



Join Keystone Symposia
for the 2016 conference on:

Axons: From Cell Biology to Pathology

January 24–27, 2016

Eldorado Hotel & Spa | Santa Fe, New Mexico | USA

Scientific Organizers:

Giampietro Schiavo, Bruce D. Carter and Rejji Kuruvilla

Joint with the conference on:

Traumatic Brain Injury: Clinical, Pathological and Translational Mechanisms

Axons extend distances ranging from a fraction of a millimeter to more than a meter in humans, lengths that require specialized mechanisms for formation, maintenance and regeneration. Given their extreme polarity and size, axons are particularly vulnerable to the risk of degeneration and dysfunction upon injury or disease. This meeting will bring together scientists from multiple disciplines interested in the common goal of addressing problems rooted in axonal cell biology, such as intracellular transport of organelles and guidance, with a view to accelerating progress in the field of axonal biology and pathology. This is a unique meeting that will cover a broad spectrum of the latest developments in axonal research, from development and maintenance, through to survival and repair, in both the central and peripheral nervous system.

Session Topics:

- Axon Cytoskeleton and Specification
- Axonal Degeneration and Regeneration
- RNA Targeting and Local Translation
- Axonal Signaling Mechanisms
- Axonal Membrane Dynamics and Axonal Transport
- Axons and Disease
- Axon-Glia-Blood Vessel Interactions
- Axon, Pathogens and Prion-Like Proteins



Submitting an abstract is a great way of participating in the conference through poster presentation and possible selection for a short talk.

Discounted Registration Deadline: Dec 18, 2015

For additional details, visit

www.keystonesymposia.org/16J4.

KEYSTONE SYMPOSIA™
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KEYSTONE SYMPOSIA

on Molecular and Cellular Biology

Axons: From Cell Biology to Pathology (J4)

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SUNDAY, JANUARY 24

Arrival and Registration

MONDAY, JANUARY 25

Welcome and Keynote Address (J4)

- ***Giampietro Schiavo**, University College London, UK
- ***Bruce D. Carter**, Vanderbilt University School of Medicine, USA
- ***Rejji Kuruvilla**, Johns Hopkins University, USA
- Karl Deisseroth**, Stanford University, USA
Structural and Molecular Interrogation of Intact Biological Systems

Welcome and Keynote Address (J3)

- ***Ann C. McKee**, Boston University / VA Boston Healthcare System, USA
- Maiken Nedergaard**, University of Copenhagen, Denmark
The Glymphatic System and its Importance in Amyloid Clearance

Axon Cytoskeleton and Specification (J4)

- Melissa Rolls**, Pennsylvania State University, USA
Using Live Imaging of Dynamic Microtubules to Understand Axon Injury Responses
- Erik Dent**, University of Wisconsin-Madison, USA
Role of an F-BAR Protein in Inhibiting Axon Outgrowth
- Francisca C. Bronfman**, Catholic University, Chile
Short Talk: Axonal BDNF Promotes Local Axonal Synthesis and Retrograde Transport of the Transcription Factor PPARgamma in an mTOR-Dependent Manner
- Christopher V. Gabel**, Boston University School of Medicine, USA
Short Talk: The What, Where, and When of Activity Induced Calcium Signaling in Neuronal Regeneration
- Jing Jin**, Institute of Molecular Cell Biology, Germany
Short Talk: Ndr1/2 Kinases Regulate Neuronal Polarity through the Regulation of Par3

What Are the Effects of TBI? Evidence from Human Observational Studies (J3)

- ***Lee E. Goldstein**, Boston University, USA
- Ann C. McKee**, Boston University / VA Boston Healthcare System, USA
Potential Long-Term Effects of Repetitive Concussive and Subconcussive Trauma
- Alon Friedman**, Ben-Gurion University of the Negev, Israel
Blood-Brain Barrier Dysfunction as a Biomarker and Target for Treatment in Brain Injuries
- Alan Pearce**, University of Melbourne, Australia
Using Transcranial Magnetic Stimulation to Measure Neurophysiological Responses Following Concussion

