



DEPARTMENT OF ANESTHESIOLOGY PROFILE



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Message from the Chair



It is an honor and a pleasure to serve as the chair of this historic department. Since joining the University of Wisconsin School of Medicine and Public Health in October 2019, I feel as though *I stand on the shoulders of giants* – those who defined and led anesthesiology, and who have contributed to academic leadership around the country and the world since the early days of anesthesiology.

Founded by Ralph M. Waters in 1927, ours was the first academic anesthesiology department in the United States. Today our mission reflects the same noble vision established by Dr. Waters: Excellence in clinical practice, education and research.

As clinicians, we serve communities in Dane County and beyond through diverse clinical service lines across the UW Health enterprise. As teachers, we educate and train medical students, residents and fellows. As scholars, we advance basic, clinical and translational research. In all these endeavors we cultivate a safe and supportive environment for individuals from all backgrounds to practice, teach, learn and conduct research.

Through this profile, I invite you to get to know us. By highlighting each of our mission commitments, it provides a comprehensive look at the UW School of Medicine and Public Health Department of Anesthesiology.

A handwritten signature in black ink, appearing to read 'K.A. Kelly McQueen'.

K.A. KELLY McQUEEN, MD, MPH, FASA

Ralph M. Waters Distinguished Chair in Anesthesiology
Chair and Professor, Department of Anesthesiology

Our Department Today

CLINICAL EXCELLENCE

Our anesthesiology practice exemplifies a physician-led, team-based approach to patient care throughout UW Health and involves faculty anesthesiologists, fellows, residents and clinical anesthetists.

UW Health clinical sites include: University Hospital, a 505-bed quaternary care facility; American Family Children's Hospital, a 111-bed pediatric facility and East Madison Hospital, a 56-bed satellite hospital. Ambulatory locations include the Digestive Health Center, East Park Medical Center, Madison Surgery Center, Generations Fertility Care and Transformations Surgery Center.

EXCEPTIONAL EDUCATION

The Department directs a range of robust educational programs. With 60 residents and interns, we house the second-largest UW Health residency program. We offer three accredited and several non-accredited fellowships. Third- and fourth-year medical students rotate with us year-round. We also offer anesthesiologist assistant rotation opportunities, up to 48 each year, and now offer a senior student registered nurse anesthetist rotation program.

CUTTING-EDGE RESEARCH

Our bold researchers and innovators excel at working in collaborative, multidisciplinary teams to improve the wellbeing of people in Wisconsin and around the world.

Three of our faculty members pursue cutting-edge basic science research funded by the National Institutes of Health. Current areas of investigation include: the neural basis of consciousness and its disruption by anesthetics, sleep and delirium; understanding how modulation of GABA receptors impairs learning and memory; and identifying genetic factors that may influence anesthetic-induced neurotoxicity.

In clinical research, our department enjoys national and international recognition for its longstanding interest in testing new methods and techniques for the treatment of both acute and chronic pain. Other department researchers seek to improve care of patients in the intensive care unit and advance liver transplant surgery.

Our commitment to translational research includes a project to develop novel treatments for chronic pain by focusing on the transition from acute to chronic pain, and a collaborative project with the Department of Family Medicine to investigate the antidepressant effects of psilocybin.

DIVERSITY, EQUITY AND INCLUSION

Excellence occurs when individuals from diverse backgrounds come together. With this conviction, our clinical, educational and research programs actively foster safe and supportive environments. Our residents, faculty and staff have participated in educational sessions on recognizing bias and microaggressions in health care. As part of the Accreditation Council on Graduate Medical Education (ACGME) Committee on Diversity and Inclusion, we closely monitor and implement its recommendations.

ALL WAYS FORWARD

As UW Health's surgical enterprise continues to expand, the Department's clinical activity will grow with it, particularly in the delivery of ambulatory anesthesia and non-operating room anesthesia (NORA). We are proud to share our comprehensive UW Health Pre-Anesthesia Clinic at East Madison Hospital has opened and is currently serving our surgical patients, virtually and in person.

Our Global Program extends our impact to communities in need. By offering sustainable support for education, training and research in low-income countries we engage our faculty and learners in the challenges of providing safe anesthesia care in resource-constrained regions.



Pre-Anesthesia Clinic



Pre-Anesthesia Clinic Members

For a complete listing of current division faculty visit the "Who We Are" online directory: www.anesthesia.wisc.edu.

Staffing faculty

Brian Cacioppo, MD
 Christopher Darling, MD
 William Hartman, MD, PhD
 Diane Head, MD
 Richard Lennertz, MD, PhD
 Tim McCormick, DO
 Kelly McQueen, MD
 Paul Rabedeaux, MD
 Jennifer Rodgers, MD
 Mark Stram, MD

APP

Anne Barnett, PA
 Erika Prell, NP

PASS Clinic

Melissa Deer, RN
 Ashley Bishop, RN
 Michelle Bishop, RN
 Donna Quandt, RN
 Jenna Shinstine, RN

The Department of Anesthesiology opened the comprehensive UW Health Pre-Anesthesia Clinic on Oct 3, 2023. The clinic expands our reach to better evaluate and prepare patients for surgery. Additionally, the Pre-Anesthesia Clinic results in improved patient and health system outcomes, and increased provider, patient, and family satisfaction. The clinic is directed by Dr. William Hartman, who brings his expertise and experience in augmenting pre-anesthesia care systems. Dr. Hartman and the anesthesia faculty are the primary staff, supported by our APPs Anne Barnett and Erika Prell, our current PASS Clinic RNs, and our rotating residents.

PROVIDING PATIENT-CENTRIC CARE

Timely preparation of surgical patients decreases their risk of complications and reduces costs related to longer hospital stays and readmissions. The new clinic, located in East Madison Hospital, dramatically increases the number of surgical patients we consult each year — from approximately 6,000 to more than 22,000.

Historically, our pre-anesthesia surgical service (PASS) clinic nurses performed chart reviews and screened phone calls to risk-stratify patients that surgical clinics had identified as high-risk. In contrast, our new, comprehensive pre-anesthesia clinic risk-stratifies patients based on comorbidities and/or surgical risk and allows for both in-person and virtual patient consults.

FUTURE FOCUSED

Over time, we expect the new clinic to become a perioperative service, with a greater focus on optimization of patients, and an Enhanced Recovery After Surgery (ERAS) approach to many service lines. Eventually, it also will provide pre-habilitation for patients in need of baseline health improvements prior to surgery.

Global Programs



Members of the UW School of Medicine and Public Health Department of Anesthesiology have had a long-standing commitment to caring for the underserved, both at home and abroad. The department sponsors trips to low and middle-income countries, providing service, education, and training. These trips often include faculty, fellows, residents, and students. Historically, these endeavors were individually initiated and the funding for this important work was ad hoc. Under Dr McQueen's leadership, a new global fund was established to support education and training, service, and research overseas.

The Global Academic Anesthesia Consortium (GAAC) a collaborative network of academic anesthesia departments

Photos from recent global trips.

in the US is committed to building anesthesia infrastructure through service, education, and research programs in low and middle-income countries (LMICs). The GAAC was launched in January 2023 in collaboration with the University of Zambia, in Lusaka, Zambia. This partnership will send teams around the year, providing anesthesia education and training, quality initiatives, and research education. This sustained effort hopes to progressively improve access to safe anesthesia and surgery and is committed to increasing the number and expertise of trainees in Sub-Saharan Africa. In future years, the GAAC may expand to provide sustained service and education in additional low and middle-income countries.



