

Neuroscience in Intensive Care International Symposium – America

March 8-9, 2019

Washington DC

“Neurologic Biomarkers in Critical Care: Physiology, Treatment and Recovery”

Abstract

Neurologic biomarkers are quantifiable biological signatures identified in molecular assays of blood or CSF, neurophysiological recordings, and structural or functional changes captured with neuroimaging. Biomarker assessments are the basis for neurologic injury detection, diagnostic classification, treatment selection, and prognostication. In the intensive care unit, the care of patients with acute brain injury is heavily reliant on the analysis of appropriately selected biomarkers. This conference brings together leaders from multiple disciplines to discuss the science of neurologic biomarkers in critical illness, injury and recovery.

Aims

1. To review basic and translational science of neurological biomarkers
2. To discuss the use of biomarkers in the clinical setting of neurologic injury prediction, treatment and prognostication

Deliverables

At the end of this conference, participants will

1. Understand the different types of neurologic biomarkers of relevance in critical care medicine
2. Learn how neurologic biomarkers are derived and validated
3. Make the connection between biomarker research and advances in clinical practice

Friday March 8—Scientific Foundations, Methodologic Innovation

07:30-08:00 Registration and Breakfast

08:00-08:05 Welcome and Introduction of keynote speaker—Robert D Stevens

08:05-08:35 Keynote 1: Biomarker-driven precision neurocritical care

Jose Suarez, Johns Hopkins University

Session 1—Physiological biomarkers

Session Chair—Jan Claassen

08:35-09:05 High frequency EEG oscillations in epileptogenesis

Paul Vespa, UCLA

09:05-09:35 Pathophysiology and impact of cortical spreading depolarization

Jed A. Hartings, University of Cincinnati

09:35-10:05 Measuring autoregulation in the human brain

Kenneth Brady, Northwestern University

10:05-10:25 BREAK

Session 2—Cellular biomarkers

Session Chair—Tarek Sharshar

10:25-10:55 The blood-brain barrier in acute neurological disorders

Martin Lauritzen, University of Copenhagen

10:55-11:25 Microglial activation in acute brain injury

Sujatha Kannan Johns Hopkins University

11:25-11:55 Extracellular vesicles as markers and mediators of neurological diseases

Kenneth W Witwer, Johns Hopkins University

12:00-13:00 LUNCH

Session 3—Imaging biomarkers

Session Chair—Robert D Stevens

13:00-13:30 Computational neuroimaging

Michael Miller, Johns Hopkins University

13:30-14:00 Advanced mapping to probe the unconscious brain

Melanie Boly, University of Wisconsin Madison

14:00-14:30 Molecular imaging in brain disorders

Jennifer Coughlin, Johns Hopkins University

14:30-14:50 BREAK

Session 4—Multi-omics biomarkers

Session Chair—Christos Lazaridis

14:50-15:20 Gut microbiota signaling in neurological disorders--TBA

15:20-15:50 Genetics of stroke risk and outcome

Jonathan Rosand, MGH/Harvard University

15:50-16:20 Next generation protein biomarkers in traumatic brain injury

Denes Agoston, Uniformed Services University

Saturday March 9—Neurologic Biomarkers in Intensive Care

07:30-08:00 Registration and breakfast

08:00-08:05 Introduction of keynote speaker—Jan Claassen

08:05-08:35 Keynote 2: Defining endophenotypes in traumatic brain injury

Ramon Diaz Arrastia, University of Pennsylvania

Session 5—Biomarkers for Detection and Diagnosis

Session Chair—Robert D Stevens

08:35-09:05 Significance of ictal-interictal-injury continuum abnormalities in critically ill patients

M. Brandon Westover, MGH/Harvard University

09:05-09:35 Advanced imaging in acute ischemic stroke

Richard Leigh, NIH/NINDS

09:35-10:05 Next generation sequencing in meningoencephalitis

Carlos Pardo, Johns Hopkins University

10:05-10:25 BREAK

Session 6—Biomarkers for Treatment Selection

Session Chair—Chethan Rao

10:25-10:55 Selection of ischemic stroke patients for reperfusion therapy

Tudor Jovin, Cooper University Hospital Camden

10:55-11:25 Multimodality monitoring (BOOST trial)

Lori Shutter, University of Pittsburgh School of Medicine

11:25-11:55 Individualized blood pressure management in TBI (COGITATE trial)

Ari Ercole, University of Cambridge

12:25-13:25 LUNCH

Session 7—Biomarkers of Neurological Crisis

Session Chair—Jose Suarez

13:25-13:55 Critical transitions and applications in critical neurological disorders

Christian Meisel, Harvard University

13:55-14:25 Predicting delirium with neurophysiology and neuroimaging

Arjen Slooter, UMC Utrecht

14:25-14:55 Delayed cerebral ischemia in aneurysmal SAH

Sherry Chou, University of Pittsburgh School of Medicine

14:55-15:25 Neurologic worsening in intracerebral hemorrhage

Wendy Ziai, Johns Hopkins University

15:25-15:45 BREAK

Session 8—Biomarkers for Recovery Prediction

Session Chair—Christos Lazaridis

15:45-16:15 Neural plasticity and recovery after brain trauma

Neil Harris, UCLA

16:15-16:45 Cognitive and functional recovery after hypoxic ischemic encephalopathy

Robert D. Stevens, Johns Hopkins University

16:45-17:15 Hidden command following in unresponsive tients and prediction of recovery

Jan Claassen, Columbia University

Closing Remarks

Jose Suarez