National Neurotrauma Society

Neurotrauma2021

Sunday, Jul 11: Zoom **09:00 AM - 09:30 AM**

N01 – Joint Section of Neurotrauma and Critical Care Opening Session

Chair: Eve Tsai

Zoom AANS/CNS

Andres M Rubiano
Professor of Neurosciences and Neurosurgery / Chair of Neurological Surgery Service, Universidad El Bosque / Valle Salud Clinical Network
David Okonkwo
President, AANS / CNS

Eve Tsai, MD,PhD
Associate Professor, Neuroscience Program, Ottawa Hospital Research Institute

Greg Hawryluk
Assistant Professor of Neurosurgery, University of Manitoba

Knowledge Translation of TBI: Algorithms to Courses:International Guidelines for TBI Management: This talk will discuss different international guidelines for the management of TBI, including discussion of guidelines from LMIC´s. The presentation will include the new stratified model for the management of TBI care according to different levels of resources and education. This has been considered a useful model for developing protocols of care in low and limited resources environments.Link to: BootStrap Protocols

Sunday, Jul 11: Zoom **09:00 AM - 09:01 AM**

N01-01 - Introduction of Speakers and Session

Zoom AANS/CNS

Eve Tsai, MD,PhD
Associate Professor, Neuroscience Program, Ottawa Hospital Research Institute

Sunday, Jul 11: Zoom **09:01 AM - 09:10 AM**

N01-02 - AANS/CNS Section on Neurotrauma Chair's Address

Zoom AANS/CNS

David Okonkwo
President, AANS / CNS

Sunday, Jul 11: Zoom **09:10 AM - 09:19 AM**

N01-03 - Knowledge Translation of TBI: Algorithms to Courses

Zoom AANS/CNS

Greg Hawryluk
Assistant Professor of Neurosurgery, University of Manitoba

Sunday, Jul 11: Zoom **09:19 AM - 09:28 AM**

N01-04 - International Guidelines for TBI Management

Zoom AANS/CNS

Andres M Rubiano
Professor of Neurosciences and Neurosurgery / Chair of Neurological Surgery Service, Universidad El Bosque / Valle Salud Clinical Network

Sunday, Jul 11: Zoom **09:28 AM - 09:30 AM**

N01 - Questions

Zoom AANS/CNS

Sunday, Jul 11: Zoom **09:30 AM - 10:15 AM**

N02 - Debate: Treatment of Chronic Subdurals

Chair: Laura Ngwenya

Zoom AANS/CNS

Angelos Kolias
Lecturer in Neurosurgery, University of Cambridge and Addenbrooke's Hospital

George Yang
Resident, University of Cincinnati

Jamie Ullman
Professor, Donald and Barbara Zucker School of Medicine at Hofstra/Northwell

Laura Ngwenya
Assistant Professor, University of Cincinnati

Ramesh Grandhi

In this session, a classic case of chronic subdural hematoma will be presented and speakers will present the various treatment options and the arguments for each.

Sunday, Jul 11: Conference Room A **09:35 AM - 09:36 AM**

N02-01 - Introduction of speakers and debate topic

Conference Room A

Laura Ngwenya
Assistant Professor, University of Cincinnati

Speakers will be introduced to debate the various treatment options for chronic subdural hematomas including dexamethasone, surgery, and embolization.

Sunday, Jul 11: Conference Room A **09:36 AM - 09:40 AM**

N02-02 - Introduction - case, treatment of chronic subdurals

Conference Room A

George Yang
Resident, University of Cincinnati

Sunday, Jul 11: Conference Room A **09:40 AM - 09:48 AM**

Dexamethasone

Conference Room A

Jamie Ullman
Professor, Donald and Barbara Zucker School of Medicine at Hofstra/Northwell

Sunday, Jul 11: Conference Room A **09:48 AM - 09:56 AM**

Surgery

Conference Room A

Angelos Kolias
Lecturer in Neurosurgery, University of Cambridge and Addenbrooke's Hospital

Sunday, Jul 11: Conference Room A **09:56 AM - 10:04 AM**

Embolization

Conference Room A

Ramesh Grandhi

Sunday, Jul 11: Conference Room A **10:04 AM - 10:06 AM**

Rebuttal

Conference Room A

Jamie Ullman
Professor, Donald and Barbara Zucker School of Medicine at Hofstra/Northwell

Sunday, Jul 11: Conference Room A **10:06 AM - 10:08 AM**

Rebuttal

Conference Room A

Angelos Kolias
Lecturer in Neurosurgery, University of Cambridge and Addenbrooke's Hospital

Sunday, Jul 11: Conference Room A **10:08 AM - 10:10 AM**

Rebuttal

Conference Room A

Ramesh Grandhi

Sunday, Jul 11: Conference Room A **10:10 AM - 10:15 AM**

Verdict and discussion

Conference Room A

Sunday, Jul 11 **10:15 AM - 10:30 AM**

Short Break

Sunday, Jul 11: Zoom **10:30 AM - 11:00 AM**

N03 - Debate: Brain Death is Controversial

Chair: Alan Hoffer

Zoom AANS/CNS

Alan Hoffer
Associate Professor, University Hospitals of Cleveland/Case Western Reserve University

Martina Stippler
Director of Neurotrauma, BIDMC/ Harvard Medical School

Uzma Samadani

Xiaofei Zhou

The concept of brain death emerged in the 1950's as medical advances challenged the notion of irreversible organ injury. This brought about new ethical considerations for patients thought to have lethal brain injuries. You will hear from experts in the field of neurotrauma discussing the notion that brain death is controversial. There will be polling of the audience. The discussion will be case-based. Go to PollEv.com/martinastipp555 for the audience polling or textsMARTINASTIPP555 to 22333 to join the session. We will also provide a QR code at the beginning of the talk.