Adult Cardiothoracic and Vascular Anesthesia

INTERIM DIVISION CHIEF: KATHERINE KOZAREK, MD



Cardiothoracic and Vascular Anesthesia team members under the supervision of Joshua Sebranek, MD prepare a patient for open heart surgery at University Hospital.



All faculty in our division are fellowship-trained in cardiothoracic and vascular anesthesia and provide anesthesia for scheduled and emergency cardiac, thoracic, and vascular surgeries, as well as interventional cardiology procedures.

Cardiac procedures include coronary artery bypass surgery, valve surgery, heart transplants, ventricular assist devices and ascending aortic aneurysms/dissections. Thoracic procedures include lung resections, esophagus surgery, mediastinal masses, lung transplants and extracorporeal membrane oxygenation (ECMO). UW Health is a major center for complex aortic surgery.

In the Cath lab we provide anesthesia for ablations and laser lead extractions, as well as MitraClip, Watchman and Transcatheter Aortic Valve Replacement (TAVR) procedures. Vascular procedures include bypasses, endarterectomies, aneurysms, and dissection.

Our division also provides state-of-the-art anesthesia with intensive monitoring including transesophageal and transthoracic echocardiography. We are well known for our expertise in thoracic aortic aneurysms and transplants.

Each year two fellows complete their training in the accredited cardiothoracic and vascular anesthesia fellowship. Our fellows experience wide-ranging, in-depth clinical experience in cardiac, thoracic, vascular, and thoracic anesthesia in addition to rotations in echocardiography, critical care, pediatric congenital anesthesia, and interventional cardiology procedures. Upon completion, fellows obtain the National Board of Echocardiography Advanced Perioperative Transesophageal Echocardiography Certification.



Resident under the supervision of Eric Simon, MD at University Hospital.



Cardiothoracic and Vascular Anesthesia Division

For a complete listing of current division faculty visit the "Who We Are" online directory: www.anesthesia.wisc.edu.

DIVISION HIGHLIGHT

Dr. Eric Simon, along with colleague Dr. Patrick Meyer, is conducting a clinical research trial investigating the use of bilateral pecto-intercostal fascial plane blocks with liposomal bupivacaine for analgesia following median sternotomy in elective cardiac surgery patients. Validation of the safety and efficacy of the pecto-intercostal fascial plane block will have major implications for enhanced recovery after cardiac surgery, potentially leading to improved patient outcomes and decreased health care costs.

Chronic Pain and Pain Management Treatment

DIVISION CHIEF: ALAA ABD-ELSAYED, MD, MPH



Alaa Abd-Elseyed, MD, MPH, performs a surgical procedure to address a patient's chronic back pain at University Hospital.

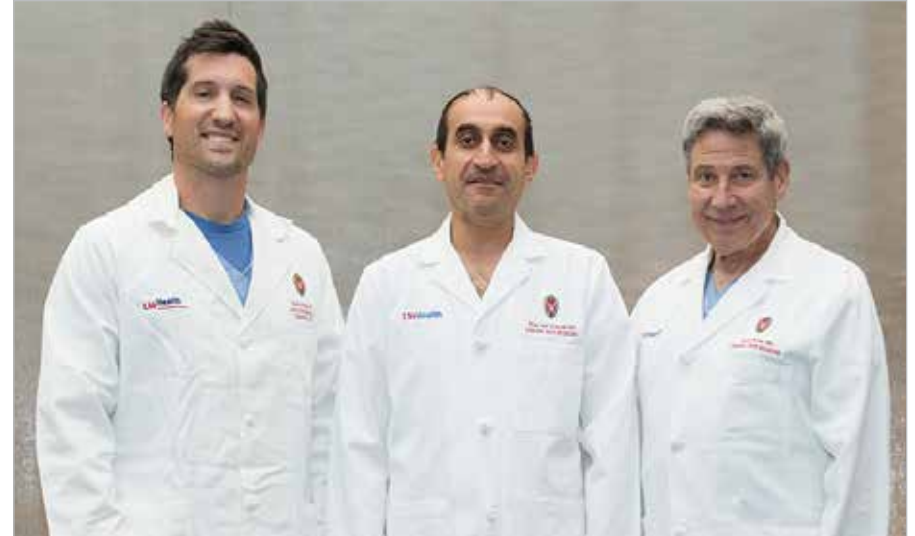
The Division of Chronic Pain Management Treatment is part of a larger multidisciplinary pain management program at UW Health.

In addition to treating all chronic pain conditions using the most advanced modalities and technologies, we also provide a second-opinion service, eConsults and telemedicine services. Members of our division have participated in many research endeavors including U.S. Food and Drug Administration trials. We also co-direct an accredited chronic pain fellowship in collaboration with the UW School of Medicine and Public Health Department of Orthopedics and Rehabilitation.

Members of the division pursue state-of-the-art clinical strategies to reduce chronic pain and manage general pain treatment with an emphasis on treating the whole patient and carefully considering the pathology of their pain. The team is able to dramatically improve quality of life with advanced technologies and modalities that successfully reduce or block pain.

Dr. Abd-Elseyed's clinical trial titled NOVA examines the efficacy of new spinal cord stimulation waveforms on improvement of low back pain in patients with severe pain resistant to all other modalities.

The division also participates in national research studies including neuromodulation Product Surveillance Registry (PSR) funded by Medtronic and the COMFORT study, a clinical study of a micro-implantable pulse generator for the treatment of peripheral neuropathic pain sponsored by Nalu. New clinical trials are being assessed that examine the treatment of chronic pain and peripheral nerve stimulators for treating different neuralgias.



Chronic Pain and Pain Management Treatment Division

For a complete listing of current division faculty visit the "Who We Are" online directory: www.anesthesia.wisc.edu.

DIVISION HIGHLIGHT

Dr. Keth Pride serves as the associate director for the chronic pain fellowship program, section head of neuromodulation and the director for the anesthesia resident pain rotation. With a particular interest in peripheral nerve stimulation, he contributes to many ongoing research studies, including one which seeks to evaluate the efficacy of lumbar radio frequency ablation. An active instructor in the UW School of Medicine and Public Health, Dr. Pride teaches medical students as a Partner Longitudinal Teacher Coach.

Critical Care Anesthesia

DIVISION CHIEF: MICAH T. LONG, MD, FCCM



CTICU Rounds.

We provide world-class care to heart, lung, heart/kidney, heart/liver, and heart/lung transplant recipients in the cardiothoracic ICU, and to our liver and other organ transplant recipients in the surgical ICU. We've had incredible growth in our transplant programs and in our mechanical circulatory support program, where we expertly manage complex patients supported with ECMO, VADs and total artificial hearts.

Our faculty take a "clinician-first" mindset in our academic careers, and we are respected throughout the hospital as experts in the management of unstable patients. We are key parts of UW Health's ECMO and Shock Consult Teams, where our faculty participate in the decision-making surrounding the management of acutely decompensating patients with severe end-organ failure. Additionally, several of our faculty participate in ECMO cannulation.

Faculty in the Division of Critical Care Anesthesia provide critical care to patients in the cardiothoracic ICU – our home unit, the surgical/trauma ICU, and the medical ICU. The UW School of Medicine and Public Health and UW Health is home to one of the nation's leading organ transplant programs.

The critical care faculty are also excellent medical educators, and several have been awarded prestigious teaching awards. Our ACGME-accredited fellowship allows for three fellows annually, offers dual-training in cardiac and critical care for select applicants, and is accredited to train emergency medicine residency graduates via the ABA / ABEM two-year pathway.

