

Innovations Innovators

University of Maryland School of Medicine
Department of Anesthesiology
Annual Report 2012/2013

The Year in Review

As I look back on the University of Maryland Department of Anesthesiology in 2012, several themes emerge. One is our expanded focus on creating better ways to educate our students, residents, fellows, and current faculty. Another is the refinement of anesthesiology approaches to enhance the patient experience. We've also continued to modernize our facilities and to pursue robust research projects. And all of this has been accomplished while meeting the needs of an ever-growing volume of cases.

The Anesthesiology Residency Program was once again accredited in 2012 by the Accreditation Council for Graduate Medical Education, and the program continues to attract some of the best minds and future academic leaders in the country. Residents are benefiting from an expanding application of simulation in their education, through the programs offered in the Maryland Advanced Simulation, Training, Research and Innovation Center. Simulation enables residents to experience events they may not encounter on a regular basis in clinical practice, including complex cases and emergencies, and prepares them to handle such challenges.

The Department of Anesthesiology is also embracing technology to improve the educational experience, using a real-time audience response system to turn passive lectures into interactive experiences for trainees. Anything we can do to engage students, residents, and fellows in what is being presented will improve learning and enhance the retention of information.

We're witnessing a rise in the number of residents who choose to subspecialize by continuing their training in fellowships, both in our department as well as top medical centers around the country. At the University of Maryland, we've added a new fellowship in Regional Anesthesiology. Recognizing the growing applications of regional anesthesia, we're also expanding our use of these techniques at the University of Maryland Medical Center, and now have a dedicated Regional Anesthesiology Service in this hospital.

In terms of clinical care, we've experienced a steady growth in the number of patients we care for each year. In particular, the Division of Pediatric Anesthesiology recently expanded its pediatric cardiovascular services. Our hospital is now one of only two hospitals in Maryland to offer anesthesiology for pediatric cardiac procedures, placing us in a leading position to perform these complex procedures.

Our faculty numbers continue to increase, and we've put into place a number of efforts to nurture their professional development. A comprehensive academic and administrative database will make it easier for faculty to create standardized CVs and to learn about research performed by other members of the Department. Through a formal mentoring process, faculty can request guidance from senior faculty members who can help them better understand the promotion process as well as provide career advice. We believe that such feedback and support are critical to the professional enrichment of our most valuable resource: our faculty, who form the foundation of all we do. Our department also continues to be a diverse group, with people from all backgrounds, creating a stimulating blend of talents and personalities, which benefits everyone.

In this era of healthcare belt-tightening, we remain committed to using our resources wisely and managing costs. Yet despite ongoing changes and uncertainty in healthcare delivery and reimbursement, our Department remains fiscally strong. I am confident that with the skills and talents of our faculty and staff, we will continue to meet our mission: to deliver state-of-the-art anesthesia services to patients; to educate students, residents, and fellows; to be recognized for our contributions to the specialty of anesthesiology through education, research, and scholarly activities; and to contribute to the accomplishments of the University of Maryland Medical School and Medical System.



Peter Rock, M.D., M.B.A., F.C.C.M.

Martin Helrich Professor and Chair, Department of Anesthesiology, University of Maryland School of Medicine

Professor of Anesthesiology, Medicine and Surgery, Anesthesiologist-in-Chief, University of Maryland Medical Center

OUR VALUES

To accomplish our mission and achieve our vision, we focus on the five pillars of our specialty:

Healing: Delivering the highest quality perioperative clinical care.

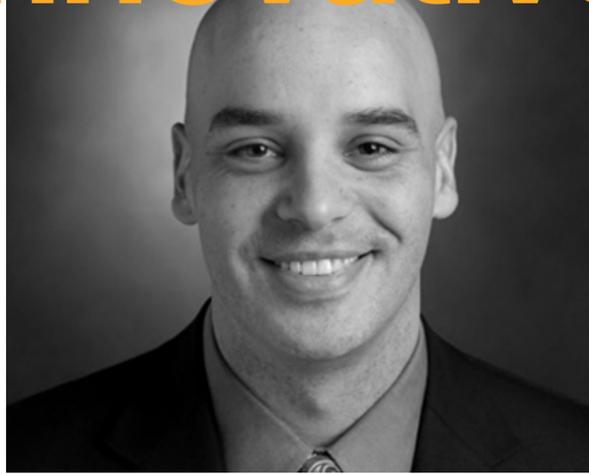
Teaching: Education and training of students, residents, fellows, and other health care providers.

Discovering: Development of new knowledge regarding perioperative care.

Caring: Fostering an environment that values professionalism, civility, compassion, collegiality, teamwork, and collaboration.

Leading: Promoting and encouraging leadership activities and skills at all levels of the Department.

Innovative Alumni



Koffi Kla, M.D.

*Assistant Professor of Anesthesiology
Medical Director of Holding Rooms and PACU
Associate Medical Director of Operating Rooms
Vanderbilt University School of Medicine, Nashville, TN*

As a medical student at the University of Maryland School of Medicine, Koffi Kla remembers one thing from his various rotations: anesthesiologists were present in every medical specialty. “In Pediatrics, in Ob/Gyn, wherever I went... anesthesiologists were always around,” Dr. Kla recalled. Attracted to a field where one doctor could work in so many different areas, he chose to pursue his residency in anesthesiology, completing it at the University of Maryland Medical Center in 2006. He worked at a private hospital following graduation and returned to the University of Maryland as a faculty member (2007-2009) when his wife, who was in the military, was transferred back to Maryland. When his wife was transferred to Tennessee, he joined the staff of Vanderbilt University in late 2009 and has been there ever since, building his career. “My training at the University of Maryland was a great experience,” Dr. Kla explained. “It provided exposure to a wide variety of cases and taught me how to take care of very sick patients. This education is the reason I am able to do what I do today.”



Brenda G. Fahy, M.D., M.C.C.M.

*Professor of Anesthesiology
Division Chief, Critical Care Medicine
University of Florida College of Medicine, Gainesville, FL
Director, American Board of Anesthesiology*

Critical care medicine is a complex, ever-changing discipline, and clinicians have to be able to think quickly and make rapid decisions regarding the care of very ill patients. Brenda Fahy believes her training at the University of Maryland Medical Center gave her the foundation she needed to make those decisions and to build upon in her role as Division Chief of Critical Care Medicine at the University of Florida. “I chose the University of Maryland for my residency because of the strength and reputation of the faculty of the department and the institution,” said Dr. Fahy. After graduating from Thomas Jefferson Medical College in Philadelphia, she completed an anesthesiology residency between 1986 and 1989 at Maryland, with subspecialty concentration in cardiothoracic anesthesiology and neuroanesthesiology during her final year of residency. She completed a critical care fellowship in 1990. “I enjoy critical care medicine because it presents intellectual and clinical challenges,” noted Dr. Fahy. “The University of Maryland offered me broad exposure to a diversity of patients. I received excellent training there, and was very well prepared to assume the faculty role and leadership position I have today.” This year, Dr. Fahy was named a Master of Critical Care Medicine (MCCM) — an honorary designation that has been awarded to only 34 critical care medicine specialists by the largest organization of critical care clinicians, the Society of Critical Care Medicine.



Patricia H. Petrozza, M.D.

*Associate Dean, Graduate Medical Education
Professor, Neuroanesthesiology
Department of Anesthesiology
Wake Forest Baptist Medical Center,
Winston-Salem, NC*

Patricia Petrozza remembers having to take first call just six months into her anesthesiology residency at the University of Maryland Medical Center in 1981. While there was always a senior resident available to oversee the newer residents, she recalled, “We took on a lot and had tremendous responsibility, so we learned quickly how to handle big cases. We were exposed to an excellent breadth of patient cases.” But more importantly, she added, “You had to know when you needed to call for help.” She left Maryland after completing a neuroanesthesiology fellowship in 1984 and has worked at Wake Forest Baptist Medical Center ever since. As Associate Dean of Graduate Medical Education, she appreciates how technology in the field “has grown in leaps and bounds,” but recognizes that one tenet of education remains constant: “You have to make sure people have the skills they need to practice.”

Raphael Gershon, M.D., M.B.A.

*Chief of Anesthesiology and Deputy Chief of Staff, Grady Memorial Hospital
Associate Professor, Department of Anesthesiology
Emory University School of Medicine,
Atlanta, GA*

Atlanta’s Grady Memorial Hospital is one of the largest public hospitals in the U.S. and is a busy Level 1 Trauma Center. It would be easy to say that it’s too difficult to give personalized care to every patient that comes through the doors of a place as big as Grady. But that’s not the case, said Raphael Gershon, who went to medical school (1982-86) at the University of Maryland School of Medicine and trained as an anesthesiology resident (1986-89) and then as a fellow (1989-90) in obstetric anesthesiology and pain medicine at the University of Maryland Medical Center. “Maryland provided an in-depth education and had a very conservative approach to patient care, asking, ‘What is best for each patient?’” he explained. “Although I run a department in a tertiary care inner city hospital that is even larger than UMMC, I still take those lessons home about individualizing patient care — lessons which I learned at Maryland.”



Mark S. Wallace, M.D.

*Professor of Clinical Anesthesia
Director, Division of Pain Medicine
Department of Anesthesiology
Director, Division of Clinical Research
Clinical and Translational Research Institute
University of California, San Diego (UCSD)
School of Medicine*

When Mark Wallace interviewed for an anesthesiology residency position at the University of Maryland Medical Center (1988 -1991), the department chair — the late Jane Matjasko, M.D. — wondered if he could cut it in the operating room, with all its alarms and sounds. That’s because Dr. Wallace has bilateral hearing aids, due to congenital progressive hearing loss. Not only did he ultimately make the grade, but his own situation prompted him to conduct a research project at medical conferences to measure hearing among anesthesiologists. The results revealed a higher than expected number of colleagues with hearing deficits, and signaled a need to reconsider the frequencies of the various alarms and signals in ORs. “This work, which was supported 100 percent by Dr. Matjasko, stimulated my interest in research,” said Dr. Wallace. That interest, coupled with the University of Maryland’s early recognition of the growing field of pain medicine, led him to pursue a pain medicine fellowship at UCSD after his residency. Today he is director of his department’s Pain Medicine Division and continues to conduct clinical research. “After my experience at Maryland and the incredible support I received from Dr. Matjasko, I decided I wanted to pursue academic medicine,” he concluded, “and I have no regrets.”





New technologies make it easier for our residents to keep track of their patients. Experience is provided in all anesthesia areas including complex and innovative subspecialty techniques.

Life Lessons

The educational programs of the University of Maryland Department of Anesthesiology have trained many of the leaders in anesthesiology today. The Department offers residency and fellowship programs in general and specialty anesthesiology as well as instruction for medical students. Students and trainees receive a broad education, with exposure to a diverse range of cases that greatly enhance the educational experience and prepare them for an enriching career. They also have the opportunity to make presentations at professional meetings; 15 such presentations were made by University of Maryland Anesthesiology residents and fellows in 2012 alone.

Residents The residency program is fully accredited and is now part of the Next Accreditation System (NAS) recently introduced by the Accreditation Council for Graduate Medical Education (ACGME). Residency training consists of supervised daily instruction in the care of patients requiring surgery, obstetric care, pain medicine, critical care services, preoperative evaluation, and postoperative care. Experience is provided in all anesthesia subspecialties — regional anesthesia, trauma, neuroanesthesia, cardiothoracic, pediatrics, obstetrics, vascular surgery, and transplantation — including complex subspecialty techniques. The curriculum complies with the training requirements of the ACGME.

The program includes three clinical anesthesia years (featuring training in basic, subspecialty, and advanced anesthesia). Four-year positions include an internship (PGY-1) and CA-1, CA-2, and CA-3 years. The CA-3 educational activities have been reorganized into a program specifically designed for the senior resident. Senior residents receive elective time to gain advanced experience in the care of seriously ill patients and complex procedures. Residents have the option of a six-month research track devoted to laboratory or clinical investigation.

The residents are academically active. Jessica Galey, M.D., and Giuliana Geng-Ramos, M.D., represented the University of Maryland at the 2012 meeting of the Maryland Society of Anesthesiologists. In 2012, 13 residents completed the program. For more information about the residency program, visit us online at <http://medschool.umaryland.edu/anesthesiology/residency.asp>.

Fellows Individuals may choose to complete subspecialty fellowship training (12-24 months) beyond the three clinical anesthesia years. There are ACGME-accredited fellowship programs in cardiothoracic anesthesiology, critical care medicine, obstetric anesthesiology and pain medicine. The Obstetric Anesthesiology Fellowship received approval in 2012 by the ACGME and the RRC for Anesthesiology. Shobana Bharadwaj, M.B.B.S., developed an outstanding curriculum for the fellowship, which is one of just 13 accredited programs in the country. The first fellow will start in July 2013. Other fellowships are offered in neurosurgical anesthesiology, trauma anesthesiology, regional anesthesiology and transplant anesthesiology.

Shafonya Turner, M.D. and Residents, Nan Zhu, M.D., Andrew Walker, M.D.

Clinician, Teach Thyself

For all the learning opportunities afforded new faculty in the Department of Anesthesiology, there was one missing piece, according to Andrew Malinow, M.D., Professor of Anesthesiology and Obstetrics/Gynecology and Reproductive Sciences. "As clinicians, we are expected to be excellent teachers, but nobody ever formally taught us how to teach," he says. What's more, for budding clinician-educators, being an ineffective teacher can severely diminish their chances of achieving academic success. To remedy this situation, Dr. Malinow and Dr. Rock created a formal program to address aspects of small- and large-group teaching, bedside teaching, and related academic topics. Since its launch two years ago, the one-day Teaching Scholars Program has been a success. It includes six lectures given by Department members and other colleagues from the School of Medicine to junior faculty in the Department. Adds Dr. Malinow, "We think that this program is quite innovative in providing training for clinicians who want to be good teachers."

The Regional Anesthesiology Fellowship was established in April 2012 and received equivalency accreditation from the UMMC Graduate Medical Education Committee. The fellowship is directed by Lise Asaro, M.D. Aaron Lange, M.D., (Class of 2012) was the first Regional Anesthesiology Fellow.

In 2012, 7 fellows graduated. Overall, our fellowships have been very successful in placing graduates in competitive employment opportunities. Our Alumni have also been a great resource in helping residents find employment, eager to take a call or to welcome a trainee visiting their region. For more information about fellowship training, visit http://medschool.umaryland.edu/anesthesiology/fellowship_training.asp.

Medical Students The Department of Anesthesiology takes an active role in training fourth-year medical students at the University of Maryland School of Medicine through a four-week anesthesiology elective in the Department of Anesthesiology, based at the University of Maryland Hospital, including general and subspecialty services (ANES 541); a four-week pain management elective (ANES 542); and a four-week subinternship in Surgical Critical Care Anesthesiology (ANES 548). Four-week and eight-week externships for students between the first and second years of medical school are also available in many anesthesia subspecialties. Third-year medical students rotate in the Department for a one-week multispecialty experience during the surgical subspecialties rotation. The Department is also a host site for the Foundation for Anesthesia Education and Research (FAER) Medical Student Anesthesia Research Fellowship Program. The FAER program is designed to recognize the academic leaders of the future. Second-year medical student Vida Chen was among the FAER Medical Student Anesthesia Research Fellowship recipients in 2012, and was assigned to work with faculty at the State University of New York Downstate Medical Center in Brooklyn.

Medical student programs in the Department have grown under the leadership of Shafonya Turner, M.D., Caron Hong, M.D., Kate Davis, M.D., and Thelma Wright, M.D. Students enjoy myriad multidisciplinary experiences within the department while preparing for their future careers. More than 160 medical students each year receive introductory and advanced instruction related to anesthesiology.

In October 2012, two University of Maryland medical students presented their work at the American Society of Anesthesiologists annual meeting. In March 2012, three University of Maryland medical students who completed anesthesiology rotations in the Department matched into anesthesiology residencies. For more information about opportunities available to medical students, visit http://medschool.umaryland.edu/anesthesiology/med_students.asp

Simulation Offerings Expand, Enhancing Training

The blue surgical drapes are removed and the breathing tube is removed. The team of anesthesia residents and the OR nurse notice that the left side of the neck looks swollen. Fresh blood begins to ooze from the stapled incision as the hematoma expands. The patient suddenly begins gasping for breath. The junior anesthesia resident is unable to ventilate the patient with a mask. The oxygen saturation begins to plummet.

Now is the time for quick thinking and bold moves to save the patient. A second-year resident removes the staples from the neck wound. A gush of blood drains from the hematoma, and the

neck swelling which caused tracheal compression and respiratory distress, improves. The first-year resident is now able to ventilate the patient with a mask, and the operative team breathes a sigh of relief.

This scenario is one of many that play out in the Maryland Advanced Simulation, Training, Research and Innovation Center (MASTRIC). During such simulation sessions for anesthesia residents, crucial decisions must be made by the entire operative team.

A renewed commitment by the Perioperative Director at the University of Maryland Medical Center has engaged the services of anesthesia technicians, surgical scrub technicians, equipment technicians, and nursing circulators in these learning experiences. The participants come from a variety of surgical services, including the General Operating Room, Vascular Surgery, ENT, and Trauma Operating Rooms. The Department of Anesthesiology has been at the forefront in recognizing the need for these multidisciplinary sessions, which stress teamwork training and interprofessional collaboration. Studies have shown that failures in communication lead to compromised patient care and lapses in patient safety.

Other new simulation course offerings this past year included:

- A module which focuses on evaluating a patient at risk for autonomic hyperreflexia, a reaction of the involuntary nervous system to too much stimulation. Operating room staff are encouraged to diagnose the clinical emergency and manage its hemodynamic complications (such as high blood pressure and changes in heart rate).
- An airway scenario in which a patient with a complicated medical history has an unrecognized difficult airway. The anesthesia provider must follow American Society of Anesthesiologists (ASA) guidelines, using alternative techniques to successfully intubate and ventilate the patient.

Changes in the American Board of Anesthesiology resident assessment and examination process have prompted changes in the simulation curriculum to address the new Objective Structure Clinical Exam development. A formal curriculum in mannequin-based scenarios in airway management algorithms has been developed and is conducted in July for the incoming first-year residents. Additional skills training is held weekly, featuring individualized attention from experienced faculty.

Further efforts are under way to expand curricular offerings to medical students and CRNAs. A faculty development track has been proposed to identify faculty members interested in developing and deploying additional task training sessions, working on scenario development, and acquiring key debriefing skills.

Anesthesia Simulation faculty have made significant contributions to the academic output of the Department through numerous presentations at meetings of the International Anesthesia Research Society, ASA, and Military Research Symposia. They have served as consultants to the Ministry of Health in Rio de Janeiro in preparation for the 2016 Olympics and the World Cup. Wendy Bernstein, M.D., was a finalist in the American College of Physician Executives Leape Ahead award for her work on "The Role of Simulation to Stratify Learners by Skill Level."

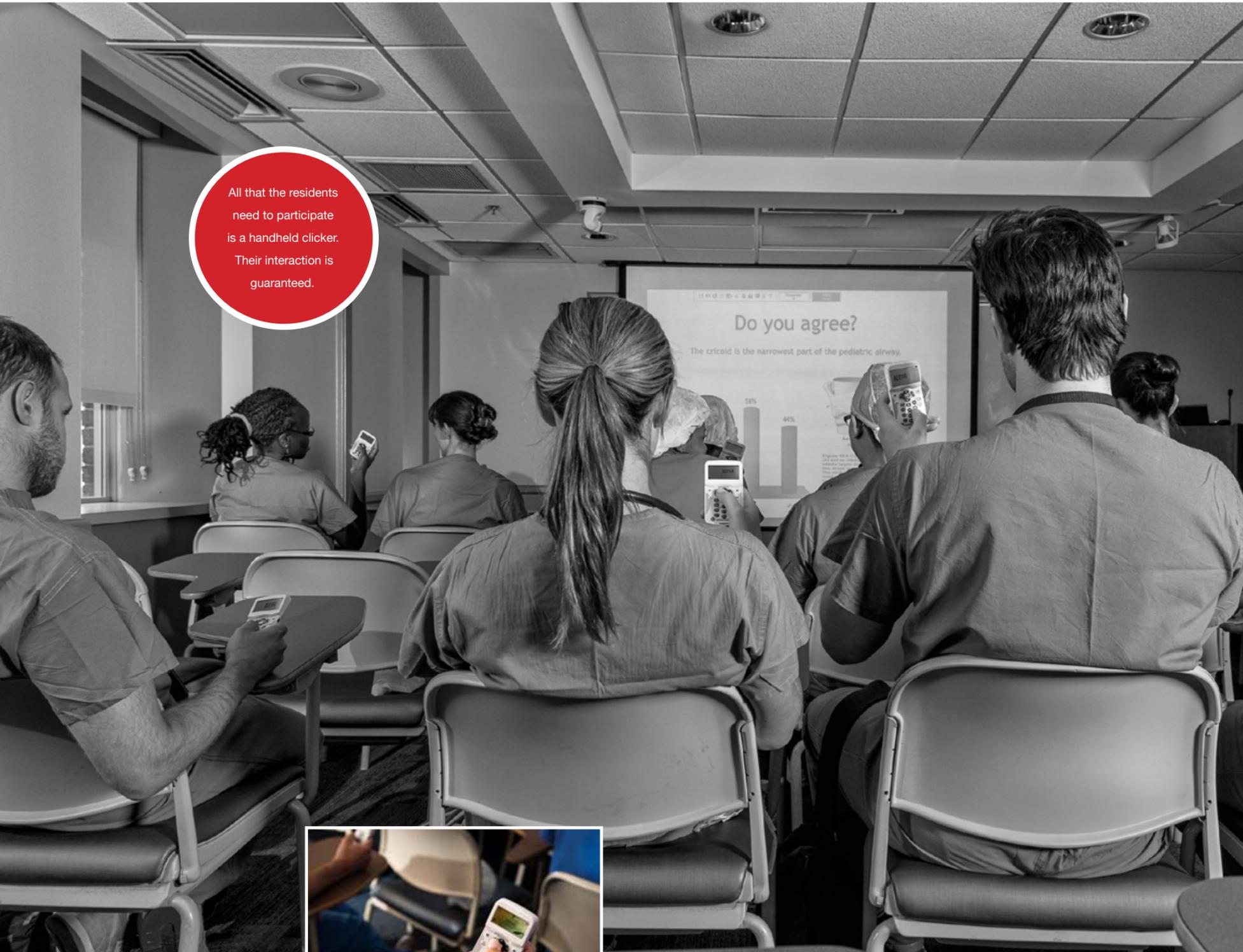
Lastly, the Department of Anesthesia Simulation Center is awaiting certification by the ASA. A mini Maintenance of Certification in Anesthesiology course is planned for July 2013, in preparation for larger and more comprehensive recertification classes.