Sunday, Jul 11: Conference Room A **10:30 AM - 10:31 AM**

Introduction of speakers and debate topic

Conference Room A

Alan Hoffer
Associate Professor, University Hospitals of Cleveland/Case Western Reserve University

Sunday, Jul 11: Conference Room A **10:31 AM - 10:35 AM**

Case presentation regarding brain death is controversial

Conference Room A

Xiaofei Zhou

Sunday, Jul 11: Conference Room A **10:35 AM - 10:43 AM**

For

Conference Room A

Uzma Samadani

Sunday, Jul 11: Conference Room A **10:43 AM - 10:51 AM**

Against

Conference Room A

Martina Stippler
Director of Neurotrauma, BIDMC/ Harvard Medical School

Sunday, Jul 11: Conference Room A **10:51 AM - 10:53 AM**

Rebuttal

Conference Room A

Uzma Samadani

Sunday, Jul 11: Conference Room A **10:53 AM - 10:55 AM**

Rebuttal

Conference Room A

Martina Stippler
Director of Neurotrauma, BIDMC/ Harvard Medical School

Sunday, Jul 11: Conference Room A **10:55 AM - 11:00 AM**

Verdict and discussion

Conference Room A

Sunday, Jul 11: Zoom **11:00 AM - 11:30 AM**

N04 - Debate: Controversies in Central Spinal Cord Injury

Chair: Sarah Woodrow

Zoom AANS/CNS

Aditya Vedantam

Allan Levi
Professor and Chairman of Neurological Surgery, University of Miami

John Hurlbert
Professor and Chief of Spinal Surgery, University of Arizona

Sarah Woodrow

Sunday, Jul 11: Conference Room A **11:00 AM - 11:01 AM**

Introduction of speakers and debate topic

Conference Room A

Sarah Woodrow

Sunday, Jul 11: Conference Room A **11:01 AM - 11:05 AM**

Case presentation regarding controversies in central spinal cord injury

Conference Room A

Aditya Vedantam

Sunday, Jul 11: Conference Room A **11:05 AM - 11:13 AM**

Point of view #1 regarding pathophysiology and management

Conference Room A

John Hurlbert
Professor and Chief of Spinal Surgery, University of Arizona

Sunday, Jul 11: Conference Room A **11:13 AM - 11:21 AM**

Point of view #2 regarding pathophysiology and management

Conference Room A

Allan Levi
Professor and Chairman of Neurological Surgery, University of Miami

Sunday, Jul 11: Conference Room A **11:21 AM - 11:23 AM**

Rebuttal

Conference Room A

John Hurlbert
Professor and Chief of Spinal Surgery, University of Arizona

Sunday, Jul 11: Conference Room A **11:23 AM - 11:25 AM**

Rebuttal

Conference Room A

Allan Levi
Professor and Chairman of Neurological Surgery, University of Miami

Sunday, Jul 11: Conference Room A **11:25 AM - 11:30 AM**

Verdict and discussion

Conference Room A

Sunday, Jul 11: Zoom **11:30 AM - 12:00 PM**

N05 - Debate: Cisternostomy or Decompressive Craniotomy for Traumatic Brain Injury

Chair: Greg Hawryluk

Zoom AANS/CNS

Andrew Ajisebutu
Resident Physician, University of Manitoba

David Okonkwo
President, AANS / CNS

Greg Hawryluk
Assistant Professor of Neurosurgery, University of Manitoba

Iype Cherian

Sunday, Jul 11: Conference Room A **11:30 AM - 11:31 AM**

Introduction of speakers and debate topic

Conference Room A

Greg Hawryluk
Assistant Professor of Neurosurgery, University of Manitoba

Sunday, Jul 11: Conference Room A **11:31 AM - 11:35 AM**

Case presentation on cisternostomy or decompressive craniotomy for traumatic brain injury

Conference Room A

Andrew Ajisebutu
Resident Physician, University of Manitoba

Herein we will be presenting two cases of patients who have suffered severe traumatic brain injuries, and will be opening the floor for debate on the role of cisternostomy in their care

