

2014 Research Annual Report

Anesthesiology



Division Summary

RESEARCH AND TRAINING DETAILS

Number of Faculty	56
Number of Joint Appointment Faculty	2
Number of Research Fellows	6
Number of Research Students	6
Number of Support Personnel	48
Direct Annual Grant Support	\$1,023,336
Direct Annual Industry Support	\$87,474
Peer Reviewed Publications	49

CLINICAL ACTIVITIES AND TRAINING

Number of Clinical Staff	138
Number of Staff Physicians	5
Number of Staff Psychiatrists	2
Number of Clinical Fellows	18
Number of Clinical Students	143
Number of Other Students	42
Inpatient Encounters	20,284
Outpatient Encounters	41,015

Division Photo



Row 1: D Moore, A Costandi, K Goldschneider, J Gunter, T Striker, B Hugus, V Chidambaran, V Olbrecht, P Ngamprasertwong, R Koll, J Mavi

Row 2: M Sikora, D Buck, B Das, M Sjoblom, J Lam, R Kreeger, S Danzer, C Lee, A Loepke, V Busso

Row 3: D Gordon, C Hoffman, J Miller, D Kurth, S Sadhasivam, J Spaeth, M Mahmoud, P Samuels, R Subramanyam

Significant Accomplishments

Productive research, growing fellowships

Our faculty set records in the past year for providing national and international lectures, hosting visiting professorships, producing education and research publications, and securing new grants. We recruited 12 pediatric anesthesia fellows and nine advanced fellows in pain medicine, cardiac anesthesia, palliative care, research, education, quality and safety, and intraoperative neurophysiological monitoring. We also formed the Principal Investigators Leadership Group, which includes [Steve Danzer, PhD](#), [Michael Jankowski, PhD](#), [Andreas Loepke, MD, PhD](#), David Richards, PhD, [Senthikumar Sadhasivam, MD](#), [Anna Varughese, MD, MPH](#), [John McAuliffe III, MD, MBA](#), and Nicole Sutton, business manager, Neurobiology.

Record volumes, declining infections

The Divisions of Anesthesia, Palliative Care, Perioperative Pain Management, and Intraoperative Neuromonitoring set records for clinical encounters, driven by lengthy, high complexity cases. The palliative care division created a palliative pain service and palliative medical service to facilitate care and growth. The anesthesia division sustained improved processes of care which decreased surgical site infections and serious airway events and is organizing around the perioperative microsystems to facilitate pre-operative communication. [David L. Moore, MD](#), and Lisa Rice, business director, Pain Management, advanced the dental, CBDI, and Biopsy anesthesia service which increased the quality of care and case volume of service.

The cardiac service became a division apart from anesthesia; the cardiac division set record for number of cardiac catheterizations.

Promotions and honors

Nick Pratap, MBBChir, Rajeev Subramanyan, MBBS, MD, Rupi Mavi, MD, and Matthew Sjoblom, MD, became assistant professors; Richards and Mario Patino, MD, were promoted to associate professor; and Sadhasivam and Varughese were promoted to professor. Joseph Previte, MD, FAAP, Veronica Busso, MD, and Pornswan Ngamprasertwong, MD, MSc, were appointed clinical directors. Anne Boat, MD, is the hospital patient experience officer. Karmella M. Franic-Everhart, CRNA, received a doctorate in nurse anesthesia.

McAuliffe serves as president of the American Society of Neurophysiological Monitoring (ASNM). Paul Samuels, MD, leads the Board Exam review course for the Society for Pediatric Anesthesia (SPA). C. Dean Kurth, MD, Anesthesiologist-in-Chief, is president of the SPA pediatric anesthesia leadership council and a board member for the society and its journal, *Pediatric Anesthesia*. SPA also awarded first prizes in research to Subramanyan and Mavi for fellow and junior faculty categories.

Significant Publications

Sadhasivam S, Chidambaran V, Olbrecht VA, Esslinger HR, Zhang K, Zhang X, Martin LJ. **Genetics of pain perception, COMT and postoperative pain management in children.** *Pharmacogenomics*. 2014 15(3):277-84.