Simulation Faculty

Wendy Bernstein, M.D., M.B.A.
Director of Anesthesiology Simulation

Shobana Bharadwaj, M.D.
Cyndi Bucci, M.D.
Thomas E. Grissom, M.D.,
F.C.C.M., M.S.I.S.
Caron Hong, M.D., M.Sc.
Douglas Martz, M.D.
Madhavi Naik, M.B.B.S.
David Schreiber, M.D.
Maurice Sheppard, M.D.
Matthew Tulis, M.D.



All that the residents need to participate is a handheld clicker. Their interaction is guaranteed.



Residents respond to lecture questions using remote handheld "clickers".

It's an age-old question for teachers: How do you get students involved in a classroom discussion? For the professors and residents of the Department of Anesthesiology, that question has been largely answered with the click of a button...literally.

In recent years, the Department's Education Committee has been reviewing various methods to improve the educational experience of residents. After examining several high-tech learning systems, the Committee selected an audience response system (Turning Technologies), which the Department adopted for resident education in the summer of 2012.

The new system is simple and intuitive. It consists of software that can be run from any desktop or laptop, enabling it to manage all of the data entered by the professor and collected from participating students. In addition, the system's software integrates seamlessly with presentation software often used with classroom lectures, so that a window with real-time data can be brought up on the computer screen to supplement the presentation at any point.

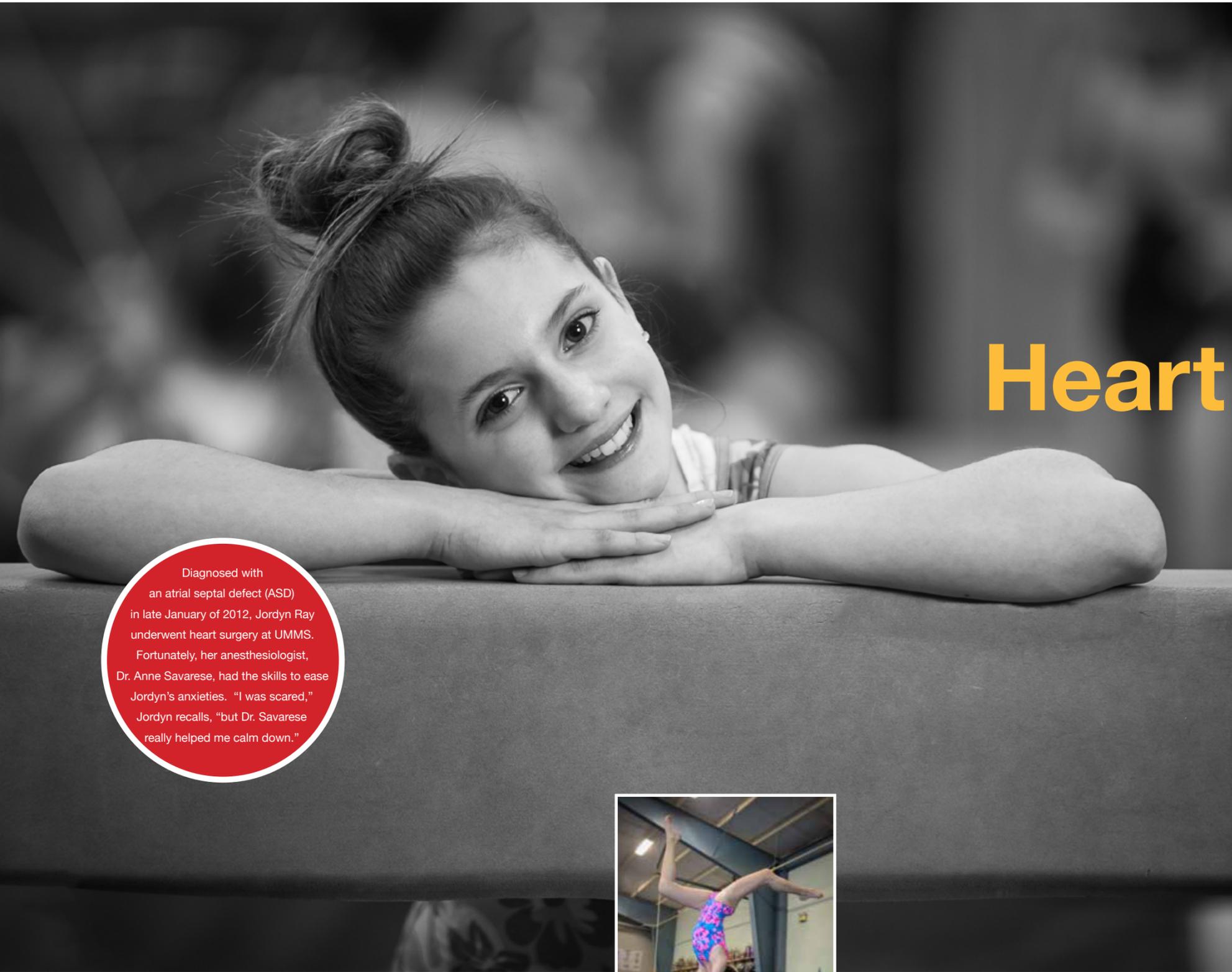
Interactive

A crucial system component is a remote handheld "clicker" that each student uses to answer lecture questions. The clicker transmits every response to the professor's computer, where software instantly tabulates all responses for each possible answer. Because responses are tallied anonymously, students are able to let the professor know when they do not understand a key learning point without having to say so publicly. In addition, the professor can gauge student understanding of a particular topic instantly, and shift the focus of the lecture accordingly.

"Before we had this system, if I posed a question to the residents in my class, a number of them wouldn't answer due to their inhibitions," says Monique Bellefleur, M.D., Assistant Professor of Anesthesiology and Chair of the Education Committee. "Now that they can choose to answer questions anonymously whenever they want, there's greater interest and participation in the learning experience." Students can also view aggregated responses to questions asked during the lecture, which can promote even more discussion.

David Schreiber, M.D., Assistant Professor of Anesthesiology and an Education Committee member, adds that the audience response system is a timesaving tool for professors. "Whether it's used in lectures or Grand Rounds, this system can be used as a testing and grading tool," he says. "We can capture and store students' grades automatically on a spreadsheet, eliminating the manual work of entering and managing them."

So what has been the response so far? Dr. Bellefleur notes that in just the first few months, about half of the Department's faculty have converted to using this audience response system for their educational presentations. "Our residents like the interactive component very much," she concludes. "They actually complain if their professors don't use it!"



Heart to Heart

Diagnosed with an atrial septal defect (ASD) in late January of 2012, Jordyn Ray underwent heart surgery at UMMS. Fortunately, her anesthesiologist, Dr. Anne Savarese, had the skills to ease Jordyn's anxieties. "I was scared," Jordyn recalls, "but Dr. Savarese really helped me calm down."

Jordyn Ray during gymnastics practice



At first glance, Jordyn Ray looks like a typical spirited thirteen-year-old girl. But there are two very big differences that set her apart. One is that she has been a dedicated, competitive gymnast since the age of five. "It's definitely her passion," says Denise Ray, her mom. And the second? In April 2012, Jordyn underwent a six-hour open-heart surgical procedure to repair three congenital defects in her heart.

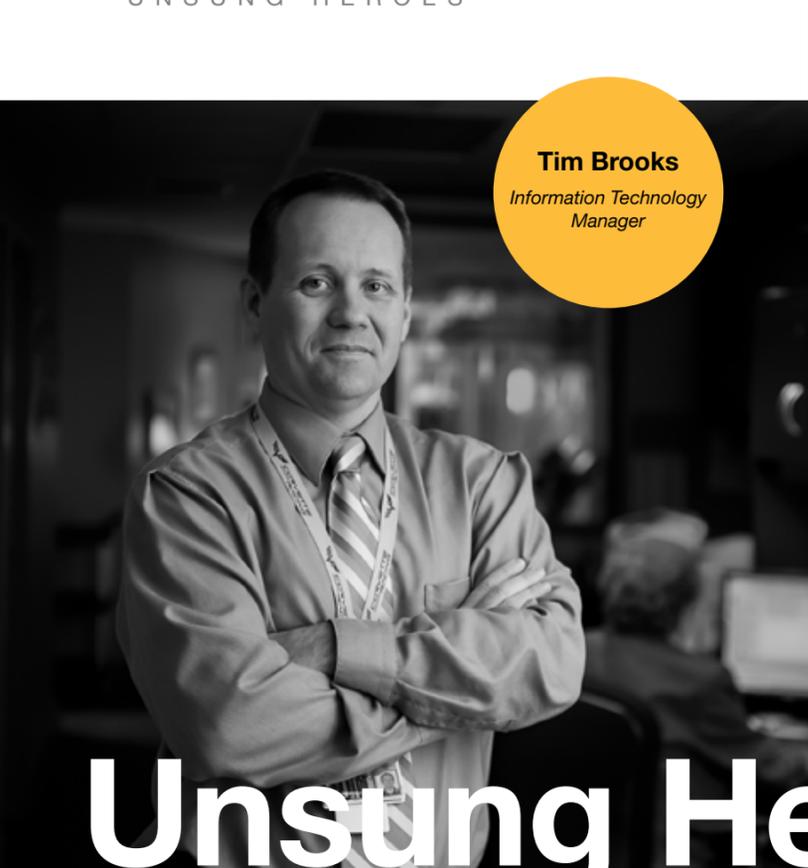
Events seemed to unfold all too quickly for Jordyn and her family in late January 2012. One moment, Jordyn was practicing 12 hours a week and winning gymnastics meets. In the next, her mother was rushing to the health suite at Jordyn's school, where her daughter sat in a wheelchair "as pale as a ghost" after a sudden bout of severe heart palpitations. An evaluation by a pediatric cardiologist and an MRI confirmed that Jordyn had an atrial septal defect, along with an abnormality of a pulmonary vein and a coronary artery. She was immediately restricted from gymnastics. "With the state meet just two weeks away, that was a huge blow for her," recalls Denise. Moreover, Jordyn learned she needed surgery to correct these defects.

By the time she arrived at the University of Maryland Medical Center for her surgery, Jordyn was one frightened girl. Fortunately, her anesthesiologist, Anne Savarese, M.D. — Director of Pediatric Anesthesiology and Pediatric Pain — had just the bedside manner and skills to ease Jordyn's anxieties. "What makes pediatric anesthesiology a subspecialty is that it requires clinical as well as interpersonal skills to gain a child's cooperation and confidence honestly, and not through trickery," she points out. "There's a lot of technical work I have to do for an operation, but first I have to get the patient to cooperate and separated from Mom and Dad. At the same time, you have to be able to read the patient's concerns quickly and know what psychological techniques will work best. My goal is to get kids to maximize their coping skills by focusing on their strengths.

"Because my patient is the child, I chatted with Jordyn first before speaking with her parents," Dr. Savarese continues. "I wanted to let her know that I was there for her. I was able to convince her that she would get through it and go home with her heart fixed."

Dr. Savarese recommended anxiety management techniques such as deep breathing and guided imagery, where she asked Jordyn to envision a difficult gymnastic routine and what she would need to do to relax and complete that exercise successfully. It worked. "I was scared," Jordyn recalls, "but she really helped me calm down."

And the operation? "Jordyn had a rare condition that can be tricky to repair," recalls Dr. Savarese. "It required us to use all of the best skills that we had. Fortunately the procedure went very well." Jordyn was released from the hospital just four days later, and was back in school two weeks afterward. By August, she was cleared to pursue gymnastics again and is currently a competitive gymnast. "I'm feeling really good!" she says. And so is Denise Ray: "As an almost straight-A freshman in high school now and a competitive athlete again, Jordyn is happier than ever and I couldn't be more proud!"



Tim Brooks
Information Technology
Manager



Leanne Downey and Erika Dick
CRNAs/Student
Clinical Coordinators

Unsung Heroes



Julie Proctor
Laboratory Supervisor



Alice Lifsey
Certified
Professional Coder

Tim Brooks: *Plugged In*

Asked what he's in charge of, Tim Brooks will answer, "Anything that plugs into a wall." As Manager of Information Technology, he oversees the operation of the department's desktop computers, e-mail accounts, software upgrades and installations, web pages, and training for staff and faculty members, and he stays on top of the latest IT advances. It's a job that keeps him on his feet, since training new faculty members might mean snagging them in between procedures in the OR. With his colleague David Jones, the two-man operation provides the IT foundation that is so essential for the department's communications and systems to run optimally. With over 350 users, 120 PCS, and five servers, "the two of us are always on the move," says Tim. "But that's a good thing, because I don't like sitting behind a desk all day."

Leanne Downey and Erika Dick: *Nurturing Tomorrow's Nurse Anesthesia Leaders*

Each year, some 70 Student Registered Nurse Anesthetists (SRNAs) from all over the country come through the University of Maryland Medical Center Department of Anesthesiology to learn the skills they need to become Certified Registered Nurse Anesthetists (CRNAs). Ensuring they have a smooth journey is the job of Leanne Downey and Erika Dick, Student Clinical Coordinators — Erika for students in the General Operating Rooms (GOR) and Leanne for those in the Trauma Operating Rooms (TOR). Among their many tasks (in addition to being practicing CRNAs themselves), both women orient new students to their various rotations, monitor clinical opportunities, and ensure communication with students remains open and strong. Junior year students first spend four to five months in the GOR, where they learn everything from basic to advanced anesthesia procedures. Trauma OR students are seniors who have already had initial GOR training and are focusing on trauma anesthesia. By the time they are finished, they are ready to take their certification exam, and many go on to CRNA leadership positions elsewhere. "We believe our roles are pivotal for teaching evidence-based practice in a welcoming environment. It's rewarding to see our students go from being green to becoming independent and confident," says Erika. Adds Leanne, "It is rare to walk down a hallway at the University of Maryland Medical Center without meeting an individual who is here for an educational opportunity."

Julie Proctor: *The Facilitator*

Published findings are the face of what comes out of a research laboratory. But many people don't see what goes into running a lab. That's the job of Julie Proctor, Laboratory Supervisor for Brain Injury and Neuroprotection Research, whose investigators perform animal studies with the goal of improving survival and quality of life for brain injury victims. She helps plan experiments, interprets data, assists the lab's staff and students in meeting their deadlines, ensures compliance with lab regulations, and is, in general, a facilitator of all tasks. "Julie's skills and acumen were largely responsible for the findings generated by this project, which resulted in a change in the American Heart Association clinical guidelines for resuscitation after cardiac arrest," says Gary Fiskum, Ph.D. Says Julie, "I am confident that what we are learning from the experimental models in our lab will someday be used to protect both the general public and military personnel from traumatic brain injuries."

Alice Lifsey: *Spiritual Gifts*

As a Certified Professional Coder, it is Alice Lifsey's job to ensure that all procedures performed by the department's physicians receive the proper medical codes before the paperwork is submitted to insurance companies. A one-digit error can mean the difference between reimbursement and not getting paid. Alice knows her job is important, but she has other life experience that she values even more. As someone who survived leukemia in 1991 and a breast cancer diagnosis in 2008, she understands what patients go through and feels a strong sense of gratitude. "My faith and my husband made all the difference in my life," says Alice, who volunteers for the Baltimore chapter of the Sisters Network, Inc., which is dedicated to enhancing awareness about breast cancer and screening services for African American women. "Today my spiritual gift is my gift of encouragement for others." Her supervisor, Kim Flayhart, adds, "We've all learned something from Alice. She has been a strong and productive member of our coding team, even during her battle with breast cancer. She continues to offer suggestions about process improvements and always looks for ways to enhance the quality of her work. Alice greets everyone with a friendly, professional manner. She is a walking, breathing example of grace and dedication."

Finding Relief

Chris Schemel, 49, a fire safety engineer, was working at a Texas oil refinery in the spring of 2005 when he realized that what he thought was bad cold could be something much more. Upon returning to his home in Laurel, Maryland, a visit to his local hospital revealed that it was indeed something more serious – serious enough that he was airlifted to the University of Maryland Medical Center.

The Department's Pain Management Center located at Kernan Hospital has truly improved the quality of life for Chris Schemel. "I continued to have pain after my cancer surgery and treatment. I come from Florida to Baltimore regularly because Dr. Thelma Wright and her team are the best for my pain management."



When he got there, he told the thoracic surgeon who was evaluating him how uncomfortable he was feeling. The surgeon replied, "I'm not surprised – you have a tumor in your chest the size of your head."

Diagnosed with lymphoma, Chris underwent six cycles of chemotherapy and multiple radiation treatments. To effectively kill the tumor cells, the radiation had to pass through Chris' sternum and also damaged some healthy spinal cord tissue. His radiation oncologist cautioned that even after he was cured, he might be left with lingering pain due to the treatments.

Indeed he does experience daily pain, not only due to the radiation therapy but also to scar tissue in his chest. Referred to the University of Maryland Department of Anesthesiology Pain Management Center at Kernan Hospital, Chris began a regimen of daily pain medication he needed not just to feel better, but to function. For the past several years, he has been under the care of Thelma Wright, M.D., Director of the Pain Medicine Division.

"When pain re-enters my life, it has such a profound impact. I would not be able to do what I do without Dr. Wright's support," Chris explains. His job requires not only comfort but clarity: As someone who investigates the sources of industrial fires and explosions, he may need to wear a harness while climbing scaffolding, or don a mask to breathe in a toxic environment. The drugs Dr. Wright prescribed and their dosages enable him to do his work while remaining mentally sharp.

"We individualize treatment for each patient. It's a time consuming process," says Dr. Wright. "Our mission is to provide excellent care to help patients function effectively in both their personal and professional lives."

Chris takes daily medication to prevent the pain's return, supplemented with another pain reliever when the pain is worse. Unfortunately those medications — particularly one which is also used to treat heroin addiction — come with a stigma. "If I go into a pharmacy to fill my prescriptions and they don't know me, they sometimes look at me like I'm a criminal," Chris notes. "We need to educate people to change that mindset and focus on pain relief as essential to quality of life."

Today Chris and his family live in Marco Island, Florida, but his company maintains an office in Baltimore, and he continues to see Dr. Wright. "She personally takes the time to know me and what's going on in my life," he concludes. "It's been an incredibly comforting experience."



Chris Schemel (pictured above) with Thelma Wright, M.D., J.D.



J. Sherman Gray, Jr.
Billing Manager



Shelly Kizina
Billing Administration

Community Service



Megan Anders, M.D.
Assistant Professor,
Critical Care
Anesthesiology



Bianca Conti, M.D.
Assistant Professor,
Trauma Anesthesiology

Go Wildcats!

During working hours, J. Sherman Gray, Jr. is a Patient Account Manager with University of Maryland Anesthesiology Associates, P.A. But after hours, he dons a whistle and steps out onto the gridiron as Assistant Head Coach and Defensive Coordinator of the Laurel Wildcats, a youth football team sponsored by the Laurel Boys and Girls Club. Gray has held this volunteer position for the last six years, working with boys aged 6-12 for up to six days a week during the summer months. This past season, the Wildcats won their division and played in the Maryland state tournament. But it's not all about sports. Says Mr. Gray, "We try to teach them not just about football, but about teamwork and life."

