
**Evaluation of VAL-083, Either Alone or in Combination with Other Agents, for its Activity Inhibition of Glioblastoma Subtypes**
Funding Agency: DelMar Pharmaceuticals, Inc.
Grant Amount: $238,500

### Niccolò Terrando, BSc, DIC, PhD
**Role of TLR4 in Surgery-Induced Cognitive Decline**
Funding Agency: Takeda Pharmaceutical Company Limited
Grant Amount: $108,888
**Neurovascular Dysfunction in Delirium Superimposed on Dementia**
Funding Agency: National Institutes of Health/National Institute on Aging
Grant Amount: $2,815,756

### David S. Warner, MD
**Integrated Training in Anesthesiology Research**
Funding Agency: National Institutes of Health
Grant Amount: $217,963

### Wei Yang, PhD
**The Unfolded Protein Response and Neuroprotection in Stroke**
Funding Agency: National Institutes of Health
Grant Amount: $347,813

## CARDIOTHORACIC ANESTHESIA

### Kamrouz Ghadimi, MD
**LEX-209 Octapharma**
Funding Agency: Octapharma AG
Grant Amount: $126,992

### Joseph P. Mathew, MD, MHSc, MBA
**Educational Services Agreement**
Funding Agency: Sheridan Healthcare, Inc
Grant Amount: $375,000

### Madhav Swaminathan, MD, FASE, FAHA
**Angion AKI**
Funding Agency: Angion Biomedica Corp.
Grant Amount: $217,803

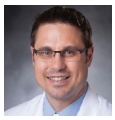
### Ian J. Welsby, MB BS
**Evaluation of Quantra System in Adult Patients Undergoing Major Surgical Procedures**
Funding Agency: HemoSonics, LLC
Grant Amount: $259,586

## CENTER FOR TRANSLATIONAL PAIN MEDICINE

### William Maixner, DDS, PhD
**Chronic Overlapping Pain Conditions**
Funding Agency: University of North Carolina - Chapel Hill
Grant Amount: $158,998

### Andrea G. Nackley, PhD
**Proteins, MicroRNAs and Genes Associated with TMD and Overlapping Pain Conditions**
Funding Agency: National Institutes of Health
Grant Amount: $586,001

## CRITICAL CARE MEDICINE



### Jamie R. Privratsky, MD, PhD
**The Role of Macrophage IL-1 Signaling in Acute Kidney Injury and Recovery**
Funding Agency: International Anesthesia Research Society
Grant Amount: $175,000

## GENERAL, VASCULAR AND TRANSPLANT ANESTHESIA

### Iain C. Sanderson, MD, BM, BCh
**National Patient-Centered Clinical Research Network (PCORnet): Clinical Data Research Networks(CDRNs) Phase II**
Funding Agency: South Carolina Research Foundation
Grant Amount: $280,000

## NEUROANESTHESIOLOGY, OTOLARYNGOLOGY AND OFFSITE ANESTHESIA

### Miles Berger, MD, PhD
**Paul B. Beeson Emerging Leaders Career Development Award**
Funding Agency: National Institutes of Health
Grant Amount: $1,195,505
**Neuro-inflammation in Postoperative Cognitive Dysfunction: CSF and fMRI Studies**
Funding Agency: National Institutes of Health
Grant Amount: $243,000

## PAIN MEDICINE

### Thomas J. Hopkins, MD
**SPR Peripheral Nerve Stimulation**
Funding Agency: SPR Therapeutics, LLC
Grant Amount: $163,188

## PEDIATRIC ANESTHESIA

### Guy De L. Dear, MA, MB, BChir, FRCA, FUHM
**Evaluation of Anesthesia Cost Dashboard**
Funding Agency: General Electric Company
Grant Amount: $320,513

## ORTHOPAEDICS, PLASTICS AND REGIONAL ANESTHESIOLOGY

### Jeffrey C. Gadsden, MD, FRCPC, FANZCA
**Mallinckrodt Hip IV vs. PO Acetaminophen**
Funding Agency: Mallinckrodt Pharmaceuticals
Grant Amount: $199,734

### Stuart A. Grant, MB ChB, FRCA
**Randomized Controlled Trial of SPR Pre-op PNS for TKA**
Funding Agency: SPR Therapeutics, LLC
Grant Amount: $114,390

