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Previous Kosaka Best Abstract Award Recipients

2022 Annual Meeting

2022 Award Winners

Kosaka Top Basic Science Award Winner: Andrew McKinstry-Wu, MD

Consciousness and reversible unconsciousness first drew Andrew McKinstry-Wu, MD, to the field of anesthesiology. Now 13 years after he began his residency at Perelman School of Medicine, University of Pennsylvania and later his practice and research, he was recognized for his hard work studying this very topic area. Assistant Professor of Anesthesiology at University of Pennsylvania, he was selected from a competitive field of abstract applicants as the Kosaka Top Basic Science Award recipient at the IARS 2022 Annual Meeting for his research on "Glutamatergic and Adrenergic Neurons Mediate Alpha-2-Agonist-Induced Sedation and Hypnosis in Mice." In the following Q&A interview, he shared some of his insights into his investigations and hopes for the future.

Abstract Title: Glutamatergic and Adrenergic Neurons Mediate Alpha-2-Agonist-Induced Sedation and Hypnosis in Mice

Read Interview with Andrew McKinstry-Wu, MD

Kosaka Top Clinical Research Award Winner: Megan K. Wong, BSE

Megan K. Wong, BSE, a third-year medical student at Duke University School of Medicine, is intrigued by how anesthesia care can impact the brain and patient outcomes. It was this curiosity to better understand these mechanisms that drew her to her current research area, investigating the cause of postoperative cognitive dysfunction and delirium, particularly whether these disorders are related to changes in Alzheimer's disease pathways. In her research, "Cognitive and Cerebrospinal Fluid Alzheimer's Disease Biomarker Changes Over Time in Older Surgical Patients and Matched Nonsurgical Controls," presented at the Kosaka Best Abstract Award Session on Sunday, March 20 at the IARS 2022 Annual Meeting, she, in conjunction with over 100 co-investigators, is determined to unravel some of this mystery. Her determination paid off when she was selected as the 2022 Kosaka Top Clinical Research Award Winner. Learn more about her aspirations for this research and her career in the field of anesthesia.

Abstract Title: Cognitive and Cerebrospinal Fluid Alzheimer's Disease Biomarker Changes Over Time in Older Surgical Patients and Matched Nonsurgical Controls

Read Interview with Megan K. Wong, BSE

Kosaka Top Scholars Presentation Award Winner: Amy S. Tsai, BS (MD Candidate)

Harnessing biotechnology and artificial intelligence as tools to improve patient care spurred fourth-year medical student Amy S. Tsai's interest her current research area. Although still concluding her studies at University of California, Davis School of Medicine, Ms. Tsai caught the attention of the Kosaka Best Abstract Awards Session Judges Max B. Kelz, MD, PhD, and Y.S. Prakash, MD, PhD, with her abstract submission, "Integrated Single-cell and Plasma Proteomic Modeling to Predict Surgical Site Complications, A Prospective Cohort Study." As a result, they selected her as the Top Scholars Presentation Award recipient for the IARS 2022 Annual Meeting. This recognition is just one step towards her aspirations to become an anesthesiologist and her future aims to help improve postoperative outcomes, both perioperatively and preoperatively.

Read Interview with Amy S. Tsai, BS (MD Candidate)

2022 Finalists

BASIC SCIENCE PRESENTATIONS
Ketamine Mitigates Sevoflurane-Induced Persistent Memory Deficits and Prevents Increased Activity of GABAA Receptors in Mice
Dian-Shi Wang, MD, PhD, University of Toronto

CLINICAL RESEARCH PRESENTATIONS
Incidence and predictors of a same-day case cancellation.
Karuna Wongtangman, MD, Montefiore Medical Center

Development and Validation of Machine Learning Model to Predict Postoperative, Post-Discharge Opioids Refills as a Screening Tool for Referral to a Transitional Pain Service Clinic.
Andrew Bishara, MD, UCSF

SCHOLARS PRESENTATIONS
Chemogenetic activation of dopaminergic midbrain neurons accelerates cognitive recovery following dexmedetomidine- but not ketamine-induced loss of consciousness in rats
Kathleen Vincent, PhD, Massachusetts General Hospital

Phase-Locked Acoustic Stimulation Increases Human Thermal Arousal Thresholds during Dexmedetomidine Sedation
Christian S. Guay, MD, Washington University School of Medicine in St. Louis

TOP LATE-BREAKING PRESENTATIONS *(not eligible for award)*
Human Demonstration of a Closed-loop, Wearable Naloxone Injector System
Jacob Sunshine, MD, University of Washington School of Medicine

Variation in postpartum hemorrhage prevalence based on hospital of delivery in California.
Rudolph Davis, MD, MPH, Stanford University School of Medicine

2021 Annual Meeting

2021 Award Winners

Kosaka Best Basic Science Research Award Winner: Shufang He, PhD

Shufang He, PhD, from Stanford University and The Second Hospital of Anhui Medical University, was recognized with the Kosaka Best Basic Science Research Award for her research on "Leveraging TRPV1 genetic divergence between avian and mammalian species to develop a TRPV1 knock-in mouse and a novel analgesic" during the Kosaka Best Abstract Award Session on May 16 at the IARS 2021 Annual Meeting. She discusses how a quandary about why birds can eat hot peppers and mammals avoid them led her to this particular research topic as well as the implications of her research.

Abstract Title: Leveraging TRPV1 genetic divergence between avian and mammalian species to develop a TRPV1 knock-in mouse and a novel analgesic

Read Interview with Shufang He, PhD

Kosaka Clinical Research Award Winner: Keith M. Vogt, MD, PhD

Keith M. Vogt, MD, PhD, from the University of Pittsburgh Medical Center, received the Kosaka Best Clinical Research Award for his research on "Whole-brain network connectivity changes with midazolam sedation during task performance and periodic pain: A functional MRI study in healthy young adults" during the Kosaka Best Abstract Award Session on May 16 at the IARS 2021 Annual Meeting. He reveals why he got interested in human cognition and the implications of his current study.

Abstract Title: Whole-brain network connectivity changes with midazolam sedation during task performance and periodic pain: A functional MRI study in healthy young adults

Read Interview with Keith M. Vogt, MD, PhD

Kosaka Scholars Presentation Award Winner: Yifan Xu, MD, PhD

Yifan Xu, MD, PhD, from Oregon Health and Science University (OHSU), was awarded the Kosaka Best Scholars Presentation Award for her research on "Modulation of Microvascular Blood Flow and Stroke Outcome Via GPR39 in Mice" during the Kosaka Best Abstract Awards Session on May 16 at the IARS 2021 Annual Meeting. She shared insights about her work and what attracted her to neurovascular coupling.