A Donation for Life

Even a simple act can save a life. For Megan Anders, M.D., an Assistant Professor in Anesthesiology, it happened as a college undergraduate, when she signed up to be a donor with the National Bone Marrow Registry (<http://marrow.org/>). Eight years later, she received a call from the registry, informing her that she was a match with a 62-year-old woman with leukemia. Without hesitation, Dr. Anders agreed to make a bone marrow donation, which involved minor surgery. Not only did her recipient survive, but she is now completely cured of her cancer. The two even had the opportunity to meet in person in 2011. "There were no words needed," says Dr. Anders. "We just hugged right away." Since that time, the women have remained in touch regularly by e-mail and Facebook, bolstered by a recent visit in Baltimore. "We will always be connected," adds Dr. Anders.

Good Will to Spare

Shelly Kizina is quite a bowler. In fact, she's played since she was four and has a personal best score of 298. Still, when her best friend first asked her to help out as a sighted bowler with the Baltimore Blind Bowling League, it was a whole new experience. The league, which meets every Friday evening, is composed of teams where one member is always sighted. "As the sighted volunteer, I don't bowl, but I inform the others about the placement of the pins before their turn," says Ms. Kizina. After eight years of volunteering with the League, she is still rolling. "The people are just so nice," Ms. Kizina concludes. "They make you feel right away that you're part of the team."

The Gift of Giving

For the past several years, members of the Department of Anesthesiology have pooled their donations and time to run an annual holiday giving initiative. Their generosity in 2012 was exceptional: Through personal donations and Department contributions, \$6,180 was raised for St. Vincent's Villa, a program of Catholic Charities Child and Family Services. "We went shopping and fulfilled the wish lists of all 19 children whom we sponsored," says Pamela Earle-Jackson, Project Manager/Special Assistant to Dr. Rock, who has coordinated the effort for the past three years. "We also were able to purchase household items needed by the group homes themselves. It was gratifying for everyone involved, and much appreciated by the gift recipients."



Nakia Proctor-Dixon, Tara Winterling (Billing office) shopping for gifts

A Rewarding Goal

Soccer is second nature to Bianca Conti, M.D., a Trauma Anesthesiologist in the Shock Trauma Center. She's actively played the sport ever since the age of 5. Even with the demands of her profession, she takes part in up to four evening games a week as a player in three different local leagues. As for the rest of her free time? Hundreds of kids around Baltimore know her as "Coach." As an officially licensed FIFA soccer coach, Dr. Conti has been working with local Recreation League teams for the past 12 years—usually for up to eight hours over a weekend. She likes working with younger kids the best. "It's great to watch them learn how to develop as a team," she says.



On February 18, the morning after Jen's hospital admission, surgeons removed 60 percent of Robert's liver and replaced Jen's liver with his healthy liver tissue.

A Second Chance

In Greek mythology, Prometheus was chained to a rock after defying the god Zeus, his liver exposed to an eagle that feasted on it. Because liver tissue regenerates itself and Prometheus was immortal, the eagle dined for eternity. Liver regeneration is not only the stuff of legend, but the gift of life for up to 300 living donor liver transplant recipients each year in this country — including Jen Dietrick, whose donor liver came from a surprisingly close source.

Jen was diagnosed in February 2012 with acute liver failure at age 25. She had been taking acetaminophen “around the clock” for weeks as she recovered from injuries from a car accident, unaware that overuse of this medicine could cause liver failure. As her condition worsened, she grew disoriented, calling her boyfriend of nearly three years, Robert Hopkins, up to 25 times in an hour and forgetting each time that she had already called. And then the calls stopped. Robert contacted Jen's father, Donovan Dietrick, M.D., who took her to a local emergency room. She was transferred to the University of Maryland Medical Center, where doctors said she needed a liver transplant immediately.

No deceased donor livers were available, but Robert was a match. He didn't think twice about donating. On February 18, the morning after Jen's hospital admission, surgeon Benjamin Philosophe, M.D. removed 60 percent of Robert's liver. Surgeon Rolf Barth, M.D. replaced Jen's liver with Robert's healthy liver tissue.

“As a physician, I was aware of the complex surgical issues in liver transplantation, but could not even imagine the anesthesia complexity of this situation,” says Dr. Dietrick. “Dr. Mary Njoku introduced herself as the anesthesiologist for Jennifer and said, ‘You can trust me to keep your daughter safe.’ That reassurance, and a confident handshake, were all it took for me to know that she would get the best care. And the expertise of Dr. Peter Rock, Jen's intensivist for much of her ICU stay, was well appreciated.”

Donating liver tissue is not a decision to be made lightly. “Giving a portion of your liver to someone else is completely altruistic,” notes Obi R. Udekwu, M.D., the anesthesiologist who attended to Robert. “Five percent of donors develop complications.” Robert recovered well and was back at his job at a trade association three weeks later. Today he works at a law firm and will complete his studies at George Washington University Law School in December 2013.

Jen has little recollection of the weeks before the transplant and didn't know Robert was her donor until she woke up from surgery. They recently celebrated their fourth anniversary together. “It was pretty amazing that my own boyfriend was a match,” she says, knowing now that the odds of finding a donor liver so quickly are extraordinarily slim. She was back at work on April 30 at the Baltimore firm where she is an accountant, and is now studying to become a Certified Public Accountant. “Everyone fought so hard for me. I can't say enough about how great they are.”

Robert Hopkins and Jennifer Dietrick



Prom picture



Present

Photo courtesy of Associated Press

"Being there at the beginning was important, because it set the course for everything that followed. I was so proud to be a part of it."

- Maria Karla Villacin, M.D.
Resident



Post-surgery



Pre-surgery

Over two nonstop, tension-filled days just a year ago, the University of Maryland School of Medicine collectively held its breath as history was made. From March 19 to 20, 2012, a multidisciplinary team of physicians, along with more than 150 nurses and professional staff, participated in an intricate 36-hour operation. Their goal was to complete the most extensive full-face transplant accomplished to date, including both jaws as well as the teeth and tongue.

The Department of Anesthesiology's physicians and nurse anesthetists rose to the demands of the occasion, working long hours with other members of the OR team to ensure the operation's success. Mary Njoku, M.D. and Yvette Fouché-Weber, M.D., Division Chief of Trauma Anesthesiology, had begun preparing for the operation months earlier. "Since we had never done this type of procedure before, we began organizing staff, researching how the procedure had been done at other institutions, and developing a logistics protocol to provide access and meet surgical requirements," Dr. Fouché-Weber recalls. Participating in both the donor and recipient phases of the procedure, Dr. Fouché-Weber admits it was "grueling hours of work." "Still, she adds, "It was a unique event. The novelty of the procedure was overwhelming."

As the charge anesthesiologist in the Trauma OR on the evening of March 19, Bianca Conti, M.D., Assistant Professor of Anesthesiology, cared for the transplant recipient over two shifts totaling 24 hours. "After getting the initial monitoring and lines in place and his airway secured, my job was to stay focused on the patient and the other members of my team," she says. "It was definitely one of the most interesting operations I've ever worked on."

Working side by side with Dr. Conti was Joey Sliwkowski, a Certified Registered Nurse Anesthetist. "Our Department did a lot of research and preparation on face transplants to design a game plan, so we knew going in what we needed to accomplish," she said. "We couldn't have done this operation without everyone pulling together and sharing their knowledge and resources."

Making History

Matthew Fox, CRNA, relieved Ms. Sliwowski the evening of the first day. "It's an incredible feeling to have been a part of such an historic procedure," he recalls. "The most exciting part was when they began the graft of the new tissue onto the recipient. It was an intense situation, yet everyone remained completely professional."

For Maria Karla Villacin, M.D., a Department of Anesthesiology resident, her involvement with the operation was "a once-in-a-lifetime opportunity." Dr. Villacin assisted in the preparation of the donor grafts and the recipient. "Being there at the beginning was important, because it set the course for everything that followed," she recalls. "I was so proud to be a part of it."

"All team members worked together diligently for the benefit of the patient," says Mary J. Njoku, M.D., Residency Program Director, Department of Anesthesiology.

Rolf Barth, M.D., Associate Professor of Surgery and one of the physicians involved, has nothing but praise for the anesthesiologists who participated. He notes, "As always, Anesthesiology and Surgery worked well together with great precision throughout the procedure, and as critical members of the transplant team."



Jim's heart had not registered a beat for 19 minutes, depriving his brain and other vital organs of oxygen. "It was one of the longest scenarios I've encountered with no discernible heart function," says Dr. Sivaraman.

19 Minutes

On June 10, 2011, something phenomenal happened in an operating room at the University of Maryland Medical Center. Some say it was unbelievable. Others say it was miraculous. All say it was a case they will never forget.

James (Jim) Pearo, 64, a real estate attorney from Annapolis, had hemochromatosis, a condition which causes too much iron in the body. He kept an eye on it, but years of drinking alcohol, coupled with his hemochromatosis, created the perfect storm in his liver. He developed cirrhosis, and his only hope for survival was a liver transplant.

Jim was making monthly trips to UMMC to have as many as 12 liters of fluid drained from his swollen abdomen. After one challenging session, he could barely get off the table. His doctor admitted him to the hospital, knowing a donor liver might be available the next day.

It was. Liver surgeon Rolf Barth, M.D., removed Jim's damaged liver and replaced it with the healthy donor organ. But shortly after the liver was in place, Jim's heart stopped beating.

It's not unheard of for this to happen, usually due to an electrolyte imbalance during liver transplant surgery. Anesthesiologist Vadivelu Sivaraman, M.B.B.S., gave Jim powerful drugs to restart his heart. But nothing worked. Dr. Barth began massaging the heart with his hands, while Dr. Sivaraman summoned help on the overhead system in the operating room.

Cardiac anesthesiologist Seema Deshpande, M.B.B.S., answered the call. "We thought, 'something is not quite right — he should have responded by now,'" recalls Dr. Deshpande. The anesthesiologists inserted a transesophageal echocardiography probe and were surprised at what they found: Jim's heart was full of clots. Based on this finding, the anesthesiologists gave him low doses of heparin to dissolve them.

Time was of the essence: Jim's heart had not registered a beat for 19 minutes, potentially depriving his brain and other vital organs of oxygen. "It was one of the longest scenarios I've encountered with no discernible heart function," says Dr. Sivaraman. Slowly, Jim's heart began to respond. He spent the next week on a ventilator in the ICU.

When Dr. Sivaraman visited Jim after the ventilator was removed, he looked for the expected signs of brain damage that occur when the body might have been deprived of oxygen for such a long period. But amazingly, Jim spoke, telling him, "I'm doing alright."

Dr. Barth told Jim that normally he might have stopped trying to resuscitate him, but he felt a "presence in the room" and kept going. Jim feels it was his brother John, who had died the previous October of pancreatic cancer that had spread to his liver. Jim left the hospital on September 11, unable to walk without a walker or cane. But on September 30, he walked his daughter Nicole down the aisle at her wedding without a cane, a goal he had set for his recovery. He has not had a drink since August 2010. "The doctors told me I was 'gone.' They literally saved my life," he says.

The case is not one that Dr. Deshpande feels she'll ever witness again in her career. "I was so amazed that he made it. This is why we do what we do," she says.

"I've been doing this a long time, and he made me think there is always something for me to learn," adds Dr. Sivaraman. "I will never forget that man."

Above: Jim Pearo and daughter Nicole Pearo Taylor on her wedding day.
Right: Seema P. Deshpande, M.B.B.S., Jim Pearo, Vadivelu Sivaraman, M.B.B.S.



Today's GO-TEAMS provide critical care and surgical services beyond the scope of typical pre-hospital emergency care at the scene of seriously injured patients.

First in Their Field

Above: CRNA Go-Team Members, Cindy Sampson, Chuck Magich, Linda Goetz (Director, Nurse Anesthetists), Bonjo Batoon, Bill Howie, Sharee Miller.
Right: Go-Team Attending Physician, Christopher Stephens, M.D., M.S.



In the early days of the University of Maryland's Shock Trauma Center, several nurses and physicians were talking with R Adams Cowley, the Center's founder. Suddenly an emergency call came in for an accident that required trained medical personnel on site. Dr. Cowley turned and pointed sharply, first at a doctor and then a nurse. "You go and you go!" he commanded. And so, the legend goes, the concept of the Shock Trauma GO-TEAM was born.

GO-TEAMS have operated in one form or another since the 1980s, explains Andrew Pollak, M.D., GO-TEAM Medical Director and Trauma Chief for Orthopedic Surgery. "Originally, GO-TEAM members were whichever two people were available—usually a trauma nurse and a physician. They went out into the field and did what they could do."

By the mid-1990s, however, it was decided that the program should become more formalized, with GO-TEAM members better trained in EMS field operations. Today's GO-TEAMS provide critical care and surgical services beyond the scope of typical pre-hospital emergency care at the scene of seriously injured patients. Complementing a select group of physicians, a Certified Registered Nurse Anesthetist (CRNA) now serves as a member of the GO-TEAM, given the advanced expertise CRNAs offer in managing difficult airway situations with trauma patients, performing fluid resuscitation, and administering medications. "The CRNA has to be ready for airway management and resuscitation, while the surgeon has to be focused on extrication and its facilitation, as well as overseeing the patient's care," says Dr. Pollak.

GO-TEAM veteran Bonjo Batoon, a CRNA, says team members work to improve their competencies. "GO-TEAM CRNAs participate in a range of training programs including flight zone safety, where we work with the Maryland State Police to become more familiar with helicopters," he explains. "We also train with area fire departments to understand their protocols."

"The GO-TEAM has answered more than 95 percent of all requests for support," adds Linda Goetz, the chief CRNA at UMMC. The team is usually out the door within 15 minutes of receiving a first call.

Chris Stephens, M.D., Assistant Professor of Anesthesiology and Director of Trauma Anesthesiology Education, has been a GO-TEAM physician since 2009. "The GO-TEAM brings an extension of the Shock Trauma Center to the patient," he asserts. "It's essentially an operating room team sent out into the field to help resuscitate a trauma victim."

While the GO-TEAM answers just 12 to 15 calls a year, it serves a vital purpose. "EMS personnel find GO-TEAMS to be very valuable," adds Dr. Pollak. "They know when they're in a situation where a higher level of care is required, and they can get help on the scene right away."

Dr. Stephens agrees. "The GO-TEAM is a unique pre-hospital resuscitation team that gives a patient a greater chance of surviving before reaching the Shock Trauma Center," he concludes. "There's no other initiative like it in Maryland, and really, the whole country."

Adult Multispecialty Anesthesiology Division Faculty

Douglas G. Martz, M.D.
*Vice Chair for Clinical Affairs
 Director, Adult Multispecialty Anesthesiology Division
 Associate Professor*

Beatrice M. Afrangui, M.D.
 Shobana Bharadwaj, M.B.B.S.
 Paul E. Bigeleisen, M.D.
 Malinda T. Boyd, M.D.
 Kathleen M. Davis, M.D.
 John P. Drago, D.O., J.D.
 Stephanie Esposito, M.D., M.S.
 Ileana Gheorghiu, M.D.
 Kriti Goel, M.D.
 Ashanpreet Grewal, M.D.
 Caron M. Hong, M.D., M.Sc.
 Chinwe A. Ihenatu, M.B., Ch.B.
 Jeremy Kaplowitz, M.D.
 Arthur V. Milholland, M.D., Ph.D.
 Sheryl Nagle, M.D.
 Mary J. Njoku, M.D.
 Robert J. Noorani, M.D.
 John Pallan, M.D.
 Peter Rock, M.D., M.B.A., F.C.C.M.
 Philip E.F. Roman, M.D., M.P.H.
 Ron E. Samet, M.D.
 Sanyogeeta Sawant, M.B.B.S.
 David L. Schreiberman, M.D.
 Maurice R. Sheppard, M.D.
 Baekhyo Shin, M.D.
 Daniela Smith, M.D.
 Matthew Tulis, M.D.
 Gauri Turner, M.B.B.S.
 Shafonya M. Turner, M.D.
 Obi R. Udekwu, M.B.B.S.

Day in the life of a Certified Registered Nurse Anesthetist

06:15
 Arrive at the medical center and change into scrubs. Get the day's assignments for cases and the operating room number.

06:15-6:45
 Set up the operating room for the first patient of the day. Ensure that equipment, monitors, and medications are prepared.

06:30-07:30
 Wednesday:
 Trauma Conference

07:00-08:00
 Thursday:
 Grand Rounds

Patient Care: Comfort, Compassion, and Safety

As the number of patients the Department cares for continues to rise, their comfort and safety remain paramount. Providing perioperative, critical care, and pain management services based on the latest medical evidence is a vital component of the Department's mission. Team members are subspecialized, enabling the Department to meet patients' varied and often complex needs while advancing the field.

Subspecialty anesthesiology at the University of Maryland Medical Center is provided through the following Divisions and Programs:

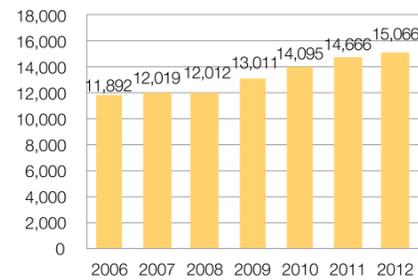
- Adult Multispecialty Anesthesiology
- Cardiovascular and Thoracic Anesthesiology
- Critical Care Anesthesiology
- Neurosurgical Anesthesiology
- Obstetric Anesthesiology
- Pediatric Anesthesiology
- Regional Anesthesiology
- Transplantation Anesthesiology
- Trauma Anesthesiology

Adult Multispecialty Anesthesiology

The Division of Adult Multispecialty Anesthesiology is the largest Division in the Department. Staff members care for patients in the Weinberg and North Hospital operative suites of the University of Maryland Medical Center. The 27 surgical suites and two endoscopy suites in these facilities are supported by an expanding group of faculty who both care for patients and educate fellows, residents, medical students, student nurse anesthetists, and paramedics. All services are further supported by the Anesthesia Information Management System (AIMS), an electronic system for recording dynamic patient data during surgery.

Members of the Division not only provide care in surgical suites, but also anesthetic care in nonsurgical cares, such as the MRI/CT scanning areas, neuroangiography, body angiography, radiation oncology, pulmonary medicine, electrophysiology, and

Adult Multispecialty OR Case Volume



gastrointestinal endoscopy. The Division expects its services in these areas to continue to grow.

The Division looks forward to implementing the preoperative phase of the AIMS system. Electronic assessments of both outpatients and inpatients will enable staff members to document a patient's preanesthetic information accurately and concisely. The Division also helped establish a perioperative regional anesthesia team, which maximizes the efficient use of regional anesthesia in the perioperative period and enhances the education of trainees in regional anesthetic techniques.

Cardiovascular and Thoracic Anesthesiology

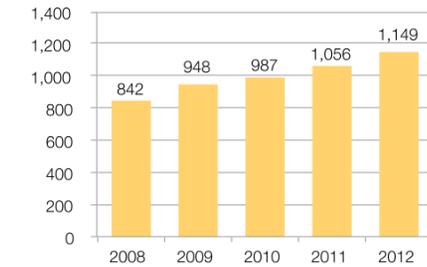
The Division of Cardiovascular and Thoracic Anesthesiology excels in the provision of patient care, the conduct of innovative research, and the education of residents and fellows. In 2012, the Division moved into new operating rooms, and a new hybrid room for multispecialty integrated cardiac care involving cardiac surgery, cardiology, cardiac anesthesia, and interventional radiology services.

The Division provides anesthesia services for 1,300 cases a year in state-of-the-art surgical suites as well as the Electrophysiology Laboratory and Adult Cardiac Catheterization Laboratory. The University of Maryland Medical Center moved up in rank from 31st to 27th in Cardiology and Heart Surgery in the U.S. News & World Report "Best Hospitals" 2012-2013 edition, and is ranked 26th in the country in Pulmonology.

Faculty members care for patients undergoing minimally invasive valve repairs, coronary revascularization, congenital heart disease surgery, and major aortic surgery. The Division is a leader in transplantation and destination therapy with ventricular-assist devices.

Faculty members recently began participating in two advanced cardiothoracic procedures: ex-vivo lung transplantation and transcatheter aortic valve replacement. During ex-vivo lung transplantation, the donor lungs are ventilated, warmed, and treated with nutrients and antibiotics before surgeons transplant them into the recipient. Transcatheter aortic valve replacement is a minimally invasive approach which enables patients with stenotic aortic valves to receive new valves without open heart surgery.