### David B. MacLeod, MB BS
**NG INVOS Validation**
Funding Agency: Medtronic, Inc.
Grant Amount: $295,265
**Dysfunctional Hemoglobin Pulse Oximeter Manufacturability Study**
Funding Agency: Nonin Medical, Inc.
Grant Amount: $201,784

## WOMEN'S ANESTHESIA

### Ashraf S. Habib, MBBCh, MSc, MHSc, FRCA
**Pacira 402 Exparel C/S**
Funding Agency: Pacira Pharmaceuticals
Grant Amount: $ 275,546
**BioQ Ropivacaine 0.2% Pre-Filled Dispenser for Post Op Pain After CS**
Funding Agency: BioQ Pharma
Grant Amount: $150,658
**Trevena Oliceridine for Acute Pain**
Funding Agency: Trevena, Inc.
Grant Amount: $202,374
**Evaluation and Risk Assessment for Persistent Postsurgical Pain after Breast Surgery: A Collaborative Prospective Cohort Study**
Funding Agency: Duke/Duke-NUS Medical School
Grant Amount: $200,000

PRESENTED BY:

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# 29TH ANNUAL ASA ALUMNI EVENT

**10.21.2017**

TAJ BOSTON
THE ROOF

SCENES FROM THE 2016
**DUKE ANESTHESIOLOGY ASA ALUMNI EVENT**
CHICAGO, ILLINOIS


## Celebrating 25+ Years at Duke

**'88** Arrived at Duke for a cardiothoracic anesthesiology fellowship

**'92** Joined Duke Anesthesiology faculty

**'94** Appointed chief of the Cardiothoracic Anesthesia Division

**'01** Appointed as the first medical director of the Global Perioperative Research Organization

**'01** Named chairman of Duke Anesthesiology

**'04** Named the Merel H. Harmel Professor of Anesthesiology

**'06** Awarded the Bernard H. Eliasberg Medal for significant contributions in the fields of anesthesia, critical care and pain management

**'08** Created Duke Anesthesiology's Academic Career Enrichment Scholars Program

**'14** Named president of the Duke Private Diagnostic Clinic, LLC

**Today**

Preserve Dr. Newman's legacy by donating an **online gift** on our DREAM webpage toward the launch of the **Mark F. Newman Professorship**

# Leaving a **Legacy**

Described as a hard-working farmer's son from Owensboro, Kentucky, Dr. Mark Newman has become a pioneer in the field of perioperative neurologic research. Best known for his two decades of research on cognitive dysfunction and quality of life following coronary artery bypass graft surgery, Dr. Newman has played a significant role in defining the demographic, procedural and genetic risk factors for postsurgical cognitive decline. His discoveries regarding the management of body temperature and glucose levels to improve cognitive outcomes are widely used today.

He earned a medical degree at the University of Louisville School of Medicine in Kentucky and completed residency in anesthesiology at Wilford Hall United States Air Force Medical Center in San Antonio, Texas. He discovered his passion for the field of anesthesia while completing a cardiothoracic anesthesiology fellowship at Duke under the mentorship of then chairman, Dr. Joseph "Jerry" Reves. After completing his fellowship, Dr. Newman spent a number of years in the Air Force where he honed his leadership skills and gained an appreciation for the importance of contributing to the greater good. He returned to Duke as faculty, determined to improve perioperative patient outcomes. During the next nine years, he rose to the ranks of a division chief and chairman with a mission to advance the department.

During his chairmanship, Dr. Newman placed a strong emphasis on development. He notably created five endowed professorships, a faculty mentorship program and the Academic Career Enrichment Scholars (ACES) Program which equips trainees with the skills and experience necessary for successful careers in academic anesthesiology. He has trained and mentored more than 30 cardiothoracic anesthesiology fellows at Duke. In addition to being the first medical director of the Global Perioperative Research Organization, Dr. Newman developed the Multicenter Perioperative Outcomes Research Group and initiated a Perioperative Genomics Group that collected valuable information about the genetic predictors and mechanisms behind myocardial infarction and perioperative organ injury in effort to improve patient safety and postoperative outcomes. Thanks to Dr. Newman's unwavering commitment to patient care and relentless pursuit of knowledge, he has elevated Duke Anesthesiology to be one of the best anesthesiology departments in the world.

# Announcing the Mark F. Newman Professorship

"We can define our future and change the world around us through research, education and the advancement of patient care by working as a team and never accepting less than the best."

**Preserve Dr. Newman's legacy.** Donors who generously endow this new professorship are not only ensuring the progress of medicine, research and academic excellence, they are giving a gift for future generations to come.

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