Our division has had excellent success in our academic endeavors including research endeavors sponsored by department and system grants as well as industry. We have active research projects in cardiac arrest management, invasive and non-invasive continuous hemodynamic monitoring, diabetes/dysglycemia, intubation and simulation, and more. Our faculty serve as site leads for major clinical trials and several are involved in governing body leadership within the SCCM, SOCCA, ASA and more.

DIVISION HIGHLIGHT

Our faculty have local, national, and international recognition and involvement. All present locally and regionally, and several are sought-after national and international speakers.

Dr. Arrigo designed, programmed, and published “ECHO On,” a free, open access medical education app. Currently he is working on the Stanford Anesthesia Cognitive Aid Program and an interactive hemodynamics simulator and trainer.

Dr. Demiralp massively grew and improved our cardiothoracic ICU. This high-volume unit is now the only closed ICU with 24/7 in-house intensive care faculty presence at UW Health. She has key leadership roles at SCCM and SOCCA, including committee chair work.

Dr. Dollerschell is the fellowship program director and has funded research exploring the intersection of AI in complex decision making and in continuous hemodynamic monitoring approaches. He is one of UW Hospital’s core ultrasound and echocardiography instructors.

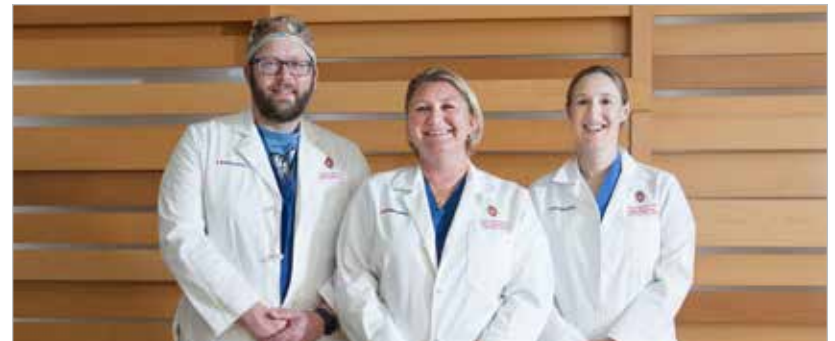
Dr. Feichtinger is a sought-after lecturer and instructor in POCUS and simulation-based education.

Dr. Frackman has presented and published in medical education, focused on cognitive aids and in high-fidelity and augmented-reality medical simulation.

Dr. Hammel is nationally and internationally recognized for her work in liver transplantation and played a significant role in expanding and guiding the preoperative workup and medical management of transplant recipients.

Dr. Tawil is highly involved in the ASA’s critical care & cardiothoracic committees and is a section editor for the Anesthesia Toolbox. He has published broadly in cardiothoracic anesthesiology.

Dr. Long, is the Division Chief and site lead for multiple major multicenter research studies, including the PCCRG and SCCM’s Discover IHCA and is an expert on nonhepatic hyperammonemia and diabetes/dysglycemia and glucose measurement in the ICU and OR. He has won many prestigious educational awards and is involved in SCCM and hospital leadership.



Critical Care Anesthesia Division

For a complete listing of current division faculty visit the “Who We Are” online directory: www.anesthesia.wisc.edu.

Adult Multispecialty Anesthesia

DIVISION CHIEF: RICHARD LENNERTZ, MD, PHD



Richard Lennertz, MD, PhD and Clinical Anesthetist prepare a patient for an outpatient procedure at University Hospital.

The Division of Adult Multispecialty Anesthesia delivers outstanding evidence-based care, fosters innovation, and encourages individuals to pursue clinical and research interests.

We provide anesthesia care across a wide range of surgical specialties including ear, nose, and throat (ENT), plastic surgery, orthopedic surgery, general surgery, neurosurgery, and vascular surgery. We also provide anesthesia services for several non-OR procedures including those in interventional radiology, brachytherapy, and gastroenterology.

Our wide-ranging research interests include both lab-based basic science research and clinical research. The diverse areas of interest to which our faculty have contributed include developing ERAS protocols for various services; innovative use of jet ventilation for solid organ ablations; and groundbreaking work on the use of convalescent plasma and vaccines during the COVID-19 pandemic.

Our faculty's research projects have included investigating mechanisms of anesthetic action in animal models, understanding the pathophysiology of postoperative delirium, and conducting a multidisciplinary study of the antidepressant effects of psilocybin. Ongoing quality improvement efforts include reducing the environmental footprint associated with the delivery of anesthesia and patient optimization prior to elective surgery. Additionally, we help residents and medical students produce research to present at regional and national meetings and publish in a wide variety of journals.



Non-OR Anesthesia (NORA)

Non-OR anesthesia (NORA) cases make up approximately 20 percent of total anesthesia cases at UW Health, or more than 8,000 cases per year. These cases include cardiac, radiologic imaging, CT ablation, interventional radiologic, neuroendovascular, brachytherapy and gastroenterology procedures. Overall, NORA volumes have increased approximately 10 percent annually for nearly 10 years and we anticipate this continuing in the future.



DIVISION HIGHLIGHT

Dr. George Arndt has dedicated his career to advancing the practice of anesthesiology in airway management. His many innovations – including the Arndt Endobronchial Blocker and the Arndt Wire-guided Airway Exchange Catheter – have improved the safety of anesthesia. Dr. Arndt's immense impact extends to education. He has trained residents and medical students for more than three decades. His Arndt Airway Course, held annually for the last 20 years, helps learners of all disciplines advance their practice of airway management.



Preparing a patient for surgery at EMH.



Ambulatory Anesthesia

Ambulatory anesthesia Ambulatory Anesthesia proudly provides comprehensive and compassionate care to an increasing number of patients in a variety of procedure and ambulatory surgery centers. We are able to effectively care for a wide spectrum of patients by adopting innovative approaches and the latest evidence-based anesthesia modalities. At East Madison Hospital and the Madison Surgery Center, for example, we employ a host of general, regional and Monitored Anesthesia Care (MAC) anesthesia techniques for the variety of general, ophthalmology, orthopedic, otolaryngology, plastics, and vascular surgeries. At Generations Fertility Center and the Digestive Health Center, we provide sedation services. We also provide coverage for UW Hospital Outpatient Surgery Center (OSC), where patients with more serious comorbidities are cared for on an outpatient basis.

Complementing our steadfast clinical mission, our division also offers a variety of educational opportunities. We train future professionals to advance the practice of anesthesia, education is integral to our division. We teach a variety of learners about our specialty and demonstrate how our work integrates with the world of medicine. Additionally, we train residents at most of UW Health's clinical locations and expand our reach to alternative settings by providing educational opportunities in simulation for medical students, residents, and other learners.

Beginning in their CA-1 year, residents are required to spend a four-week rotation in OSC. There they are introduced to the challenges and nuances of ambulatory anesthesia. We also offer a senior ambulatory anesthesia elective for CA-3 residents who wish to operate in a more independent fashion.

Our division houses a unique ambulatory anesthesia and administrative medicine fellowship that offers insight into the business, financial and administrative aspects of an anesthesiology practice.



Adult Multispecialty Anesthesia Division

For a complete listing of current division faculty visit the "Who We Are" online directory: www.anesthesia.wisc.edu.



Neuroanesthesia

DIVISION CHIEF: COREY AMLONG, MD



Whitney Fallahian, MD leads a resident physician in preparation for brain surgery,

Internationally recognized surgeons from the Department of Neurological Surgery perform myriad surgical services, both open and endovascular.