Abstract Title: Modulation of Microvascular Blood Flow and Stroke Outcome Via GPR39 in Mice

Read Interview with Yifan Xu, MD, PhD

2021 Finalists

Basic Science Award Finalists

"Leveraging TRPV1 genetic divergence between avian and mammalian species to develop a TRPV1K^{710N} knock-in mouse and a novel analgesic"

Shufang He, PhD, Stanford University, Stanford, CA, and The Second Hospital of Anhui Medical University, Hefei, China

Using rats, knock-in mice, and wild type mice, this study explored whether introducing a genetically divergent avian transient receptor potential vanilloid 1 channel (TRPV1) sequence by CRISPR/Cas9, a

technology for genetic manipulation, to rodents limits pain responses without exacerbating cellular injury. Findings show it is possible to achieve gene editing in the rodent TRPV1 receptor to carry a single TRPV1 amino acid that is genetically divergent between birds and mammals, and to reduce biochemical and behavioral responses to noxious stimuli in rodents. Designing a cell-permeable peptide targeting the TRPV1 region mimics the effect in rodents and creates a promising lead compound for use in developing a novel analgesic.

"Protective Effects of Hydrogen Gas against Spinal Cord Ischemia Reperfusion Injury: A Microdialysis Study in the Spinal Ventral Horn"
*Aya Kimura, MD, Osaka City University Graduate School of Medicine***,** *Osaka, Japan*

In their experimental study, investigators assessed the efficacy of hydrogen gas (H_2), as a novel neuroprotective gas against spinal cord ischemia-reperfusion injury (SCI). They also described its mechanisms by measuring glutamate concentration in the ventral horn of the spinal cord. Subjects included 36 rats in six groups: sham, SCI only, SCI + 1% or 2% or 3% H_2 inhalation; or SCI + DHK (a selective inhibitor of the glutamate transporter) + 3% H_2 inhalation. Findings show that H_2 inhalation has a protective and concentration-dependent effect against SCI. Glutamate transporter-1 plays an important role in the protective mechanism.

"Reduction in Cerebral Blood Flow During Aeromedical Evacuation-Relevant Hypobaria Following Rat Traumatic Brain Injury"
Gary Fiskum, PhD, University of Maryland School of Medicine, Baltimore, MD

Using adult male rats, researchers tested the hypothesis that cerebral blow flow (CBF) is reduced after traumatic brain injury (TBI) and is further reduced during exposure to aeromedical evacuation (AE)-relevant hypobaria at 24 hours post injury. Results support the recommendation that TBI patients should either wait at least several days before flying or fly at cabin pressure higher than that typically used. Further, the use of high levels of supplemental oxygen should be avoided during flights as hyperoxia can worsen oxidative stress and metabolic dysfunction.

Clinical Research Award Finalists

"Whole-brain network connectivity changes with midazolam sedation during task performance and periodic pain: A functional MRI study in healthy young adults"
Keith M. Vogt, MD, PhD, University of Pittsburgh, Pittsburgh, PA

The authors conducted a secondary analysis of data from a within-subject crossover imaging study that compares midazolam (MDZ) and ketamine (KT) on multiple behavioral and imaging endpoints. Subjects included 16 healthy volunteers, ages 25.7 ± 5.3 years, with 11 males and five females having functional MRI (fMRI) under saline, followed by a target-controlled infusion of MDZ. Findings show the majority of changes in the brain are localized to nodes in the parietal posterior temporal and occipital lobes. In memory tasks, during periodic painful stimulation, light sedation with MDZ causes robust increases in background network connectivity throughout the brain with a predominance of posterior functional connectivity changes.

"Applying Machine Learning to Identify Pediatric Patients at Risk of Critical Perioperative Adverse Events: using the APRICOT Dataset"
Hannah Lonsdale, MBChB, Johns Hopkins University, St Petersburg, FL

Investigators presented a high-performance learning model for classifying patients as high or low risk for perioperative adverse events (PAEs), as a secondary use of the Anesthesia Practice in Children Observational Trial (APRICOT) dataset. Subjects included 30,874 children from 33 countries with severe critical events per APRICOT. Findings show that airway interface, inpatient status, and history of influenza are the most substantial predictive factors for severe PAEs. Individually identifying patients at low risk for critical PAEs may help clinicians identify cases with low to high likelihood of care escalation, which may help in stratifying patients for care at satellite sites.

"Reduction of preoperative anxiety using Virtual Reality vs midazolam: A randomized controlled trial"
Anthony Koo, MD, Phoenix Childrens Hospital, Scottsdale, AZ

Researchers compared the use of virtual reality (VR) to midazolam (MDZ) for reducing preoperative anxiety in surgical patients, and assessing differences in induction, emergence delirium (ED), pain scores, and opioid use. Subjects included 28 first-time surgical patients, ages 5-11 years, having tonsillectomy or tonsillectomy and adenoidectomy. They received MDZ or played an underwater-themed immersion VR game. Findings show VR is equivalent to MDZ for preoperative induction compliance. Postoperatively, patients in the MDZ and VR groups have similar ED, pain scoring, and pain medication use.

Scholars Award Finalists

"Modulation Of Microvascular Blood Flow And Stroke Outcome Via GPR39 in Mice"
Yifan Xu, MD, PhD, Oregon Health and Sciences University, Portland, OR

Researchers investigated the role of G protein-coupled receptor 39 (GPR39) in stroke using GPR39 knock-out (KO) mice. The study tested the hypothesis that GPR39 KO mice sustained a larger infarct during stroke, associated with lower microvascular reperfusion after transient local cerebral ischemia, when compared to wild-type (WT) mice with intact GPR39. Optical imaging showed decreased red blood cell flux in deeper cortical layers after occlusion and KO mice having decreased microvascular reperfusion in cortical layers when compared to WT mice. This suggests that GPR39 plays a protective role in ischemic stroke, making it a potential therapeutic target.

