Division Details

RESEARCH AND TRAINING DETAILS

- Number of Faculty: 51
- Number of Joint Appointment Faculty: 2
- Number of Research Fellows: 7
- Number of Research Students: 5
- Number of Support Personnel: 16
- Direct Annual Grant Support: $750,220
- Direct Annual Industry Support: $20,790
- Peer Reviewed Publications: 54

CLINICAL ACTIVITIES AND TRAINING

- Number of Clinical Staff: 117
- Number of Clinical Fellows: 13
- Number of Clinical Students: 143
- Number of Other Students: 42
- Inpatient Encounters: 22,334
- Outpatient Encounters: 35,239

Significant Accomplishments

**EPIC Conversion Goes Smoothly During High-Volume Year**

Our Department spent much of the year preparing to convert from one electronic anesthesia information system (Centricity) which it has used for eight years to another, EPIC, to integrate with the hospital on an enterprise-wide system. Joseph Previte MD, Beth Townsend, Jeff Werner, Vicki Bitter, Tom Ludwig, and Chad Garrett led the implementation process. The go-live went very smoothly. During the preparation for go-live, the department set volume records for general and regional anesthetics, consultations in pain management and palliative care, and clinical productivity. These efforts allowed us to reach our strategic plan goal for faculty productivity one year early.

**More Than 120 Papers and Presentations, 13 New Grants**

Our Department continued to be recognized nationally as a leader in pediatric anesthesia research and education. Our faculty members delivered 70 lectures nationally and internationally; authored 70 research papers, review articles and book chapters; presented 57 research abstracts at national and international meetings; and were awarded 13 extramural research grants. Steve Danzer, PhD, Mike Jankowski, PhD, Andreas Loepke, MD, PhD, Mohamed Mahmoud, MD, Dave Richards, PhD, Senthil Sadhasivam, MD, and Anna Varughese, MD, MPH, led the research efforts. The Society for Pediatric Anesthesia awarded Raj...
Subramanyam, MD, and Vanessa Olbrecht, MD, first prizes for resident and faculty research, respectively, for their studies on mortality after tonsillectomy and morphine pharmacogenetics.

**Strong Year for Fellowship Recruitment**

Fellowship directors Paul Samuels, MD, and Smokey Clay, MD, recruited 12 outstanding fellows into the core fellowship program. Meanwhile, Norb Weidner, MD, Alex Szabova, MD, Anna Varughese, MD, MPH, John McAuliffe, MD, DABNM, Paul Samuels, MD and Lori Aronson, MD recruited fellows into the palliative care, pain medicine, quality and safety, neurophysiological monitoring, education, and cardiac anesthesia advanced fellowship programs.

**Faculty Members Play National Leadership Roles**

Several of our faculty members hold significant national leadership positions. John McAuliffe, MD, DABNM, was elected president of the Society of Neurophysiological Monitoring. Anne Boat, MD, was appointed Patient Experience Officer at Cincinnati Children’s. Dean Kurth, MD, serves on the boards for the Society for Pediatric Anesthesia and the journal Pediatric Anesthesia and is president of the Pediatric Anesthesia Leadership Council. Paul Samuels, MD, and Lori Aronson, MD, lead board exam review courses for the Society for Pediatric Anesthesia and American Physician Company.

**Significant Publications**


Inhaled anesthetics have been found in numerous studies to cause widespread neuronal cell death in neonatal animals, leading to concerns that these findings could apply to children undergoing anesthesia and sedation. However, it remained unclear why certain neurons die while immediately adjacent neurons are seemingly unaffected and why the immature brain is exquisitely vulnerable, while the mature brain seems resistant.

Our study demonstrated, for the first time, that neurodegeneration induced by inhaled anesthetics is not limited by the age of the organism, as neuronal cell death was observed in adult animals in brain regions exhibiting continued neuronal cell birth throughout adulthood, such as dentate gyrus. Furthermore, we illustrated in dentate granule cells that anesthetic vulnerability specifically targets very young neurons under three weeks of age, suggesting that anesthetics may exert their toxicity by interfering with normal neuronal maturation.


The publication provides evidence that abnormal granule cells contribute to temporal lobe epilepsy. The more abnormal granule cells an animal has, the more seizures it has. The publication also provides correlative evidence that abnormal granule cells contribute to epilepsy severity.


There are not many areas where it is demonstrated that “anesthetic technique” makes a difference in the outcome. Current anesthetic management of open fetal surgery is the use of high dose volatile anesthetic agents in order to achieve profound uterine relaxation. By using fetal-maternal sheep model, we demonstrated
the potential benefit of alternative anesthetic technique. We found that high-dose desflurane anesthesia resulted in more hypotension in the mother, reduced uterine blood flow, and fetal acidosis than using lower dose desflurane supplemented with intravenous infusion of propofol and remifentanil.


Propofol is a commonly used highly lipophilic anesthetic, which poses dosing dilemmas in obese children, a population in which propofol pharmacokinetics and pharmacodynamics (PK/PD) have never been studied before. A prospective PK/PD study was performed in 20 morbidly obese adolescents undergoing bariatric surgery to describe the effect of increased fat on the pharmacokinetics of propofol. Integration of propofol effects on anesthetic depth will provide a basis for optimal individualized dosing guidelines in this population.