The Department of Anesthesia's Division of Neuroanesthesia is there for each of these patients, whether undergoing simple or complex neurosurgical procedures. We focus on the perioperative care of patients undergoing spinal fusions or decompressions, resection of spine and brain tumors, open or endovascular correction of spinal or intracranial vascular malformations and aneurysms, cerebrospinal fluid shunts and surgical interventions for movement disorders and epilepsy.

Annually the Division of Neuroanesthesia helps usher more than 600 patients through open craniotomies for tumors, craniotomies for repair of aneurysms or vascular malformations and endovascular treatment of intracranial vascular malformations.

As a Level 1 stroke center we take care of nearly 200 patients presenting for endovascular intervention for embolic stroke annually. It is anticipated that these numbers will continue to increase as our stroke program expands.

Endovascular cases are now done in two recently completed, state-of-the-art, hybrid endovascular operating rooms. These rooms allow us to safely perform combination open/endovascular cases in the same location, thus limiting unnecessary patient transports between the operating room and the interventional radiology suites.



The Division of Neuroanesthesia is proud to provide all patients with remarkable perioperative care while also staying abreast of the latest advancements in neurosurgical techniques, therapeutics and neuro-monitoring. We also endeavor to remain active in both clinical and bench neuroscience research while maintaining an atmosphere that is welcoming and nurturing to resident and medical student learners.

We structure our non-ACGME accredited neuroanesthesia fellowship around an individual's specific interests and provide ample free time to allow for additional educational or research pursuits. Fellows can fill their year with electives that are interesting to them. A fellow might, for example, choose to spend extra time reading



Neuroanesthesia Division

For a complete listing of current division faculty visit the "Who We Are" online directory: www.anesthesia.wisc.edu.

DIVISION HIGHLIGHT

Dr. Joel Johnson is an integral member of the Division of Neuroanesthesia. He brings unrivaled experience to the team. In his limited spare time Dr. Johnson serves as the co-Editor-in-Chief for the American Society of Anesthesiologist's ACE program as well as the medical director for UW Health's clinical anesthesiologists. Joel brings experience as a former department chair and is a perfect example of the hard work, dedication and depth of clinical knowledge and proficiency that the Division of Neuroanesthesia strives to maintain.

Pediatric Anesthesia

DIVISION CHIEF: BENJAMIN WALKER, MD

The Division of Pediatric Anesthesia provides comprehensive anesthesia care for the diverse pediatric patients treated at the nationally recognized American Family Children's Hospital.



Faculty physician and resident caring for patients at American Family Children's Hospital.

All of our anesthesiologists are dedicated to providing safe, quality care for our patients, and we have a robust quality improvement program that strives to improve the management of anesthetic care for all children.

Our patients range from healthy toddlers and teens to critically ill premature infants and children staying in our neonatal and pediatric intensive care units. We work closely with our pediatric surgical and procedural colleagues from many pediatric specialties including cardiac surgery, general surgery, neurosurgery, otolaryngology, orthopedics, urology, plastic surgery, ophthalmology, transplant surgery, interventional cardiology, and interventional radiology.

To meet our patients' varied needs our division also includes subspecialty-trained pediatric anesthesiologists in pediatric cardiac anesthesia and complex pediatric pain management.

Our growing comprehensive pediatric pain program provides perioperative consultative services in advanced pain management for our surgical and pediatric colleagues. We also treat patients with both acute and chronic pain on our inpatient consult service. In addition to providing excellent clinical care, our pediatric anesthesiologists extend our impact through teaching fellows, residents and medical students, and by participating in global health endeavors.

Nationally, the pediatric anesthesia division is involved with several national databases and collaborative projects. Locally, we conduct a number of clinical studies. Our division also houses novel research and designs development projects aimed to improve monitoring and safety for patients globally.



Eva Lu-Boettcher, MD and resident caring for a patient at American Family Children's Hospital.



Pediatric Anesthesia Division

For a complete listing of current division faculty visit the "Who We Are" online directory: www.anesthesia.wisc.edu.

DIVISION HIGHLIGHT

Dr. Ben Walker focuses on pediatric acute pain and regional anesthesia, including advanced epidural and perineural catheter placements. He has performed extensive research on the safety and efficacy of performing regional anesthesia techniques in children and has taught these techniques at a national level. At American Family Children's Hospital the pediatric acute pain team focuses on designing multimodal pain management plans that minimize opioid exposure to children.

Regional Anesthesia and Acute Pain

DIVISION CHIEF: LISA KLESIUS, MD



Kristopher Schroeder, MD and resident physician preparing patient for surgery at East Madison Hospital.

The Division of Regional Anesthesia and Acute Pain Management draws upon the abundant resources and surgical case diversity afforded by a world-class health care institution.

Our division provides exemplary pain management to orthopedic, breast, cardiac, thoracic, vascular, general surgery and transplant surgical procedures. We also extend our expertise throughout the hospital to provide care to patients suffering with chronic pain/exacerbations, cancer pain and acute pain following traumatic injuries.

In addition to providing excellent clinical care, the Division of Regional Anesthesia and Acute Pain Management is active at the regional and national level. Members of our team hold multiple leadership positions within the Wisconsin Society of Anesthesiologists, the American Society of Regional Anesthesia and the American Society of Anesthesiologists. Our members are also active academically. We perform significant clinical research and disseminate information and technical expertise through lectures and workshops.

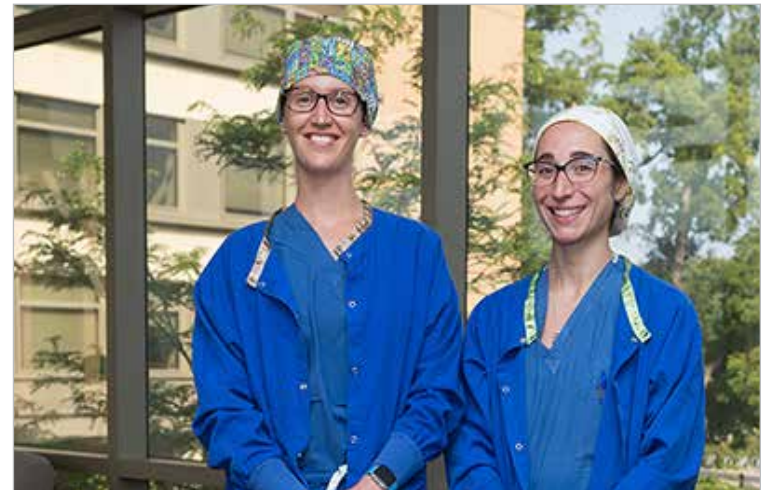
Residents consistently rate the regional anesthesia and acute pain medicine rotation as one of the most popular. We offer residents intensive hands-on training, didactics, and simulation experiences. Medical students and other learners also benefit from instruction at the hands of acute pain medicine specialists and leave

better equipped to manage patients with an array of complicated pain management problems.

Finally, our fellowship program has produced alumni who have excelled in private practice and academic settings. The Division of Regional Anesthesia and Acute Pain Management is a team comprised of health care providers from diverse backgrounds. Our physician anesthesiologists, nurse practitioners, physician assistants, block nurses and nursing assistants make valuable contributions to our ability to serve our patients.

DIVISION HIGHLIGHT

In addition to being an outstanding clinician, Dr. Kristin Bevil is dedicated to providing superior education to our residents, medical students, anesthesiologists, and faculty in her role as the Associate Vice Chair for Education. She continues to support the residency program as an Assistant Program Director and is regarded as a top educator in the department. At the 2023 Society for Education in Anesthesia annual meeting, Dr. Bevil was awarded the Philip Liu Award for innovation in curriculum!