"Perioperative neurocognitive and neuroimaging trajectories in older APOE4 carriers vs non-carriers: A prospective cohort study"
Rosa O. Yang, MS, Duke University School of Medicine, Durham, NC

The authors examined the effect of apolipoprotein E4 (APOE4), the most common genetic variant associated with late-onset Alzheimer's disease (AD), on perioperative neurocognition. Subjects included 140 patients ≥ 60 years scheduled for nonneurologic, noncardiac surgery under general anesthesia. Findings showed APOE4 carriers with significantly greater resting state-functional MRI (rs-fMRI) connectivity differences between the left posterior cingulate and left angular/supramarginal gyrus regions, and between the right entorhinal cortex and left inferior frontal lobe region before surgery. This connectivity pattern decreases more after surgery in APOE4 carriers when compared to noncarriers, resulting in a postoperative normalization of functional connectivity between these brain regions in APOE4 carriers.

"Anesthetic activation of $GABA_A$ receptors in astrocytes triggers a persistent increase in cell-surface expression of $\alpha5GABA_A$ receptors in neurons via IL-1β in mice"

Arsene Pinguelo, PhD Student, University of Toronto, Toronto, Ontario

Using cortical astrocytes and hippocampal neurons from fetal mice, investigators explored mechanisms that raise inhibitory tonic current, the surface expression, linked to postanesthetic cognitive deficits generated by the α5 subunit-containing $GABA_A$ receptors (α5$GABA_A$Rs) in mouse hippocampal neurons. Findings showed anesthetic activation of $GABA_A$Rs in astrocytes triggered the release of IL-1β from astrocytes. The release of IL-1β acts on neurons through phosphorylation of P38 MAPK, driving an increase in α5$GABA_A$R surface expression and function. There is novel cross talk between astrocytic and neuronal $GABA_A$Rs — these may be targets that reduce postanesthesia cognitive deficits.

2019 Annual Meeting

2019 Award Winners

Top Basic Science Research Award Winner: Viola Neudecker, MD, Columbia University Medical Center

Abstract Title: GFAP expression in the visual cortex is increased in juvenile non-human primates that were exposed to anesthesia during infancy

Read Interview with Viola Neudecker, MD

Top Clinical Research Award Winner: Ming Ann Sims, MBBS, National University Hospital Singapore

Abstract Title: Sustaining the Gains – A 6 Year Follow through of the Impact of a Hospital Wide Patient Safety Strategy on Global and Anesthetic Patient Safety Outcomes

Read Interview with Ming Ann Sims, MBBS

Top Scholars Presentation Award Winner:
Jacob Basak, MD, PhD, Washington University School of Medicine in St. Louis

Abstract Title: Bacterial Sepsis Increases Fibrillary Amyloid Load and Neuroinflammation in a Mouse Model of Alzheimer's disease Pathology

Read Interview with Jacob Basak, MD, PhD

2019 Finalists

Top Finalists

Kosaka Best of Meeting Top Finalists - Basic Science Research
Gary Fiskum, PhD, University of Maryland School of Medicine

"Hyperoxic Resuscitation Following Canine Cardiac Arrest Increases Cerebellar Purkinje Neuronal Damage and Inflammatory Microglial Activation"

Jae-woo Lee, MD, University of California, San Francisco School of Medicine
"Therapeutic Effects of Hyaluronic Acid in E. coli Bacterial Pneumonia In the Ex Vivo Perfused Human Lungs"

Kosaka Best of Meeting Top Finalists - Clinical Research
Ethan L. Chambers, MD, University of Miami / Jackson Memorial Hospital
"Opioid Therapy Algorithm For Chronic Non-Cancer Pain Based on APS, AAPM, CDC, ASA and ASRA Guidelines and Position Statements"

Domagoj Mladinov, MD, PhD, University of Alabama at Birmingham (UAB)
"Effects of incubating packed red blood cells with common infusion crystalloids and medications on red blood cell lysis, aggregation and deformability"

Kosaka Best of Meeting Top Finalists - Scholars
Michael P. Schnetz, MD, PhD, University of Pittsburgh Medical Center
"Response to inhaled anesthetics measured by the Triple Variable Index reveals population-specific patterns of intraoperative hypotension exposure"

Shinji Sugita, MD, University of California, San Francisco School of Medicine
"Therapeutic Effects of High Molecular Weight Hyaluronic Acid in Ex Vivo Perfused Marginal Human Lungs Injured with Pseudomonas Aeruginosa"

Finalists
Kosaka Best of Meeting Finalists - Basic Science Research
Mervyn Maze, MB, ChB, University of California, San Francisco School of Medicine
"Dexmedetomidine prevents lipopolysaccharide (LPS)-induced neuroinflammation and cognitive decline through an α2A adrenoceptor mechanism in mice"

Scott M. Pappada, PhD, The University of Toledo College of Medicine and Life Sciences
"A Novel Learning Management System to Revolutionize Generation, Administration, and Assessment of Simulation-Based Medical Education"

Kosaka Best of Meeting Finalists - Clinical Research
Matthias Görges, PhD, The University of British Columbia
"The effect of low dose intra-operative ketamine on closed-loop controlled general anesthesia; a randomized controlled equivalence trial"

Thomas G. Kannampallil, PhD, Washington University School of Medicine in St. Louis
"Patient-Reported In-hospital Complications and Self-Reported Cognitive Function 1-Year After Surgery"

Dustin R. Long, MD, University of Washington Medicine
"Epidemiology of Surgical Site Infection in Spinal Fusion Surgery and Patterns of Discordance with Surgical Antibiotic Prophylaxis: A Retrospective Case-Level Analysis"

Christina R. Miller, MD, Johns Hopkins Hospital

“Poiseuille's Law Demonstration to Compare Flow Rates with Commonly Used Vascular Catheters and IV Tubing Accessories”

Seshadri Mudumbai, MD, Stanford University School of Medicine
“Implementation of a Distributed Research Network Virtual Data Warehouse for a Multi-Center Observational Study”

Tetsu Ohnuma , MD, MPH, Duke University Medical Center
“Effects of acetaminophen, NSAIDs, gabapentinoids and their combinations on the day of surgery in total hip and knee arthroplasties”

Laurence Ring, MD, Columbia University Medical Center
“Contingency planning to overcome critical shortages of hyperbaric bupivacaine for obstetric anesthesia care”

Kosaka Best of Meeting Finalists - Scholars
Stephen Ellison, MD, PhD, Duke University Medical Center
“Novel Circulating Metabolic Markers Improve Discrimination of Metabolic Health Independent of Weight”

Thomas Bunning, BS, Duke University Medical Center
“The INTUIT Study: Investigating Neuroinflammation Underlying Postoperative Neurocognitive Dysfunction and Delirium in Older Adults”

Cheshire Hardcastle, MSc, University of Florida
“The Left Angular Gyrus and Dorsal Anterior Cingulate Cortex: Key Regions for Pre-Post Operative Functional Resting State Decline?”