Ultrasound training primarily occurs in patient care settings. Typically, residents, fellows and anesthesiologists acquire imaging and interpretation skills and learn to perform an UGRA simultaneously. Rarely, they are provided the means to practice image interpretation and they often do not receive real-time feedback about the proper use of the image to do UGRA, especially in children.

We implemented a training program while assessing UGRA technical and cognitive skills early, mid, and late in the fellows’ year, and found over the course of the academic year, trainees in pediatric anesthesia had significant improvement of their UGRA related technical and cognitive skills with the use of an inexpensive integrated teaching program using cognitive skill assessment, real-time simulation and feedback.

**Division Publications**


41. Pun RY, Rolle IJ, Lasarge CL, Hosford BE, Rosen JM, Uhl JD, Schmeltzer SN, Faulkner C, Bronson SL, Murphy BL, Richards DA, Holland KD, Danzer SC. Excessive activation of mTOR in postnatally generated granule cells is sufficient to cause epilepsy. *Neuron.* 2012; 75:1022-34.


Faculty, Staff, and Trainees

Faculty Members

C. Dean Kurth, MD, Professor
Leadership Anesthesiologist-in-Chief and Chair, Department of Anesthesia

Elena Adler, MD, Associate Professor
Leadership Medical Director, Anesthesia Supply Chain, Division of Anesthesia

Nancy Andersen, MD, Associate Professor

Lori Aronson, MD, Associate Professor

Anne Boat, MD, Associate Professor
Leadership Director, Fetal Surgery Team, Division of Anesthesia, Patient Family Experience Officer

Veronica Busso, MD, Assistant Professor

Vidya Chidambaran, MD, Assistant Professor

Smokey Clay, MD, Assistant Professor

Andrew Costandi, MD, Assistant Professor

Steve Danzer, PhD, Associate Professor

Hilary Flint, DO, Assistant Professor

Lisa Francis, DO, Assistant Professor

Kenneth Goldschneider, MD, Associate Professor
Leadership Director, Medical Pain Service and Chronic Pain Clinic, Division of Pain Management

Diane Gordon, MD, Assistant Professor

Joel Gunter, MD, Professor

Nancy Hagerman, MD, Assistant Professor

Leadership Co-Medical Director, Same Day Surgery and Pre-Anesthesia Consultation Clinic, Division of Anesthesia

Elizabeth Hein, MD, Associate Professor

Michael Jankowski, PhD, Assistant Professor

Thomas Kabalin, MD, Associate Professor

Michael "Jack" Kibelbek, MD, Associate Professor

Rachael Koll, MD, Assistant Professor

Renee Kreeger, MD, Assistant Professor

Jennifer Lam, DO, Assistant Professor

Christopher Lee, MD, Assistant Professor

Ik Lee, MD, Associate Professor

Leadership Director, Division of Anesthesia

Erica Lin, MD, Assistant Professor

Andreas Loepke, MD, PhD, Associate Professor

Mohamed Mahmoud, MD, Associate Professor

Leadership Director, Anesthesia Imaging

John McAuliffe, MD, MBA, Professor

Leadership Director, Research; Interim Director, Division of Neurobiology

Mark Meyer, MD, Associate Professor

Leadership Director, Procedure Management, Division of Pain Management

David Moore, MD, Associate Professor

Leadership Clinical Coordinator, Anesthesia Fellow Pain Management Education, Division of Pain Management

Jacquelyn Morillo-Delerme, MD, Associate Professor

Leadership Director of Anesthesia at the Liberty Campus, Division of Anesthesia

Pornswan Ngamprasertwong, MD, Assistant Professor

Vanessa Olbrecht, MD, Assistant Professor

Mario Patino, MD, Assistant Professor

Jayant "Nick" Pratap, MD, Assistant Professor

Joseph Previte, MD, FAAP, Associate Professor

Leadership Director, Information Technology Services, Division of Anesthesia

David Richards, PhD, Assistant Professor

John Rose, MD, Professor
Senthilkumar Sadhasivam, MD, MPH, Associate Professor
  Leadership Director, Perioperative Pain Management, Division of Pain Management

Nancy Samol, MD, Assistant Professor

Paul Samuels, MD, Associate Professor
  Leadership Director, Education, Division of Anesthesia

Ximena Soler, MD, Assistant Professor
  Leadership Director, Liver Transplant Surgery Team, Division of Anesthesia

James Spaeth, MD, Associate Professor
  Leadership Associate Director, Department of Anesthesia; Director, Cardiac Anesthesia Team, Division of Anesthesia

Theodore Striker, MD, Professor

Alexandra Szabova, MD, Assistant Professor

Anna Varughese, MD, MPH, Associate Professor
  Leadership Associate Director, Department of Anesthesia; Director, Quality, Department of Anesthesia; Co-Medical Director, Same Day Surgery and Pre-Anesthesia Consultation Clinic, Division of Anesthesia; Associate Director, Perioperative Services