Regional Anesthesia and Acute Pain Division

For a complete listing of current division faculty visit the "Who We Are" online directory: www.anesthesia.wisc.edu.

Transplant Anesthesia

DIVISION CHIEF: ZOLTAN HEVESI, MD, MBA

Each year the Division of Transplant Anesthesia assists more than 100 liver transplants and hundreds of other abdominal organ transplants, including kidney and pancreas transplantation.



Laura Hammel, MD and Elizabeth Townsend, MD during transplant surgery.

We provide the anesthetic and perioperative care for abdominal organ transplant recipients and organ donors and exclusively anesthetic care for liver transplant recipients and donors. Our core group of board-certified anesthesiologists possesses the diverse and multi-disciplinary training and experience needed to understand the complex physiology of end-stage organ failure, liver disease and the intricacies of the liver transplant and abdominal transplant surgery.

In addition to fellowship training in transplant anesthesiology, many members of the division are also formally trained and board-certified in additional anesthesia subspecialties and other medical specialties such as cardiovascular anesthesia, critical care anesthesia, internal medicine and transfusion medicine.

Our tradition of close collaboration with the transplant surgeons and other members of the transplant department has become the model for liver transplant centers for the American Society of Anesthesiologists and the United Network of Organ Sharing. Working closely with the Department of Surgery, division co-leaders take an active role in the selection and preoperative evaluation of transplant recipients, particularly liver recipients. We frequently collaborate with transplant surgeons and other specialists — such as cardiology, pulmonary or other disciplines — to plan multidisciplinary care and create guidelines for the pre- and post-operative care of particularly complex patients.

We ensure all anesthesia residents are instructed not only on the intra-operative anesthetic management, but also receive education on end-stage organ failure and physiology, the process of organ resource allocation and the evaluation of potential transplant candidates.



DIVISION HIGHLIGHT

Dr. Molly Goose studies the effects of vitamin C on biochemical and cellular damage in liver transplant recipients in order to optimize graft outcomes. Her randomized, double-blind, placebo-controlled clinical trial titled "Parenteral Ascorbic Acid Repletion in Transplantation (PARTI)" aims to determine the clinical response to parenteral vitamin C supplementation in patients undergoing liver transplantation. Because recipient need is so much greater than donor availability, improving recipient outcomes and maximizing graft survival is critically important.



Transplant Anesthesia Division

For a complete listing of current division faculty visit the "Who We Are" online directory:
www.anesthesia.wisc.edu

Education

PROGRAM DIRECTOR: ERIC SIMON, MD



Patrick Meyer, MD, Eric Simon, MD, Sabrina Sam, MD.

Directed by Vice Chair for Education Dr. Kristin Bevil, Associate Vice Chair for Education Dr. Robert Shaw, Residency Program Director Dr. Eric Simon, and Associate Program Directors Dr. Patrick Meyer and Dr. Sabrina Sam, the Department of Anesthesiology's Division of Education recruits learners from diverse backgrounds, cultivates an equitable and inclusive educational environment and fosters a culture of respect and support for all learners, faculty, and staff.

Medical student education

We believe all future physicians should learn fundamental principles of anesthesiology, which is why we provide a basic, required clerkship for all medical students. Each year 150 students rotate in operating rooms throughout Wisconsin. They also participate in simulations focused on recognizing hemodynamic or respiratory instability and making initial decisions and interventions to stabilize a patient. We also offer elective rotations to our medical students and students from other institutions. Additional elective rotations are available in critical care ("The Shock Course"), pain management and research.

Anesthetist education

Clinical anesthetists are a critical part of the patient care team at UW Health. Each year up to 48 anesthesia assistant students from around the country rotate with our department. We also have a partnership with the Medical College of Wisconsin for two students per class which allows them to do their entire clinical training at the UW. Additional rotational opportunities for up to three students are also available each month.

We offer a new program providing a rotation to senior-student registered nurse anesthetists (SRNAs) to expand their anesthesia experiences with a variety of cases and help encourage autonomy. The program's inaugural SRNA students hailed from the Mayo Clinic Health System–Franciscan Healthcare

Other educational opportunities include simulation activities and continuing education for clinical anesthetists. The current design of our simulation program focuses on skill development, including central line placement, ultrasound-guided IVs and arterial lines, regional anesthesia, and scenario-based cases.

PROGRAM HIGHLIGHTS

Research opportunities: The Department of Anesthesiology accepts medical students in the UW School of Medicine and Public Health's Shapiro Summer Research Program. These students conduct eight to 10 weeks of mentored research in the summer between the first and second years to work on a hypothesis-driven project in basic science, clinical and translational research, health services, population/public health or global health.

Anesthesiology residents have dedicated research time to work with faculty on existing research projects or on a project of their own design.

Global health: Residents can participate in global anesthesia efforts (including clinical service, education and training and research) to support patients and providers in low- and middle-income countries.

Simulation: Residents participate in simulation activities throughout their training. First-year simulations focus on procedural skills such as central line placement and advanced airway management. Clinical anesthesia sessions offer active training for crisis scenarios and rare anesthesia-related events and provide practice in difficult patient scenarios.

Faculty development: Faculty and residents participate in our yearly series of in-person and virtual interactive workshops to improve their teaching skills. Recent topics include giving effective feedback and successfully mentoring learners.

Teaching opportunities: Residents and fellows have the opportunity to teach in many settings including leading medical student small-group sessions, teaching procedural skills in the UW Health Clinical Simulation Program and teaching students and junior residents in the operating room.

Continuing education: Continuing education for faculty, residents and anesthesiologists includes the Arndt Airway course and GE course as well as our Grand Rounds lecture series.

Undergraduate shadowing program: We support UW School of Medicine and Public Health's pre-health advising program that connects undergraduate students from underrepresented populations with mentors in the health care professions.



Training at the UW Health Simulation Center.



Team and skill building activities start in orientation.

PROGRAM HIGHLIGHTS

Residency program

We take pride in being the first academic department of anesthesiology, founded in 1927 by Dr. Ralph Waters. Our state's motto is Forward, and, in that spirit, we continue to provide our residents with an environment that promotes outstanding patient care, prioritizes education, supports collegiality, and advances the scientific foundation of our discipline. We have designed our residency program to train superior anesthesiologists, ready to practice confidently and competently in any setting and prepared to serve as leaders in their practice group and specialty.

Our residency program is ACGME-approved for 16 categorical positions per class. Typically, we offer categorical, advanced, and reserve (physician only) positions each year through the National Resident Matching Program (NRMP) Main Residency Match.



Residents pictured at the graduation ceremony in June 2024.

The UW difference

- Diversity in residency: Our 60 residents hail from 30 medical schools spanning 20 states and 5 countries.
- Outstanding clinical training by subspecialty-trained faculty committed to resident teaching.
- Early exposure to anesthesia subspecialty cases.
- Strong emphasis on graduated autonomy throughout residency.
- Robust didactic program including a Point of Care Ultrasound (POCUS) curriculum and boards preparation.
- State-of-the-art simulation center with a detailed core curriculum.
- Teaching opportunities: Residents and fellows have the opportunity to teach in many settings.
- Diverse research opportunities available within and outside the Department of Anesthesiology.
- Global health opportunities: Residents can participate in global anesthesia efforts to support patients and providers in low- and middle-income countries.
- Wellbeing Committee with resident leadership: Our program supports multiple wellness events throughout the year and offers great work-life balance with average resident work hours ranging between 50–55 hours per week.
- Structured resident mentorship program: Residents connected with faculty mentors committed to their development and success.