Sunday, Jul 11: Conference Room A **11:35 AM - 11:43 AM**

Cisternostomy

Conference Room A

Iype Cherian

Sunday, Jul 11: Conference Room A **11:43 AM - 11:51 AM**

Decompressive craniotomy

Conference Room A

David Okonkwo
President, AANS / CNS

Sunday, Jul 11: Conference Room A **11:51 AM - 11:53 AM**

Rebuttal

Conference Room A

Iype Cherian

Sunday, Jul 11: Conference Room A **11:53 AM - 11:55 AM**

Rebuttal

Conference Room A

David Okonkwo
President, AANS / CNS

Sunday, Jul 11: Conference Room A **11:55 AM - 12:00 PM**

Verdict and discussion

Conference Room A

Sunday, Jul 11 **12:00 PM - 12:45 PM**

Lunch Break

Sunday, Jul 11: Zoom **12:45 PM - 01:20 PM**

N06 - Neurotrauma and COVID

Chair: Emily Sieg

Zoom AANS/CNS

Abenezer Tirsit

Ann Parr
Associate Professor, University of Minnesota

Emily Sieg
Director of Neurotrauma, University of Louisville

P.B. Raksin

Sunday, Jul 11: Conference Room A **12:45 PM - 12:46 PM**

N06-01 - Introduction Speakers and Session

Conference Room A

Emily Sieg
Director of Neurotrauma, University of Louisville

Sunday, Jul 11: Conference Room A **12:46 PM - 12:55 PM**

N06-02 - Neurotrauma and Covid Epidemiology

Conference Room A

Ann Parr
Associate Professor, University of Minnesota

Sunday, Jul 11: Conference Room A **12:55 PM - 01:04 PM**

N06-03 - Neurotrauma and Covid - In the trenches

Conference Room A

P.B. Raksin

Sunday, Jul 11: Conference Room A **01:04 PM - 01:13 PM**

N06-04 - The impact of COVID on Neurosurgical Activities and Neurotrauma at the University of Addis Ababa, Ethiopia

Conference Room A

Abenezer Tirsit

Sunday, Jul 11: Conference Room A **01:13 PM - 01:20 PM**

N06-05 - Questions

Conference Room A

Sunday, Jul 11: Zoom **01:20 PM - 02:00 PM**

N07 - Spinal Cord Pressure Monitoring and Debate on Early Decompression for Acute Spinal Cord Injury

Chair: Paul Arnold

Zoom AANS/CNS

James Harrop
Professor, Depts of Neurological and Orthopedic Surgery, TJUH Neurosurgery

Marios Papadopoulos
Professor, St George's, University of London

Michael Fehlings
Professor of Neurosurgery, University of Toronto

Paul Arnold

Saud Alhamad
Spine Surgery Fellow, University of Ottawa

M. Papadopoulos talk: I will show how to monitor intraspinal pressure (ISP) and spinal cord perfusion pressure (SCPP) in ICU, analogous to intracranial pressure (ICP) and cerebral perfusion pressure(CPP) monitoring for traumatic brain injury. I will introduce multi-modality monitoring from the injury site for spinal cord injury including microdialysis and tissue oxygen. Finally, I will discuss a randomised controlled trial we are setting up termed DISCUS aiming to investigate whether duroplasty is beneficial as a treatment for acute, severe traumatic spinal cord injury.

Sunday, Jul 11: Conference Room A **01:20 PM - 01:21 PM**

Introduction of speakers

Conference Room A

Paul Arnold

Sunday, Jul 11: Conference Room A **01:21 PM - 01:30 PM**

Spinal cord pressure monitoring

Conference Room A

Marios Papadopoulos
Professor, St George's, University of London

Sunday, Jul 11: Conference Room A **01:30 PM - 01:31 PM**

Introduction of speakers and debate topic

Conference Room A

Paul Arnold

Sunday, Jul 11: Conference Room A **01:31 PM - 01:35 PM**

Case presentation regarding timing of decompression for acute spinal cord injury

Conference Room A

Saud Alhamad
Spine Surgery Fellow, University of Ottawa

Sunday, Jul 11: Conference Room A **01:35 PM - 01:43 PM**

Early

Conference Room A

Michael Fehlings
Professor of Neurosurgery, University of Toronto

Sunday, Jul 11: Conference Room A **01:43 PM - 01:51 PM**

Not early

Conference Room A

James Harrop
Professor, Depts of Neurological and Orthopedic Surgery, TJUH Neurosurgery

Sunday, Jul 11: Conference Room A **01:51 PM - 01:53 PM**

Rebuttal

Conference Room A

Michael Fehlings
Professor of Neurosurgery, University of Toronto

Sunday, Jul 11: Conference Room A **01:53 PM - 01:55 PM**

Rebuttal

Conference Room A

James Harrop
Professor, Depts of Neurological and Orthopedic Surgery, TJUH Neurosurgery

Sunday, Jul 11: Conference Room A **01:55 PM - 02:00 PM**

Verdict and discussion and questions regarding spinal cord pressure monitoring

Conference Room A

Sunday, Jul 11 **02:00 PM - 02:15 PM**

Short Break

Sunday, Jul 11: Zoom **02:15 PM - 02:50 PM**

N08 - Non Accidental Neurotrauma

Chair: Tanvir Choudhri

Zoom AANS/CNS

Julian Bailes

Randy Bell
Chief of Neurosurgery, Professor of Surgery, Walter Reed National Military Medical Center and Uniformed Services University of Health Sciences
Tanvir Choudhri

Uzma Samadani

Sunday, Jul 11: Conference Room A **02:15 PM - 02:16 PM**

Introduction speakers and session

Conference Room A

Tanvir Choudhri

Sunday, Jul 11: Conference Room A **02:16 PM - 02:25 PM**

Chronic traumatic encephalopathy

Conference Room A

Julian Bailes

Sunday, Jul 11: Conference Room A **02:25 PM - 02:34 PM**

Penetrating TBI

Conference Room A

Randy Bell
Chief of Neurosurgery, Professor of Surgery, Walter Reed National Military Medical Center and Uniformed Services University of Health Sciences