Luigi Viola, MD, Assistant Professor

Norbert Weidner, MD, Associate Professor
  Leadership Director, Palliative Care and Comfort Team, Division of Pain Management

Eric Wittkugel, MD, Associate Professor

Junzheng Wu, MD, Associate Professor

Joint Appointment Faculty Members

Susmita Kashikar-Zuck, PhD, Associate Professor (Behavioral Medicine & Clinical Psychology)

Anne Lynch-Jordan, PhD, Assistant Professor (Behavioral Medicine & Clinical Psychology)

Clinical Staff Members

Clifford Hoffmann, MD,
  Staff Anesthesiologist

Normidaris Jimenez, MD,
  Staff Anesthesiologist

William Worden, MD,
  Staff Anesthesiologist

Trainees

Graciela Argote-Romero, MD, PGY-V, Weill-Cornell University

Michael Baker, MD, PGY-V, Mayo School of Graduate Medical Education

Kathleen Barrett, MD, PGY-V, University of Pittsburgh Medical Center

David Buck, MD, PGY-V, Tufts Medical Center

Rebecca Harrison-Laurich, MD, PGY-V, Scott and White Hospital

Janelle Jambrosic, MD, PGY-V, University of Arizona Department of Anesthesiology
Division Collaboration

**Department of Radiology; Pulmonary Medicine** » Blaise Jones, MD, Alan Brody, MD, Raouf Amin, MD, Mohamed Mahmoud, MD, and Mario Patino, MD

Investigative airway dynamics in healthy and obstructive sleep apnea with anesthesia and sedation.

**Neurology; Orthopedics** » Douglas Rose, MD, Hansel Greiner, MD, Peter Sturm, MD, and John McAuliffe, MD

Investigate anesthetics in neurophysiological signals during surgery.

**Emergency Department; Critical Care** » Benjamin Kerrey, MD, Kenneth Tegtmeyer, MD, Joseph Luria, MD, Riad Lufti, MD, and Paul Samuels, MD

Investigate learning and competency of intubation skills

**Developmental Biology; Neurology** » Katherine Holland, MD, Michael Williams, MD, Chris Vorhees, MD, Steve Danzer, PhD, David Richards, PhD, and Mike Jankowski, PhD

Investigate mechanisms of autism and epilepsy

Investigate Neurotransmission

Investigate Chronic Pain

**Behavioral Medicine; Clinical Psychology** » Anne Lynch-Jordan, MD, Susmita Kashkar-Zuck, MD, and Kenneth Goldschneider, MD

Investigate chronic pain in children

**Clinical Pharmacology; Center for Autoimmune Genomics and Etiology; Orthopedics; Human Genetics; Otolaryngology** » Sander Vinks, PhD, John Harley, MD, Paul Willging, MD, Peter Sturm, MD, Keijan Zhang, MD, Senthilkumar Sadhasivam, MD, and Vidy Chidambaran, MD

Investigate pharmacogenetics of anesthetics and analgesics

**Otolaryngology** » Paul Willging, MD, Anna Varughese, MD, and Nancy Hagerman, MD

Investigate pre-operative factors on postoperative outcomes

**Heart Institute** » Peter Manning, MD, David Morales, MD, and Jayant (Nick) Pratap, MD

Investigate cerebral oxygenation during congenital heart disease

**Heart Institute** » Thomas Kimball, MD, Foong - Yen Lim, MD, and Pornswan Ngamprasertwong, MD

Grants, Contracts, and Industry Agreements

**Grant and Contract Awards**

**Annual Direct**

CHIDAMBARAN, V

Opioid Safety in Children: Evaluation of Continuous Capnography Monitoring and Prediction of Susceptibility to Respiratory Depression
Anesthesia Patient Safety Foundation

07/01/12-06/30/14 $75,000

DANZER, S

**Contributions of Aberrant Granule Cells Integration to the Development of Epilepsy**
National Institutes of Health
R01 NS 062806 08/05/09-07/31/14 $214,375

**Selective Disruption of Hippocampal Dentate Granule Cells in Autism: Impact of PT**
National Institutes of Health
R01 NS 065020 05/01/09-04/30/14 $264,045

JANKOWSKI, M

**Molecular Mechanisms of Musculoskeletal Pain After Ischematic Tissue Injury**
American Pain Society
09/01/12-08/31/15 $50,000

PRATAP, J

**Randomized Trial of Near-Infrared Spectroscopy to Guide Intraoperative and Intensive Care Management During Children's Heart Surgery**
Society of Cardiovascular Anesthesiologists
07/01/11-06/30/13 $25,000

SADHASIVAM, S

**Personalizing Perioperative Pain Management in Children: A Multicenter Pharmacogenetic Study**
Thrasher Research Fund
04/01/12-03/31/15 $120,000

SUBRAMANYAM, R

**Factors Predictive of Adverse Outcomes in Children Undergoing Tonsilectomy**
American Society of Anesthesiologists
10/01/12-09/30/13 $1,800

Current Year Direct $750,220

Industry Contracts

KURTH

Masimo Corporation $20,790

Current Year Direct Receipts $20,790

Total $771,010