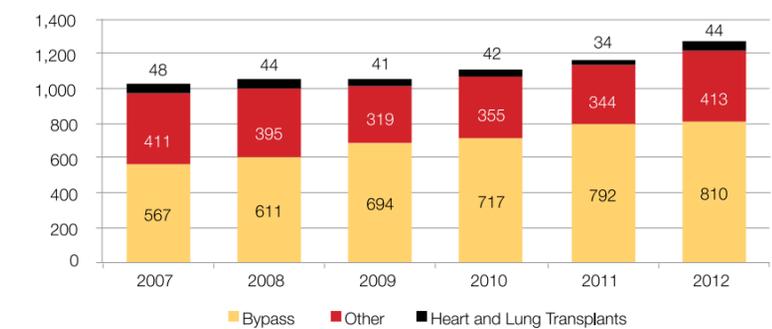
Trans-esophageal Echocardiograms



Research: Division investigators are conducting research to advance the field. Several faculty members are collaborating to study protection against excitotoxicity-induced neuronal metabolic inhibition by pharmacologic levels of magnesium.

Education: Anesthesiology residents rotate through the Division, which also offers a fellowship in Cardiothoracic Anesthesiology. The Division also provides the learning environment and tools to train for certification in Basic Perioperative Transesophageal Echocardiography from the National Board of Echocardiography.

Cardio-Thoracic Surgical Cases



Cardiovascular and Thoracic Anesthesiology Division Faculty

Alina Grigore, M.D., M.H.S., F.A.S.E.
*Director, Cardiothoracic Anesthesiology Division
 Associate Professor*

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 Molly Fitzpatrick, M.D.
 Ileana Gheorghiu, M.D.
 Ashanpreet Grewal, M.D.
 Patrick Odonkor, MB, ChB
 Philip E.F. Roman, M.D., M.P.H.

**Critical Care Anesthesiology
Division Faculty**

Vadivelu Sivaraman, M.B.B.S.
*Director, Critical Care Division
Assistant Professor*

Megan Anders, M.D.
Christopher Franklin, M.D.
Samuel M. Galvagno Jr., D.O., Ph.D.
Thomas E. Grissom, M.D.,
F.C.C.M., M.S.I.S.
Caron M. Hong, M.D., M.Sc.
Mary J. Njoku, M.D.
Peter Rock, M.D., M.B.A., F.C.C.M.
David L. Schreiberman, M.D.



Megan Anders, M.D.

Critical Care Anesthesiology

Faculty members in the Division of Critical Care Medicine provide care for critically ill patients in both the Surgical Intensive Care Unit (ICU) and Neurosurgical ICU. Both ICUs are jointly supervised by Surgical Critical Care and Anesthesiology Critical Care and managed 24/7 by intensivists. The Division's intensivists also treat critically ill patients in the Post-Anesthesia Care Unit who are awaiting transfer to an ICU.

The Neurosurgical ICU has expanded into two units and now features 22 beds. Patients receiving thrombolytic therapy for ischemic stroke and those being treated for subarachnoid hemorrhages and brain tumors are cared for in this unit. The Surgical ICU features 19 beds (a number which is expected to rise). The staff provides care for patients undergoing major vascular surgery or transplant surgery, those with severe pancreatitis, and patients suffering from septic shock and multi-organ failure. Faculty members continue to incorporate advances in clinical care in these ICUs. For example, they now use ultrasound to direct intravascular catheter placement.

Education: Medical students and residents who rotate through the Surgical and Neurosurgical ICUs gain valuable experience in the management of critically ill patients and attend lectures during their rotations. The Division also offers a Critical Care Anesthesiology Fellowship, accredited by the ACGME. In addition to learning all aspects of care for seriously ill patients, fellows participate in lectures and journal clubs on a weekly basis.

Certified Registered Nurses Anesthetists (CRNAs)

Certified Registered Nurse Anesthetists (CRNAs) are committed to patient safety and professional excellence. CRNAs have been providing care in the United States for nearly 150 years. The University of Maryland Medical Center provides unique opportunities for CRNAs to be involved in such groundbreaking surgical cases as the full face transplant that was accomplished in 2012.

CRNAs help coordinate preoperative patient assessment, including ordering and interpreting diagnostic tests. They care for patients undergoing induction, maintenance, and emergence from general and regional anesthesia, and are also skilled in specialized procedures such as advanced airway management and invasive catheter placement.

At the University of Maryland Medical Center, CRNAs take an active role in fashioning the framework of their profession. By serving as board members, committee members, and leaders – locally, in the Maryland Association of Nurse Anesthetists,

and nationally, in the American Association of Nurse Anesthetists – they play a vital role in establishing the standards of their profession influencing national healthcare policies that pertain to CRNAs.

CRNAs play a vital role in the R Adams Cowley Shock Trauma Center's "Go-Team," a group of medical clinicians who deliver advanced surgical and anesthesia services at the scene of accidents which require a prolonged or complicated extrication process. Also, the University of Maryland Medical Center, the C-STARS program plays an integral role in the training of Air Force CRNAs. Prior to deployment, these CRNAs rotate through the department to keep abreast of the latest techniques in trauma anesthesia.

Education: Students training to be CRNAs come to the University of Maryland Medical Center from across the nation. Six programs in nurse anesthesia use the General Operating Rooms and Trauma Operating Rooms as clinical sites: the University of Maryland, Georgetown University, University of Pennsylvania, Old Dominion University, Columbia University, and Uniformed Services University of the Health Sciences. Several CRNAs are faculty members at the University of Maryland School of Nursing in the Program for Nurse Anesthesia, and many others serve as guest lecturers throughout the year.

For more information about CRNAs, visit <http://medschool.umaryland.edu/anesthesiology/crna.asp>.

Kernan Hospital Anesthesiology

Kernan Hospital is located in Woodlawn, Maryland, about seven miles from the University of Maryland Medical Center. The Kernan Hospital specializes in orthopedic surgery and serves as the primary rehabilitation facility for the UMMS system. Division faculty are experts in the delivery of regional anesthesia, with more than half of surgeries performed using this approach. They also employ advanced approaches to controlling pain during and after surgery, and maintain a 24-hour acute inpatient and pain service.

The faculty of Kernan Hospital have been leaders in the use of ultrasound-guided peripheral nerve blockade. The Division recently updated its four GE LOGIQ e ultrasound machines and plans to purchase two of the latest Philips Healthcare portable ultrasound units, exposing residents and fellows to a variety of equipment. As ultrasound technology continues to advance, image quality subsequently improves, allowing anesthesiologists to employ newer ultrasound-guided regional anesthesia techniques. For example, the group has put into clinical practice an ultrasound-guided anterior approach to the sciatic nerve that was not possible using older technology. The Division is gathering data on the clinical use of this new approach, with plans to publish their findings in the near future.

CRNAs, Continued

Ron Ejanda, MS, CRNA
Victorine Esaka, MSN, CRNA
Tara Faw, MSN, CRNA
Matthew Fox, MSN, CRNA
Abbie Frankart, MSN, CRNA
Joy Gonzalez, MSN, CRNA
Michelle Gonzalez, MSN, CRNA
Elizabeth Hammond, MSN, CRNA
Bill Howie, DNP, CRNA
Rex Huber, MSA, CRNA
Jaime Hurd, MSN, CRNA
Emily Irish, MSN, CRNA
Catherine Kinsey, MSN, CRNA
Ashley Lacy, MSN, CRNA
Sarah Lee, MSN, CRNA
James Lewis, MHS, CRNA
Kristina Ludwig, MS, CRNA
Alex Mallari, MSN, CRNA
Charles Magich, MS, CRNA
Elizabeth Matthews, MS, CRNA
Paul Miller, MSN, CRNA
Sharee Miller, MSN, CRNA
Courtney Mullaney, MSN, CRNA
Anne Marie Muntuerto, MSN, CRNA
Gina Muscara, DNAP, CRNA
Nancy Newman, MSN, CRNA
Lilly Nguyen, MSN, CRNA
Melissa Piskozub, MS, CRNA
Cindy Sampson, MSN, CRNA
Kristine Santos, MS, CRNA
Chris Scott, MSN, CRNA
Sally Sharkey, MSN, CRNA
Alex Sigalovsky, MSN, CRNA
Natalie Sigalovsky, MSN, CRNA
Joey Sliwkowski, MSN, CRNA
Faresha Sims, DNAP, CRNA
Patrick Taylor, MS, CRNA
Krystle Thomas, MSN, CRNA
David Travis, MSN, CRNA
Franny Tucker, MSN, CRNA
Kristy Ward, MS, CRNA
Kristin Weatherley, MSN, CRNA
Theresa Young, MSN, CRNA

CRNAs

Linda Goetz, M.H.S., CRNA
Director, Nurse Anesthetists

Obinna Adogu, MSN, CRNA
Chris Amoroso, MSN, CRNA
Bonjo Batoon, M.S., CRNA
Katherine Billington, MSN, CRNA
Shane J. Bison, MHS, CRNA
William Boyden, MSN, CRNA, CRNP
Michael Broussard, MSN, CRNA
Kristy Browning, MSN, CRNA
Christina Burgess, MSN, CRNA
Katharine Carr, MSN, CRNA
Cheryl Cline, MSN, CRNA
Robyn Cooke, MS, CRNA
Marisa Conry, MSN, CRNA
Erika Dick, MSN, CRNA
Dale Downey, MS, CRNA
Leanne Downey, MHS, CRNA
Emilene Drager, MSN, CRNA
Michelle Duell, DNP, CRNA
Continued next page

**Day in the Life of a Certified
Registered Nurse Anesthetist**

06:50
Meet the patient to assess her for anesthesia. Discuss the plan for anesthesia, answer any patient and family questions, perform a physical exam, and obtain informed consent.

07:10
Discuss the patient's assessment results and anesthetic plan with the anesthesiologist.

07:15
Escort the patient to the operating room with the nursing staff. Perform "timeout" to verify that the patient, procedure, and surgical site are all correct.

**Kernan Anesthesiology
Division Faculty**

Edwin J. Villamater, M.D.
*Director, Kernan
Anesthesiology Division
Assistant Professor*

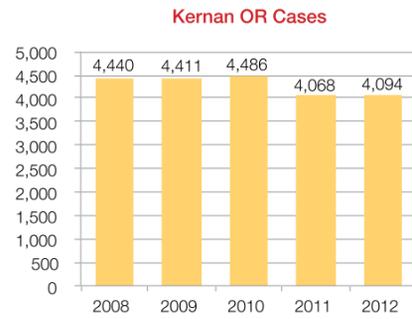
Lise R. Asaro, M.D.
Mark D. Dimino, M.D.
Andra D. DiStefano, M.D.
Jeffrey T. Haugh, M.D.
Emily Joe, M.D.
Hanni Monroe, M.D.
Kathleen Ranney, M.D.
Eric K. Shepard, M.D., F.C.C.M.

**Neurosurgical Anesthesiology
Division Faculty**

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Anesthesiology Division
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Beatrice M. Afrangui, M.D.
Caron M. Hong, M.D., M.Sc.
Douglas G. Martz, M.D.
Mary J. Njoku, M.D.
Vadivelu Sivaraman, M.B.B.S.

Day in the life of a Certified
Registered Nurse Anesthetist



Research: Kernan anesthesiologists are planning to conduct clinical trials evaluating a liposomal extended-release version of bupivacaine. This clinical trial will provide residents and fellows opportunities to gain more education and experience in clinical research. It will also be the first step in creating a clinical research unit based at Kernan.

Education: Kernan faculty members make educational presentations to anesthesiology residents rotating through Kernan Hospital, which offers an ideal environment for learning regional anesthesia. Residents also benefit from a monthly morbidity and mortality conference, a weekly journal club, and an annual workshop on ultrasound-guided regional anesthesia and acute pain management. The 2013 workshop is being offered in conjunction with anesthesiology faculty from the Uniformed Services University of Health Sciences.

The Regional Anesthesiology fellow participates in clinical care, research, and educational activities related to regional anesthesia at Kernan Hospital and UMMC. The fellow also can take an elective regional anesthesia rotation at the Uniformed Services

Medical Center at Andrews Air Force Base in Prince George's County, Maryland.

Simulation is an important part of the education provided at Kernan Hospital. Faculty from Kernan and the University of Maryland Program of Regional Anesthesiology have worked together to create and conduct simulation exercises for residents at the Maryland Advanced Simulation, Training, Research and Innovation Center (MASTR).

Neurosurgical Anesthesiology

Neurosurgical anesthesiology focuses on the perioperative care of patients undergoing surgery of the brain, spine, or peripheral nerves. Faculty in the Division of Neurosurgical Anesthesiology provide specialized care for complex cases such as intracranial aneurysms, diseases of the spine, malignant and benign brain tumors, hydrocephalus, epilepsy, and other functional disorders.

Physicians in the Division of Neurosurgical Anesthesiology provide electrophysiologic monitoring at UMMC, Kernan Hospital, and the Veterans Administration Medical Center. This service includes intraoperative neurophysiologic monitoring – such as brainstem auditory evoked potentials, somatosensory and transcranial motor evoked potentials, nerve conduction studies, brain mapping, electroencephalography, cranial and peripheral electromyography, and transcranial Doppler – for more than 1,100 cases each year. Such monitoring enables anesthesiologists to quickly identify new neurologic impairments and provide prompt correction and functional guidance to the surgeons.

Neurosurgical anesthesiologists manage intracranial hypertension and facilitate

intraoperative neurophysiologic and cardiovascular monitoring. Occasionally, surgery must be performed while the patient is awake to monitor cognitive functions such as speech and movement. In addition, many neurosurgical procedures require placement of the patient in various positions to facilitate surgery, such as sitting up or on their side. UMMC neurosurgical anesthesiologists have expertise in “awake” procedures and understand how the pathophysiology of disease states changes in the different positions required for surgery.

Neurosurgical anesthesiologists help facilitate neuroradiologic procedures such as endovascular intra-arterial mechanical clot retrieval, thrombolysis, aneurysm coiling, and intracranial stenting, and provide intracranial and hemodynamic monitoring and anesthetic techniques to support these life-saving techniques. In the Neuro ICU, Division faculty work with neurosurgeons and neurologists to optimize safety and outcomes for patients with ischemic and hemorrhagic strokes, intracranial tumors, spinal disorders, nerve and muscle diseases, encephalopathy, and infections of the central nervous system.

Research: Neurosurgical anesthesiologists are involved in research projects related primarily to subarachnoid hemorrhage, vasospasm, inflammation and biomarkers, and management of intracranial hypertension.

Education: In the Maryland Advanced Simulation, Training, Research and Innovation (MASTR) Center, neurosurgical anesthesiologists help residents understand the ASA Difficult Airway Algorithm and teach them different techniques to manage difficult

airways. Such approaches include the use of fiberoptic intubation, intubation using a laryngeal mask airway, cricothyroidotomy, retrograde intubation, and the use of tube exchange catheters.

Obstetric Anesthesiology

Ten faculty members of the Division of Obstetric Anesthesiology provide subspecialty care in the Labor and Delivery Suites. Over the past year, the Division cared for over 1,500 parturients; thirty-one percent delivered by cesarean section. Sixty-nine percent of women delivering vaginally received neuraxial labor analgesia. Obstetric anesthesiologists also cared for 60 patients undergoing gynecologic surgery performed in Labor and Delivery, and provided anesthesia for approximately one-third of the 100 fetal surgery cases performed at UMMC, including placental laser, fetal shunts and EXIT procedures (intubation of the neonatal trachea during continued maternal-placental perfusion). The team of obstetric anesthesiologists in the department have



Shafonya Turner, M.D. (left) and Resident, Maria Karla Villacin, M.D.



07:20
Place monitors on the patient and administer oxygen in preparation for beginning anesthesia.

07:25
Give medications intravenously (IV) to anesthetize the patient. Place a breathing tube into the patient's airway, insert a large bore IV, and position the patient for surgery.

07:30
The surgeon makes the first incision, beginning the operation: an abdominal hysterectomy.

09:00
Take a 15-minute break, leaving the patient in the hands of the anesthesiologist.

**Obstetric Anesthesiology
Division Faculty**

Andrew M. Malinow, M.D.
*Vice Chair for Faculty Affairs
Director, Obstetric
Anesthesiology Division
Professor of Anesthesiology
and Obstetrics/Gynecology
and Reproductive Sciences*

Beatrice M. Afrangui, M.D.
Shobana Bharadwaj, M.B.B.S.
Kathleen M. Davis, M.D.
Chinwe A. Ihenatu, M.B., Ch.B.
Douglas G. Martz, M.D.
Sheryl Nagle, M.D.
John Pallan, M.D.
Amer A. Quaddoura, M.D.
Maurice Sheppard, M.D.
Shafonya M. Turner, M.D.
Edwin J. Villamater, M.D.

special expertise in the care of high-risk pregnancy. UMMC serves a mainly urban population and is also a transport hospital for the rest of the state; approximately 90 percent of the Division's obstetric patients are considered to be high-risk. Many patients have co-existing cardiac, neurosurgical, and respiratory diseases. Obstetric anesthesiologists are increasingly seeing patients with previous anesthetic problems related to super-morbid obesity or other issues. The Division's faculty members address complex fetal problems that often require fetal intervention or preterm delivery. Obstetric anesthesiologists also provides bedside critical care services for critically-ill parturients, in collaboration with faculty from the Department of Obstetrics and Gynecology. In addition, all first-year obstetric residents as well as second-year maternal-fetal medicine fellows rotate on the obstetric anesthesiology service.

During the past year, office and sleep-room space were upgraded for both faculty and residents. Faculty members Andrew Malinow, M.D., and Shobana Bharadwaj, M.B.B.S., have been serving in leadership

roles to help set the standards of care for parturients and their neonates within the UMMC system and in hospitals throughout the state of Maryland.

An original contributor, Dr. Malinow has recently revised his chapter for the fifth edition of *Chestnut's Obstetric Anesthesia*. Dr. Bharadwaj and Dr. Malinow mentor resident presentations at regional and national conferences and have incorporated a resident role in their research analysis of the obstetric anesthesiology database

Education: The Division was one of the first groups nationwide to be approved for the ACGME fellowship in Obstetric Anesthesiology. Dr. Bharadwaj was instrumental in this process and serves as the Fellowship Director. The first ACGME OB Anesthesia fellow will begin in July 2013. Each morning, faculty obstetric anesthesiologists conduct a daily educational session that is well received by both junior and senior anesthesiology residents who rotate on the service. Residents consistently score highly on the obstetric anesthesiology-specific portions of the American Board of Anesthesiology in-training and American Board of Anesthesiology written exams. Each resident provides anesthesia for about 100 parturients during their training, including many opportunities for general anesthesia as well as all neuraxial techniques. The Division also hosts medical students during their junior and senior rotations in anesthesiology; Dr. Bharadwaj presents small group sessions for these students on regional anesthesia she also conducts a robust simulation scenario that involves Anesthesiology and Obstetric residents as well as Labor and Delivery nurses.

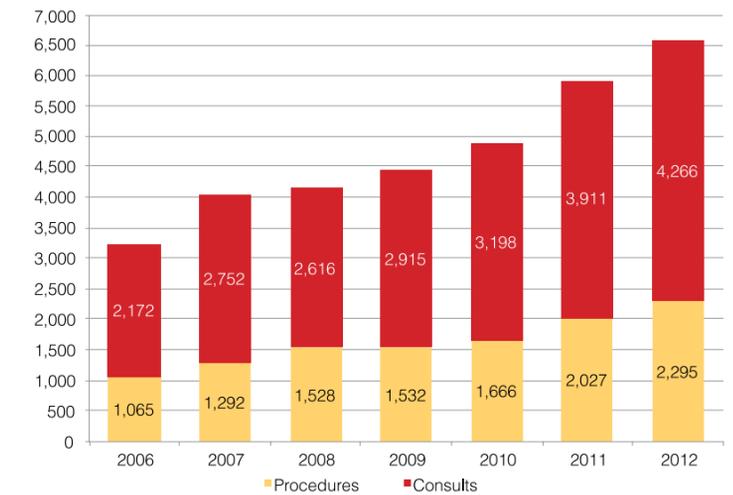
Pain Medicine

The University of Maryland Division of Pain Medicine employs a multidisciplinary team approach to provide compassionate and comprehensive services to reduce pain, promote coping strategies, and improve function and the quality of life. Faculty members encourage active involvement of patients in their treatment and tailor therapies to individual needs. Such therapy may include a combination of opioids, adjunctive medications, interventional therapies, psychological support, and physical therapy.

The Pain Management Center recently initiated a number of programs to improve patient satisfaction. For example, having a nurse travel with each patient before, during, and after a procedure has enhanced patient satisfaction, efficiency, and patient safety. Volunteers have been engaged to assist with customer service by greeting patients and informing them of any delays. The phone system was improved by having callers access a live person instead of voicemail, and the rate of calls answered by staff has increased. Patients are surveyed about their level of satisfaction, and the results are continuously used to drive process improvement initiatives.

Research: Faculty members continue to pursue research to enrich patient care. Ongoing projects focus on spinal cord stimulation to treat diabetic neuropathy and to manage visceral pain. Staff members made four research presentations at recent meetings of the American Society of Anesthesiologists and the American Society of Regional Anesthesia and Pain Medicine.