PROGRAM HIGHLIGHTS

Fellowship Programs

We offer one-year ACGME-accredited fellowships led by top-notch faculty in Adult Cardiothoracic, Critical Care and Pediatric Anesthesiology. We also support the accredited pain management fellowship housed in the Department of Orthopedics and Rehabilitation. Each program accepts up to two fellows per year. Our non-accredited fellowships include Ambulatory and Administrative Medicine, Global Health, Neurosurgical Anesthesiology, Regional and Acute Pain Management, Research, and Transplant Anesthesiology.

ACGME-accredited fellowships

- Adult Cardiothoracic Anesthesiology - 2 positions. (offers dual fellowship with CCM)
- Critical Care Anesthesiology - 2 positions (offers dual fellowship with ACTA and EM two-year pathway) Pediatric Anesthesiology - 2 positions.
- Pain Medicine (in collaboration with the Department of Orthopedics and Rehabilitation) - 2 positions

Non-accredited fellowships

- Ambulatory and Administrative Medicine - 1 position.
- Global Health - 1 position.
- Neurosurgical Anesthesiology - 1 position.
- Regional & Acute Pain Management - up to 4 positions.
- Research - 1 position.



Fellows pictured at the graduation ceremony in June 2024.

Research

Department of Anesthesiology faculty in all academic tracks, residents and fellows take part in our basic, translational, and clinical research programs. We also are committed to developing the next generation of exceptional anesthesia researchers and offer projects for trainees in basic, clinical and outcomes research.

In FY24, the Department of Anesthesiology brought in more than \$3.2 million in external research funds from federal agencies, foundations, pharmaceutical and biotechnology companies and collaborating universities.

Our basic research endeavors in consciousness, memory, neuromodulation, respiratory compromise, and anesthetic neurotoxicity are supported by the National Institutes of Health, private endowments, and other external sources. Current projects focus on elucidating the mechanisms for unconsciousness, understanding the nature of consciousness and factors contributing to cognitive dysfunction, understanding how general anesthetics alter central nervous system function and identifying genetic determinants of anesthetic neurotoxicity.

The department's robust clinical research portfolio includes a variety of industry-sponsored clinical trials and investigator-initiated studies that span a spectrum from perioperative care to chronic pain to investigational drugs and devices. Our clinical researchers seek clinical strategies to reduce pain, evaluate techniques and therapies, improve patients' recovery, and optimize outcomes.

To enhance and grow the department's research enterprise our research office supports researchers at all levels. The office's services include pre- and post-award grants management, clinical research coordination, protocol and survey development, biostatistics, and regulatory compliance.



Exploring Mechanisms of Consciousness



Research Summary

Research in my lab centers on how changes in brain activity and connectivity result in changes in consciousness. We study this question in human subjects using behavioral assays as well as imaging and electrophysiological measurements focused primarily in neocortex and thalamus. Our areas of interest include mechanisms of loss and recovery of **consciousness under anesthesia**, the overlap of these mechanisms with changes in arousal during **natural sleep**, the link between inflammation and brain function during post-operative and post-ictal **delirium**, and the mechanisms whereby psychedelics ameliorate **psychiatric disorders** (depression, anxiety, substance use disorder).

This research has broad implications for understanding the neural basis of consciousness and the relationship between cortical network activity and cognition and perception. It also is foundational for developing treatments for acute and chronic disorders of consciousness and psychiatric disorders.

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Bryan Krause, Assistant Scientist
& Biostatistician



The Ongoing Quest for Non-Opioid Analgesics

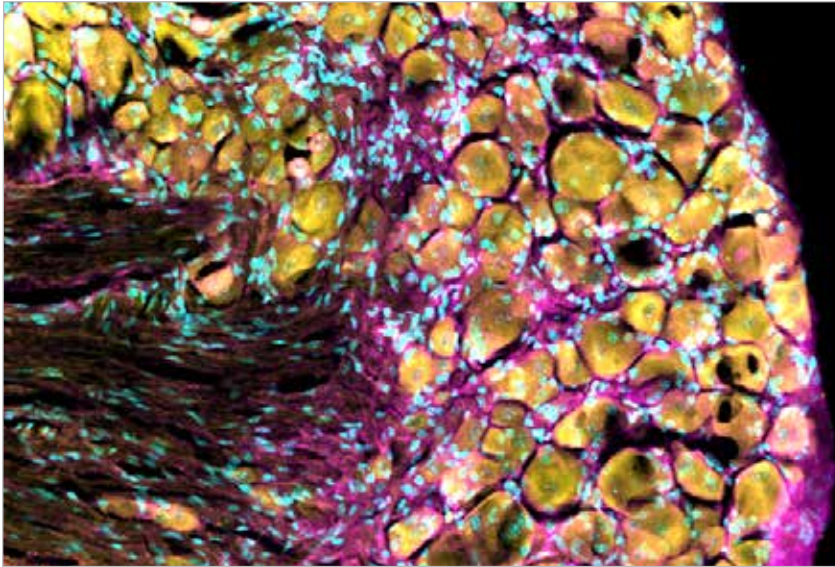


Image of a murine dorsal root ganglia stained for DNA (cyan) and two proteins of interest in yellow and magenta

Pain is pervasive and devastating. Poorly treated chronic pain is the largest source of disability in America with an estimated economic cost in excess of 500 billion dollars per year. Moreover, existing strategies to disrupt pain (e.g. opiates) have well-known and highly undesirable effects on reward circuits in the CNS. Better strategies for preventing chronic pain are desperately needed.

In the vast majority of cases, pain originates in the periphery in a specialized type of sensory neuron called a nociceptor. Long-lived changes in their excitability hinge on changes in gene expression. We focus specifically on the process of protein synthesis. Multiple groups have shown

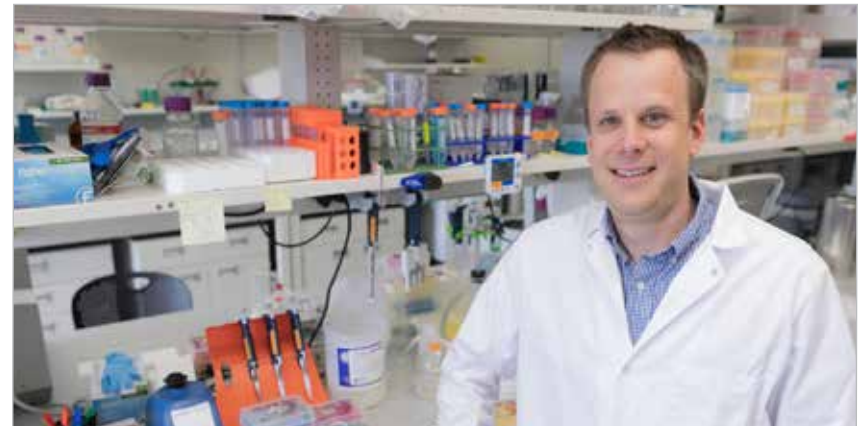
that peripheral blockade of this process diminishes pain-associated behaviors in animal models. This suggests that a better understanding of protein synthesis could reveal new ways to prevent or reverse maladaptive plasticity that drives persistent pain. But what are the mRNAs that need to be locally translated and what governs the specificity of protein synthesis in nociceptors? My lab is actively pursuing these critical questions with generous support from the National Institutes of Health. We make extensive use of functional genomics, pharmacology, physiology, and genome editing. To learn more about our work please visit our website: www.RNAcentral.com

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At the Forefront of the Fight Against COVID-19