Soo Young Kim, MD, Asan Medical Center
“Risk Factors for Acute Kidney Injury after Primary Total Correction of Coarctation of the Aorta (COA) and Transposition of the Great Arteries (TGA) in Infants: A Retrospective Cohort Study”

Sean Moore, MD, MBA, Duke University Medical Center
“Preoperative Gabapentinoids Increase Risk of Postoperative Opioid-Related Respiratory Depression in Adult Patients Undergoing Total Hip and Knee Arthroplasties”

Khoa Nguyen, BS, University of Central Florida
“Ventilator-Induced Lung Injury in a Rat Model of Pulmonary Fibrosis is Influenced by Disease Severity and Tidal Volume”

Jarret Weinrich, PhD, University of California, San Francisco School of Medicine
“Imaging Cortical Activity During General Anesthesia: Insights into Cortical Pain Processing in Mice”

2018 Annual Meeting

2018 Award Winners

Clinical Research Award Winner

Neuroscience in Anesthesiology and Perioperative Medicine

1393. Optical Neuromonitoring Detects Brain Hypoxia

David R. Busch[1], Wesley B. Baker[2], Wensheng Guo[2], Lian He[3], Mamadou Diop[4], Daniel Milej[4], Venkaiah Kavuri[3], Olivia Amendolia[3], Ramani Balu[3], Keith St. Lawrence[4], Arjun G. Yodh[3], William A. Kofke[5]
[1]University of Texas Southwestern, Dallas, TX, [2]Children's Hospital of Philadelphia, Philadelphia, PA, [3]University of Pennsylvania, Philadelphia, PA, [4]University of Western Ontario, London, Ontario, Canada, [5]Hospital of the University of Pennsylvania, Philadelphia, PA

Basic Science Research Award Winner

Pain Mechanisms

955. GABA neurons in the rostromedial tegmental nucleus modulate analgesia in mice

Norman E. Taylor[1], Hu Long[2], JunZhu Pei[3], Phanidhar Kukutla[1], Ksenia Y. Vlasov[3], Ken Solt[4], Gary J. Brenner[4]
[1]Massachusetts General Hospital, Boston, MA, [2]West China Hospital of Stomatology, Chengdu, China, [3]Massachusetts Institute of Technology, Cambridge, MA, [4]Harvard Medical School, Boston, MA

Scholars Abstracts Award Winner

Neuroscience in Anesthesiology and Perioperative Medicine

953. Power Spectrum and Frontal Alpha Band Activity Saturation Predicts Loss of Response to Verbal Command in Older Adults during Anesthetic Induction with Propofol: A Diagnostic Test Approach

Carlos M. Fuentes, Juan C. Pedemonte, Andrea Sanchez, Martin Irani, Mohit Rana, Victor Contreras, Ignacio Cortinez
Pontificia Universidad Catolica de Chile, Santiago de Chile, Chile

2018 Finalists

Clinical Research Finalists

Ambulatory Anesthesia

1256. Finding the Body Mass Index Threshold for Selection of Patients for Ambulatory Open Hernia Repair

Eric Rosero, Girish Joshi
UT Southwestern Medical Center, Dallas, TX

Pediatric Anesthesiology

1099. Intraoperative intravenous infusion of lidocaine for better postoperative analgesia in children undergoing laparoscopic hernia repair

Ji-Min Lee[1], Jeongrim Lee[2]
[1]Severance Hospital, Yonsei University College of Medicine, Seoul, Korea, [2]Yonsei University College of Medicine, Seoul, Korea

Basic Science Research Finalists

Anesthetic Pharmacology
1410. Identification of a modulatory site of action for the volatile anesthetic isoflurane in TREK1 tandem pore potassium channels
Paul M. Riegelhaupt[1], Kellie Woll[2], Thomas T. Joseph[2], Kiran A. Vaidya[1], Crina M. Nimigean[1], Roderic G. Eckenhoff[2]
[1]Weill Cornell Medicine, New York, NY, [2]University of Pennsylvania Perelman School of Medicine, Philadelphia, PA

Neuroscience in Anesthesiology and Perioperative Medicine
1388. Activation of Mouse Orexin Neurons Facilitates Anesthesia Emergence and Increases Pain tolerance
Wei Zhou, Kevin Cheung, Zhonghui Guan, Philip A. Kurien, Lily Jan, Lynn Wang
University of California, San Francisco, San Francisco, CA

Scholars Abstracts Finalists

Geriatric Anesthesia
823. Considerations for Scoring the Clock Drawing Test for Impairment of Geriatric Patients in the Perioperative Setting: A Comparison of Three Common Scoring Criteria
Mitchel Y. Zhang, Bailey Frei, Kristen Woodward, Shawna Amini, Patrick J. Tighe, Chris Giordano, Catherine Price
University of Florida, Gainesville, FL

Neuroscience in Anesthesiology and Perioperative Medicine
928. Midazolam Sedation during the Periodic Experience of Pain Decreases Functional Connectivity Both within and between Brain Systems for Pain Processing and Memory Encoding
Christopher T. Smith, Keith M. Vogt, James W. Ibinson
University of Pittsburgh, Pittsburgh, PA

2017 Annual Meeting

2017 Award Winners

Clinical Research Award Winner
Geriatric Anesthesia
GA 74 (1596): Persistent Pain is Associated with Accelerated Memory Decline and Dementia in a Longitudinal Cohort of Elders
Elizabeth L Whitlock, MD, MSc, L. G. Diaz-Ramirez, MS, M. M. Glymour, ScD, MS, W. J. Boscardin, PhD,

Kenneth E. Covinsky, MD, Alexander K. Smith, MD, MPH
University of California, San Francisco School of Medicine, San Francisco, California

Basic Science Research Award Winner
Anesthetic Pharmacology
AP 6 (1785): High Throughput Screening for Novel General Anesthetics in Larval Zebrafish
Xiaoxuan Yang, MD[1], Youssef Jounaidi, PhD[2], Jennifer Dai, PhD, MS[2], Francisco Marte, BA[2], Renee V. Daigle, PhD[2], Stuart Forman, MD, PhD[2]
[1]Shanghai Jiao Tong University School of Medicine, Shanghai, China, [2]Massachusetts General Hospital, Harvard Medical School, Boston, Massachusetts

