

14th ANNUAL SAFAR SYMPOSIUM

MAY 16TH-17TH 2016

Patient Safety and Simulation

**Biomarkers in Resuscitation,
Neurocritical Care and Brain Injury**



Peter & Eva Safar Lecturer:
J. Marc Simard, MD, PhD

*"The Sur1-Trpm4 Channel
and Brain Edema"*



**SAFAR CENTER FOR
RESUSCITATION RESEARCH**
UNIVERSITY OF PITTSBURGH

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14th Annual Safar Symposium

May 16, 2016

Location: WISER, 230 McKee Place, Suite 300

1:00	Registration
1:30 – 5:00	PATIENT SAFETY AND SIMULATION
Moderators:	Deborah Farkas, PhD Director, Educational Development, Winter Institute for Simulation, Education and Research (WISER), University of Pittsburgh
	John M. O'Donnell, CRNA, MSN, DrPh Professor and Chair, Department of Nurse Anesthesia Director, Nurse Anesthesia Program, School of Nursing, University of Pittsburgh Associate Director, WISER
1:30 – 1:45	Opening Comments John M. O'Donnell, CRNA, MSN, DrPh Professor and Chair, Department of Nurse Anesthesia Director, Nurse Anesthesia Program, School of Nursing, University of Pittsburgh Associate Director, WISER
1:45 – 2:15	Andrew Musits, MD Simulation and Medical Education Fellow Department of Emergency Medicine, University of Pittsburgh Topic: “The Role of Simulation Based Procedural Skills Training in Patient Safety”
2:15 – 2:25	Discussion
2:25 – 2:55	Adam Z. Tobias, MD, MPH, FACEP Assistant Professor of Emergency Medicine, School of Medicine, University of Pittsburgh Topic: “Is There a Doctor on Board? Turning Medical Students into First Responders with Simulation?”
2:55 – 3:05	Discussion
3:05 – 3:20	Break

3:20 – 3:50	Alisa Sumkin, DO Radiology Resident, University of Pittsburgh Topic: “Managing Contrast Reactions: Preparation Through Simulation”
3:50 – 4:00	Discussion
4:00 – 4:30	Jeff Alvarez, RN, MSN, NE-BC Unit Director – 3E Stepdown, 3W ICU, Respiratory Therapy, Patient Transport, and Dialysis, UPMC East Topic: “Utilizing In-situ Simulation to Improve Condition A Response”
4:30 – 4:40	Discussion
4:40 – 5:00	Closing Remarks
5:00 – 6:00	Tour and Learn about WISER

14th Annual Safar Symposium

May 17, 2016

Location: University Club, Ballroom A – 123 University Place

8:00	Registration
8:30 – 11:45	BIOMARKERS IN RESUSCITATION, NEUROCRITICAL CARE, AND BRAIN INJURY
Moderators:	Robert S.B. Clark, MD Chief, Pediatric Critical Care Medicine Children’s Hospital of Pittsburgh of UPMC Professor, Critical Care Medicine University of Pittsburgh
	Amy K. Wagner, MD Associate Professor and Vice-chair Research and Faculty Development, Physical Medicine and Rehabilitation University of Pittsburgh
8:30 – 8:45	Opening Comments Patrick M. Kochanek, MD, MCCM Professor and Vice Chair, Department of Critical Care Medicine Director, Safar Center for Resuscitation Research, School of Medicine, University of Pittsburgh
8:45 – 9:10	Hector R. Wong, MD Director, Division of Critical Care Medicine, Cincinnati Children’s Hospital Medical Center Professor of Pediatrics, University of Cincinnati College of Medicine Topic: “Biomarkers for Prognostic and Predictive Enrichment Strategies”
9:10 – 9:15	Discussion
9:15 – 9:40	Michael W. Donnino, MD Director, Center for Resuscitation Science, Beth Israel Deaconess Medical Center Associate Professor of Emergency Medicine, Harvard Medical School Topic: “Biomarkers in Cardiac Arrest?”
9:40 – 9:45	Discussion

9:45 – 10:10

John A. Kellum, MD, FACP, MCCM

Professor and Vice Chair for Research,
Department of Critical Care Medicine
Director, Center for Critical Care Nephrology,
University of Pittsburgh

Topic: “Is There a Troponin for the Kidney?”