DIRECTOR

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Research in the Hartman Laboratory focuses on clinical trials of novel therapies to fight worldwide pandemic viruses. We specialize in rapid implementation of medical therapeutics in conjunction with national programs and pharmaceutical companies. Our analysis allows therapeutics to reach patients in an expeditious manner that is also consistent, safe and scientifically sound. Present trials include:

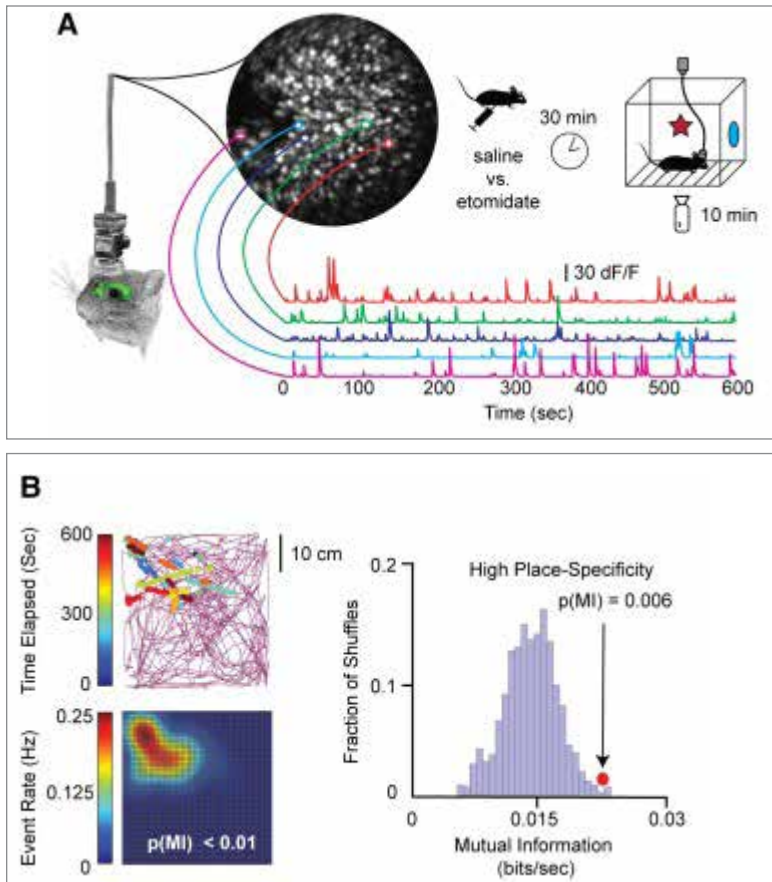
UW-Moderna CMVictory Trial: The CMVictory Trial is studying mRNA-1647, an investigational vaccine, to cytomegalovirus (CMV). This clinical trial is designed to evaluate the safety and efficacy of mRNA-1647 in women who test positive to prior exposure to CMV.

UW-Moderna KidCove Trial: The primary purpose of the KidCOVE Study is to test the safety and effectiveness of the study vaccine, called mRNA-1273, that may protect children between the ages of 6 months to < 12 years from getting sick if they come into contact with SARS-CoV-2, which causes COVID-19. Moderna will be recruiting multiple age groups from 6 months to < 12 years and staggering the recruitment of each group. The goal of this study is to evaluate the safety and effectiveness of different dose amounts and regimens, including a three-dose regimen in children 6 to < 12 years.

UW-AstraZeneca Supernova Trial: SUPERNOVA is a large Phase III global trial providing the only

efficacy data in immunocompromised patients, demonstrating the potential benefit of a COVID-19 antibody against recent SARS-CoV-2 variants. Immunocompromised patients include those with blood cancer, organ transplant recipients, patients with end-stage renal disease requiring dialysis, patients receiving B-cell depleting therapy within the past year, and those taking immunosuppressive medications. Despite accounting for approximately 4% of the population, immunocompromised patients make up about 25% of COVID-19 hospitalizations, ICU admissions, and deaths, even after multiple doses of COVID-19 vaccines.

Elucidating the Mechanisms of Memory Suppression and Unconsciousness During General Anesthesia



Figures: A. Measurement of fluorescent activity in dorsal hippocampal CA1 neurons in vivo. B. Location-specific firing rate of a place cell. From: Zhu et al., *PNAS Nexus*, 2023.

Research in the Pearce Laboratory focuses on inhibitory GABAergic circuitry in the hippocampus and neocortex. We seek to understand how the general anesthetics that target GABA receptors control memory formation and consciousness.

Memory suppression and unconsciousness are the two most fundamental components of general anesthesia. Using a variety of methods, including electrophysiology, optogenetics, calcium imaging in vivo, and behavioral measures of learning and memory, we are investigating how inhibitory circuits in the hippocampus and neocortex support and control neural network activity – and how their modulation contributes to general anesthesia.

We are particularly interested in determining how anesthetic modulation of the slow GABA-A receptor-mediated inhibition produced by neurogliaform interneurons regulates synaptic plasticity and memory, using brain slice electrophysiological recordings and “place cells” in the hippocampus as a surrogate for contextual memory formation. In addition to improving our understanding of how general anesthetics produce their essential effects, this work will also help explain the neural basis of memory and how it is impaired by disease.

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Yizhou (Rosalind) Wang
Graduate Student
Pharmaceutical Sciences Training
Program - year 2

Chan (Cat) Chu
Research Intern

David Kunkel
Clinical Research Coordinator

Novel Therapeutics for the Treatment of Asthma

Research in the Townsend Laboratory focuses on mechanisms of ongoing inflammation and inflammation resolution of the airways following an asthma exacerbation. Viral infections are the number one cause of adult asthma exacerbations and lead to increased asthma symptoms, inflammation, and airway remodeling. Some individuals have permanent loss of lung function following an exacerbation, however there are few therapies to aid in recovery from an acute exacerbation aside from prednisone.

The immune system responds to viral infection by generating pro-inflammatory molecules, but also promotes inflammation resolution, in part, through the production of specialized pro-resolving mediators including oxylipins. We are interested in characterizing the different eicosanoids produced in asthmatic airway epithelium

after infection with human rhinovirus, investigating gene regulation and epithelial remodeling as a result of viral infection, and determining the effects of the exogenous administration of pro-resolving oxylipins on the airway following a viral infection. To date, no current therapy utilizes specialized pro-resolving mediators for the treatment of asthma.

Additionally, Dr. Townsend is interested in the systemic inflammatory effects of asthma on other organ systems. Individuals with asthma are known to develop premature cardiovascular disease and obesity and insulin resistance impact asthma severity. The lung and the liver have a common embryonic origin, however, little is known about how asthma impacts the development of non-alcoholic fatty liver disease and metabolic dysfunction-associated fatty liver disease (NAFLD and MAFLD).

We are working to prospectively characterize the incidence of liver fat infiltration in individuals with asthma, assess how this changes longitudinally, and how asthma exacerbations impact liver fat deposition. We are also developing a biomarker panel to characterize individuals with asthma who are at risk for developing fatty liver disease. Therapies that target inflammation resolution in the airway, may be beneficial at halting or reversing inflammation and remodeling in the liver.