Pain Procedures and Consults



Education: The Division of Pain Medicine offers an ACGME-accredited Pain Medicine Fellowship, offering education in the management of chronic pain using medication as well as fluoroscopic and ultrasound-guided approaches. Anesthesiology residents spend one to two months rotating through Pain Medicine. Both fellows and residents participate in a weekly lectures series.

Pain Medicine Division Faculty

Thelma Wright, M.D., J.D.
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Fellowship Director
Assistant Professor*

Stephen Bono, Ph.D.
Natasha Durant, Ph.D.
Kanchana Gattu, M.B.B.S.
Seung J. Lee, M.D., M.B.A.

Pediatric Anesthesiology

Faculty of the Division of Pediatric Anesthesiology combine expertise with compassion to care for UMMC's youngest patients – and ease the minds of their parents – from the time of the preoperative evaluation, throughout the operation, and during the recovery period. Fellowship-trained pediatric anesthesiologists care for children in the Pediatric Surgery Center, a separate child and family-centered area. Faculty members provide evidence-based, high-quality care for infants, children, and adolescents.

**Pediatric Anesthesiology
Division Faculty**

Anne M. Savarese, M.D.
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Assistant Professor*

Monique Bellefleur, M.D., M.B.A.
Monika Chatrath, M.D.
Wendy Daley, M.D., M.P.H.
Madhavi A. Naik, M.B.B.S.
Teresa Niemiec, D.O.
Shelley Ohliger, M.D.



Top: (Left to Right) Leonard Taylor, Mary J. Njoku, M.D., Andy M. Malinow, M.D., Peter Rock, M.D., M.B.A., and Adam Weidenhammer at the ribbon cutting for the new OB anesthesia office and sleep rooms.
Bottom: New OB anesthesia office space

09:15
Return to
the patient.

11:30
The operation
nears
completion.

12:30
Stop anesthetic,
allow patient to emerge
from anesthesia, remove
patient's breathing tube.
Take patient to Post-Anesthesia
Care Unit (PACU, the recovery
room), ensuring she is
comfortable and not
in pain.

12:45
Grab
lunch.

PREP Center Faculty

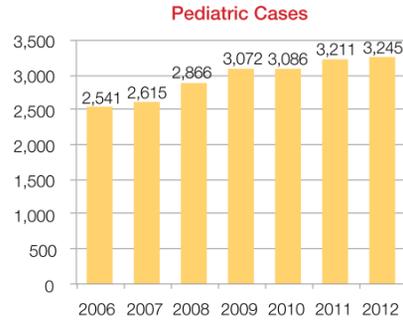
Beatrice M. Afrangui, M.D.
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Kathleen M. Davis, M.D.
 Ileana Gheorghiu, M.D.
 Virginia E. Murphy, M.B., B.Ch., B.A.O.
 Sheryl Nagle, M.D.
 Robert J. Noorani, M.D.
 Maurice Sheppard, M.D.
 Daniela Smith, M.D.



Ileana Gheorghiu, M.D.

Day in the life of a Certified Registered Nurse Anesthetist



The Division recently expanded its services in the area of pediatric cardiovascular services. Anesthesiologists participated in the first surgery at UMMC to repair a neonate with hypoplastic left heart syndrome, in which the left side of the heart has not developed properly. Repairing this condition is a highly complex surgery. UMMC is one of only two hospitals in Maryland to offer anesthesiology services for pediatric cardiac procedures and anesthesia for children receiving radiation therapy. Faculty also provide care for young patients undergoing neurosurgery, orthopedic operations, cardiac catheterization, and other procedures.

Research: Pediatric anesthesiologists are collaborating with otolaryngologists on a study of perioperative complications in pediatric patients with sleep apnea. Data collection is anticipated to be complete in 2013.

Education: All residents in Anesthesiology rotate through the Division of Pediatric Anesthesiology. Instruction is provided through weekly lectures, simulation-based pediatric scenarios, a didactic program for those in Clinical Anesthesia years 1 and 2, and Board review for those in the third Clinical Anesthesia year.

Preoperative Readiness Evaluation and Preparation (PREP) Center

Preanesthetic evaluation is an important component of the journey for every patient scheduled for surgery. The goal of such assessment is to enhance patient safety by identifying and minimizing perioperative risk. The staff of the PREP Center provides preoperative history and physical documentation and performs preanesthesia evaluations for patients undergoing surgery at the University of Maryland Medical Center. All preoperative patients' charts originate in the PREP Center, except for patients who have already been admitted to the hospital. The staff evaluates some patients in person and many others by telephone.

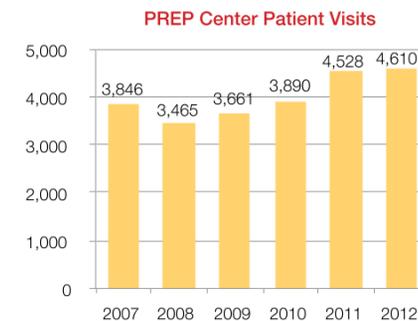
During the preoperative assessment, the PREP Center team evaluates and manages medical conditions and identifies anesthetic risk factors. Postoperative care plans – such as close postoperative observation in ICUs or Intermediate Care for select patients – often begin to take shape in the PREP Center.

The PREP Center team includes an attending anesthesiologist, an anesthesiology resident, and several Certified Registered Nurse Practitioners (CRNPs). They are joined by nurses, patient care technicians, and clerical staff. The attending anesthesiologist reviews each patient's case and discusses it with other specialists if further assessment is needed before the patient can be approved to receive anesthesia. This process not only ensures patient safety, but results in learning opportunities for anesthesiologists, residents, medical students, and clinical staff. It also decreases patient cancellations on the day of surgery. The cancellation rate of less than 1%

represents top-tier performance compared to other academic health centers. Such a low day of surgery cancellation rate enhances operating room efficiency.

The PREP Center uses "My Medical File," a Web-based initiative, to facilitate the preoperative process. This program automatically collects and electronically "files" patient records that have been transmitted to a Web-based location, and also checks for chart completeness. PREP Center staff members, clinical anesthesia providers, and surgical offices may access patient records for preoperative patients and can view secure medical information online. This process was initiated over the last year, and will hopefully expand to more surgical services in the coming year.

An electronic preoperative evaluation module is under development. It will be based in the Cerner "Power Chart" Hospital EMR System and will be programmed for data flow into Metavision to facilitate easier access to preoperative information by the anesthesia care team. The Cerner preoperative "Power Note" is now being tested, and it is hoped that it will be in routine use in the coming year.



Program in Regional Anesthesia

The Program in Regional Anesthesia at the University of Maryland School of Medicine features a multidisciplinary group of anesthesiologists who provide advanced regional anesthesia approaches for a wide range of patients who come to UMMC and Kernan Hospital. Working primarily with general and orthopedic surgeons, the faculty performs over 3,000 regional blocks each year for elective and urgent orthopedic procedures. Most regional anesthetics are provided at Kernan Hospital. As the number of regional anesthesia-trained faculty in the program grows, however, and the indications for regional anesthesia procedures expand, these efforts are increasing significantly at UMMC. The Department recently established a dedicated Regional Anesthesia Service at UMMC to provide these innovative approaches to more patients.

Over the past year, the mission of the Program in Regional Anesthesia was to increase the delivery of regional anesthesia and improve analgesia in our diverse patient population. To that end, additional regional anesthesia-trained faculty have joined the department, and new regional anesthesia equipment was secured, including three state-of-the-art ultrasound machines, echogenic-tip nerve-block needles, and all-inclusive nerve block catheter kits. In addition to standard nerve blocks for limb injuries or procedures, the ability to perform more thoracic and abdominal nerve blocks has grown significantly. Some examples include thoracic paravertebral blocks

Program in Regional Anesthesia Faculty

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 Andra D. DiStefano, M.D.
 Jeffrey T. Haugh, M.D.
 Emily Joe, M.D.
 Jeremy Kaplowitz, M.D.
 Hanni E. Monroe, MD
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 Eric K. Shepard, M.D.
 Maurice Sheppard M.D.
 Roger F. Shere-Wolfe, M.D., J.D.
 Daniela Smith, M.D.
 Matthew Tulis, M.D.
 Shafonya M. Turner, M.D.
 Edwin J. Villamater, M.D.

13:15
 Return to the operating room to set up for the next case: repair of a hip fracture.

13:50
 The patient arrives at the operating room in traction and using a patient-controlled analgesia (PCA) device to manage her pain.

14:10
 The patient is anesthetized and a breathing tube is placed. An epidural catheter is placed in her lower back. Intravenous lines are also placed to give medications during the surgery and to monitor the patient's blood pressure.

A cell saver will be used. This machine collects the patient's blood from the surgical site and processes it so that it can be given back to the patient through an IV.

This approach is frequently used during hip fracture repairs, because patients can lose more than a liter of blood.



(Resident) *Giuliana Geng-Ramos, M.D.* and *Matthew Tulis, M.D.*

for rib fractures and thoracotomy procedures, transversus abdominis plane catheters for intra-abdominal procedures, and ultrasound-assisted neuraxial techniques.

Patients and surgeons alike are reporting positive results with regional anesthesia techniques and are more frequently requesting these services for future procedures. The Program's most unique contribution to patient care is the comfort level in safely placing regional blocks in adult patients who are heavily sedated or under general anesthesia – techniques that many other centers are still hesitant to perform.

The coming year will bring the initiation of a Regional Anesthesia Service at UMMC, implementation of standardized pain management protocols for total joint replacement patients and trauma victims, more robust patient follow-up and documentation of post-block procedures, and the creation of a dedicated regional anesthesia database to capture all techniques and facilitate clinical research and performance improvement.

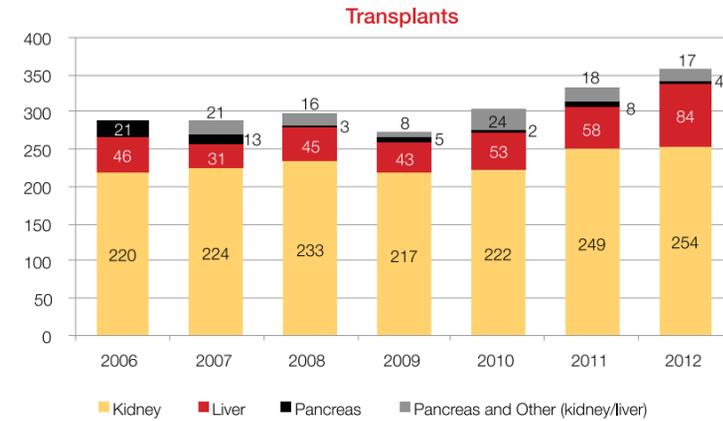
Research: Academic pursuits in the Program include IRB-approved research projects, article and book chapter publications, Grand Rounds lectures, and a rising presence at regional anesthesia conferences. With their special expertise in peripheral nerve blocks in trauma patients, ultrasound-guided techniques, and the development of a successful outpatient peripheral nerve block catheter program, the Program's physicians

are often invited to lecture and train others nationally in the rapidly emerging field of regional anesthesia.

Education: The Program initiated a Regional Anesthesia Fellowship at the University of Maryland, headed by Lise Asaro, M.D. based at Kernan Hospital and UMMC, with dedicated training and lectures. Resident education has also intensified, with simulation training and a greater focus on ultrasound use in regional techniques. In spring 2012, regional anesthesia faculty conducted one-on-one Ultrasound-Guided Regional Anesthesia Task Training sessions with each resident, and employed the newly purchased eZono simulation system in the MASTRI center to help trainees hone their clinical skills. Improvements in teaching have instilled confidence in residents to function independently in any regional anesthesia practice post-residency.

Transplant Anesthesiology

The Division of Transplant Anesthesiology has been participating in a steadily growing volume of cases. In 2012, the Division completed 359 transplants (including transplants of organs from deceased and living donors, combined kidney/pancreas transplants, and combined liver/kidney transplants). The liver program is now on track to complete 100 liver transplants per year, having seen a 30% increase in liver transplants from 2011 to 2012. The living donor liver program has also been strengthened and has a goal of ten per year.



(See page 18 for the story of one living donor liver transplant.) UMMC is the only hospital in Maryland to perform adult living donor liver transplants. In addition, the living donor kidney program is witnessing an increase in the number of cases.

New processes have been implemented to increase the time spent evaluating patients earlier in the transplant clinic. The Division also implemented a face transplant program in 2012 for patients with severe burns and facial trauma from combat injuries. In March 2012, a multidisciplinary team at UMMC completed the most extensive full-face transplant to date, including both jaws, teeth, and tongue (see page 20). Such lengthy, complicated procedures require the collaboration and expertise of multiple specialists such as those found at the University of Maryland Department of Anesthesiology.

Trauma Anesthesiology

The mission of the Division of Trauma Anesthesiology is to provide outstanding anesthetic care to trauma patients originating from the state of Maryland. Care is delivered at the R Adams Cowley Shock Trauma Center, the world's first freestanding trauma facility, which serves as the primary adult trauma referral center for Maryland and features capabilities which exceed a Level 1 trauma center designation.

The Division strives to provide innovative resuscitation therapies that improve both short- and long-term outcomes, optimize perioperative pain management, and provide appropriate anesthetic management for reconstructive surgeries. The goal is to be the leading trauma center in the world, practicing evidence-based medicine and serving as a model for other trauma centers. Another goal

Trauma Anesthesiology Division Faculty

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Director, Trauma Anesthesiology Division
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Cynthia J. Bucci, M.D.
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Mary L. Hyder, M.D.
Ron E. Samet, M.D.
Roger F. Shere-Wolfe, M.D., J.D., M.A.
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Robert A. Sikorski, M.D.
Christopher T. Stephens, M.D., M.S.



Karla Greco, M.D., M.H.S.

Day in the life of a Certified Registered Nurse Anesthetist

14:30
The entire team positions the patient on her side for the surgery.

15:00
The surgeon makes the first incision, starting the procedure.

16:00
Take a 10-minute break, relieved by attending anesthesiologist.

18:10
Two units of the patient's collected blood were given back through her IV. Her vital signs are stable.

**VAMC Anesthesiology
Department Members**

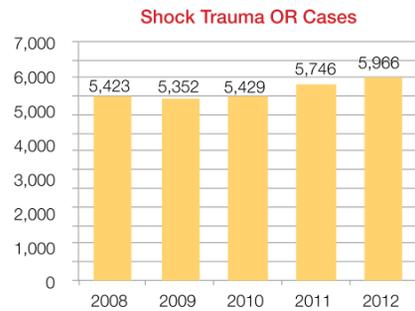
Edward J. Norris, M.D., M.B.A., F.A.H.A.
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Daniel J. Bochicchio, M.D.
Gregory Cheloff, M.D.
Natan Fooks, M.D.
Nigam Sheth, M.D.
Padmini Thomas, M.B.B.S.
Henry Wilson, Jr., M.D.



Edward J. Norris, M.D., M.B.A., F.A.H.A.

Day in the life of a Certified
Registered Nurse Anesthetist



is to be an integral part of the team that helps patients return to functional lives after tragedy, and to make that transition as seamless and comfortable as possible.

In 2012, the Division helped open a new building in the trauma hospital and gained two additional operating rooms. The existing building is under renovation and is scheduled for completion in 2014. Once finished, the entire project will yield three new operating rooms, including a new anesthesia workroom and upgraded equipment.

The Division recently instituted a new massive transfusion protocol. In addition, staff are expanding their experience with regional anesthetic techniques to improve post-operative pain management and to facilitate surgical needs.

Research: The Shock Trauma Center is participating in a large multicenter research project known as the PROPPR study. This study is investigating the best mix of different blood products to control hemorrhage and positively influence long-term outcomes, such

as survival and post-operative complications. Faculty are also assessing non-invasive monitors to assist pre-hospital providers with triage decisions. One example is a sensor to determine the quality of respiration in patients with cervical spine injuries. Such a device could be used to determine if these patients should have a secured airway prior to transport.

Education: The Division offers the only full-time fellowship in Trauma Anesthesiology in the country. Instruction is also provided by Division staff to paramedics, student nurse anesthetists, medical students, and anesthesiology residents. The Division is awaiting the completion of a new simulation lab which will further enhance faculty competencies as well as the training of residents, fellows and other health care professionals.

**Veterans Affairs Medical Center (VAMC)
Affiliated Department**

The University of Maryland Department of Anesthesiology maintains a close affiliation with the Baltimore Veterans Affairs Medical Center (VAMC), which offers inpatient, outpatient, and primary care services for veterans in Maryland and adjacent states. The VAMC Department of Anesthesiology delivers perioperative, critical care, and pain management services to veterans, many of whom have advanced cardiovascular, pulmonary, and metabolic diseases. These services are provided in nine operating rooms, a twelve-bed Post-Anesthesia Care Unit, a

nine-bed Same Day Surgical Unit, and a ten-bed Surgical Intensive Care Unit.

The most common procedures requiring anesthesia at the VAMC include vascular, thoracic, neurosurgical, spine, orthopedic, plastic, urologic, ENT, gynecologic, and eye surgeries. Veterans receiving electroconvulsive therapy or painful diagnostic and therapeutic procedures outside the operating room also receive anesthetic services. VAMC anesthesiologists provide emergency airway management and intubation around the clock.

Education: The VAMC features a diverse clinical training environment, with high-acuity patients and nine surgical divisions. Training is provided to medical students, residents, student nurse anesthetists, and allied medical and health trainees. A third resident position was recently added to the VAMC Department of Anesthesiology. One-on-one staffing with a board-certified attending anesthesiologist allows for optimal teaching contact hours and supervision, with case selection tailored to each resident's level of training and interest.

Advancing Information Technology

Implementation of the Anesthesia Information Management System (AIMS) expanded further in 2012. It is now being used in Obstetric Anesthesiology, providing a searchable database and enhancing the quality assurance database. iPad tablets were introduced on a trial basis for obstetric anesthesia documentation and recording of post-operative notes in the general operating rooms, making this task more efficient and portable than using a workstation on wheels.

The Department of Anesthesiology has partnered with the UMMC Information Technology training group to develop computer-based training modules for the AIMS, which will be available online when completed. This tool will help prepare incoming clinicians to use our AIMS. The Department also employs the Turning Point audience response system to collect real-time feedback during lectures and to survey response during meetings. (See the Education section for more information.)

The computers of the entire Department were upgraded to Windows 7, bringing all systems up to date and compatible with the newest technologies available. Finally, the Department initiated an Emergency Contact System to make communication more reliable in the event of severe weather, natural disasters, and other unexpected situations.



Julie Utz, AS, AIMS Administrator

AIMS BY THE NUMBERS

290
Users

57
Sites Wired for AIMS

74 gigabytes
Database Size

75,835
Records (since 06/15/10)

48,012
Unique Patients

265
Computers

2
Servers

SQL 2005
Database

Windows 7
Workstation OS

**Windows Server
2003 Enterprise**
Server OS

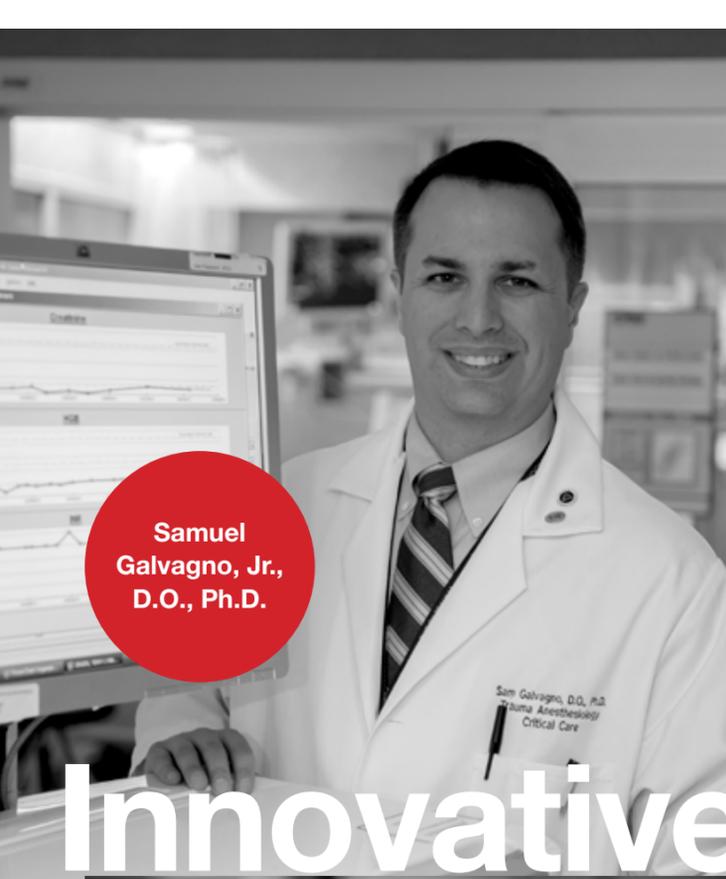
1 terabyte
Server Storage

12 gigabytes
RAM Server Memory

18:45
Shift is over.
Hand off report to
the night shift CRNA,
who will finish the
patient's care.