Effective perioperative analgesia is lacking for children owing to interindividual variations and underdosing of opioids caused by fear of adverse effects. Dr. Sadhasivam, et al showed that in 149 children undergoing tonsillectomy, minor allele carriers of 4 COMT SNPs (rs6269, rs4633, rs4818 and rs4680) were approximately three-times more likely to require analgesic interventions than homozygotes of major alleles (p-value range: 0.0031-0.0127; odds ratio range: 2.6-3.1). COMT SNPs may play a significant role in interindividual variation in postoperative pain perception and postoperative morphine requirements in children. This study, **Genetics of pain perception, COMT and postoperative pain management in children**, was published in February 2014 issue of *Pharmacogenomics*. The research team is recruiting 1000 children to the study from Cincinnati Children's and 15 other pediatric hospitals. Their goal is to validate the initial findings and identify additional important genes in surgical pain management.

Jankowski MP, Ross JL, Weber JD, Lee FB, Shank AT, Hudgins RC. **Read Age-dependent sensitization of cutaneous nociceptors during developmental inflammation.** *Mol Pain*. 2014 Jun;10:34.

It is well accepted that neonates of all ages experience thermal and mechanical hypersensitivity after a peripheral injury. In this study, we have demonstrated that the primary afferent subpopulations that likely drive the development of these pediatric pain states are likely quite different depending upon the age in which peripheral injury is sustained. This is an important consideration for the management of pain in children as therapies may need to be more specifically tailored depending on the patient's age in order to obtain an appropriate level of analgesia.

Lasarge CL, Danzer SC. **Mechanisms regulating neuronal excitability and seizure development following mTOR pathway hyperactivation.** *Front Mol Neurosci*. 2014 14;7:18.

The PI3K/PTEN-mTOR pathway regulates a variety of neuronal functions, including cell proliferation, survival, growth and plasticity. Moreover, dysregulation of the pathway is implicated in the development of both genetic and acquired epilepsies. This review highlighted structural and physiological abnormalities, associated with mTOR hyperactivation, which are thought to cause recurrent excitatory circuits and neuronal hyperexcitability during epileptogenesis.

Division Publications

1. Andropoulos DB, Walker SG, Kurth CD, Clark RM, Henry DB. **Advanced second year fellowship training in pediatric anesthesiology in the United States.** *Anesth Analg.* 2014; 118:800-8.
2. Boat AC, Spaeth JP. **Handoff checklists improve the reliability of patient handoffs in the operating room and postanesthesia care unit.** *Paediatr Anaesth.* 2013; 23:647-54.
3. Buck D, Kurth CD, Varughese A. **Perspectives on quality and safety in pediatric anesthesia.** *Anesthesiol Clin.* 2014; 32:281-94.
4. Chidambaran V. **Anesthetic Interactions for the Pediatric Circulatory System.** In: JL Lockman, ed. *Pediatric Anesthesiology Review Topics, Book 4: The Cardiovascular System and Cardiac Surgical Procedures.* Naerthwyn Press; 2013.