10:10 – 10:15

Discussion

10:15 – 10:30

Break

10:30 – 10:55

Kevin K.W. Wang, PhD

Director, Program for Neurotrauma, Neuroproteomics &
Biomarkers Research (NNBR), Associate Professor of Psychiatry,
Neuroscience & Physiological Science
Affiliate Professor of Analytic Chemistry, Department of Chemistry,
McKnight Brain Institute, University of Florida, Gainesville, FL

**Topic: “An Update on the Utilities of Biofluid-based
TBI Biomarkers”**

10:55 – 11:00

Discussion

11:00 – 11:25

Ruchira Jha, MD

Assistant Professor, Departments of Critical Care Medicine,
Neurology and Neurosurgery, Safar Center for Resuscitation
Research, University of Pittsburgh

Topic: “Sulfonylurea Receptor-1: From Bench to Bedside?”

11:25 – 11:30

Discussion

11:30 – 11:45

Nancy Caroline Award Presentation and Closing Remarks

Patrick M. Kochanek, MD, MCCM

11:45 – 12:00

Break

12:00 – 1:00

35th Peter and Eva Safar Annual Lectureship in
Medical Sciences and Humanities

J. Marc Simard, MD, PhD

Professor, Departments of Neurosurgery, Pathology, and Physiology
University of Maryland School of Medicine Baltimore, MD

Topic: “The Sur1-Trpm4 Channel and Brain Edema”

1:00 – 1:45

Reception – Ballroom B, 2nd floor

The 36th Peter and Eva Safar Annual Lectureship in Medical Sciences and Humanities

Guest Speaker: **J. Marc Simard, MD, PhD**
Professor, Departments of Neurosurgery, Pathology,
and Physiology,
University of Maryland School of Medicine, Baltimore, MD
Topic: **The Sur1-Trpm4 Channel and Brain Edema**



Dr. J. Marc Simard is Professor of Neurosurgery, Pathology, and Physiology at the University of Maryland School of Medicine, in Baltimore. He is a board-certified clinical neurosurgeon with an active practice of neurosurgery at the university, where he specializes in vascular neurosurgery. He also serves as Chief of Neurological Surgery at the Baltimore VA Medical Center and as attending neurosurgeon at the R Adams Cowley Shock Trauma Center in Baltimore. Dr. Simard is an experienced investigative scientist who is responsible for the original discovery of the Sur1-Trpm4 channel (previously, the Sur1-regulated NCCa-ATP channel) fifteen years ago, and for initiating the work showing involvement of the channel in acute diseases of the CNS, including stroke, subarachnoid hemorrhage, traumatic brain and spinal cord injury, as well as intraventricular hemorrhage, hemorrhagic forms of encephalopathy of prematurity and multiple sclerosis. His work on the Sur1-Trpm4 channel has led to the award of 21 U.S. and international patents.

Multidepartmental Trainees' Research Day

May 17, 2016

Location: University Club, Ballroom A – 123 University Place

- 1:00 – 1:45 Registration and Poster Setup
- 2:00 – 2:05 **Opening Comments**
Patrick M. Kochanek, MD, MCCM
Professor and Vice Chair, Department of Critical Care Medicine
Director, Safar Center for Resuscitation Research,
University of Pittsburgh School of Medicine
- Moderators:** **Yan Xu, PhD**
Professor and Vice Chair for Basic Sciences,
Department of Anesthesiology, University of Pittsburgh
School of Medicine
- Clifton W. Callaway, MD, PhD**
Professor and Executive Vice Chair of Emergency Medicine, UPMC
- 2:05 – 3:20 Poster Session
- 3:20 – 3:30 Break
- 3:30 – 4:45 Oral Presentations
- Department of Anesthesiology
Phillip S. Adams, DO: Increased use of inhaled nitric oxide in single ventricle patients with low nasal nitric oxide undergoing congenital heart surgery
- Department of Critical Care Medicine
Solomon M. Adams, PharmD: Characterizing xenobiotic transporter expression in the hippocampus following experimental pediatric brain injury
- Department of Emergency Medicine
Katharyn L. Flickinger, MS: Neurological outcomes based on PCAC score and ICU length of stay
- Department of Neurological Surgery
Shaun W. Carlson, PhD: Lithium increases synaptic vesicular proteins, improves neurotransmission, and promotes recovery of cognitive function after CCI
- Physical Medicine & Rehabilitation
John Myrnga, BS: COMT Val158Met polymorphism and chronic serum cortisol levels following TBI
- 4:45 – 5:15 Judges Meeting – Conference Room A, 3rd floor
- 5:15 – 5:30 **Awards Presentation**