Scholars Award Winner
Sleep Medicine
SM 16 (1404): Using DVPRS as a Single-Item Screening Tool for Postoperative Sleep Disturbance
Albert Hsu, MD, Christian Calilung, MSc, Winifred Rojas, BSN, RN, CCRP, Krista Highland, PhD, Chester Buckenmaier, MD, Michael Kent, MD
Walter Reed National Military Medical Center, Bethesda, Maryland

2017 Finalists

Clinical Research Finalists

Airway Management
AM 37 (1784): Peak Cervical Spinal Cord Strain Predictions are Affected by the Point of Force Application during Direct Laryngoscopy
Benjamin C. Gadomski, PhD[1], Brad J. Hindman, MD[2], Brandon G. Santoni, PhD[3], Michael Todd, MD[4], Vincent C. Traynelis, MD[5], Ricardo B. Fontes, MD, PhD[5], Christian M. Puttlitz, PhD[1]
[1]Colorado State University, Fort Collins, Colorado, [2]University of Iowa, Iowa City, Iowa, [3]Foundation for Orthopaedic Research and Education, Tampa, Florida, [4]University of Minnesota, Minneapolis, Minnesota, [5]Rush University, Chicago, Illinois

Pediatric Anesthesiology
PED 27 (1989): Virtual Reality for Educating and Reducing Preoperative Anxiety in Children, Phase 1: Design, Face Validity and Acceptability by Health Care Professionals
Benjamin J. O'Sullivan, MBChB[1], Katie Brezel, BScN[1], Monica Caldera, BScN[1], Maria Salman, MD1, Fahad Alam, MD, FRCPC2, Clyde Matava, MD1

[1]The Hospital for Sick Children, University of Toronto, Toronto, Ontario, Canada, [2]Sunnybrook Health Sciences Centre, Toronto, Ontario, Canada

Basic Science Research Finalists

Neuroscience in Anesthesiology and Perioperative Medicine
NR 37 (2058): Ketamine Reduces Post-Traumatic Brain Injury Neurogenesis and Improves Outcomes in

Mice
Austin Peters, MD, Laura E. Villasana, PhD, Eric Schnell, MD, PhD
Oregon Health & Science University, Portland, Oregon

Neuroscience in Anesthesiology and Perioperative Medicine
NR 37 (1794): GABA Neurons in the Rostromedial Tegmental Nucleus Modulate Arousal and Anesthetic Sensitivity in Mice
Ksenia Y. Vlasov, BA[2], JunZhu Pei, BS[2], Norman E. Taylor, MD, PhD[1], Christa J. Van Dort, PhD[1], Jennifer A. Guidera, BA[1], Emery N. Brown, MD, PhD[1], **Ken Solt, MD[1]**
[1]Massachusetts General Hospital, Harvard Medical School, Boston, Massachusetts, [2]Massachusetts Institute of Technology, Cambridge, Massachusetts

Scholars Finalists

Perioperative Anesthesiology
PA 35 (1124): Postoperative Pulmonary Complications Not Increased With Combined Regional + General Anesthesia Compared to General Anesthesia Alone: A Sub-Analysis of the Perioperative Research Network Study
Kristina Coger, MD[1], Gyorgy Frendl, MD, PhD, FCCM[2], Juraj Sprung, MD, PhD[3], Daryl J Kor, MD[3], Bala Subramaniam, MD[4], Ricardo Martinez Ruiz, MD[5], Jae-Woo Lee[6], William G Henderson[7], Angela Moss, MS[1], Niten Mehdiratta[7], Megan Colwell[8], Karsten Bartels, MD[1], Kerstin Kolodzie[6], Jadelis Giquel[5], Marcos Francisco Vidal Melo[8], Ana Fernandez-Bustamante, MD, PhD[1]
[1]University of Colorado School of Medicine, Aurora, Colorado, [2]Brigham and Women's Hospital, Boston, Massachusetts, [3]Mayo Clinic, Rochester, Minnesota, [4]Beth Israel Deaconess Medical Center, Boston, Massachusetts, [5]University of Miami, Palmetto Bay, Florida, [6]University of California, San Francisco, San Francisco, California, [7]Vanderbilt University Medical Center, Nashville, Tennessee, [8]Massachusetts General Hospital, Harvard Medical School, Boston, Massachusetts

Patient Safety
PS 49 (1048): Intraoperative Neuromuscular Blocking Agent Administration and Hospital Readmission
Tharusan Thevathasan[1], Shirley Shih, MD, MS[2], Kyan C. Safavi, MD, MBA[1], David L Berger, MD[1], Sara M Burns, MS[1], Matthias Eikermann, MD, PhD[1], Jeffrey C. Schneider, MD[2]
[1]Massachusetts General Hospital, Harvard Medical School, Boston, Massachusetts, [2]Massachusetts General Hospital, Spaulding Rehabilitation Hospital, Harvard Medical School, Boston, Massachusetts

2016 Annual Meeting

2016 Award Winners

Basic Science Research Award Winner
Anesthetic Pharmacology
S-38: SELECTIVE ALKYLPHENOL ANESTHETIC BINDING TO GABAA SUBUNITS IN NATIVE NEURONAL TISSUE
K. A. Woll[1], S. Murlidaran[2], J. Hénin[3], G. Brannigan[2], R. Eckenhoff[4]
[1]Department of Pharmacology, University of Pennsylvania Perelman School of Medicine, Philadelphia,

PA, [2]Center for Computational and Integrative Biology, Rutgers University, Camden, NJ, [3]Laboratoire de Biochimie Théorique, Institut de Biologie Physico-Chimique, CNRS and Université Paris Diderot Uppsala Biomedicinska Centrum, Uppsala, Sweden, [4]Department of Anesthesiology & Critical Care, University of Pennsylvania Perelman School of Medicine, Philadelphia, PA