5. Chidambaran V. **Basic Respiration and Respiratory Physiology for the Pediatric Anesthesiologist.** In: JL Lockman, ed. *Pediatric Anesthesiology Review Topics, Book 3: The Pediatric Airway and Thoracic Surgery.* Naerthwyn Press; 2013.
6. Crews KR, Gaedigk A, Dunnenberger HM, Leeder JS, Klein TE, Caudle KE, Haidar CE, Shen DD, Callaghan JT, Sadhasivam S, Prows CA, Kharasch ED, Skaar TC, Clinical Pharmacogenetics Implementation C. **Clinical Pharmacogenetics Implementation Consortium guidelines for cytochrome P450 2D6 genotype and codeine therapy: 2014 update.** *Clin Pharmacol Ther.* 2014; 95:376-82.
7. Diepstraten J, Chidambaran V, Sadhasivam S, Blusse van Oud-Alblas HJ, Inge T, van Ramshorst B, van Dongen EP, Vinks AA, Knibbe CA. **An integrated population pharmacokinetic meta-analysis of propofol in morbidly obese and nonobese adults, adolescents, and children.** *CPT Pharmacometrics Syst Pharmacol.* 2013; 2:e73.
8. Fukuda T, Chidambaran V, Mizuno T, Venkatasubramanian R, Ngamprasertwong P, Olbrecht V, Esslinger HR, Vinks AA, Sadhasivam S. **OCT1 genetic variants influence the pharmacokinetics of morphine in children.** *Pharmacogenomics.* 2013; 14:1141-51.
9. Furstein JS, Abd-Elseyed A, Wittkugel EP, Barnett S, Sadhasivam S. **Motor blockade of abdominal muscles following a TAP block presenting as an abdominal bulge.** *Paediatr Anaesth.* 2013; 23:963-4.
10. Furstein JS, Sadhasivam S. **Comment on Ultrasound-guided parasacral approach to the sciatic nerve block in children.** *Paediatr Anaesth.* 2014; 24:462-3.
11. Gordon D, Hosu L, Agabegi S, Sturm P, Sadhasivam S. **Brain herniation due to syndrome of inappropriate antidiuretic hormone secretion (SIADH) after posterior spine fusion.** *Paediatr Anaesth.* 2013; 23:875-6.
12. Guite JW, Kim S, Chen CP, Sherker JL, Sherry DD, Rose JB, Hwang WT. **Pain beliefs and readiness to change among adolescents with chronic musculoskeletal pain and their parents before an initial pain clinic evaluation.** *Clin J Pain.* 2014; 30:27-35.
13. Guite JW, Kim S, Chen CP, Sherker JL, Sherry DD, Rose JB, Hwang WT. **Treatment expectations among adolescents with chronic musculoskeletal pain and their parents before an initial pain clinic evaluation.** *Clin J Pain.* 2014; 30:17-26.
14. Hagerman N, Varughese A. **Preparing the Critically Ill or Injured Child for Surgery.** In: DS Wheeler, HR Wong, TP Shanley, eds. *Pediatric Critical Care Medicine: Basic Science and Clinical Evidence.* London: Springer-Verlag; 2014:3-10.
15. Hagerman NS, Varughese AM, Kurth CD. **Quality and safety in pediatric anesthesia: how can guidelines, checklists, and initiatives improve the outcome?** *Curr Opin Anaesthesiol.* 2014; 27:323-9.
16. Jankowski MP, Ross JL, Weber JD, Lee FB, Shank AT, Hudgins RC. **Age-dependent sensitization of cutaneous nociceptors during developmental inflammation.** *Mol Pain.* 2014; 10:34.
17. Kraemer W, Rose J, Logan D. **Acute Pain Management in Children.** In: RS Litman, ed. *Basics of*