Sunday, Jul 11: Conference Room A **02:34 PM - 02:43 PM**

Thinkfirst - non accidental trauma

Conference Room A

Uzma Samadani

Sunday, Jul 11: Conference Room A **02:43 PM - 02:50 PM**

Questions

Conference Room A

Sunday, Jul 11: Zoom **02:50 PM - 03:20 PM**

N09 - Debate: Lumbar CSF Drainage for Prevention and Treatment of Intracranial Hypertension in Severe TBI Patients

Chair: David Okonkwo

Zoom AANS/CNS

Andrew Ajisebutu
Resident Physician, University of Manitoba

Greg Hawryluk
Assistant Professor of Neurosurgery, University of Manitoba

Jamshid Ghajar

Sunday, Jul 11: Conference Room A **02:50 PM - 02:51 PM**

Introduction of speakers and debate topic

Conference Room A

David Okonkwo
President, AANS / CNS

Sunday, Jul 11: Conference Room A **02:51 PM - 02:55 PM**

Case presentation regarding lumbar CSF drainage for prevention and treatment of intracranial hypertension in severe TBI patients

Conference Room A

Enyinna Nwachuku

Sunday, Jul 11: Conference Room A **02:55 PM - 03:03 PM**

Point of view #1 regarding pathophysiology and management

Conference Room A

Greg Hawryluk
Assistant Professor of Neurosurgery, University of Manitoba

Sunday, Jul 11: Conference Room A **03:03 PM - 03:11 PM**

Point of view #2 regarding pathophysiology and management

Conference Room A

Jamshid Ghajar

Sunday, Jul 11: Conference Room A **03:11 PM - 03:13 PM**

Rebuttal

Conference Room A

Greg Hawryluk
Assistant Professor of Neurosurgery, University of Manitoba

Sunday, Jul 11: Conference Room A **03:13 PM - 03:15 PM**

Rebuttal

Conference Room A

Jamshid Ghajar

Sunday, Jul 11: Conference Room A **03:15 PM - 03:20 PM**

Verdict and discussion

Conference Room A

Sunday, Jul 11 **03:20 PM - 03:35 PM**

Short Break

Sunday, Jul 11: Zoom **03:35 PM - 04:10 PM**

N10 - Neurocritical Care Management of Neurotrauma Patients

Chair: Maya Babu

Zoom AANS/CNS

Anthony Figaji

Jamie Ullman
Professor, Donald and Barbara Zucker School of Medicine at Hofstra/Northwell

Maya Babu

Shane English

Sunday, Jul 11: Conference Room A **03:35 PM - 03:36 PM**

Introduction of speakers and session

Conference Room A

Maya Babu

Sunday, Jul 11: Conference Room A **03:36 PM - 03:45 PM**

Cortical spreading deoplarization treatments

Conference Room A

Jamie Ullman
Professor, Donald and Barbara Zucker School of Medicine at Hofstra/Northwell

Discuss the recognition of Cortical Spreading Depolarizations in patients with subdural hematomas with targeted and emperic treatment.

Sunday, Jul 11: Conference Room A **03:45 PM - 03:54 PM**

Update on Anticoagulation and Neurotrauma

Conference Room A

Shane English

Sunday, Jul 11: Conference Room A **03:54 PM - 04:03 PM**

Neuromonitoring in pediatrics

Conference Room A

Anthony Figaji

Sunday, Jul 11: Conference Room A **04:03 PM - 04:10 PM**

Questions

Conference Room A

Sunday, Jul 11: Zoom **04:10 PM - 04:40 PM**

N11 - Debate: Preclinical Animal Data is Helpful in Developing Therapies for Humans

Chair: Ann Parr

Zoom AANS/CNS

Abdul Mounnem Kassab
Neurosurgery Resident, University of Ottawa

Ann Parr
Associate Professor, University of Minnesota

Candace Floyd
Associate Professor, University of Utah

Eve Tsai, MD,PhD
Associate Professor, Neuroscience Program, Ottawa Hospital Research Institute

Sunday, Jul 11: Conference Room A **04:10 PM - 04:11 PM**

Introduction of speakers and debate topic

Conference Room A

Ann Parr
Associate Professor, University of Minnesota

Sunday, Jul 11: Conference Room A **04:11 PM - 04:15 PM**

Preclinical animal data is helpful in developing therapies for humans

Conference Room A

Abdul Mounnem Kassab
Neurosurgery Resident, University of Ottawa

Sunday, Jul 11: Conference Room A **04:15 PM - 04:23 PM**

For

Conference Room A

Candace Floyd
Associate Professor, University of Utah

Sunday, Jul 11: Conference Room A **04:23 PM - 04:31 PM**

Against

Conference Room A

Eve Tsai, MD,PhD
Associate Professor, Neuroscience Program, Ottawa Hospital Research Institute

Sunday, Jul 11: Conference Room A **04:31 PM - 04:33 PM**

Rebuttal

Conference Room A

Candace Floyd
Associate Professor, University of Utah

Sunday, Jul 11: Conference Room A **04:33 PM - 04:35 PM**

Rebuttal

Conference Room A

Eve Tsai, MD,PhD
Associate Professor, Neuroscience Program, Ottawa Hospital Research Institute