Patient-Oriented Research Award Winner
Critical Care
S-418: GOAL DIRECTED EARLY MOBILIZATION REDUCES ICU LENGTH OF STAY AND IMPROVES FUNCTIONAL MOBILITY: AN INTERNATIONAL MULTI CENTER, RANDOMIZED, CONTROLLED TRIAL (SOMS TRIAL)
S. J. Schaller[1], K. Waak[2], T. Edrich[3], J. M. Walz[4], M. Blobner[1], M. Eikermann[5]
[1]Klinik für Anaesthesiologie, Technische Universitaet Muenchen, Munich, Germany, [2]Department of Physical and Occupational Therapy, Massachusetts General Hospital, Boston, MA, [3]Abteilung für Anästhesie und Operative Intensivmedizin, Klinikum Landkreis Erding, Paracelsus Medical Univ, Erding, Germany, [4]Department of Anesthesiology and Perioperative Medicine, UMass Memorial Healthcare, Worcester, MA, [5]Anesthesia, Critical Care & Pain Medicine, MGH, Boston, MA

Scholars' Abstract Award Finalist, Kosaka Abstract Award Finalist
Neuroscience in Anesthesiology and Perioperative Medicine
S-154: PERFORMANCE OF A TOUCHSCREEN-BASED VISUAL DISCRIMINATION TASK IS RESTORED WITH ELECTRICAL STIMULATION OF THE VENTRAL TEGMENTAL AREA (VTA) IN RATS SEDATED WITH ISOFLURANE
J. D. Kenny[1], N. E. Taylor[1], J. Pei[1], J. Yang[2], K. Vlasov[1], E. N. Brown[1], K. Solt[1]
[1]Anesthesia, Critical Care and Pain Medicine, Massachusetts General Hospital, Boston, MA, [2]Computational and Neural Systems, Caltech, Pasadena, CA

SNACC Award Winner for Best in Neuroscience in Anesthesiology and Perioperative Medicine and Kosaka Abstract Award Finalist

Obstetric Anesthesiology
S-187: KETOROLAC PREVENTS NAUSEA & VOMITING RELATED TO UTERINE EXTERIORIZATION DURING CESAREAN SECTION: A RANDOMIZED, CONTROLLED DOUBLE-BLINDED STUD
S. E. Landa, D. Costa, J. Markley, A. Woglom, Y. Jiang, L. Hormozi
Dept. of Anesthesia, St. Joseph's Regional Medical Center, Paterson, NJ

2016 Finalists

Perioperative Anesthesia
S-455: A NOVEL ASSOCIATION BETWEEN HIGH DENSITY LIPOPROTEIN LEVELS AND THE RISK OF ACUTE KIDNEY INJURY AFTER CARDIAC SURGERY
L. Smith[1], D. K. Smith[2], M. F. Linton[3], F. T. Billings[4]
[1]Anesthesiology, Vanderbilt University Medical Center, Nashville, TN, [2]Biostatistics, Vanderbilt University Medical Center, Nashville, TN, [3]Departments of Medicine and Pharmacology, Division of Cardiovascular Medicine, Division of Cardiology, Vanderbilt University Medical Center, Nashville, TN, [4]Anesthesiology, Vanderbilt University, Nashville, TN

Sleep Medicine
S-336: POSTOPERATIVE OXYGEN THERAPY: AN EFFECTIVE THERAPY FOR PATIENTS WITH OBSTRUCTIVE

SLEEP APNEA
J. Wong[1], M. Singh[1], P. Liao[1], S. Islam[1], M. Andrawes[2], W. Kang[1], F. Chung[1]
[1]Anesthesia, Toronto Western Hospital, University Health Network, Toronto, ON, Canada, [2]Anesthesia, University of Toronto, Toronto, ON, Canada

Technology, Computing and Simulation, Equipment Monitoring
S-344: PULSE-INDUCED CONTINUOUS CARDIAC OUTPUT (PICCO) VERSUS TRANS-ESOPHAGEAL DOPPLER MONITOR (TED) FOR OPTIMIZATION OF FLUID MANAGEMENT IN PATIENTS UNDERGOING MAJOR ABDOMINAL SURGERY. A COMPARATIVE STUDY
H. F. Hassan[1], M. Z. Ali[1], A. I. Refaat[1], M. A. Abdelhaq[2], R. S. Ebied[1], A. S. El-Hadidy[1], N. G. Elsharkawi[2]
[1]Anesthesia and ICU, Theodor Bilharz Research Institute, Giza, Egypt, [2]Anesthesia and ICU, Kasr El-Aini University Hospital, Cairo, Egypt

2015 Annual Meeting

2015 Award Winners

Basic Science Research Award Winner
Whole Exome Sequencing of a Family with Local Anesthetic Resistance
Steven R. Clendenen, MD, Mayo Clinic Florida, Jacksonville, Florida

Patient-Oriented Research Award Winner
Academic Performance after Anesthesia and Surgery during Childhood: A Large-Scale Nation-Wide Study
Pia Glatz, MD, Karolinska Institutet, Stockholm, Sweden

2015 Society for Neuroscience in Anesthesiology and Critical Care (SNACC) Abstract Award Winner
The Aging Brain: An Age-Dependent Analysis of Electroencephalogram Dynamics during Propofol and Sevoflurane General Anesthesia
Patrick Purdon, PhD, Massachusetts General Hospital, Boston, Massachusetts

2015 Finalists

Comparison of the Storz C-Mac D Blade against the Glidescope, Efficacy in the Predicted Difficult Airway: Stage Trial: A Multi-Centered Randomized Controlled Trial
Ansgar M. Brambrink, MD, PhD, Oregon Health & Science University, Portland, Oregon

Applying Latent Class Analysis to Perioperative Risk Stratification in Patients Undergoing Intraabdominal General Surgery
Minjae Kim, MD, MS, Columbia University Medical Center, New York, New York

Maternal Magnesium Protects the Fetal Brain in a Rat Model of Intrapartum Noninfectious Inflammatory Fever
Carlo Pancaro, MD, MHCM, Tufts University School of Medicine, Boston, Massachusetts

Involvement of Ephrin-B2, Not TRPV1 Expression in Sarcomeres of Myofascial Trigger Points in the Upper Trapezius Muscle
Feng Qi, MD, Qilu Hospital of Shandong University, Jinan, China

2014 Annual Meeting

2014 Award Winners

Basic Science Research Award Winner & Society for Neuroscience in Anesthesiology and Critical Care (SNACC) Award Winner
Inflammation Increases Neuronal Sensitivity to General Anesthetics in Mice
Sinziana Avramescu, MD, PhD, FRCPC, University of Toronto, Toronto, Ontario, Canada

Patient-Oriented Research Award Winner
Genome-Wide Assessment for Genetic Variants Associated with Long-Term Heart Failure after Coronary Artery Bypass Graft Surgery
Amanda Fox, MD, MPH, University of Texas Southwestern Medical Center, Dallas, Texas