- Pediatric Anesthesia*. Philadelphia, PA: Ronald S. Litman Publishing; 2013:390-396.
18. Kraemer W, Rose J, Logan D. **Analgesic Medication**. In: RS Litman, ed. *Basics of Pediatric Anesthesia*. Philadelphia, PA: Ronald S. Litman Publishing; 2013:370-380.
 19. Kraemer W, Rose J, Logan D. **Chronic Pain**. In: RS Litman, ed. *Basics of Pediatric Anesthesia*. Philadelphia, PA: Ronald S. Litman Publishing; 2013:397-402.
 20. Kraemer W, Rose J, Logan D. **Local Anesthetics & Adjuvant Analgesics**. In: RS Litman, ed. *Basics of Pediatric Anesthesia*. Philadelphia, PA: Ronald S. Litman Publishing; 2013:381-389.
 21. Kraemer W, Rose J, Logan D. **Pediatric Pain Assessment**. In: RS Litman, ed. *Basics of Pediatric Anesthesia*. Philadelphia, PA: Ronald S. Litman Publishing; 2013:365-369.
 22. Kreeger RN, Spaeth JP. **Patient safety in pediatric anesthesia: developing a system to improve perioperative outcomes**. *Int Anesthesiol Clin*. 2013; 51:164-78.
 23. Kurth CD. **Introducing quality improvement**. *Paediatr Anaesth*. 2013; 23:569-70.
 24. Lasarge CL, Danzer SC. **Mechanisms regulating neuronal excitability and seizure development following mTOR pathway hyperactivation**. *Front Mol Neurosci*. 2014; 7:18.
 25. Lin EP, Soriano SG, Loepke AW. **Anesthetic neurotoxicity**. *Anesthesiol Clin*. 2014; 32:133-55.
 26. Loepke AW, McCann ME. **Anesthetic-Induced Neurotoxicity**. In: PD Mongan, S Soriano, TB Sloan, eds. *A practical approach to neuroanesthesia*. Philadelphia, Pa: Wolters Kluwer Health/Lippincott Williams & Wilkins; 2013:307-316.
 27. Lynch-Jordan AM, Kashikar-Zuck S, Szabova A, Goldschneider KR. **The interplay of parent and adolescent catastrophizing and its impact on adolescents' pain, functioning, and pain behavior**. *Clin J Pain*. 2013; 29:681-8.
 28. Mahmoud M, Jung D, Salisbury S, McAuliffe J, Gunter J, Patio M, Donnelly LF, Fleck R. **Effect of increasing depth of dexmedetomidine and propofol anesthesia on upper airway morphology in children and adolescents with obstructive sleep apnea**. *J Clin Anesth*. 2013; 25:529-41.
 29. Mahmoud M, McAuliffe J. **Sedation dilemmas for computed tomography with oral contrast in children**. *Pediatr Emerg Care*. 2014; 30:372.
 30. Mavi J, Moore DL. **Anesthesia and analgesia for pectus excavatum surgery**. *Anesthesiol Clin*. 2014; 32:175-84.
 31. Mills R, Radhakrishnan R, Moore DL, Sadhasivam S. **Epidural blood patch relieves positional diplopia following lumbar punctures**. *Paediatr Anaesth*. 2014; 24:345-7.
 32. Ngamprasertwong P, Habli M, Boat A, Lim FY, Esslinger H, Ding L, Sadhasivam S. **Maternal hypotension during fetoscopic surgery: incidence and its impact on fetal survival outcomes**. *ScientificWorldJournal*. 2013; 2013:709059.
 33. Ngamprasertwong P, Mahmoud M. **Anesthesia for MRI enterography in children**. *J Clin Anesth*. 2014; 26:249.
 34. Patino M, Hart CK, Mahmoud M. **Arytenoid prolapse and inability to ventilate**. *Paediatr Anaesth*. 2013; 23:876-8.
 35. Patino M, Redford DT, Quigley TW, Mahmoud M, Kurth CD, Szmuk P. **Accuracy of acoustic respiration rate monitoring in pediatric patients**. *Paediatr Anaesth*. 2013; 23:1166-73.
 36. Patino M, Sadhasivam S, Mahmoud M. **Obstructive sleep apnoea in children: perioperative considerations**. *Br J Anaesth*. 2013; 111 Suppl 1:i83-95.
 37. Pratap JN. **Ventilation**. In: R Skone, ed. *Managing the critically ill child : a guide for anaesthetists and emergency physicians*. Cambridge ; New York: Cambridge University Press; 2013:277-287.
 38. Prows CA, Zhang X, Huth MM, Zhang K, Saldana SN, Daraiseh NM, Esslinger HR, Freeman E, Greinwald JH, Martin LJ, Sadhasivam S. **Codeine-related adverse drug reactions in children following**