14th Annual Safar Symposium

May 16, 2016

PATIENT SAFETY AND SIMULATION

Location: WISER, 230 McKee Place, Suite 300



Dr. Andrew Musits is currently a Simulation and Medical Education Fellow in the Department of Emergency Medicine at the University of Pittsburgh in conjunction with the Peter M. Winter Institute for Simulation, Education, and Research (WISER). In this role, he is expanding his knowledge and experience with simulation center operations, research, and education. Dr. Musits is the principal investigator of a controlled trial in educational methods in the simulation lab,

the creator and host of an interdisciplinary online journal club for health care simulation, and serves as the medical director for the Inpatient Crisis System Response Evaluation program. His passion is improving patient care and patient safety through innovative and engaging education for clinicians at all levels.

Dr. Musits is also enrolled in the Masters of Science in Medical Education program at the University of Pittsburgh with anticipated graduation in August 2016. He is board-certified by the American Board of Emergency Medicine and previously served as Chief Resident for The Emergency Medicine Residency at Albany Medical Center in New York. He works clinically for the Department of Emergency Medicine at UPMC and holds a Clinical Instructor appointment at the University of Pittsburgh School of Medicine.



Dr. Adam Z. Tobias is an Assistant Professor of Emergency Medicine at the University of Pittsburgh School of Medicine. He completed medical school, residency, and fellowship training at Pitt and is board-certified in both Emergency Medicine and Emergency Medical Services. He also obtained a Masters of Public Health degree from Pitt's Graduate School of Public Health. He serves as Assistant Medical Director for Pittsburgh EMS and is a past recipient

of the SAEM EMS Fellowship grant.

Dr. Tobias currently serves as course director of several medical student courses, including the fourth-year clerkship in Emergency Medicine, Get Ready for

Residency, and Bystander Emergency Response for Medical Students. In July 2016, he will assume the role of Assistant Program Director for the University of Pittsburgh Emergency Medicine Residency. Dr. Tobias is a past member of the Board of Trustees of the Pennsylvania Medical Society and recipient of the 2014 Arnold Gold Humanism in Medicine Award, 2014 Clinical Educator of the Year award, and the 2016 Alpha Omega Alpha faculty award.



Dr. Alisa Sumkin graduated from the University of Michigan in 2008 with a BS in biology. She went on to receive her DO from Philadelphia College of Osteopathic Medicine in 2013. Alisa completed her internship at Delaware County Memorial Hospital in 2014. She is currently a second year radiology resident at the University of Pittsburgh. Alisa is the representative to the ACR for Western Pennsylvania and serves on the ROAR (Recruitment, Orientation, Activities, and Retention) sub-committee of UPMC Graduate Medical Education Committee. She hopes to pursue a fellowship in Women's Imaging.



Dr. Jeff Alvarez, Unit Director of the Intensive Care Unit, Stepdown Unit, Respiratory Therapy, Dialysis, and Patient Transport at UPMC East, is a graduate of the University of Pittsburgh School of Nursing where he received his BSN. He received his master's degree in nursing leadership and education from Carlow University. Jeff started his career at the Cleveland Clinic and then continued his leadership path to UPMC Presbyterian. While at UPMC Presbyterian, he was the first Director of the ICU Command Center, UPMC's initial exploration into the field of tele-ICU. He served as president and then vice president of the Eta Epsilon chapter of Sigma Theta Tau International, the honor society of nursing. In 2010, Jeff became board certified as a nurse executive. Recent honors include UPMC East's Cameo of Caring Nurse Leader of the Year award in 2015. Jeff has held his current position at UPMC East since January 2012 in which he assisted with the opening, build, design, and processes of the new 156-bed hospital.