2014 Finalists

Can Ultrasound Scan of the Airway be used to Predict Difficulty of Airway Management? A Computerized Tomography Validation Study
Faraj Abdallah, MD, University of Toronto, Toronto, Ontario, Canada

Minocycline Fails to Improve Neurologic and Histologic Outcome after Ventricular Fibrillation Cardiac Arrest in Rats
Tomas Drabek, MD, PhD, University of Pittsburgh, Pittsburgh, Pennsylvania

Calabadion II Reverses Steroidal Neuromuscular Blocking Agents Faster than Sugammadex and Reverses the Effects of Benzylisoquinolines, without Altering the Effects of Succinylcholine in Rats
Ingrid Moreno Duarte, MD, Harvard University, Boston, Massachusetts

Effects of Continuous Positive Airway Pressure on Postoperative Adverse Events in Obstructive Sleep Apnea Patients Undergoing Surgery: A Systematic Review and Meta-Analysis
Mahesh Nagappa, MD, DNB, MNAMS, University of Toronto, Toronto, Ontario, Canada

Quantification of Variability in Anesthesia Residency Airway Training
Jonathan Wanderer, MD, Vanderbilt University, Nashville, Tennessee

2013 Annual Meeting

2013 Award Winners

Best of Meeting

Patient-Oriented Research Award Winner

A Study of the Functional Connectivity of the Insula and the Anterior Cingulate Gyrus During Pain Processing
Kevin B. Taylor, MS, University of Pittsburgh, Pittsburgh, Pennsylvania

"I am very humbled to have been chosen for the Best of Meeting Abstract Award in Patient-Oriented Research at the IARS 2013 Annual Meeting! This has further motivated my desire to continue research on the underlying mechanisms of pain and how it can be properly managed in chronic sufferers."

Basic Science Research Award Winner
Neuronal Gamma Protein Kinase C Mediates Remote Cardioprotection in Rats
Eric R. Gross, MD, PhD, Stanford University, Stanford, California

"The IARS meeting and awards session was an excellent platform to share my findings with others in the world interested in anesthesia research, ultimately working towards a common goal to improve patient care. I thank IARS for the opportunity."

Kosaka Abstract Award Winners

Patient-Oriented Research Award Winner
Therapeutic Effects of Bromvalerylurea on Sepsis-Induced Respiratory Failure of Rats by Immunosuppression of Alveolar Macrophages
Tasuku Nishihara, MD, PhD, Ehime University, Toon, Ehime, Japan

"It is a great honor for me to receive the Kosaka Award. The Kosaka Award provides us researchers with high motivation to continue research. I hope our research can contribute to the patients suffering from diseases in the future."

Basic Science Research Award Winner
System-Wide Analysis of the Endogenous Immune Response to Surgical Trauma Using Mass Cytometry (CYTOF)
Brice Gaudilliere, MD, PhD, Stanford University, Stanford, California

"I was very honored to be selected to compete for the Kosaka Award with such brilliant scientists and I was particularly impressed by the quality of the Japanese research in anesthesia. Receiving the Kosaka Award at this early point in my career carried the important message that I have chosen a very promising research field."

Resident Abstract Award Winner

New Horizons in Surgical Analgesia: A Nanostructured Lidocaine Delivery System Provides Equivalent Analgesia to Scheduled NSAIDS in A Rat Model
Jeffrey L. Van Eps, MD, The Methodist Hospital Research Institute, Houston, Texas

"Winning this award from such a prestigious society as the IARS is not only incredibly flattering, but it immediately validates my work in the field and its potential translational, clinical impact. I am honored to participate in the IARS commitment to clinical and academic research excellence."

2013 Society for Neuroscience in Anesthesiology and Critical Care (SNACC) Award Winner

Isoflurane Post-Treatment Ameliorates Germinal Matrix Hemorrhage-Induced Brain Injury By Activating The Sphingosine Kinase/AKT Pathway in Neonatal Rats
Arthur Leitzke, MD, Loma Linda University Loma Linda, California

"It was a privilege to be selected amongst the many abstracts submitted at IARS. The recognition of my research project by SNACC provides support to continue my investigative endeavors. I was honored by the opportunity to present at the Best of Meeting Awards Session."

2013 Finalists

IARS 2013 Best of Meeting Abstract Award Finalists

+2-Acetylcyclopentanone (2-ACP), A 1,3-Dicarbonyl Enol, Provides Hepatoprotection in A Mouse Model of Acetaminophen Toxicity
Boleslav Kosharskyy, MD, *Montefiore Medical Center Albert Einstein Medical College, Bronx, New York*

A Study of the Functional Connectivity of the Insula and the Anterior Cingulate Gyrus During Pain Processing
Kevin B. Taylor, MS, *University of Pittsburgh, Pittsburgh, Pennsylvania*

Cognitive Outcome After Spinal Anesthesia in Infancy
Robert Williams, MD, *Vermont Children's Hospital, University of Vermont Burlington, Vermont*

Cost-Consequence Analysis of Troponin T Screening on the Detection of Perioperative Myocardial Ischemia
Giovanna Lurati Buse, MD, MSc, *University Hospital of Basel, Basel, Switzerland*

Isoflurance Post-Treatment Ameliorates Germinal Matrix Hemorrhage-Induced Brain Injury By Activating The Sphingosine Kinase/AKT Pathway in Neonatal Rats
Arthur Leitzke, MD, *Loma Linda University, Loma Linda, California*

Neuronal Gamma Protein Kinase C Mediates Remote Cardioprotection in Rats
Eric R. Gross, MD, PhD, *Stanford University, Stanford, California*

2012 Annual Meeting

2012 Award Winners

Best of Meeting Abstract Award Winners
Patient-Oriented Research Award Winner
Perioperative Use of the Glucommander® for Glucose Control in Patients Undergoing Cardiac Surgery
Julie L. Huffmyer, MD, University of Virginia, Charlottesville, Virginia

Basic Science Research Award Winner
In Vivo Fluorescence-Mediated Tomography Imaging Demonstrates Atorvastatin Mediated Reduction of Lesion Macrophages in Apoe-Deficient Mice
Jan Larmann, MD, PhD, Hannover Medical School, Hannover, Germany

Kosaka Abstract Award Winners

Patient-Oriented Research Award Winner

Interpatient Variability in Intrathecal Drug Distribution: Cerebrospinal Fluid Pulsatile Magnitude, Frequency, Solution Baricity, and Toxicity Risks
Ying Hsu, University of Illinois at Chicago, Chicago, Illinois