tonsillectomy: a prospective study. *Laryngoscope*. 2014; 124:1242-50.

39. Sadhasivam S, Chidambaran V, Olbrecht VA, Esslinger HR, Zhang K, Zhang X, Martin LJ. **Genetics of pain perception, COMT and postoperative pain management in children.** *Pharmacogenomics*. 2014; 15:277-84.
40. Samol NB, Wittkugel EP. **Quality in pediatric ambulatory anesthesia: its recognition, measurement, and improvement.** *Int Anesthesiol Clin*. 2013; 51:147-63.
41. Sherwin CM, Ngamprasertwong P, Sadhasivam S, Vinks AA. **Utilization of optimal study design for maternal and fetal sheep propofol pharmacokinetics study: a preliminary study.** *Curr Clin Pharmacol*. 2014; 9:64-9.
42. Singh SP, He X, McNamara JO, Danzer SC. **Morphological changes among hippocampal dentate granule cells exposed to early kindling-epileptogenesis.** *Hippocampus*. 2013; 23:1309-20.
43. Sjoblom MD, Busso VO, Linscott LL, Sadhasivam S. **Postoperative cerebral arterial thrombosis following cranial surgery in an infant.** *Paediatr Anaesth*. 2013; 23:1105-6.
44. Spaeth JP, Kurth CD. **The Extremely Premature Infant (Micropremie).** In: CJ Coté, J Lerman, BJ Anderson, eds. *Coté and Lerman's a practice of anesthesia for infants and children*. Philadelphia, PA: Elsevier/Saunders; 2013:733-745.
45. Steinhoff BJ, Bacher M, Bast T, Kornmeier R, Kurth C, Scholly J, Staack AM, Wisniewski I. **First clinical experiences with perampanel--the Kork experience in 74 patients.** *Epilepsia*. 2014; 55 Suppl 1:16-8.
46. Steinhoff BJ, Bacher M, Bucurenciu I, Kornmeier R, Kurth C, Martin P, Mathews K, Staack AM. **The impact of guidelines on the quality of MRI diagnostics in adult patients referred to a tertiary epilepsy centre.** *J Neurol*. 2013; 260:3174-5.
47. Subramanyam R, Chidambaran V, Ding L, Myer CM, 3rd, Sadhasivam S. **Anesthesia- and opioids-related malpractice claims following tonsillectomy in USA: LexisNexis claims database 1984-2012.** *Paediatr Anaesth*. 2014; 24:412-20.
48. Subramanyam R, Varughese A, Kurth CD, Eckman MH. **Cost-effectiveness of intravenous acetaminophen for pediatric tonsillectomy.** *Paediatr Anaesth*. 2014; 24:467-75.
49. Varughese AM, Rampersad SE, Whitney GM, Flick RP, Anton B, Heitmiller ES. **Quality and safety in pediatric anesthesia.** *Anesth Analg*. 2013; 117:1408-18.

Faculty, Staff, and Trainees

Faculty Members

C. Dean Kurth, MD, Professor

Leadership Anesthesiologist-in-Chief and Chair, Department of Anesthesiology

Elena Adler, MD, Associate Professor

Leadership Medical Director, Anesthesia Supply Chain, Division of Anesthesiology

Lori Aronson, MD, Associate Professor

Anne Boat, MD, Associate Professor

Leadership Director, Fetal Surgery Team, Division of Anesthesiology, Patient Family Experience Officer

Veronica Busso, MD, Assistant Professor

Leadership Clinical Director, Division of Anesthesiology

Vidya Chidambaran, MD, Associate Professor

Smokey Clay, MD, Assistant Professor

Leadership Co-Director, Core Fellowship Program; Division of Anesthesiology

Andrew Costandi, MD, Assistant Professor

Steve Danzer, PhD, Associate Professor

Bobby Das, MD, Assistant 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 Anesthesiology

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 Anesthesiology

Erica Lin, MD, Assistant Professor

Andreas Loepke, MD, PhD, Associate Professor

Mohamed Mahmoud, MD, Associate Professor

Leadership Director, Anesthesia Imaging

Jagroop Mavi, MD, Assistant Professor

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

Jeffrey Miller, MD, Associate Professor

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 - Liberty Campus, Division of Anesthesiology

Pornswan Ngamprasertwong, MD, Assistant Professor

Leadership Clinical Director, Division of Anesthesiology

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 Anesthesiology; Clinical Director, Division of Anesthesiology

David Richards, PhD, Associate 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 Anesthesiology

Matthew Sjoblom, MD, Assistant Professor

Ximena Soler, MD, Assistant Professor

Leadership Director, Liver Transplant Surgery Team, Division of Anesthesiology

James Spaeth, MD, Associate Professor

Leadership Associate Director, Department of Anesthesiology; Director, Cardiac Anesthesia Team, Division of Anesthesiology

Theodore Striker, MD, Professor

Rajeev Subramanyam, MD, Assistant Professor

Alexandra Szabova, MD, Assistant Professor

Anna Varughese, MD, MPH, Associate Professor

Leadership Associate Director, Department of Anesthesiology; Director, Quality, Department of Anesthesiology; Co-Medical Director, Same Day Surgery and Pre-Anesthesia Consultation Clinic,; Division of Anesthesiology; 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

- **Nancy Andersen, MD**,
Staff Anesthesiologist
- **Clifford Hoffmann, MD**,
Staff Anesthesiologist
- **Matthew Mitchell, MD**,
Staff Anesthesiologist
- **Normidaris Jimenez, MD**,
Staff Anesthesiologist
- **William Worden, MD**,
Staff Anesthesiologist