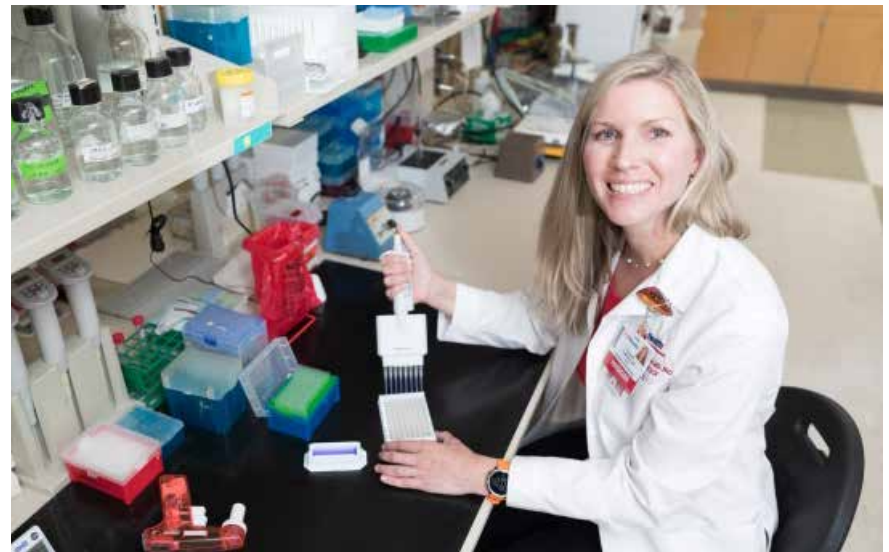
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Breanne Steffan, PhD, Postdoctoral Fellow

Andy Ziemer, Undergraduate Student Researcher



Clinical Anesthetists

CLINICAL ANESTHETIST MANAGER: BROOKE SCHLIEWE

Clinical anesthetists are integral to the Department of Anesthesiology and valued members of our anesthesia care team, comprised of faculty anesthesiologists, certified anesthesiologist assistants and certified registered nurse anesthetists. Clinical anesthetists care for patients in multiple clinical subspecialties including orthopedics, otolaryngology, vascular, pediatrics, urology, neurosurgery, plastics, peripheral vascular, thoracic, trauma, transplant, and cardiac. They also work across multiple UW Health facilities including University Hospital, East Madison Hospital, Eastpark Medical Center, American Family Children's Hospital, Digestive Health Center and Madison Surgery Center.

Our group of clinical anesthetists is still growing to meet UW Health's expanding patient care needs. Clinical anesthetists enjoy competitive salary, comprehensive benefits, excellent clinical case variety, a wide range of educational opportunities and flexible scheduling.



Leadership: (Top photo) Nikki Brechtel, CAA: CA Supervisor UH/AFCH/MSC; Brooke Schlieve, MPH, CAA: Clinical Anesthetist Manager; Chelsea Bennett, CRNA: CA Supervisor UH/DHC/EMH. (Bottom photos) Randy DeGreef, CAA: Education Team Lead, Student Anesthesiology Assistant Rotations; Neil Brauner, CRNA: Education Team Lead, Student Nurse Anesthetist Rotations.



Sustainability Initiatives



A healthy planet leads to healthy people

That's why the missions of both UW Health and the Department of Anesthesiology include a commitment to advancing health through social responsibility. In the past decade our department has enhanced the social, environmental and economic sustainability of our practice through waste reduction and education. Dr. Karin Zuegge leads the efforts as the inaugural UWH Medical Director of Sustainability. In 2023, UW Health received the highly competitive Emerald Award from Practice Greenhealth.

Carbon emissions reduction

In 2012, we began education initiatives with Grand Rounds lectures, new employee orientation, signage and a resident sustainability educator. Over time we have seen steady reduction in our anesthetic gas waste and a concurrent savings of more than \$30,000 per month compared with a 2011 baseline.

We also achieved a 73% reduction in our carbon dioxide emissions, the equivalent of eliminating the emissions of more than 2,400 cars per year between 2011 and 2018.



Teaming up with UW Health, vial cap artwork days hosted at HSLC during Earth Week.



Vaporizer labels and signage along with emissions education has led to emissions reduction and cost savings.

With ongoing education and quality projects involving use of low flow and reduction of nitrous oxide, we strive to lower our emissions even further. American Family Children's Hospital has become a national leader in eliminating the use of nitrous oxide at induction of anesthesia. With ongoing education and quality projects involving use of low flow and further reduction of nitrous oxide, we strive to lower our emissions even further.

Solid waste reduction

To reduce upstream waste, we favor reusable supplies wherever possible, and providers are educated to avoid wasteful set ups with excessive supply opening. We have also reduced our landfill waste stream from the ORs by 23%, diverting more than 9000 cubic yards of waste from our landfill in one year.

In just two years, UW Health and the Department of Anesthesiology collected and recycled 352 pounds of medication vial caps with an approximate volume of 20 cubic feet (about a freezer-chest full). These caps get a second life as stacking bins, stools and even toys and art supplies. Several vial cap art installations can be seen throughout UW Health locations.

Wellbeing



The MAC (Maximizing Anesthesia Connections) Gatherings, Summer '24 at the Memorial Union Terrace.



Department members at "Dogs on Call" event outside of Medical Foundation Centennial building.

The Department is committed to promoting the health and wellbeing of all of its members by promoting an optimal work-life balance. The department wellbeing committee is led by William Filbey, CAA, Diane Head, MD, Peter Popic, MD, and Sabrina Sam, MD. The committee helped create the Peer Support Program, working in conjunction with UW Health, to provide a confidential, legally protected connection to a clinical peer for support after experiencing difficult or stressful work events. Additionally, the committee organizes a plethora of fun activities for our department members, their friends, and families to foster our team-oriented culture both within and beyond the workplace.



Department members at the local "Tough Mudder" in Spring '23.

Diversity, Equity and Inclusion



Dr. Morgan White, Family Medicine, Dr. Dawda Jawara, General Surgery, and Dr. Hosea Covington, Anesthesiology, shared their expertise at the Annual Medical Education Conference in Connecticut.

The Department of Anesthesiology is committed to Diversity, Equity and Inclusivity (DEI), and aligns with both UW School of Medicine and Public Health and UW Health DEI commitments and activities. Our commitment to DEI is manifested by our desire to ensure a departmental culture that is supports and respects every member, and a climate that fosters belonging and ensures equity and transparency.

In 2021, the Department of Anesthesiology launched a Diversity, Equity, and Inclusion (DEI) Committee with open membership for all staff levels. The committee has introduced DEI grand rounds and continues to host visiting professors. The department promotes ongoing DEI micro-learning sessions through UW-Health and offers residents an annual DEI journal club.

The department supports resident attendance at the Annual Medical Education Conference hosted by Student National Medical Association (SNMA) an organization that supports current and future underrepresented minority medical students.



Visiting Professor Dr. Gonzalez presented "Perioperative Racial Disparities in Cardiac Surgery" at Grand Rounds

Experience Madison!



VisitMadison.com describes Madison as a good eats kind of a city. A get on your feet kind of city. A city where history and future meet. We've got a small-town feel. And big-city amenities. Lake life, campus cool, and endless things to do. Discover more of Madison!

#bythenumbers

694,345 people live in the Madison area

50,662 students enrolled at UW-Madison

76th largest city in the U.S.

2nd largest city in Wisconsin

77 miles between Madison and Milwaukee

122 miles between Madison and Chicago

5 lakes - Mendota, Monona, Wingra, Waubesa, Kegonsa

12 public beaches

15 off-leash dog parks in the area

Under **20** minutes is the average commute time for Madisonians

14 communities makeup Greater Madison: Cottage Grove, Cross Plains, DeForest, Fitchburg, Maple Bluff, McFarland, Middleton, Monona, Oregon, Shorewood Hills, Stoughton, Sun Prairie, Verona and Waunakee.

Under **30** - The age of more than half of Madison's population



Department of Anesthesiology

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SCHOOL OF MEDICINE AND PUBLIC HEALTH

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