14th Annual Safar Symposium

May 17, 2016

BIOMARKERS IN RESUSCITATION, NEUROCRITICAL CARE, AND BRAIN INJURY

Location: University Club, Ballroom A – 123 University Place



Dr. Hector R. Wong is a Professor of Pediatrics at Cincinnati Children's Hospital Medical Center and the University of Cincinnati College of Medicine. He also serves as the Director of Critical Care Medicine at Cincinnati Children's Hospital Medical Center and the Cincinnati Children's Hospital Research Foundation. His research program is focused on sepsis and spans the spectrum from laboratory-based research to translational research. The latter effort is centered on a multi-institutional genomic and clinical database of pediatric septic shock. The database has been leveraged for the discovery of novel therapeutic targets, novel insights regarding the pathobiology of septic shock, the discovery of gene expression-based subclasses of septic shock, and the discovery of novel stratification and diagnostic biomarkers. He is a former graduate of the Critical Care Medicine training program at the University of Pittsburgh.



Dr. Michael W. Donnino is an emergency and critical care physician with research expertise in cardiac arrest and septic shock. Dr. Donnino was the first physician in the United States to train in a six-year combined emergency medicine, internal medicine, and critical care training program leading to board certification in all three fields. He is the Director of the Center for Resuscitation Science at Beth Israel Deaconess Medical Center and Associate Professor of Emergency Medicine at Harvard Medical School. As founder and director of the Center for Resuscitation Science, he leads a multidisciplinary group of physicians and basic scientists in translational critical care research and particularly cardiac arrest research. Dr. Donnino has published over 100 manuscripts and his research group is funded through multiple sources, including the National Institutes of Health and American Heart Association.



Dr. John A. Kellum is a Professor of Critical Care Medicine, Medicine, Bioengineering and Clinical and Translational Science, and Vice Chair for Research within the Department of Critical Care Medicine and Director of the Center for Critical Care Nephrology at the University of Pittsburgh.

Dr. Kellum received his medical degree from the Medical College of Ohio in 1984. His postgraduate training includes an internship and residency in Internal Medicine at the University of Rochester, NY, and a Fellowship in Critical Care Medicine at the University of Pittsburgh Medical Center.

Dr. Kellum is actively involved in education, research, and administration. His research interests span various aspects of Critical Care Medicine, but center in critical care nephrology, sepsis and multi-organ failure, and clinical epidemiology, including consensus development and research methodology. He has authored more than 275 publications and has won several awards for teaching. Dr. Kellum lectures widely and has given more than 300 seminars and invited lectures worldwide related to his research.



Dr. Kevin K.W. Wang is currently at the Departments of Psychiatry and Neuroscience of the University of Florida McKnight Brain Institute as the Director of the Program for Neurotrauma, Neuroproteomics & Biomarkers Research/ Associate Professor. Dr. Kevin Wang is internationally recognized for his original contributions to the fields of traumatic brain injury (TBI)-linked proteolytic enzymes, therapeutic targets, neuroproteomics/systems biology, and

biomarker discovery and validation. The clinical diagnostic utility for two TBI protein biomarkers during the acute phase of brain injury has now been confirmed in peer-reviewed journals. These TBI diagnostic biomarker tests are now moving forward to FDA-approval seeking pivotal clinical study. His current research includes studying mechanisms for CNS injury and substance abuse-induced brain perturbation using systems biology approach. He has published more than 200 peer-reviewed papers, reviews, and book chapters and coauthored eight U.S. patents and coedited four books. Dr. Wang is also past President (2011–12) and current Councilor (2013–present) of the National Neurotrauma Society.



Dr. Ruchira Jha is an Assistant Professor in the Department of Critical Care Medicine. She is a KL2 scholar in the Clinical Research Scholars Program at the CTSI and is being mentored by Dr. Patrick Kochanek, Director of the Safar Center for Resuscitation Research. She and Dr. Kochanek are exploring the role of Sur1 in traumatic brain injury related cerebral edema, both as a biomarker in humans as well as a molecular target in a translational

animal model of TBI.

Dr. Jha also works as an intensivist in the Neurocritical Care Unit at UPMC Presbyterian Hospital. She received her Doctor of Medicine degree from Harvard Medical School in Boston, Massachusetts in May 2008. From June 2008 through June 2009, Dr. Jha was an intern in Internal Medicine at Massachusetts General Hospital in Boston, Massachusetts, and continued her Neurology residency and subsequent Neurocritical Care Fellowship at the combined Harvard Medical School Program at Massachusetts General Hospital and the Brigham and Women's Hospital.