Sunday, Jul 11: Conference Room A **04:35 PM - 04:40 PM**

Verdict and discussion

Conference Room A

Sunday, Jul 11 **05:00 PM - 06:00 PM**

NNS & AANS/CNS Welcome Reception

Social Event

Go to SpatialChat to log in. When logging in enter your full name and group or company affiliation, e.g., Rio Febrian (CCHF/Emory). In the “About” box, enter your position, i.e., Research Scientist, Graduate Student, Postdoc, Faculty, etc. Choose “Camera and microphone” on Click “Join Space” To move within a room: drag and drop your avatar bubble To zoom in/out: use your mouse scroll or the +/- in the right lower corner of the screen. To navigate between rooms: click on the room names in the right sidebar To go directly to a specific person: click on their name Make sure ...

Monday, Jul 12: Nature **09:30 AM - 10:00 AM**

Mindfulness Break

Nature

Monday, Jul 12: Grand Ballroom **10:00 AM - 10:15 AM**

NNS President & Program Chair Welcome Address

Grace Griesbach and Michelle LaPlaca

Grand Ballroom

Grace Griesbach
President, National Neurotrauma Society

Michelle LaPlaca
Professor, Georgia Tech / Emory

Monday, Jul 12: Grand Ballroom **10:15 AM - 11:00 AM**

Keynote 01 - Alexis Peterson - TBI-Epidemiology Overview and CDC's Investment in Prevention

Co-Chairs: Kristy Arbogast and Michelle LaPlaca

Grand Ballroom | Keynote | TBI

Alexis Peterson, PhD
Health Scientist, Division of Injury Prevention (DIP), Center for Disease Control

Traumatic brain injury (TBI) is a serious public health concern that can result in disability and death.This presentation describes 2018 national incidence of TBI-related hospitalizations and deaths by age group, principal mechanism of injury , and injury intent. Evidence-based prevention strategies and CDC's investments in primary prevention of TBI will be discussed.

Monday, Jul 12 **11:00 AM - 11:15 AM**

Break

Monday, Jul 12: Conference Room A **11:15 AM - 12:30 PM**

S01 - The Future of Genetics in Predicting TBI Risk and Outcome, and Developing Therapeutics

Co-Chairs: T. Dianne Langford & Regina Armstrong

Conference Room A | TBI

Dianne Langford
Professor, Associate Dean, Research, Temple University

Jane McDevitt
Assistant Professor of Instruction, Temple University

John Yue
Resident Physician, University of California, San Francisco

Lili-Naz Hazrati
Associate professor, Hospital for Sick Children, Pathology, Toronto, Canada

Regina Armstrong
Professor and Chair, Department of Anatomy, Physiology and Genetics, Uniformed Services University of the Health Sciences

Monday, Jul 12: Conference Room A **11:15 AM - 12:30 PM**

S01-01 - Association between genetic polymorphisms and recovery from concussion

Conference Room A TBI

Jane McDevitt
Assistant Professor of Instruction, Temple University

Variability in recovery between concussed athletes can be attributed to several risk factors. One risk factor not definitively explored is genetic variation. Genetic variations such as variable number tandem repeats (VNTR) and single nucleotide polymorphisms (SNPs) are normal in the population, and can lead to disparities in the amount of protein produced, which could be associated with neuronal recovery. Little research has been conducted to investigate these VNTRs and SNPs within genes responsible for increasing risk of concussion as well as prolonged recovery following a concussion. I have implemented prospective cohort designs using a standardized concussion protocol to diagnose and ...

Monday, Jul 12: Conference Room A **11:15 AM - 12:30 PM**

S01-02 - Post TBI Acquired DNA Changes and Cellular Senescence

Conference Room A TBI

Lili-Naz Hazrati
Associate professor, Hospital for Sick Children, Pathology, Toronto, Canada

Each year, approximately 10 million individuals experience traumatic brain injury (TBI), with a vast majority of these injuries classified as mild TBIs (mTBIs) or concussions. Chronic exposure to mTBI has been associated with an increased risk of neurodegenerative disease later in life. It is currently unclear how mTBI drives symptoms, and why some individuals seem to be more susceptible or more resilient to the effects of concussion. In the first part of our our study we analyzed post-mortem human brains with a history of repeated mTBI through involvement in contact sports. We found evidence of inefficient DNA damage repair and ...

Monday, Jul 12: Conference Room A **11:15 AM - 12:30 PM**

S01-03 - Association Of Genetic Variants With Multidimensional Outcomes After Traumatic Brain Injury

Conference Room A TBI

John Yue
Resident Physician, University of California, San Francisco

Genetic determinants of patient response and outcome in traumatic brain injury (TBI) are multifactorial. Genes involved in neuronal repair, neuroinflammation, cell survival/apoptosis, neuroprotection, and neurotransmission are known to influence TBI outcome. The diverse mechanisms by which these genes exert their effects underscore the challenges in understanding TBI, and also suggest the existence of many unexplored treatment modalities. Recent advances in data standardization have facilitated data pooling across multicenter clinical trials, enabling the identification and validation of high-priority candidate genes for TBI recovery. Among neurodegenerative pathways, the Apolipoprotein E epsilon 4 allele confers increased risk for beta-amyloid aggregation and secondary injury, ...