Basic Science Research Award Winner

Usefulness of Ultrasound Guided Central Venous Insertion is Dependent on the Different Clinical Experiences
Tomoko Yorozu, MD, Kyorin University Faculty of Medicine, Mitaka City, Tokyo, Japan

Resident Abstract Award Winner

Lidocaine And Ropivacaine, But Not Chloroprocaine, Attenuate Tnf-Alpha Induced SRC Activation, ICAM-1 Phosphorylation and Migration of Human Lung Cancer Cells Independently from Sodium Channel Inhibition
Tobias Piegeler, MD, University of Illinois Hospital & Health Sciences System, Chicago, Illinois; University Hospital Zurich, Zurich, Switzerland

Best of Category Award Winners

A Phase III, Randomized, Double-Bind, Dose-Controlled, Multicenter Study of the Safety and Efficacy of Dexmedetomidine in Mechanically Ventilated Children
Gregory Hammer, MD, *Stanford University, Stanford, California*

Activation of the CB2 Receptor System Alleviates Amyloid-Induced Memory Deficiency
Jiang Wu, MD, *Cleveland Clinic, Cleveland, Ohio*

Airway Management in Low Tracheal Tumour – An Anaesthetic Challenge
Satinder Gombar, MD, *Government Medical College & Hospital Sector 32, Chandigarh, India*

An Algorithm for Computer Control of Drug Delivery By Continuous Intravenous Infusion: Reduction of Delivery Onset Lag Time In A Laboratory Model
Robert Peterfreund, MD, PhD, *Massachusetts General Hospital, Boston, Massachusetts*

BETA-2 Adrenergic Receptor Polymorphisms Affect Labor Pain in Nulliparous Women
Abdullah Terkawi, *King Farad Medical City, Riyadh, Riyadh, Saudi Arabia*

Chronic Morphine Administration Leads to Increased Neuroapoptosis in Newborn Rats
Dusica Bajic, MD, PhD, *Children's Hospital Boston, Boston, Massachusetts*

Contemporary Analysis of the Incidence and Economic Impact of Postoperative Pneumonia
Santosh Agarwal, BPharm, MS, *Covidien, Mansfield, Massachusetts*

The Effect of Octreotide on Brain Injury After Hepatic Ischemia-Reperfusion in A Rabbit Model
Jinfeng Yang, MD, PhD, *Changsha, Hunan, China*

Epidemiology and Risks of Transfusion Among Different Age Strata in ICU Patients
Seshadri Mudumbai, MD, *VA Palo Alto; Stanford University, Palo Alto, California*

Exposure of TG2576 Mice to Isoflurane Results in No Detectable Increase in Aβ Amyloid Load Via [18F]AV45 Pet Imaging Confirmed with Autoradiographic Investigation
Cody Rowan, MD, *University of Tennessee Graduate School of Medicine, Knoxville, Tennessee*

Glycemic Control and Sciatic Nerve Block Duration in Diabetic Rats
Jeffrey Kroin, PhD, *Rush Medical College, Chicago, Illinois*

In Vivo Fluorescence-Mediated Tomography Imaging Demonstrates Atorvastatin Mediated Reduction of Lesion Macrophages in APOE-Deficient Mice
Jan Larmann, MD, PhD, *Hannover Medical School, Hannover, Germany*

Interpatient Variability in Intrathecal Drug Distribution: Cerebrospinal Fluid Pulsatile Magnitude, Frequency, Solution Baricity, and Toxicity Risks
Ying Hsu, BS, *University of Illinois at Chicago, Chicago, Illinois*

Management of Lumbar Discogenic Pain in Ambulatory Environment
Adel Abadir, MD, *Queens Surgi-Center Queens, New York*

The Minimum Effective Dose of Dexamethasone in Combination with Midazolam in Patients Undergoing Laproscopic Cholecystectomy for Prevention of Post Operative Nausea and Vomiting
Shashi Srivastava, MD, *SGPGIMS, Lucknow, Uttar Pradesh, INDIA*

Microrna-181 Regulates Both Chaperone GRP78 and BCL-2 Family Proteins Changing Outcome from Ischemic Brain Injury In Vitro in Mice
Rona Greenberg Giffard, PhD, MD, *Stanford University School of Medicine, Stanford, California*

Perioperative Use of the Glucommander® for Glucose Control in Patients Undergoing Cardiac Surgery
Julie Huffmyer, MD, *University of Virginia, Charlottesville, Virginia*

Perioperative Systemic Lidocaine for Postoperative Analgesia and Recovery After Abdominal Surgery A META-Analysis of Randomized Controlled Trials
Yanxia Sun, *Beijing TongRen Hospital; Capital Medical University, Beijing, China*

Rocuronium Neuromuscular Blockade is Potentiated By Ondansetron
Olivier Desjardins St-Jean, MD, *University of Montreal, Montreal, Quebec, Canada*

Role of Surveillance Cultures in Identifying the Pathogens Responsible for Ventilator-Associated Pneumonia (VAP): Analysis of Colonization Curves
Jana Hudcova, MD, *Lahey Clinic, Burlington, Massachusetts*

2012 Finalists

Best of Meeting Abstract Award Finalists

Airway Management in Low Tracheal Tumour – An Anaesthetic Challenge
Satinder Gombar, MD, *Government Medical College and Hospital, Chandigarh, India*

Chronic Morphine Administration Leads to Increased Neuroapoptosis in Newborn Rats
Dusica Bajic, MD, *Children's Hospital Boston, Boston, Massachusetts*

Exposure of TG2576 Mice to Isoflurane Results in No Detectable Increase in A Amyloid Load VIA [18F]AV45 Pet Imaging Confirmed with Autoradiographic Investigation
Cody Rowan, MD, *University of Tennessee Medical Center at Knoxville, Knoxville, Tennessee*

In Vivo Fluorescence-Mediated Tomography Imaging Demostrates Atorvastatin Mediated Reduction of Lesion Macrophages in APOE-Deficient Mice
Jan Larmann, MD, *Hannover Medical School, Hannover, Germany*

Perioperative Use of the Glucommander® for Glucose Control in Patients Undergoing Cardiac Surgery
Julie L. Huffmyer, MD, *University of Virginia Medical Center, Crozet, Virginia*

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Shashi Srivastava, MD, *Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow, India*