Trainees

- **Orvil Ayala, MD**, PGY-V, Montefiore Medical Center/Albert Einstein College of Medicine
- **George Bishai, MD**, PGY-V, University of Miami, Jackson Memorial Hospital
- **James Bradley, MD**, PGY-V, Georgia Health Sciences University
- **David Buck, MD**, PGY-X, Tufts Medical Center
- **Richard Colquitt, MD**, PGY-V, University of Virginia
- **Elizabeth Cudilo, MD**, PGY-V, University of California-Irvine, Medical Center
- **Clare Herlihy, MD**, PGY-V, University of Cincinnati
- **Karen Johnson, MD**, PGY-V, Cleveland Clinic Foundation
- **Eapen Mathew, MD**, PGY-V, University of Connecticut
- **Ian McIntyre, MD**, PGY-X, University of Manitoba
- **Marc Mecoli, MD**, PGY-V, Beth Israel Deaconess Medical Center
- **Ryan Mills, MD**, PGY-V, Advocate Illinois Masonic Medical Center
- **Sara Powell, MD**, PGY-V, University of Kansas-Wichita
- **Matthew Reynolds, MD**, PGY-V, University of Virginia
- **Deborah Romeo, MD**, PGY-V, Virginia Commonwealth University
- **Joanna Rosing, MD**, PGY-X, University of Cincinnati College of Medicine Department of Anesthesiology
- **Michael Sikora, MD**, PGY-X, BCM Anesthesiology
- **Rachel Thienprayoon, MD**, PGY-X, UT Southwestern Medical Center

Division Collaboration

Investigate airway dynamics in healthy and obstructive sleep apnea with anesthesia and sedation (Mohamed Mahmoud, MD, Mario Patino, MD)

Pulmonary Medicine » Raouf Amin, MD

Radiology » Alan Brody, MD and Blaise Jones, MD

Investigate anesthetics in neurophysiological signals during surgery (John McAuliffe, MD)

Orthopaedics » Peter Sturm, MD

Investigate chronic pain in children (Kenneth Goldschneider, MD)

Behavioral Medicine and Clinical Psychology » Susmita Kashikar-Zuk, MD, Anne Lynch-Jordan, MD, and Sara Williams, PhD

Rheumatology » Esi Morgan DeWitt, MD

Investigate learning and competency of intubation skills (Paul Samuels, MD)

Emergency Department » Benjamin Kerrey, MD and Joseph Luria, MD

Critical Care Medicine » Kenneth Tegtmeyer, MD

Investigate cerebral oxygenation during congenital heart disease (Jayant (Nick) Pratap, MD)

Heart Institute » David Morales, MD

Investigate pharmacogenetics of anesthetics and analgesics (Senthilkumar Sadhasivam, MD; Vidya Chidambaran, MD)

Asthma Research » Ji Hong, PhD

Biomedical Informatics » Jarek Meller, PhD and Michael Wagner, PhD

Center for Autoimmune Genomics and Etiology » John Harley, MD

Clinical Pharmacology » Tsuyoshi Fukuda, PhD and Sander Vinks, PhD

Human Genetics » Keijan Zhang, MD

Neurology » Tracy Glaser, MD

Orthopaedics » Peter Sturm, MD

Otolaryngology » Paul Willging, MD

Rheumatology » Kenneth Kaufman, MD

Investigation of factors leading to persistent postoperative pain in children (Vidya Chidambaran, MD; Senthilkumar Sadhasivam, MD)

Behavioral Medicine and Clinical Psychology » Susmita Kashikar-Zuck, MD

Neurology » Andrew Hershey, MD

Orthopaedics » Peter Sturm, MD

Investigate cerebral responses to pain (Dean Kurth, MD; Vanessa Olbrecht, MD)

Neurosurgery » Francesco Mangano, MD, Charles Stevenson, MD, and Sudhakar Vadivelu, MD

Investigate cerebral responses to language development (Dean Kurth, MD; John McAuliffe, MD; Vanessa Olbrecht, MD)

Radiology » Scott K. Holland, PhD

Tonsillectomy postoperative outcomes (Rajeev Subramanyam, MD; Anna Varughese, MD)

Adolescent and Transition Medicine » Maria Britto, MD

James M. Anderson Center for Health Systems Excellence » Evaline Allesandrini, MD

Otolaryngology » Paul Willging, MD

Risk factors for surgical site infection in scoliosis (Rajeev Subramanyam, MD; Anna Varughese, MD)