Monday, Jul 12: Conference Room A **11:15 AM - 12:30 PM**

S01-04 - Genetic modifications in mice to modify outcomes and develop therapeutics for TBI

Conference Room A TBI

Regina Armstrong
Professor and Chair, Department of Anatomy, Physiology and Genetics, Uniformed Services University of the Health Sciences

Traumatic brain injury (TBI) causes chronic symptoms and increased risk of neurodegeneration. Axons in white matter tracts, such as the corpus callosum (CC), are critical components of neural circuits and particularly vulnerable to TBI. TBI can result in axon degeneration and/or tau pathology in neurons. The effects of axonal proteins, Tau and SARM1, in neurodegeneration were tested using genetic mouse models. Tau is highly concentrated in axons in healthy adult CNS. Transgenic P301S MAPT mice expressing an aggressive mutation of human tau were used to examine pathological tau in the progression of CC atrophy, an indicator of neurodegeneration. A single ...

Monday, Jul 12: Conference Room B **11:15 AM - 12:30 PM**

S02 - Development of Personalized Medicine Approaches for Spinal Cord Injury

Chair: Warren Alilain

Conference Room B SCI

Brian Kwon
Professor and Canada Research Chair in Spinal Cord Injury, University of British Columbia

Cedric Geoffroy
Assistant Professor, Texas A&M

John Gensel
Associate Professor, University of Kemtucky.

Warren J Alilain
Associate Professor, University of Kentucky

A majority of pre-clinical animal investigations and studies aimed at the development of therapeutic strategies for SCI and the recovery of function have involved the use of in-bred rodent models at similar developmental stages, as well as the same sex. While necessary to minimize confounding variables and enable directly investigating the effectiveness of experimental therapies, this approach does not adequately reflect the human SCI population. Indeed, the SCI population is a diverse and heterogeneous group. There are differences in sex, age at the time of injury, and the length of time living with the injury, as well as in the ...

Monday, Jul 12: Conference Room B **11:15 AM - 12:30 PM**

S02-01 - Genetic predispositions and aversions towards plasticity and recovery after chronic SCI

Conference Room B SCI

Warren J Alilain
Associate Professor, University of Kentucky

Monday, Jul 12: Conference Room B **11:15 AM - 12:30 PM**

S02-02 - State of the Art of translational SCI protein and miRNA biomarkers

Conference Room B SCI

Brian Kwon
Professor and Canada Research Chair in Spinal Cord Injury, University of British Columbia

Given the limitations of the ISNCSCI examination in acute SCI patients, there is increasing recognition that objective biomarkers would have a number of important potential applications. Firstly, biomarkers may reflect the extent of biological damage to the cord, and thus be useful as objective measures of injury severity. A biomarker of injury severity could supplement or theoretically even supplant the ISNCSCI assessment of injury severity for the stratification of patients within an acute SCI trial. Secondly, biomarkers as objective measures of spinal cord damage may be able to more precisely predict spontaneous neurologic recovery over time. Having a better ability ...

Monday, Jul 12: Conference Room B **11:15 AM - 12:30 PM**

S02-03 - The impact of age on axonal regeneration and recovery of function after SCI

Conference Room B SCI

Cedric Geoffroy
Assistant Professor, Texas A&M

Monday, Jul 12: Conference Room B **11:15 AM - 12:30 PM**

S02-04 - Differences between males and females on functional recovery after SCI

Conference Room B

John Gensel
Associate Professor, University of Kemtucky.

The current presentation will highlight our findings along with our most recent observations of both age- and sex-divergent effects of therapeutic interventions for spinal cord injury.

Monday, Jul 12: Conference Room C **11:15 AM - 12:30 PM**

S03 - Making Sense of Gut Feelings

Co-Chairs: Fernando Gomez-Pinil & Sonia Villapol

Conference Room C

Alan Faden
Professor and Associate Dean, University of Maryland School of Medicine

Fernando Gomez-Pinilla
Professor, UCLA

Phillip Popovich
Professor and Chair, The Ohio State University

Sonia Villapol
Assistant Professor, Houston Methodist Research Institute

Session Description Clinical observations indicate that TBI and SCI can cause pathologic changes in systemic organ systems. It has been shown that brain-systemic interactions after trauma are bidirectional and can negatively impact morbidity and mortality. It is becoming to be understood that peripheral dysfunction can be modulated by consumption of dietary factors that, in turn, can override brain function and plasticity. Also, the bacterial composition of the gut has emerged as profound regulator of whole-body physiology. This conglomerate of peripheral processes activated by TBI and diet can alter metabolic and immune homeostasis, and influence brain function and disease. Secondary infections ...

Monday, Jul 12: Conference Room C **11:15 AM - 12:30 PM**

S03-01 - Can a Concussion change your gut microbiome?