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Program Overview

The Safar Symposium is a two-day, multi-departmental research conference held jointly by the Safar Center for Resuscitation Research and the Peter M. Winter Institute for Simulation, Education, and Research (WISER) in the University of Pittsburgh School of Medicine. The first day of the Symposium will feature lectures and a state-of-the-art simulation program at the WISER institute titled Patient Safety and Simulation. The morning of the second day of the event will feature a block of lectures titled Biomarkers in Resuscitation and Neurocritical Care presented by national authorities on biomarkers and neurocritical care. The Peter and Eva Safar Annual Lectureship in Medical Sciences and Humanities will follow at noon, presented by J. Marc Simard MD, PhD, Professor of Neurosurgery, Pathology, and Physiology at the University of Maryland School of Medicine. The second day of the Symposium will close with the Multi-departmental Trainees' Research Day, with poster and oral presentations given by trainees from the Departments of Anesthesiology, Critical Care Medicine, Emergency Medicine, Neurological Surgery, and Physical Medicine and Rehabilitation.

Learning Objectives

1. To recognize the emerging role of biomarkers in multiple diseases relevant to neurocritical care, resuscitation, and related disorders
2. To learn how to best evaluate the utility and/or value of a biomarker for clinical applications
3. To understand the diagnostic, prognostic, and theranostic applications of biomarkers
4. To become familiar with potential utility of biomarkers in research applications.

Target Audience

Physicians, allied professionals, and trainees with a special interest in neurocritical care, resuscitation, anesthesiology, critical care medicine, emergency medicine, neurological surgery, and/or physical medicine and rehabilitation.

CME Accreditation and Designation Statement

The University of Pittsburgh School of Medicine is accredited by the Accreditation Council for Continuing Medical Education (CME) to provide continuing medical education for physicians.

The University of Pittsburgh School of Medicine designates this live activity for a maximum of **7.25 AMA PRA Category 1 Credit(s)**[™]. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Other health care professionals are awarded 0.7 continuing education units (CEUs), which are equal to 7.2 contact hours.

Disclaimer Statement

The information presented at this CME program represents the views and opinions of the individual presenters and does not constitute the opinion or endorsement of, or promotion by, the UPMC Center for Continuing Education in the Health Sciences, UPMC/ University of Pittsburgh Medical Center or affiliates, and University of Pittsburgh School of Medicine. Reasonable efforts have been taken intending for educational subject matter to be presented in a balanced, unbiased fashion and in compliance with regulatory requirements. However, each program attendee must always use his/her own personal and professional judgment when considering further application of this information, particularly as it may relate to patient diagnostic or treatment decisions including, without limitation, FDA-approved uses and any off-label uses.

Faculty Disclosure:

All individuals in control of the content for this activity including course directors, planning committees, and faculty are required to disclose all relevant financial relationships with any proprietary entity producing, marketing, reselling, or distributing health care goods or services, used on, or consumed by, patients.

No relevant financial relationships with commercial entities were disclosed by:

Anthony E. Kline, PhD, Lori Shutter, MD, Amy Wagner, MD, Ruchira Jha, MD, Paul Phrampus, MD, Jeff Alvarez, RN, MSN, Deborah Farkas, PhD, Andrew Musits, MD, John M. O'Donnell, CRNA, DrPH, Alisa Sumkin, DO, Adam Tobias, MD, Robert Clark, MD, and Natalie Nieman

The following information was disclosed:

Michael Donnino, MD, disclosed that he is a consultant for the American Heart Association.

John A. Kellum, MD, disclosed that he has research support from Alere and Astute Medical, and that he is a consultant at Alere and Astute Medical.

Patrick M. Kochanek, MD, MCCM, disclosed that he is a provisional patent holder for the following patents: Method of Inducing EPR following cardiopulmonary arrest, compositions and methods for identifying subjects at risk for traumatic brain injury; Small Molecule Inhibitors of RNA Binding MOTIF (RBM) proteins for the treatment of acute cellular injury; and Method to improve neurologic outcomes in temperature managed patients.

J. Marc Simard, MD, PhD, disclosed that he has grant support from the NIH, and he is a consultant and stockholder at Remedy Pharmaceuticals.

Kevin K.W. Wang, PhD, disclosed that he holds grants from the NIH and the DOD, and he is a stockholder at Banyan Biomarkers.

Hector R. Wong, MD, disclosed that he has grant support from the NIH and he is the U.S. patent holder for the biomarkers discussed in his lecture.

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The Laerdal Foundation

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Dr. Ake N. Grenvik Endowed Chair in Critical Care Medicine
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