19:00
Check assignments
for the morning. Talk
with colleagues in the
workroom. Change out
of scrubs, drive home,
and grab some
dinner.

23:00
Get some sleep.
Tomorrow will be
here soon!



Samuel Galvagno, Jr., D.O., Ph.D.

Caron Hong, M.D., M.Sc.

Innovative Research



Junfang Wu, Ph.D.

Brian Polster, Ph.D.

A Higher Standard of Care

Today in the U.S., trauma is the chief cause of death for those under age 45. To reduce these numbers, Samuel Galvagno, Jr., D.O., Ph.D., is setting his sights higher—specifically through research initiatives to expand the science associated with aero-medical critical care. An intensivist, Dr. Galvagno is investigating how to improve care when patients are transported from point A to point B, using sophisticated epidemiological techniques and state-of-the-art statistical analysis. While aero-medical evacuation is widely seen as the answer, “It’s not just the helicopter, but a combination of many factors,” he notes. “We need to figure out what those factors are to ensure the best patient outcomes.”

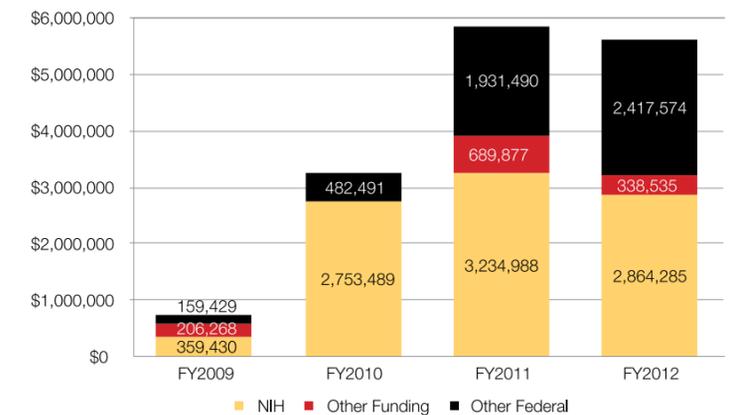
Pushing Back on Spine Pain

As most sufferers of spinal cord injuries (SCI) will tell you, pain is a constant. In fact, clinical data show that up to 80 percent of SCI patients suffer from chronic pain. Through her research, Junfang Wu, Ph.D., believes that a therapeutic intervention can be found to better manage this pain. “We propose that genetics play a key role in susceptibility to this kind of pain,” she contends. Now Dr. Wu, an Assistant Professor in the Department of Anesthesiology, is taking her investigations to the next level, thanks to a National Institutes of Health grant that will support her work over the next five years. “By looking at potential cell therapies, we’re exploring the possibilities of not only reducing chronic pain but even improving motor function,” she explains.

Back from the Brink

A subarachnoid hemorrhage, commonly referred to as a “brain bleed,” occurs when a weakened wall of a blood vessel in the brain balloons out and ruptures. These patients often suffer from severe cognitive impairment, and many do not survive. But Caron Hong, M.D., M.Sc., a researcher and Assistant Professor in the Department of Anesthesiology, wants to change those odds. Through a \$308,000 American Heart Association Scientist Development Grant, she and research mentor Marc Simard, M.D., Ph.D., are investigating new approaches to treating this devastating brain injury. “This research has significant potential to improve outcomes and change the clinical management of patients with subarachnoid hemorrhage,” Dr. Hong says.

Anesthesiology Department Faculty Funding



Answers in the Air

Investigators have been largely unsuccessful in developing therapies for traumatic brain injury or stroke—particularly approaches to prevent the death of injured brain cells. Now Brian Polster, Ph.D., an Assistant Professor in the Department of Anesthesiology, has a clue as to why. The oxygen level in the blood that reaches the brain is normally lower than the level in air. But researchers had been studying brain cell death at the normal atmospheric oxygen level of 21 percent. “Most prior experiments have been conducted at the wrong oxygen tension,” says Dr. Polster. “We believe we will have a much better chance of developing an appropriate treatment if we study the mechanisms of cellular injury at the right oxygen level.” By using a specialized oxygen regulation chamber, he is accomplishing just that. “We’re one of the first labs in the world to investigate brain cell death in this way,” he says.

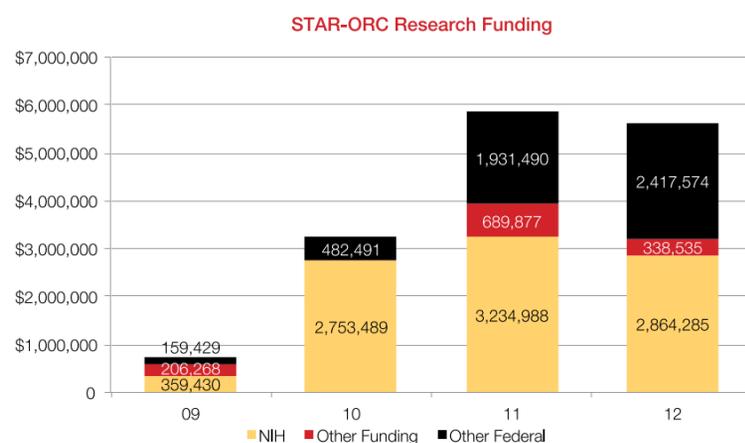
Investigation Meets Innovation

A robust program of basic science and clinical research drives innovation in the University of Maryland Department of Anesthesiology. Research projects are conducted primarily through the Shock, Trauma and Anesthesiology Research Center. This Organized Research Center (ORC) was created in early 2008.

The STAR ORC supports translational research related to trauma, tissue injury, critical care, and perioperative outcomes. Faculty members from multiple clinical and basic science departments are part of STAR. The STAR ORC is continually establishing collaborations with investigators from other schools at UMB and other University of Maryland campuses. To date, collaborative programs have been developed with the School of Pharmacy, School of Nursing, University of Maryland College Park, Uniformed Services University of the Health Sciences, and Georgetown University. The STAR Center is also creating programs of excellence related to neurotrauma (brain and spinal cord) and geriatric trauma and critical care.

Extramural research support of the STAR Center has continued to escalate. NIH funding has increased over past years. A multi-PI NIH RO1 award for Alan Faden, M.D., and Susan Dorsey of the School of Nursing was funded for FY 2012/2013.

There are internal scientific advisory committees for both preclinical and clinical research which meet semi-annually. These committees include senior research leaders from other departments and research centers, as well as selected STAR faculty. An External Scientific Advisory Committee includes leaders in trauma, critical care medicine, and/or anesthesiology who are known around the world.



STAR Faculty Research

The laboratory of **Alan Faden, M.D.**, uses multidisciplinary approaches to examine the pathobiology of experimental brain and spinal cord injury and their treatment, focusing on cell cycle pathways, microglial activation, cell death pathways, metabotropic glutamate receptors, and the use of combination and multifunctional drug treatment strategies for neurotrauma. This research is supported by five NIH grants. There are active collaborations with the School of Pharmacy in medicinal chemistry and drug discovery, and with the School of Nursing in spinal cord injury.

Gary Fiskum, Ph.D., and his colleagues study the molecular mechanisms underlying ischemic and traumatic brain injury, using cell culture and animal models of adult and pediatric brain injury to understand how oxidative stress and mitochondrial dysfunction contribute to injury. They utilize both basic and translational research to decipher the molecular mechanisms of neural cell death, with the goal of improving survival and quality of life after brain injury. Investigators use tissue and fluid samples from patients with traumatic brain injuries to validate the mechanisms elucidated from animal models and to identify potential injury biomarkers. Preclinical research on mechanisms of brain injury caused by exposure to blasts is being performed in collaboration with William Fourny, Ph.D., at the University of Maryland School of Engineering.

Bingren Hu, Ph.D., and his colleagues study molecular mechanisms of ischemic and traumatic brain injury, using ischemia, traumatic brain injury, and neonatal hypoxia-ischemia animal models. Their research focuses on how

synaptic plasticity and protein misfolding contribute to brain injury, as well as post-brain injury dysfunction, complications, and recovery, and also on developing new therapies for brain injuries.

Tibor Kristian, Ph.D., investigates the role of mitochondrial dysfunction and catabolism of metabolic cofactors in ischemic brain injury. He has generated unique transgenic mice with fluorescently tagged neuronal mitochondria that enable visualization of morphological changes that precede cell death. His research is focused on the development of neuroprotective interventions utilizing compounds that protect cellular energy metabolism.

Marta Lipinski, Ph.D., uses in vivo and in vitro models to examine the role of neuronal cell death after traumatic injury and to delineate the molecular mechanisms involved. Her long-term research goal is to define novel “drugable” target molecules and pathways for the effective modulation of autophagy in traumatic brain injury and other neurodegenerative diseases.

David Loane, Ph.D., focuses on the mechanisms and modulation of chronic inflammation after experimental traumatic brain injury, and the impact of aging on outcome after such injury. He also studies common mechanisms underlying acute and chronic neurodegeneration.

Colin Mackenzie, M.B., Ch.B., and **Peter Hu, M.S. Ph.D.**, study predictors of trauma patient outcome using automated capture of vital sign data in the Trauma Resuscitation and Intensive Care Units of the Shock Trauma Center, as well as vital sign data during the pre-hospital care

of these patients. By applying advanced signal-processing and machine-learning statistical techniques to the analysis of vital signs data, their goal is to predict the need for blood products and life-saving interventions during the first 48 hours of care in the Shock Trauma Center.

Brian Polster, Ph.D., examines subcellular mechanisms that govern neural cell death and survival in acute brain injury and neurodegenerative disorders, focusing on the role of mitochondrial proteases and nitric oxide. He is also developing unique methods to study mitochondrial bioenergetics in models of neuronal injury.

Peter Rock, M.D., M.B.A., F.C.C.M. leads the Program in Patient Safety and Clinical Outcomes. This program is involved in several large multicenter investigator-initiated clinical trials. These include reducing the incidence of ICU delirium, improving postoperative cognitive function in the elderly, evaluating genetic factors that impact postoperative deep venous thrombosis and infections, and improving outcomes in patients with Acute Respiratory Distress Syndrome.

Bogdan Stoica, Ph.D., studies mechanisms of neuronal cell death using both cell culture and animal neurotrauma models. One emphasis has been on the role of cell cycle pathways and apoptosis in the induction of secondary tissue loss after traumatic brain injury.

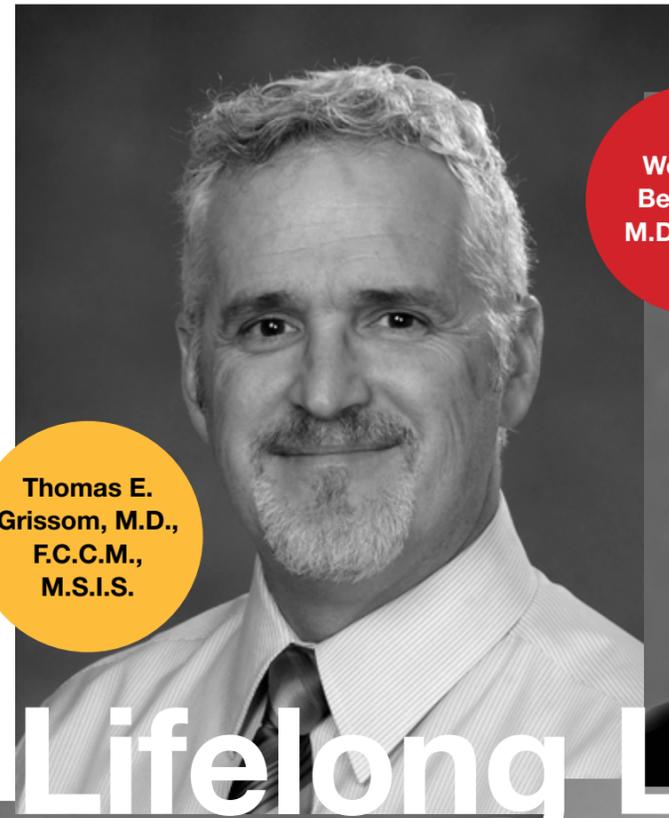
Junfang Wu, Ph.D., explores secondary damage after experimental spinal cord injury, as well as the role of glial cells in the response to injury, using both in vivo and in vitro models.

Reducing the Incidence of Brain Trauma

The twin forces of hyper-acceleration and impact are causing a growing number of traumatic brain injury (TBI) among occupants of American military vehicles that strike roadside bombs. To develop new ways to protect warfighters in such situations, the Department of Anesthesiology's **Gary Fiskum, Ph.D.**, is directing a four-year \$1.5 million study funded by the U.S. Army. In collaboration with the University of Maryland Department of Engineering, the investigators created a unique animal simulation model that employs small-scale vehicles to test the effects of underbody blasts during actual explosions. Dr. Fiskum hopes the study will lead to additional changes in vehicle hull design to reduce the incidence of TBI.

Raising the Standard of Surgical Skills

Through a \$2 million, three-year grant awarded in January 2013 by the U.S. Army, **Colin Mackenzie, M.B., Ch.B.**, and his research team are developing a new set of performance measures for surgical skills. A Clinical Professor in the Department of Anesthesiology, Dr. Mackenzie is seeking to measure the performance of surgeons conducting vascular control procedures during the Advanced Surgical Skills Exposures for Trauma (ASSET) course, established by the American College of Surgeons. By first assessing “before and after” ASSET competencies and then re-testing the skills of participating surgeons up to 18 months later, Dr. Mackenzie hopes to design a new recertification protocol that enhances skill retention.



Thomas E. Grissom, M.D., F.C.C.M., M.S.I.S.

Wendy K. Bernstein, M.D., M.B.A.



Lifelong Learning



Thelma B. Wright, M.D., J.D.



Seung J. Lee, M.D., M.B.A.

While earning an M.D. or Ph.D. degree is a major achievement, for many of our faculty it is not the end of their education. The following faculty members went on to earn advanced degrees that not only enrich their own knowledge, but also enhance the mission of the Department.

Thomas E. Grissom, M.D., F.C.C.M., M.S.I.S.

Degree earned: Masters of Science in Information Systems (M.S.I.S.), University of Maryland, Baltimore County

When health-related information systems fail, it's often due to poor planning and implementation. Frequently, the problems arise from a gap between the end-users in the healthcare system and the individuals supporting the information technology infrastructure. "To support future projects, I felt it would be useful to have an understanding of the I.T. considerations that go beyond my day-to-day clinical responsibilities," says Dr. Grissom. "The M.S.I.S. program at UMBC helped me understand that clinical support systems require involvement from individuals with a foothold on both sides of the bridge." The Department of Anesthesiology interfaces with a number of I.T. systems at both UMMC and the University of Maryland, Baltimore. "I hope that my understanding of the integration, deployment, and acceptance challenges to be faced by both the Department and the hospital will make this information technology transition smoother," Dr. Grissom notes.

Thelma B. Wright, M.D., J.D.

Degree earned: Juris Doctor (J.D.), University of Maryland Law School

In her role as Director of Pain Medicine at Kernan Hospital, Dr. Wright provides analgesic relief to thousands of patients each year, and teaches other doctors how to do the same. Yet she's always had an interest in the study of law. So she enrolled in the University of Maryland Francis King Carey School of Law. "The practice of medicine includes different facets of the law, such as informed consent, the physician/patient relationship, ethical aspects regarding patient autonomy, physician beneficence, and nonmaleficence," she notes. "As physicians, we may take this for granted when we treat patients, but it can be quite interesting to see how these issues play out in health care." Her time in law school afforded her exposure to health law — something she is already applying in her work. "I have since become a member of the University of Maryland Bioethics Committee," Dr. Wright adds. "I also hope that in the future, I can get involved in risk management and policymaking at UMMC."

Wendy K. Bernstein, M.D., M.B.A.

Degree earned: Masters of Business Administration, University of Maryland University College, Baltimore

Dr. Bernstein pursued an online program to accommodate her full-time work schedule and her personal and family obligations. Her goal was to make a difference and improve health care. "As a physician, I have a unique perspective to develop solutions to problems. Through my work in simulation, I need to develop business plans and handle budgets, and I would like to take on future leadership roles," says Dr. Bernstein. "I pursued this degree to gain the expertise and leadership training necessary to accomplish these goals." She also noted that simulation may be useful for dealing with world health problems, and the M.B.A. program at the University of Maryland University College provided a global perspective. "I hope to use the knowledge I gained to take a more active role in addressing the financial issues that face our Department," she adds. "I also intend to apply my business knowledge as we gain accreditation of the Simulation Program for the Department of Anesthesiology by the American Board of Anesthesiology."

Seung J. Lee, M.D., M.B.A.

Degree earned: Masters of Business Administration, University of Baltimore

Health care is an ever-changing industry, and today more than ever, cost is an important component of patient care. Recognizing this, Dr. Lee chose to pursue an M.B.A. from the University of Baltimore. "I had very limited exposure to the business aspects of health care during my medical school years, residency, and fellowship," recalls Dr. Lee. "Given the current healthcare environment, I wanted to learn more about the business model and its impact on health care." How might his new degree influence his career? He says, "Gaining new perspectives is always valuable."

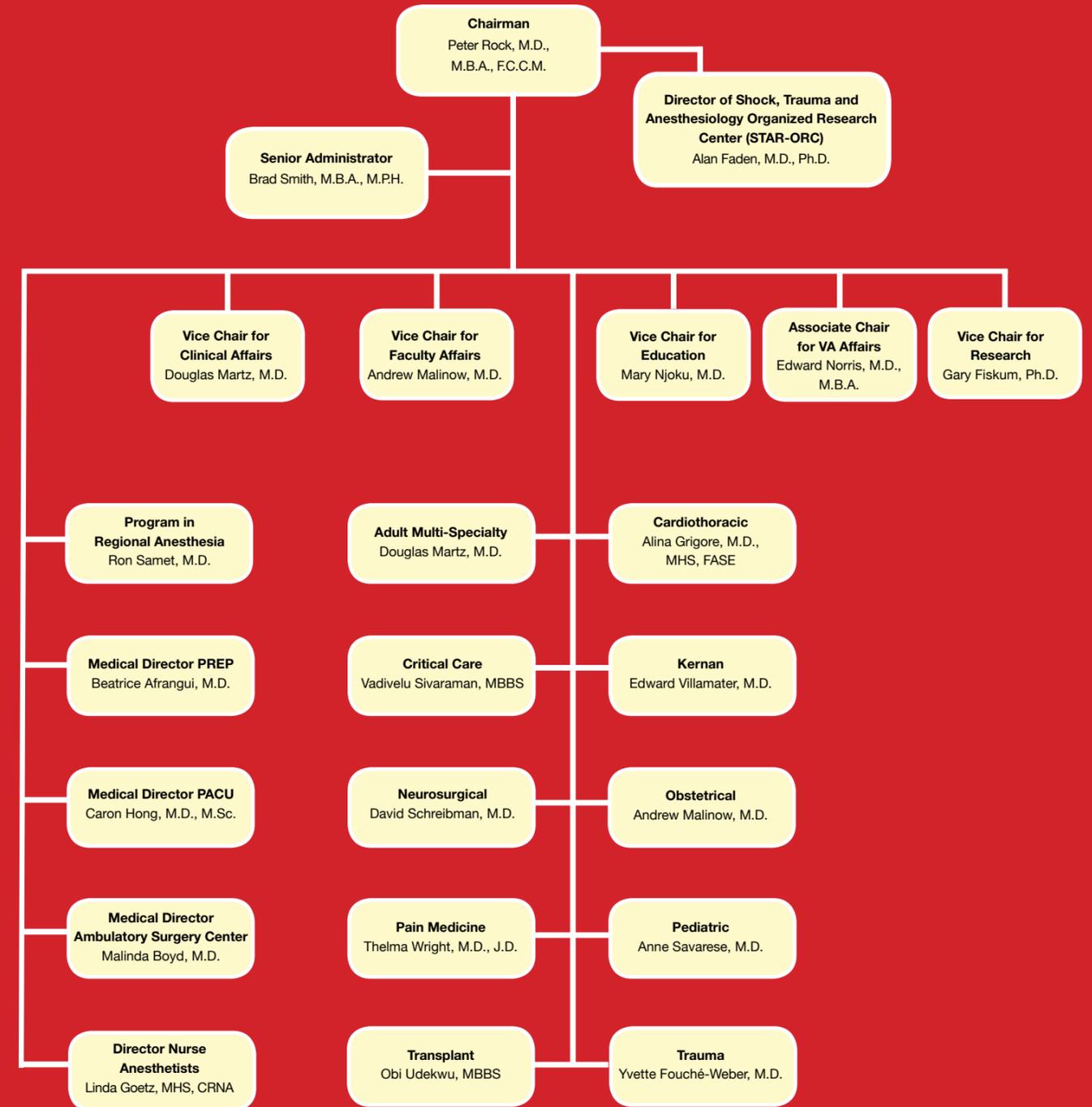
Professors Martin Helrich and M. Jane Matjasko Lecture in Anesthesiology

Each year we celebrate the Department's history and heritage during the Professors Martin Helrich and M. Jane Matjasko Lecture in Anesthesiology. A leading anesthesiologist is invited to present their latest research and to speak about the field before the Department alumni and guests. On November 14, 2012, the 26th invited Lecturer was Vesna Jevtovic-Todorovic, M.D., Ph.D., M.B.A., Harold Carron Professor of Anesthesiology and Neuroscience, University of Virginia School of Medicine, who spoke in the University of Maryland Medical Auditorium on "Anesthesia and Brain Development: Should We Be Concerned?"