Conference Room C

Sonia Villapol
Assistant Professor, Houston Methodist Research Institute

Alterations to the gut microbiome after sport-related concussion and subconcussive impacts in a student athlete cohort Concussions, both single and repetitive, during contact sports cause brain and body alterations in athletes. The role of the brain-gut connection and changes in the microbiota have not been well established after a head injury or concussion-related health consequences. We recruited 33 college football players and collected blood, stool, and saliva samples throughout the athletic season. Analysis of the gut microbiome reveals a decrease in abundance for two bacterial species, Eubacterium rectale and Anaerostipes hadrus, after a diagnosed concussion. No significant differences were found ...

Monday, Jul 12: Conference Room C **11:15 AM - 12:30 PM**

S03-02 - Modulatory action of diet on brain-systemic interaction and TBI pathogenesis

Conference Room C

Fernando Gomez-Pinilla
Professor, UCLA

TBI seems to involve a multiorgan dysfunction in which the action of diet on peripheral metabolism plays a preponderant role. The interactive actions of liver and gut on nutrient metabolism, detoxification, synthesis of lipids and proteins that are essential for brain and body homeostasis are pivotal for the outcome of TBI pathogenesis. I will discuss how fructose intake interacts with TBI to regulate the overall TBI pathogenesis in the brain and body.

Monday, Jul 12: Conference Room C **11:15 AM - 12:30 PM**

S03-03 - Systemic dysfunction in TBI and SCI pathology

Conference Room C

Alan Faden
Professor and Associate Dean, University of Maryland School of Medicine

Monday, Jul 12: Conference Room C **11:15 AM - 12:30 PM**

S03-04 - Spinal cord injury changes the functional potential of the gut microbiome

Conference Room C

Phillip Popovich
Professor and Chair, The Ohio State University

This presentation will provide a brief background on the gut microbiota and changes in the gut microbiota induced by spinal cord injury (SCI). A brief introduction to analytical tools will be provided with a focus on the use of metagenomics to improve the resolution of microbial analysis while also revealing the functional implications of gut dysbiosis after SCI. Data presented in this talk were recently published (see: https://journals.asm.org/doi/full/10.1128/mSystems.01356-20)

Monday, Jul 12: Conference Room D **11:15 AM - 12:30 PM**

S04 - Membrane Disruption Following CNS Injury

Co-Chairs: Audrey Lafrenaye & Ina Wanner

Conference Room D

Audrey Layfrenaye
Assistant Professor, Virginia Commonwealth University

D. Kacy Cullen
Associate Professor, University of Pennsylvania

Ina Wanner
Associate Research Neuroscientist, UCLA

Marta Lipinski
Associate Professor, University of Maryland School of Medicine

Michelle LaPlaca
Professor, Georgia Tech / Emory

Traumatic loading and shear forces generated by traumatic brain injury (TBI) are known to cause cell damage such as membrane disruption and/or mechanoporation, which is characterized by leaky membranes. Membrane disruption of the plasmalemma may rapidly reseal and thereby restore cellular integrity or remain leaky leading to long-term cell damage/cell death. While studies have shown ion gradient breakdown is an immediate consequence, we know little about the acute and long-term biochemical and structural disturbances associated with trauma-induced membrane disruption. Therefore, this session will focus on the exploration of cellular and subcellular traumatic membrane disruption following CNS injury, its pathological consequences ...

Monday, Jul 12: Conference Room D **11:15 AM - 12:30 PM**

S04-01 - Membrane Disruption and Lipid Dysregulation after TBI

Conference Room D

Michelle LaPlaca
Professor, Georgia Tech / Emory

Monday, Jul 12: Conference Room D **11:15 AM - 12:30 PM**

S04-02 - Acute and chronic neuronal membrane disruption in a diffuse TBI rat model

Conference Room D

Audrey Layfrenaye
Assistant Professor, Virginia Commonwealth University

Traumatic brain injury (TBI) is a highly prevalent disease with devastating costs. While morbidity has been linked to diffuse pathologies, our knowledge regarding these TBI-initiated diffuse pathologies is limited. Neuronal membrane disruption is a captivating pathology that can occur in areas of either focal or diffuse cellular injuries. Diffuse membrane disruption is defined by alterations in the integrity of the plasmalemma that permit normally cell-impermeable molecules entrance into the soma. As we are currently unable to detect single-cell pathologies, such as membrane disruption, in the clinic, we use a rat model of central fluid percussion injury to assess diffusely distributed ...

Monday, Jul 12: Conference Room D **11:15 AM - 12:30 PM**

S04-03 - Lysosomal membrane disruption and inhibition of autophagy in TBI

Conference Room D

Marta Lipinski
Associate Professor, University of Maryland School of Medicine

Damage to membranes surrounding intracellular organelles is observed under many pathological conditions, leading to cellular dysfunction and cell death. The mechanisms contributing to organellar membrane damage in vivo are often complex and remain poorly understood. Our data demonstrate that controlled cortical impact (CCI) TBI in mice leads to lysosomal membrane damage and permeabilization (LMP) in neurons, causing lysosomal dysfunction, inhibition of autophagy and neuronal cell death. In order to determine the mechanisms of TBI-induced LMP, we used lysosome-specific LC-MS/MS lipidomics, which allowed us to demonstrate a role for the phospholipase cPLA2 in lysosomal membrane damage. Consistently, inhibition of cPLA2 attenuated ...