Jillian Urban, Wake Forest University, USA
Short Talk: Cumulative Head Impact Exposure in Youth Football Players

Daniel Daneshvar, Boston University, USA
Short Talk: Examining Repetitive Head Impact Exposure Metrics and Risk of Chronic Traumatic Encephalopathy in American Football Players

Poster Session 1

Axonal Degeneration and Regeneration (J4)

- ***Valeria Cavalli**, Washington University, USA
- Marc Hammarlund**, Yale University School of Medicine, USA
Neuronal Regulation of Axon Regeneration
- Trent A. Watkins**, Baylor College of Medicine, USA
DLK-Dependent Regulation of the Degenerative and Regenerative Responses to Axonal Injury
- Richard E. Zigmond**, Case Western Reserve University, USA
Macrophages in Dorsal Root Ganglia (drgs) Promote Nerve Regeneration through a Stat3-Dependent Mechanism
- Peter Walter**, HHMI/University of California, San Francisco, USA
Inhibition of the Integrated Stress Response Restores Cognition After Brain Injury

Workshop 1: TBI, Neuroinflammation and Microvasculopathy (J3)

- ***Maiken Nedergaard**, University of Copenhagen, Denmark
- Rita H. Nguyen**, University of Calgary, Canada
Understanding the Role of Microglia Following Repetitive Mild Traumatic Brain Injury using Intravital Microscopy
- Jon Cherry**, Boston University School of Medicine, USA
Repetitive Head Injury Results in Neuroinflammation that Precedes Chronic Traumatic Encephalopathy Pathology and Scales with Disease Severity
- Barry W. Festoff**, University of Kansas Medical School, Phlogistix LLC, USA
TBI Effects on BBB Neuro-Gliovascular (N-GVU) Units Modeled by Inflammo-Coag Factors In Vitro
- Susanna Rosi**, University of California, San Francisco, USA
In vivo Metabolic Imaging of Neuroinflammation after TBI
- Bertrand Russell Huber**, VA Boston Healthcare, USA
Assessing Long-Term Vascular Dysfunction in Chronic Traumatic Encephalopathy with Fibrinogen Immunohistochemistry
- Dara Bree**, Beth Israel Deaconess Medical Center, Harvard Medical School, USA
Novel Characterisation of Headache-Related Behaviours in a Clinically Relevant Rat Model of Posttraumatic Headache

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RNA Targeting and Local Translation (J4)

***Michael Fainzilber**, Weizmann Institute of Science, Israel

***Christopher V. Gabel**, Boston University School of Medicine, USA

Jeffery L. Twiss, University of South Carolina, USA

Molecular Determinants for mRNA Transport into Axons

Dianna E. Willis, Burke-Cornell Medical Research Institute, USA

Altered RNA Binding Protein Regulation and Axonal RNA Transport in Diabetic Peripheral Neuropathy

Ulrich Hengst, Columbia University, USA

Short Talk: Regulation of Retrograde Transport in Axons through Local Synthesis of Dynein Adaptor Proteins

Alexander Jaworski, Brown University, USA

Short Talk: Operational Redundancy in Axon Guidance through the Multifunctional Receptor Robo3 and its Ligand NELL2

What Are the Effects of TBI? Evidence from Neuroimaging Studies (J3)

***Alon Friedman**, Ben-Gurion University of the Negev, Israel

Jeffrey J. Bazarian, University of Rochester Medical Center, USA

DTI Coupled with Helmet Impact Sensors Provides Insight into the Relationship between Repetitive Head Hits and Traumatic Axonal Injury

Rami Burstein, Harvard Medical School, USA

The Pathophysiology of Trauma Induced Headache

Ramon Diaz-Arrastia, Uniformed Services University of the Health Sciences, USA

Overview of Neuroimaging

TUESDAY, JANUARY 26

Axonal Signaling Mechanisms (J4)