Top: (Left to Right) Peter Rock, M.D., M.B.A., Mrs. Ina Helrich, Martin Helrich, M.D.
 Above: Helrich Matjasko Lecturer, Vesna Jevtovic-Todorovic, M.D., M.B.A., Ph.D.
 Left: Martin Helrich, M.D.

OUR PEOPLE MAKE US THE BEST



Primary Faculty

Left to right



Afrangui, Beatrice M., M.D., *Clinical Assistant Professor*
 Anders, Megan G, M.D., *Assistant Professor*
 Asaro, Lise R., M.D., *Clinical Assistant Professor*
 Bellefleur, Monique, M.D., M.B.A., *Assistant Professor*
 Bernstein, Wendy K., M.D., M.B.A., *Associate Professor*



Bharadwaj, Shobana, M.B.B.S., *Assistant Professor*
 Bigeleisen, Paul E., M.D., *Professor*
 Blenko, John, M.D., *Associate Professor*
 Boyd, Malinda T., M.D., *Clinical Assistant Professor*
 Bucci, Cynthia J., M.D., *Assistant Professor*



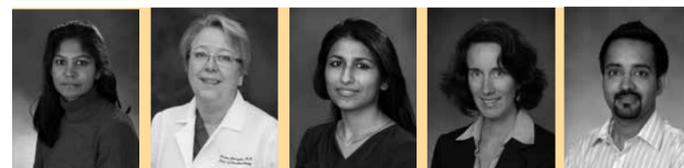
Chatrath, Monika P, M.D., *Assistant Professor*
 Conti, Bianca M., M.D., *Assistant Professor*
 Daley, Wendy A., M.D., M.P.H., *Assistant Professor*
 Davis, Kathleen M., M.D., *Assistant Professor*
 Deshpande, Seema P, M.B.B.S., *Assistant Professor*



DiMino, Mark D., M.D., *Assistant Professor*
 DiStefano, Andra D., M.D., *Assistant Professor*
 Drago, John P., M.O., J.D., *Clinical Assistant Professor*
 Esposito, Stephanie, M.D., *Assistant Professor*
 Faden, Alan I., M.D., *Professor*



Fiskum, Gary M., Ph.D., *Professor*
 Fitzpatrick, Molly, M.D., *Assistant Professor*
 Fouché-Weber, Yvette, M.D., *Assistant Professor*
 Franklin, Christopher M, M.D., *Assistant Professor*
 Galvagno Jr., Samuel M., D.O., Ph.D., *Assistant Professor*



Gattu, Kanchana, M.B.B.S., *Assistant Professor*
 Gheorghiu, Ileana, M.D., *Assistant Professor*
 Goel, Kriti, M.B.B.S., *Instructor*
 Greco, Karla M, M.D., M.H.S., *Assistant Professor*
 Grewal, Ashanpreet, M.D., *Assistant Professor*



Grigore, Alina M., M.D., *Associate Professor*
 Grissom, Thomas, M.D., F.C.C.M., M.S.I.S., *Associate Professor*
 Haugh, Jeffrey T., M.D., *Assistant Professor*
 Hong, Caron M., M.D., M.Sc., *Assistant Professor*
 Hu, Bingren, Ph.D., *Professor*



Hu, Fu M. (Peter), M.S., Ph.D., *Assistant Professor*
 Hyder, Mary L., M.D., *Assistant Professor*
 Ihenatu, Chinwe A., M.B., Ch.B., *Clinical Assistant Professor*
 Joe, Emily, M.D., *Assistant Professor*
 Kabadi, Shruti V, Ph.D., *Research Associate*



Kaplowitz, Jeremy, M.D., *Assistant Professor*
 Koerner, Albert K., M.D., *Assistant Professor*
 Kristian, Tibor, Ph.D., *Associate Professor*
 Lee, Seung J., M.D., M.B.A., *Assistant Professor*
 Lipinski, Marta, Ph.D., *Assistant Professor*



Loane, David J., Ph.D., *Assistant Professor*
 Mackenzie, Colin F., M.B., Ch.B., *Clinical Professor*
 Malinow, Andrew M., M.D., *Professor*
 Martz, Douglas G., M.D., *Associate Professor*
 Milholland, Arthur V., M.D., Ph.D., *Clinical Assistant Professor*



Monroe, Hanni E, M.D., *Assistant Professor*
 Murphy, Virginia E., M.B., Ch.B., B.A.O., *Clinical Assistant Professor*
 Nagle, Sheryl, M.D., *Clinical Assistant Professor*
 Naik, Madhavi A., M.B.B.S., *Assistant Professor*
 Niemiec, Teresa, D.O., *Assistant Professor*



Njoku, Mary J., M.D., *Associate Professor*
 Noorani, Robert J., M.D., *Assistant Professor*
 Norris, Edward J, M.D., M.B.A., *Clinical Professor*
 Odonkor, Patrick N., M.B., Ch.B., *Assistant Professor*
 Ohliger, Shelley, M.D., *Assistant Professor*



Pallan, John, M.D., *Assistant Professor*
 Polster, Brian M., Ph.D., *Assistant Professor*
 Quaddoura, Amer A., M.D., *Clinical Assistant Professor*
 Ranney-Nivens, Kathleen A, M.D., *Clinical Assistant Professor*
 Rock, Peter, M.D., M.B.A., F.C.C.M., *Professor*



Roman, Philip E.F., M.D., M.P.H., *Assistant Professor*
 Samet, Ron E., M.D., *Assistant Professor*
 Savarese, Anne M., M.D., *Assistant Professor*
 Sawant, Sanyogeeta, M.B.B.S., *Clinical Assistant Professor*
 Schreiberman, David L., M.D., *Assistant Professor*



Shepard, Eric K., M.D., *Assistant Professor*
 Sheppard, Maurice R., M.D., *Assistant Professor*
 Shere-Wolfe, Roger F., M.D., J.D., M.A., *Assistant Professor*
 Shin, Baekhyo, M.D., *Clinical Professor*
 Sidhu, Sukhwant, M.B.B.S., *Instructor*



Sikorski, Robert A., M.D., *Assistant Professor*
 Sivaraman, Vadivelu, M.B.B.S., *Assistant Professor*
 Smith, Daniela, M.D., *Assistant Professor*
 Stephens, Christopher T., M.D., M.S., *Assistant Professor*
 Stoica, Bogdan A., M.D., *Assistant Professor*



Tulis, Matthew R., M.D., *Assistant Professor*
 Turner, Gauri J., M.B.B.S., *Assistant Professor*
 Turner, Shafonya M., M.D., *Assistant Professor*
 Udekwo, Obi R., M.B.B.S., *Assistant Professor*
 Villamater, Edwin J., M.D., *Assistant Professor*



Wright, Thelma M.D., J.D., *Assistant Professor*
 Wu, Junfang, B.M., Ph.D., *Assistant Professor*

Secondary Faculty (Primary Department)

Abrams, Thomas W., Ph.D., *Professor*
(Pharmacology and Experimental Therapeutics)
Badjatia, Neeraj, M.D., *Associate Professor*
(Neurology and Neurosurgery)
Coop, Andrew, Ph.D., *Professor*
(School of Pharmacy)
Dorsey, Susan G., Ph.D., R.N., *Associate Professor*
(School of Nursing)
Frost, Douglas O., Ph.D., *Clinical Professor*
(Pharmacology and Experimental Therapeutics)om
MacKerell, Alexander D., Ph.D., *Professor*
(School of Pharmacy)
Rosenthal, Robert E., M.D., *Professor*
(Emergency Medicine)
Sears, Andrew L., Ph.D., *Professor*
(University of Maryland Baltimore County)
Xue, Fengtian, Ph.D., *Assistant Professor*
(School of Pharmacy)

Volunteer Faculty

Ashman, Michael N., M.D., *Clinical Assistant Professor*
Asike, Deondra P. M.D., *Clinical Assistant Professor*
Atwal, Jasjit B, M.B.B.S., *Clinical Assistant Professor*
Bochicchio, Daniel J, M.D., *Clinical Assistant Professor*
Bono, Stephen F, Ph.D., *Clinical Assistant Professor*
Cheloff, Gregory M, M.D., *Clinical Assistant Professor*
Coop, Andrew, Ph.D., *Professor*
Dorsey, Susan G, Ph.D., R.N., *Associate Professor*
Durant, Natasha, Psy.D., *Clinical Assistant Professor*
Goldstein, Larry J, Ph.D., *Adjunct Professor*
Heilich, Martin, M.D., B.S., *Professor Emeritus*
Masur, Henry, M.D., *Clinical Professor*
McAreevey, Dorothea, B.M., B.Ch., *Adjunct Associate Professor*
Natanson, Charles, M.D., *Adjunct Professor*
Ognibene, Frederick, M.D., *Adjunct Associate Professor*
Roux, Napoleon P III, M.D., *Clinical Assistant Professor*
Shelhamer, James H., M.D., *Adjunct Professor*
Thomas, Padmini, M.B.B.S., *Clinical Assistant Professor*
Wilson Jr, Henry L, M.D., *Clinical Assistant Professor*
Xue, Fengtian, Ph.D., *Assistant Professor*

Pain Management Center

Bono, Stephen, Ph.D. – Licensed Clinical Psychologist
Bower, Cathy, B.S.N., RN-BC – Clinical Nurse, Acute Pain
Clyde, Christina, M.S., RN-BC – Director of
Practice Operations
Collins, Norma, RN – Clinical Nurse II
Cohen, Vicki, B.S.N., RN – Clinical Nurse III
Conaway, Cheryl – Medical Practice Representative III
Denbow, Bernice, B.S.N., RN-BC – Clinical Nurse II
DiCarlo, Candy – Medical Practice Representative II
Durant, Natasha, Ph.D. – Licensed Clinical Psychologist
Elder, Jonathan, RT – Radiographer
Fitzsimmons, Karen, B.S.N., RN – Clinical Nurse II
Mewe-Pira, N. Janice, FNP-BC
O'Connor, Karen, RN – Clinical Nurse II
Petties, Bonnetta - Medical Practice Representative II
Ryan, Stefanie, PT – Physical Therapist
Stallings, Della, RN – Clinical Nurse II
Tammy Thiess - Medical Practice Representative III
Watts-Gibson, La-Vett – Medical Practice
Representative III, Team Leader
Williams, Christina – Administrative Assistant III

Transesophageal Echo Sonographers

Ezzati, Babak, RCS
Nguyen, Trinh, RCS
Salinas, Maria, RCS
Shats, Inna, MA, BS, RDCS, FASE - Supervisor

Neurophysiologic Monitoring Technologists

Babaran, Richie Cae, CNIM, BSMT, RMT
Burkhead, Ryan, BS
Del Rosario, Mary, BS, CNIM
Fencel, Robin, BS
Ferguson, Bryan B., REPT, CNIM, MCSE - Supervisor
Irie, Kary, BS, CNIM, JD
Kapusta, Sarah, BS, CNIM
Singson, Hy-D, CNIM, BSPH
Smith, Courtney, MS

Anesthesia Tech Staff List

Bolling, David
Burroughs, Bryan
Bwamu, Douglas
Clark, Charles
Emerson, Sarah
Emich, Jessica
Fanning, Maura
Fine, Jessica
Frances, Thomas
Freeman, Nelson
Garrett, Roger
Green, Tavon
Grimm, Melissa
Gross, Theodore
Hubbard, Jeff
Jarvis, Tierra
Johnson, Shaun
Johnson, Tonya
Lewis, Melvin
Matthews, Brandon
Maxwell, Matthew
Meyon, Melvin
Moore, Corey
Nachman, Samuel
Oliver, Michael
Palmer, Myrona
Parson, Lauri
Pulley, Tiffany
Sheppard, Lanell
Sommerville, Andrea
Sonza, Jay
Tabron, Victor
Terry, Keith
Walkowalk, Matthew
Watt, Christina
Weller, Alexandra
Wells, Jeremy

Research Staff

Akintola, Titilola, Technician
Aungst, Stephanie, Ph.D., Post-Doctoral
Cabatbat, Rainier, Technician
Cardiff, Katherine, Technician
Dinizo, Michael, Technician
Guanciaie, Kelsey, Technician
Hanscom, Marie, Technician
Kabadi, Shruti, Ph.D., Post-Doctoral
Liu, Chunli, Lab Specialist
Luo, Tao, Ph.D., Post-Doctoral
Skovira, Jacob, Ph.D., Post-Doctoral
Kumar, Alok, Ph.D., Post-Doctoral

Nzonlie Lowe, Marie-Claude, Vol
Pan, Yan, Research Assistant
Park, Yujung, Research Assistant
Piao, Chunshu, Ph.D., Post-Doctoral
Proctor, Julie, Lab Supervisor
Remenapp, Craig, Technician
Sarkar, Chinmoy, Ph.D., Post-Doctoral
Sabirzhanov, Boris, Ph.D., Post-Doctoral
Skopin, Mark, Ph.D., Post-Doctoral
Skovira, Jacob UM Student
Smith, Stuart, UMBC Student
Sullivan, Deborah, Lab Helper
Tianfei Luo, Post-Doctoral
Wang, Weiwei, Post-Doctoral
Zhao, Zaorui "Jerry", Ph.D., Post-Doctoral

Professional Billing Office

Dixon-Proctor, Nakia - Patient Account Representative II
Gray, Sherman - Patient Account Manager
Churby, Donald – Patient Account Manager
Clayton, Tracy - Patient Account Representative III
Davis-Lifsey, Alice – Certified Coder
Hallinger, Judith - Billing Coordinator
Kizina, Shelly – Administrative Assistant
Rhodie, Sharon – Patient Account Rep II
Sizemore, Judy - Certified Coder
Wintering, Tara - Patient Account Representative III

Administration

Armiger, Josephine – Administrative Manager
Brooks, Timothy – Manager of Information Technology
Brown, Denise, Administrative Assistant II
Burcham, Betsy – Sr. Faculty Coordinator
Cashwell, Wanda – Administrative Assistant III
Earle-Jackson, Pamela – Project Manager,
Special Assistant to the Chair
Felton, Gabriela – Program Administrative Specialist
Fitzpatrick, Kelsey, Executive Administrative Assistant
Flayhart, Kim, CMPE, CPC - Associate Administrator
Gough, Tiffany, Administrative Assistant, Residency
and Fellowship
Hebert, Leah, Executive Administrative Assistant
Jones, David – Desktop Engineer
Kopeck, Amy, Administrative Manager
Lamon, Lauren, Administrative Assistant II
Leshinskie, Vickie – Office Assistant
Levi, Michael – Residency/Fellowship Assistant
McFadden, Debbie, BA – Financial Coordinator
Moon, Terri – Administrative Assistant
Plunkett, Susan – Residency and Fellowship Coordinator
Pompanio, Emily – Administrative Assistant III
Samuels, Lolita, Clinical Database Analyst
Shearer, Jake – Finance & Projects Analyst
Simmons, Hugh, MBA – Sr. Administrator
Smith, Brad, MBA, MPH – Sr. Administrator
Sohn, Brittany, Administrative Assistant
Stubbs, La Toya, BS – Lead Clinical Research Specialist
Tchuenbou, Marie-Josiane, MBA – Director of Finance
Utz, Julie, AS – AIMS System Administrator
Wallace, Karin, BSN, RN,CCRN -Clinical Research Nurse
Webb, Taryn – Residency and Fellowship Coordinator

CRNAS

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 Wright, Kedra, M.D.



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Nguyen, Wendy, M.D.
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 Shander, Benjamin, M.D.
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 Mazur, Jordan, M.D.
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 Tao, Jing, M.D.
 Tirmizi, Henna, M.D.
 Villacin, Maria Karla, M.D.
 Walker, Andrew, M.D.
 Wilson, Earl, M.D.



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 Galey, Jessica, M.D.
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 Johnson, Kyle, M.D.
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 Lax, Peter, M.D.



Lewis, Ilene, M.D.
 Naqib, Dahlia, M.D.
 Paterson, Tara, M.D.
 Porter, Andrew, M.D.
 Sharma, Tushar, M.D.
 Villacin, Maria Karla, M.D.
 Walker, Andrew, M.D.

Publications

Peer Reviewed

- Anders, MG.** "CriticalCare: Your guide to the online world of critical care medicine." *Society of Critical Care Anesthesiologists Interchange Newsletter*. Spring 2013, Vol 24 No. 2. <http://www.socca.org/newsletters/Vol-24-No-2.pdf>.
- Balan IS, Saladino AJ, Aarabi B, Castellani RJ, Wade C, Stein DM, Eisenberg HM, Chen HH, **Fiskum G.** Cellular alterations in human traumatic brain injury: changes in mitochondrial morphology reflect regional levels of injury severity. *J Neurotrauma*. 2013 Mar 1;30(5):367-381.
- Bernstein WK.** Pulmonary function tests. *Curr Opin Anaesthesiol*. 2012 Feb; 25(1):11-16. PMID: 22186132.
- Brenner M, **Hu PF**, Aarabi B, Sheth K, Scalea TM. Traditional systolic blood pressure targets underestimate hypotension-induced secondary brain injury. *J Trauma Acute Care Surg*. 2012 May; 72(5):1135-1139. PMID: 22673237.
- Brenner M, Stein D, **Hu P**, Kufera J, Woolford M, Scalea T. Association between early hyperoxia and worse outcomes after traumatic brain injury. *Arch Surg*. 2012 Nov 1;147(11):1042-6. doi: 10.1001/archsurg.2012.1560. PubMed PMID: 22801994.
- Byrnes KR, **Loane DJ, Stoica BA, Zhang J, Faden AI.** Delayed mGluR5 activation limits neuroinflammation and neurodegeneration after traumatic brain injury. *J Neuroinflammation*. 2012 Feb; 28:9-43.
- Clerc P, Carey GB, Mehrabian Z, Wei M, Hwang H, Girmun GD, Chen H, Martin SS, **Polster BM.** Rapid detection of an ABT-737-sensitive primed for death state in cells using microplate-based respirometry. *PLoS ONE*. 2012; 7(8):e42487. Epub 2012 Aug 3. PMID: 22880001.
- Clerc P, **Polster M.** Investigation of mitochondrial dysfunction by sequential microplate-based respiration measurements from intact and permeabilized neurons. *PLoS One*. 2012; 7(4):e34465. PMID: 22496810.
- Cohen SP, **Galvagno SM**, Plunkett A, Harris D, Kurihara C, Turabi A, Rehrig S, Buckenmaier CC 3rd, Chelly JE. A multicenter, randomized, controlled study evaluating preventive etanercept on postoperative pain after inguinal hernia repair. *Anesth Analg*. 2013 Feb;116(2):455-62. doi: 10.1213/ANE.0b013e318273f71c. Epub 2013 Jan 9. PubMed PMID: 23302973.
- Cohen SP, Plunkett AR, Wilkinson I, Nguyen C, Kurihara C, Flagg A 2nd, Morlando B, Stone C, White RL, Anderson-Barnes VC, **Galvagno SM.** Headaches during war: analysis of presentation, treatment, and factors associated with outcome. *Cephalalgia*. 2012 Jan; 32(2):94-108. PMID: 21 994113.
- Tao J.** CON: The physical examination should take a backseat to newer technologies in the ICU. *Society of Critical Care Anesthesiologists Interchange Newsletter*, Winter 2012, 23 (1). <http://www.socca.org/newsletters/Vol-23-No-1.pdf>.
- Deshpande SP, Lehr E, Odonkor P, Bonatti JO, Kalangie M, Zimrin DA, Grigore AM.** Anesthetic management of robotically assisted totally endoscopic coronary artery bypass surgery (TECAB). *J Cardiothorac Vasc Anesth*. 2013 Jun;27(3):586-99.
- Faraday N, **Rock P**, Lin E, Perl T, Carroll K, Stierer T, Roberts P, McFillin A, Ross T, Shah A, Riley L, Tamargo R, Black J, Blasco-Colmenares E, Guallar E. Past history of skin infection and risk of surgical site infection after elective surgery. *Ann Surg*. 2013 Jan;257(1):150-154. PMID:23714946