Hospital Medicine » Joshua Schaffzin, MD

Postoperative respiratory outcomes after ambulatory surgery (Rajeev Subramanyam, MD; Anna Varughese, MD)

Quality Improvement » Mary Ann Lenk

Anesthesia outcomes in radiology (Mohamed Mahmoud, MD; Rajeev Subramanyam, MD; Anna Varughese, MD)

Radiology » Robert Fleck, MD

Contributions of aberrant granule cell integration to the development of epilepsy (Steven Danzer, PhD; David Richards, PhD)

Neurology » Katherine Holland-Bouley, MD

Identification and reversal of primary and secondary epileptogenic changes (Steven Danzer, PhD; David Richards, PhD)

Biomedical Informatics » Prakash Velayutham

Developmental Biology » Matthew, Kofron, PhD

Neurology » Katherine Holland-Bouley, MD

Investigate the role of Schwann Cells in peripheral nerve function (Michael Jankowski, PhD)

Developmental Biology » Yutuka Yoshida, PhD

Experimental Hematology and Cancer Biology » Nancy Ratner, PhD

Oncology » Biplap DasGupta, PhD

Investigate the role of glial cells in peripheral nerve function (Michael Jankowski, PhD)

Experimental Hematology and Cancer Biology » Nancy Ratner, PhD

Investigate the epigenetic mechanisms of peripheral nerve function (Michael Jankowski, PhD)

Experimental Hematology and Cancer Biology » Richard Lu, PhD

Investigate the dual role of muscle afferents on cardiovascular reflexes and nociception (Michael Jankowski, PhD)

Heart Institute and Molecular and Cardiovascular Biology » Robert Hinton, MD

Investigate pharmacokinetics of anesthetic agents in the fetuses (Pornswan Ngamprasertwong, MD)

Clinical Pharmacology » Sander, Vinks, PhD

Investigate maternal-fetal hemodynamic changes during fetal surgery (Pornswan Ngamprasertwong, MD)

Fetal Care Center » Foong Yen Lim, MD

Updating guidelines for flexible airway endoscopy in children (Eric Wittkugel, MD)

Otolaryngology » Michael Rutter, MD

Pulmonary Medicine » Robert Wood, MD

Esophageal perforation in a neonate during transesophageal echocardiography for cardiac surgery (Jeffrey Miller, MD)

Cardiology » Chris Statile, MD

Otolaryngology » Catherine Hart, MD

Grants, Contracts, and Industry Agreements

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

08/05/09-07/31/15

\$206,872

Identification and Reversal of Primary and Secondary Epileptogenic Changes

National Institutes of Health

R01 NS 065020

05/01/14-04/30/19

\$218,750

JANKOWSKI, M**Mechanisms of Muscle Afferent Sensitization after Ischemia**

National Institutes of Health

R01 AR 064551

09/17/13-08/31/18

\$212,500

Mechanisms of Postnatal Cutaneous Afferent Development during Inflammation

National Institutes of Health

R03 HD 077483

08/01/13-07/31/15

\$50,000

Molecular Mechanisms of Musculoskeletal Pain After Ischemic Tissue Injury

American Pain Society

09/01/12-08/31/15

\$50,000

LASARGE, C**Contribution of Abnormal Granule Cells to the Development of an Epileptic Hippocampal Network in an Inducible PTEN Knockout Mouse**

National Institutes of Health

F32 NS 083239

09/01/13-08/31/14

\$49,214

SADHASIVAM, S**Personalizing Perioperative Pain Management in Children: A Multicenter Pharmacogenetic Study**

Thrasher Research Fund

04/01/12-03/31/15

\$120,000

SINGH, S**Ontogenetic Silencing of Dentate Granule Cells as an Approach to Block Seizure Progression**

American Heart Association

13PRE16340009

07/01/13-06/30/15

\$26,000

WEIDNER, N**Hospice and Palliative Complementary Pain Management Therapies**

Each One Counts Foundation

01/01/14-12/31/14

\$15,000

Current Year Direct \$1,023,336

Industry Contracts

KURTH, D

Masimo Corporation \$13,860

SADHASIVAM, S

Astellas Pharma Europe BV \$73,614

Current Year Direct Receipts \$87,474

Total \$1,110,810