***Marc Hammarlund**, Yale University School of Medicine, USA

***Alexander Jaworski**, Brown University, USA

Steven J. Burden, New York University Medical Center, USA

Bi-Directional Signaling to Form and Preserve Neuromuscular Synapses

Michael Fainzilber, Weizmann Institute of Science, Israel

From Retrograde Injury Signaling to Axon Growth Control

Valeria Cavalli, Washington University, USA

Activating a Regeneration Program with Hypoxia

Bruce D. Carter, Vanderbilt University School of Medicine, USA

Mechanisms of Retrograde Apoptotic Signaling by the p75

Neurotrophin Receptor

Eva Klinman, University of Pennsylvania, USA

Short Talk: Regulation of Neuronal Trafficking and Transport by CDK5

Patti Murphy, University of Pennsylvania, USA

Short Talk: Roundabout2 and Exotosin-like 3 Promote Target Specific Peripheral Nerve Regeneration in vivo

Mechanistic Insights from Animal Studies (J3)

***John M. Lee**, North Shore University Health System, USA

Lee E. Goldstein, Boston University, USA

Acute and Chronic Neuronal Injury: Insights from Murine Models of Blast and Impact TBI

Matt Russo, National Institutes of Health, USA

Short Talk: Role of Resident vs. Peripherally-Derived Myeloid Cells in the Immune Response to Mild Traumatic Brain Injury

Karen Duff, Columbia University, USA

Propagation of Tau Pathology: Lessons Learned from Neurodegenerative Diseases

Andrew Fisher, Boston University, USA

Short Talk: Comparative Modeling of Blast- and Impact-Induced Traumatic Brain Injury

Mark Walter Wojnarowicz, Boston University, USA

Short Talk: Microvasculopathy, Blood-Brain Barrier Dysfunction, and Early Chronic Traumatic Encephalopathy-Linked Neuropathology In a Mouse Model of Concussive Impact Neurotrauma

Axonal Membrane Dynamics and Axonal Transport (J4)

***Subhojit Roy**, University of Wisconsin Madison, USA

Yoshio Goshima, Yokohama City University Graduate School of Medicine, Japan

Axonal Transport Elicited by Axon Guidance Molecules

Rejji Kuruvilla, Johns Hopkins University, USA

Endocytic Trafficking of Neurotrophins in Neural Development

Casper Hoogenraad, Genentech, Inc., USA

Mechanisms of Axon Formation: Microtubule Remodeling and Motor Activity

Karen Duff, Columbia University, USA

Tau Proteinopathy, Neuronal Dyshomeostasis and Neurodegeneration

Mechanistic Insights from Human Studies (J3)

***Lee E. Goldstein**, Boston University, USA

T. Blaine Hoshizaki, University of Ottawa, Canada

The Relationship between Impact Characteristics and Brain Tissue Strain Distributions

Susan Margulies, University of Pennsylvania, USA

Mechanisms of Pediatric TBI - Integrating Human and Animal Studies

Tsang-Wei Tu, National Institutes of Health, USA

Short Talk: GlucoCEST Correlates with 2DG Autoradiography in Monitoring Glucose Metabolism in Mild Traumatic Brain Injury

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Ramon Diaz-Arrastia, Uniformed Services University of the Health Sciences, USA
Short Talk: DTI and MAP-MRI Abnormalities in the Closed Head Injury Model of Engineered Rotational Acceleration (CHIMERA) Mouse Model of Diffuse Axonal Injury

Cheryl Wellington, University of British Columbia, Canada
Short Talk: Traumatic Brain Injury and Steroids

Poster Session 2

WEDNESDAY, JANUARY 27

Axons and Disease (J4)

***James G. Shorter**, University of Pennsylvania, USA

***Patti Murphy**, University of Pennsylvania, USA

Sung O.K. Yoon, Ohio State University, USA
Role of JNK3 in Development of Alzheimer's

Vincenzo De Paola, Imperial College London, UK
Long-Term Imaging of Axon Growth and Calcium Activity in Human iPSC-Derived Neurons from Healthy and Down Syndrome Donors Grafted in the Adult Mouse Brain