- Galvagno SM Jr**, Haut ER, Zafar SN, Millin MG, Efron DT, Koenig GJ Jr, Baker SP, Bowman SM, Pronovost PJ, Haider AH. Association between helicopter vs. ground emergency medical services and survival for adults with major trauma. *JAMA*. 2012 Apr 18; 307(15):1602-1610. PMID: 22511688.
- Galvagno SM Jr, Mackenzie CF.** New and future resuscitation fluids for trauma patients using hemoglobin and hypertonic saline. *Anesthesiol Clin*. 2013 Mar;31(1):1-19. doi: 10.1016/j.anclin.2012.10.004. Epub 2012 Dec 6. Review. PubMed PMID: 23351531.
- Grewal A, Fitzpatrick M, Stansbury L, Grigore AM.** Heart as an endocrine system. *Int Anesthesiol Clin*. 2012; 50(2):111-127.
- Hong CM**, Xu D, Lu Q, Cheng Y, Pisarenko V, Doucet D, Brown M, Zhang C, Deitch E, Delphin E. Systemic inflammatory response does not correlate with acute lung injury associated with mechanical ventilation strategies in normal lungs. *Anesthesia and Analgesia*. 2012 Jul; 115(1):118-121.
- Huang JH, **Galvagno SM Jr**, Hameed M, Wilkinson I, Erdek MA, Patel A, Buckenmaier C 3rd, Rosenberg J, Cohen SP. Occipital nerve pulsed radiofrequency treatment: a multi-center study evaluating predictors of outcome. *Pain Med*. 2012 Apr;13(4):489-97. doi: 10.1111/j.1526-4637.2012.01348.x. Epub 2012 Mar 5. PubMed PMID: 22390409.
- Jevtovic-Todorovic V, Absalom AR, Blomgren K, Brambrink A, Crosby G, Culley DJ, **Fiskum G**, Giffard RG, Herold KF, Loepke AW, Ma D, Orser BA, Planel E, Slikker W Jr, Soriano SG, Stratmann G, Vutskits L, Xie Z, Hemmings HC Jr., Anesthetic neurotoxicity and neuroplasticity: an expert group report and statement based on the BJA Salzburg Seminar. *Br J Anaesth*. 2013 May 30.
- Kabadi SV, Stoica BA**, Byrnes, KR, Hanscom M, **Loane DJ, Faden AI.** Selective CDK inhibitor limits neuroinflammation and progressive neurodegeneration after brain trauma. *J Cereb Blood Flow Metab*. 2012; Jan; 32(1):137-149.
- Kabadi SV, Stoica BA**, Hanscom M, **Loane DJ**, Kharebava G, Murray II MG, Cabatbat RM, **Faden AI.** CRB, a selective and potent CDK inhibitor, provides neuroprotection in experimental traumatic brain injury. *Neurotherapeutics*. 2012 Apr; 9(2):405-421. PMID:22167461.
- Kabadi SV, Stoica BA, Loane DJ**, Byrnes KR, Hanscom M, Cabatbat RM, Tan MT, **Faden AI.** Cyclin D1 gene ablation confers neuroprotection in traumatic brain injury. *J Neurotrauma*. 2012 Mar 20; 29(5):813-827. Epub 2012 Jan 13. PMID: 21895533.
- Kahraman S, Bambrick LL, **Fiskum G.** Effects of FK506 and cyclosporin A on calcium ionophore-induced mitochondrial depolarization and cytosolic calcium in astrocytes and neurons. *J Neurosci Res*. 2011 Dec; 89(12):1973-1978. doi: 10.1002/jnr.22709. . PMID: 21748780
- Kaplowitz J**, Papadakos PJ. Acute pain management for video-assisted thoracoscopic surgeries: an update. *J Cardiothorac Vasc Anesth*. 2012 Apr; 26(2):312-321. PMID:21705236.
- Kumar A, Stoica BA**, Sabirzhanov B, Burns MP, **Faden AI, Loane DJ.** Traumatic brain injury in aged animals increases lesion size and chronically alters microglial/macrophage classical and alternative activation states. *Neurobiol Aging*. 2013 May;34(5):1397-1411.

26. Kurland DB, **Hong CM**, Aarabi B, Gerzanich V, Simard JM. Hemorrhagic progression of a contusion following traumatic brain injury – a review. *J Neurotrauma*. 2012 Jan 1; 29(1):19-PMID:21988198.

27. Lakkaraju S, Xue F, **Faden A**, MacKerell A. Estimation of ligand efficacies of metabotropic glutamate receptors from conformational forces obtained from molecular dynamics simulations. *J Chem Inf Model*. 2013 Jun24;53(6):1337-1349.

28. Liang CP, Wu Y, Schmitt J, **Bigeleisen PE**, Slavin J, Jafri MS, Tang CM, Chen Y. Coherence-gated Doppler: a fiber sensor for precise localization of blood flow. *Biomed Opt Express*. 2013 Apr 24;4(5):760-71. doi: 10.1364/BOE.4.000760. Print 2013 May 1. PubMed PMID: 23667791; PubMed Central PMCID: PMC3646602

29. **Loane DJ**, **Stoica BA**, Byrnes K, Jeong W, **Faden AI**. Activation of mGluR5 and inhibition of NADPH oxidase improves functional recovery after traumatic brain injury. *J Neurotrauma*. Mar1;30(5):403-412.

30. McCranor BJ, Bozym RA, Vitolo MI, Fierke CA, Bambrick L, **Polster BM**, **Fiskum G**, Thompson RB. Quantitative imaging of mitochondrial and cytosolic free zinc levels in an in vitro model of ischemia/reperfusion. *J Bioenerg Biomembr*. 2012 Apr; 44(2):253-263. PMID: 22430627.

31. **Odonkor P**, Stansbury LG, Gammie JS, **Rock P**, **Fitzpatrick M**, **Grigore AM**. Anesthetic management of patients undergoing aortic valve bypass (apicoaortic conduit) surgery. *J Cardiothorac Vasc Anes*. 2012 Feb; 26(1):148-160. PMID: 21724415.

32. **Odonkor P**, Stansbury L, Garcia J, **Rock P**, **Deshpande SP**, **Grigore AM**. Perioperative management of adult surgical patients on extracorporeal membrane oxygenation support. *J Cardiothorac Vasc Anesth*. 2013 Apr;27(2):329-244 pii: S1053-0772(12)00525-3. doi: 10.1053/j.jvca.2012.09.023

33. Ofengeim D, Shi P, Miao B, Fan J, Xia X, Fan Y, **Lipinski MM**, Hashimoto T, Polydoro M, Yuan J, Wong ST, Degterev A. Identification of small molecule inhibitors of neurite loss induced by A peptide using high content screening. *J Biol Chem*. 2012 Mar 16;287(12):8714-23. doi: 10.1074/jbc.M111.290957. Epub 2012 Jan 25. PubMed PMID: 22277654; PubMed Central PMCID: PMC3308767.

34. Onken M, Berger S, **Kristian T**. Simple model of forebrain ischemia in mouse. *Journal of Neuroscience Methods*. 2012 Mar; 204(2):254-262. PMID: 22146544.

35. Orebaugh SL, Mukalel JJ, Krediet AC, Weimer J, Filip P, McFadden K, **Bigeleisen PE**. Brachial plexus root injection in a human cadaver model: injectate distribution and effects on the neuraxis. *Reg Anesth Pain Med*. 2012 Sep-Oct;37(5):525-9. PubMed PMID: 22878523.

36. Pajoohesh-Ganji A, Knobloch SM, **Faden AI**, Byrnes KR. Characterization of inflammatory gene expression and galectin-3 function after spinal cord injury in mice. *Brain Res*. 2012 Sep 26; 1475:96-105.

37. Perez-Pinzon MA, Stetler RA, **Fiskum G**. Novel mitochondrial targets for neuroprotection. *J Cereb Blood Flow Metab*. 2012 Jul; 32(7):1362-1376. PMID: 22453628

38. Piao CS, **Loane DJ**, **Stoica BA**, Li S, Hanscom M, Cabatbat R, Blomgren K, **Faden AI**. Combined inhibition of cell death induced by apoptosis inducing factor and caspases provides additive neuroprotection in experimental traumatic brain injury. *Neurobiol Dis*. 2012 Jun; 46(3):745-758.

39. Piao CS, **Stoica BA**, **Wu J**, **Sabirzhanov B**, Zhao Z, Cabatbat R, **Loane DJ**, **Faden AI**. Late exercise reduces neuroinflammation and cognitive dysfunction after traumatic brain injury. *Neurobiol Dis*. 2013 Jun;54:252-263.

40. **Polster B**. AIF, reactive oxygen species, and neurodegeneration: a "complex" problem. *Neurochem Int*. 2013 Apr62(5):695-702.

41. Regenold WT, Pratt M, Nekkhalpu S, Shapiro PS, **Kristian T**, **Fiskum G**. Mitochondrial detachment of hexokinase 1 in mood and psychotic disorders: implications for brain energy metabolism and neurotrophic signaling. *J Psychiatr Res*. 2012 Jan; 46(1):95-104. PMID: 22018957.

42. Rice T, Wheeler A, Thompson B, Steingrub J, Duncan Hite R, Moss M, Morris A, Dong N, **Rock P**. Initial trophic vs. full enteral feeding in patients with acute lung injury: The EDEN Randomized Trial. *JAMA*. 2012 Feb 22; 307(8):795-803. PMID: 22307571.

43. **Roman P**, Battafarano, RJ, **Grigore AM**. Anesthesia for tracheal reconstruction and transplantation. *Curr Opin Anaesthesiol*. 2013 Feb; 26(1):1-5.

44. **Sabirzhanov B**, **Stoica BA**, Hanscom M, Piao CS, **Faden AI**. Overexpression of HSP70 attenuates caspase-dependent and caspase-independent pathways and inhibits neuronal apoptosis. *J Neurochem*. 2012; Nov123(4):542-554.

45. Simard JM, Tosun C, Ivanova S, Kurland DB, **Hong C**, Radecki L, Gisriel C, Mehta R, **Schreibman D**, Gerzanich V. Heparin reduces neuroinflammation and transsynaptic neuronal apoptosis in a model of subarachnoid hemorrhage. *Transl Stroke Res*. 2012 Jul; 3(Suppl 1):155-165. PMID:22707992.

46. **Shere-Wolfe RF**, **Galvagno SM Jr**, **Grisson TE**. Critical care considerations in the management of the trauma patient following initial resuscitation. *Scand J Trauma Resusc Emerg Med*. 2012 Sep 18;20:68. doi: 10.1186/1757-7241-20-68. Review. PubMed PMID: 22989116; PubMed Central PMCID: PMC3566961

47. Stein DM, **Hu P**, Chen H, Stansbury LG, Yang S, Scalea TM. Computational "gene-mapping" to analyze continuous automated physiologic monitoring data in neuro-trauma intensive care. *J Trauma Acute Care Surg*. 2012 Aug; 73(2):419-425. PMID: 22846949.

48. Stein DM, Brenner M, **Hu PF**, Yang S, Hall EC, Stansbury LG, Menaker J, Scalea TM. Timing of intracranial hypertension following severe traumatic brain injury. *Neurocrit Care*. 2013 Jun;18(3):332-40. doi: 10.1007/s12028-013-9832-3. PubMed PMID: 23494545.

49. Thunberg C, Gaitan B, **Grewal A**, Ramakrishna H, Stansbury LG, **Grigore AM**. Pulmonary hypertension in patients undergoing cardiac surgery: pathophysiology, perioperative management, and outcomes. *J Cardiothorac Vasc Anesth*. 2013 Jun;27(3):551-572 2012 Oct 1. Pii:S1053-0770(12)00360-6. Doi: 10.1053/j.jvca.2012.07.017 .

50. **Tibor K**, **Hu B**. Guidelines for using mouse global cerebral ischemia models. *Translational Stroke Research*. 2012 December. s12975-012-0236z.

51. **Tirmizi H**. Anesthesia for the neonate: yesterday, today and tomorrow. SPA Annual Meeting Reviews. *SPA News*, Winter 2012; 25(1). <http://www.pedsanesthesia.org/newsletters/2012winter/>

52. Togioka B, **Galvagno SM**, Sumida S, Murphy J, Ouanes J-P, Wu CL. The role of perioperative high inspired oxygen in reducing surgical site infections: a meta-analysis. *Anesth Analg*. 2012 Feb; 114(2):334-342. PMID: 22156334.

53. Whittaker MT, Zai LJ, Lee HJ, Pajoohesh-Ganji A, **Wu J**, Sharp A, Wyse R, Wrathall JR. GGF2 (Nrg1-3) treatment enhances NG2+ cell response and improves functional recovery after spinal cord injury. *Glia*. 2012 Feb; 60(2):281-294. PMID: 22042562.

54. Winters B, Custer J, **Galvagno SM Jr**, Colantuoni E, Kapoor SG, Lee H, Goode V, Robinson K, Nakhasi A, Pronovost P, Newman-Toker D. Diagnostic errors in the intensive care unit: a systematic review of autopsy studies. *BMJ Qual Saf*. 2012 Nov; 21(11):894-902.

55. Woodford M, **Mackenzie C**, DuBose J, **Hu P**, Kufera J, Hu E, Dutton R, Scalea T. Continuously recorded SPO2 and pulse rate during pre-hospital transport outperform initial measurement in prediction of mortality after trauma. *J Trauma Acute Care Surg*. 2012 Apr; 72(4):1006-1011. PMID: 22491618.

56. **Wu J**, Kharebava G, Piao C, **Stoica BA**, Dinizo M, **Sabirzhanov B**, Hanscom M, Guanciale K, **Faden AI**. Inhibition of E2F1/CDK1 pathway attenuates neuronal apoptosis in vitro and confers neuroprotection after spinal cord injury in vivo. *PLoS One*. 2012; 7(7):e42129. Epub 2012 Jul 25.

57. Wu J, Pajoohesh-Ganji A, **Stoica BA**, Dinizo M, Guanciale K, **Faden AI**. Delayed expression of cell cycle proteins contributes to astroglial scar formation and chronic inflammation after rat spinal cord contusion. *J Neuroinflammation*. 2012 Jul 11; 9:169.

58. **Wu J**, **Stoica BA**, Dinizo M, Pajoohesh-Ganji A, Piao C, **Faden AI**. Delayed cell cycle pathway modulation facilitates recovery after spinal cord injury. *Cell Cycle*. 2012 May 1; 11(9): 1782-1795.

59. Xu Y, Yuan J, **Lipinski MM**. Live imaging and single-cell analysis reveal differential dynamics of autophagy and apoptosis. *Autophagy*. 2013 May 29;9(9). [Epub ahead of print] PubMed PMID: 23748697.

60. Zhang F, Guo A, Liu C, Comb M, **Hu B**. Phosphorylation and assembly of glutamate receptors after brain ischemia. *Stroke*. 2013 Jan; 44:170-176.

61. Zhao Z, **Loane DJ**, Murray MG 2nd, **Stoica BA**, **Faden AI**. Comparing the predictive value of multiple cognitive, affective, and motor tasks after rodent traumatic brain injury. *J Neurotrauma*. 2012 Oct 10; 29(15):2475-2489.

62. Zhuo J, Xu S, Porter J, Mullins RJ, Simon JZ, **Fiskum G**, and Gullapalli RP. Diffusion kurtosis as an in vivo imaging marker for reactive astrogliosis in traumatic brain injury. *Neuroimage*. 2012 Jan; 59(1):467-477.

Invited Publications

1. **Anders MG**. Pharmacology of Inhaled Anesthetics; Non-Inhaled Anesthetics; Analgesics; Local Anesthetics; Neuromuscular Blocking Drugs and Reversal Agents; Vasoactive, Autonomic, and Cardiovascular Drugs; Commonly Encountered Drugs in Anesthesia. In: Urman RD, Ehrenfeld JM. (eds.) *Pocket Anesthesia, 2nd Edition*. Philadelphia: Lippincott Williams & Wilkins, 2012.

2. **Anders MG**, Arora H. Open AAA Surgery. In: Atchabahian A, Gupta R, (eds.) *The Anesthesia Guide*. New York: McGraw-Hill Professional, 2013.

3. **Hong C**, Cartagena R, Passannante A, **Rock P**. Respiratory Diseases. In: Fleisher L. (ed.) *Anesthesia and Uncommon Diseases, 6th Edition*. Philadelphia: Elsevier, 2012; ch 4.

4. **Njoku MJ**, **Schreibman DL**. Encephalitis. In: Roizen MF, Fleisher LA (eds.) *Essence of Anesthesia Practice, 3rd edition*. Philadelphia: Elsevier Saunders, 2011; p. 144.

5. **Odonkor P**, Passannante, A, **Rock P**. When Should Pulmonary Function Tests be Performed Preoperatively? In: Fleisher L. (ed.) *Evidence-Based Practice of Anesthesiology, 3rd Edition*. Philadelphia: W.B. Saunders Company, 2013; ch 14.



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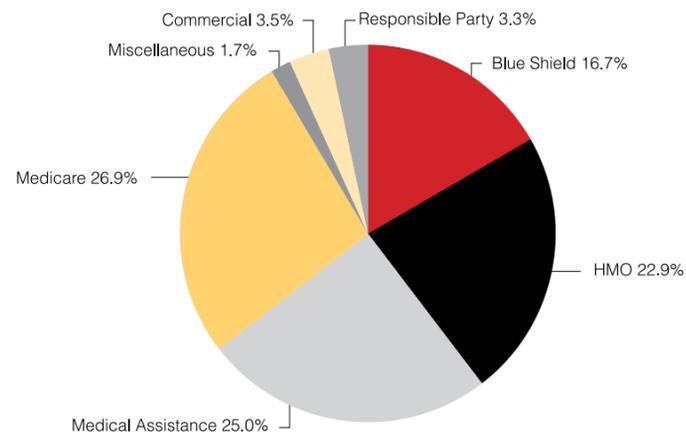
The Washington Post's Super Doctors 2012

Monique Bellefleur, M.D., M.B.A.
Douglas G. Martz, Jr., M.D.
Mary J. Njoku, M.D.
Peter Rock, M.D., M.B.A., F.C.C.M.
Anne M. Savarese, M.D.
Samuel M. Galvagno, Jr., D.O. - Rising Star
Christopher T. Stephens, M.D. - Rising Star

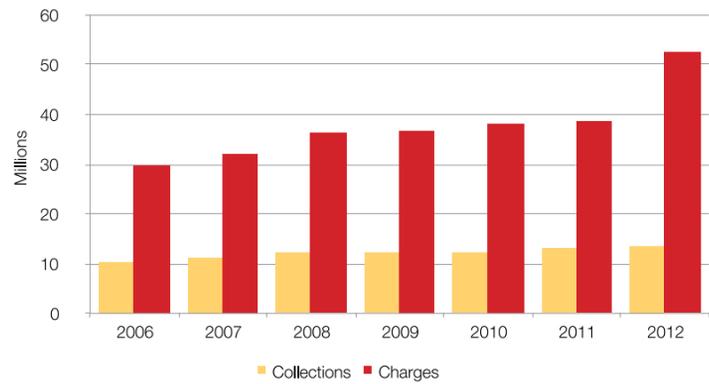
Baltimore Magazine's 2012 Top Doctors

Monique Bellefleur, M.D., M.B.A.
Mark D. DiMino, M.D.
Stephanie B. Esposito, M.D., M.S.
Andrew M. Malinow, M.D.
Douglas G. Martz, Jr., M.D.
Peter Rock, M.D., M.B.A., F.C.C.M.
Edwin J. Villamater, M.D.

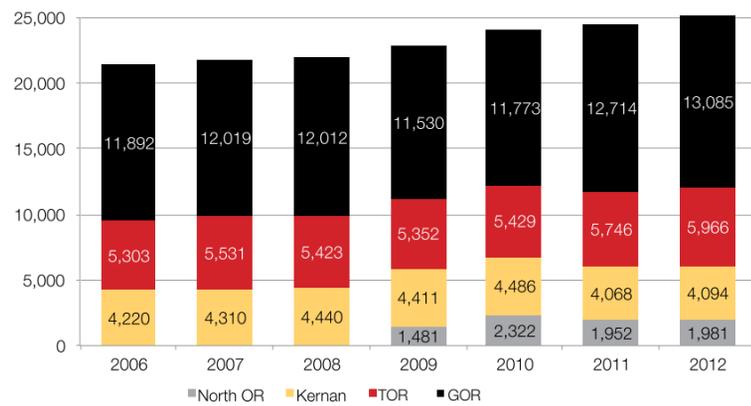
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Credits

Project Manager: Pamela Earle-Jackson, UMSOM Department of Anesthesiology

Design: Shoot the Moon, Inc.

Photos: Juan Faidley, Nuajé Visions Photography

Hugh Simmons Photography