Ralph A. Nixon, New York University, Langone Medical Center, USA
Autophagy in Neurological Disorders

Swetha Gowrishankar, University of Illinois at Chicago, USA
Short Talk: Contributions of Amyloid Plaque-Associated Axonal Lysosome Transport and Maturation Defects to Alzheimer's Disease Pathology

Eran Perlson, Tel Aviv University, Israel

From Precision Medicine to Therapies (J3)

***Cheryl Wellington**, University of British Columbia, Canada

Dorian B. McGavern, NINDS, National Institutes of Health, USA
Real-Time Dynamics of Inflammation and Neurodegeneration following Focal Brain Injury

Ramon Diaz-Arrastia, Uniformed Services University of the Health Sciences, USA
Endophenotypes of Traumatic Brain Injury: What We Need to Know for the Next Generation of TBI Clinical Trials

Kaj Blennow, University of Gothenburg, Sweden
Fluid Biomarkers for TBI – Research and Clinical Applications

Michael Chopp, Henry Ford Hospital, USA
Novel Neurorestorative Therapies for Remodeling the CNS and Enhancing Neurological Recovery Post TBI

Dallas C. Hack, USA
TBI Clinical Trials: The Path Forward

Vivian Y.H. Hook, University of California, San Diego, USA
Short Talk: Cathepsin B is a Validated Drug Target for Traumatic Brain Injury

Tatyana Gudz, Medical University of South Carolina, USA
Short Talk: Targeting Sphingosine to Protect Mitochondria after Traumatic Brain Injury

Axon-Glia-Blood Vessel Interactions (J4)

***Jeffery L. Twiss**, University of South Carolina, USA

***Eva Klinman**, University of Pennsylvania, USA

Mary A. Logan, Oregon Health & Science University, USA
Age-Dependent Changes in Glial Responses to Axon Injury and Disease

Patrizia Casaccia, Advanced Science Research Center, USA
Epigenetic Mechanisms Modulating Oligodendroglial Development and Function

Chenghua Gu, Harvard Medical School, USA
Interactions between Nervous and Vascular Systems in the CNS

Subhojit Roy, University of Wisconsin Madison, USA
Short Talk: A Two-Tier Assembly of F-actin in Axons: "Actin Rings" and "Actin Trails"

Axon, Pathogens and Prion-Like Proteins (J4)

***Francisca C. Bronfman**, Catholic University, Chile

Giampietro Schiavo, University College London, UK
Inhibition of Specific Protein Kinases Rescues Retrograde Axonal Transport Defects in Amyotrophic Lateral Sclerosis

James G. Shorter, University of Pennsylvania, USA
Potentiated Protein Disaggregates to Counter Neurodegenerative Disease

Andres Couve, Universidad de Chile, Chile
Short Talk: The Endoplasmic Reticulum and Protein Trafficking in Axons

Lauren Walker, University of Pennsylvania, USA
Short Talk: Axon Self-Destruction: Integrating Sarm1 Activation, NAD+ Depletion, and MAPK Signaling

Therapeutic Approaches to TBI (J3)

***Ramon Diaz-Arrastia**, Uniformed Services University of the Health Sciences, USA

Peter Walter, HHMI/University of California, San Francisco, USA
Short Talk: Inhibition of the Integrated Stress Response Restores Cognition after Brain Injury

Ciaran Hill, University of Cambridge, UK
Short Talk: A Novel Organotypic Brain Slice Model of Traumatic Stretch Injury

Richard M. Ransohoff, Third Rock Ventures, USA
Microglia: A Reintroduction

David K. Menon, University of Cambridge, UK
What Do We Know About TBI? Where Do We Need To Go?

Meeting Wrap-Up: Outcomes and Future Directions (J4)

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***Bruce D. Carter**, Vanderbilt University School of Medicine, USA

***Rejji Kuruvilla**, Johns Hopkins University, USA

Meeting Wrap-Up: Outcomes and Future Directions (Organizers)
(J3)

THURSDAY, JANUARY 28

Departure