Monday, Jul 12: Conference Room D **11:15 AM - 12:30 PM**

S04-04 - Acute Neuronal Membrane Disruption and Dendritic Beading in a Pig Model of Closed-Head Diffuse TBI

Conference Room D

D. Kacy Cullen
Associate Professor, University of Pennsylvania

Closed-head traumatic brain injury (TBI) is caused by rapid motion of the head, resulting in diffuse strain fields throughout the brain. The injury mechanism(s), loading thresholds, and neuroanatomical distribution of cells affected by these strain fields remain poorly understood, especially in the gyrencephalic brain. We utilized a swine model to investigate the incidence of acute cell membrane disruptions and related pathophysiology following head rotational acceleration induced TBI. To assess plasmalemmal compromise, Lucifer Yellow (LY), a small cell-impermeant dye, was delivered intraventricularly and diffused throughout the brain parenchyma prior to injury, with animals euthanized at 15-minutes post-injury. We found that plasmalemmal ...

Monday, Jul 12: Conference Room E **11:15 AM - 12:30 PM**

S05 - Clinical Consortia Updates-TBI: What have we learned so far?

Co-Chairs: David Wright & David Cifu

Conference Room E

David Cifu
Associate Dean for Innovation and Systems Integration, Virginia Commonwealth University

David Menon
Professor & Head of Division, University of Cambridge

David Wright
Professor & Chair, Emory University School of Medicine

Geoff Manley
Professor and Vice Chairman of Neurological Surgery, University of California, San Francisco/San Francisco General Hospital
Michael McCrea
Medical College of Wisconsin

Several major initiatives are on the brink of transforming what we know about traumatic brain injury (TBI) and how we approach the TBI patient. These initiatives include CENTER-TBI, a large scale observational study on TBI conducted in Europe, who's aim is to improve the characterization and classification (precision medicine) of TBI; the Transforming Research and Clinical Knowledge in Traumatic Brain Injury (TRACK-TBI) network studies, a longitudinal observational study with explicit goals of characterizing the clinical, magnetic resonance imaging (MRI), and blood-based biomarker features of TBI, in order to better design the next generation of clinical trials; the Chronic Effects of ...

Monday, Jul 12: Conference Room A **11:15 AM - 12:30 PM**

S05-01 - Analyzing longitudinal trajectories of function and recovery following Traumatic Brain Injury: Findings from TRACK-TBI

Conference Room A

Geoff Manley
Professor and Vice Chairman of Neurological Surgery, University of California, San Francisco/San Francisco General Hospital

Monday, Jul 12: Conference Room A **11:15 AM - 12:30 PM**

S05-02 - CENTER-TBI Updates

Conference Room A

David Menon
Professor & Head of Division, University of Cambridge

Monday, Jul 12: Conference Room A **11:15 AM - 12:30 PM**

S05-03 - Blast-related injury and findings from the Longitudinal Study cohort of the CENC

Conference Room A

David Cifu
Associate Dean for Innovation and Systems Integration, Virginia Commonwealth University

Long-term Impact of Military-relevant Brain Injury Consortium (LIMBIC) 2013-2021 David X. Cifu, MD, Principal Investigator LIMBIC-CENC Objectives: To establish a definitive understanding of the relationship between military service, combat concussion and Veteran status with development of persistent symptoms, mental health disorders, dementia and related neurodegeneration. Method: A prospective, longitudinal cohort of >3,000 of active duty and veteran service members with combat and brain trauma, including low- and high-level blast, exposures is being recruited and followed annually to monitor recovery, to identify the development of new symptoms, mental illnesses, or neurodegeneration, and to identify potential causative factors and effective interventions. Assessments ...

Monday, Jul 12: Conference Room A **11:15 AM - 12:30 PM**

S05-04 - Update on the CARE Consortium

Conference Room A

Michael McCrea
Medical College of Wisconsin

Monday, Jul 12 **12:30 PM - 01:00 PM**

Lunch Break / Free Time

Monday, Jul 12: Conference Room A **01:00 PM - 02:00 PM**

DB01 - Data Blitz

Top 20 Posters

Conference Room A | SCI | TBI

Abdul Mounnem Kassab
Neurosurgery Resident, University of Ottawa

Ahmad Ozair
MBBS Candidate, King George's Medical University, India

Alexandra Adams
PhD Candidate, Rutgers University

Aria Tarudji
Graduate Research Assistant, University of Nebraska-Lincoln

Beth Costine-Bartell
Assistant Professor, Massachusetts General Hospital, Harvard Medical School

Christopher Adam
PhD Candidate , University of Pennsylvania

Coleen Atkins
Associate Professor, University of Miami Miller School of Medicine

Divya Jain
University of Pennsylvania, University of Pennsylvania

Eleni Moschonas
Predoctoral Fellow, University of Pittsburgh

Heather Siedhoff
PhD Candidate, University of Missouri

Jon Richards
Drexel University

Josephina Rau
Texas A&M Health and Science Center

Julia Malewicz
Wayne State University

Lindsey Morrow
Undergraduate Researcher, University of Florida

Max Eisenbaum
PhD Candidate, Roskamp Institute

Nadine Kerr
University of Miami

Pooja Sakthivel
UC Irvine

Saurabh Sinha
University of Pennsylvania

Seyed Mojtaba Hosseini
PhD Student, University of Manitoba

Spencer Murphy
Medical College of Wisconsin

Tabitha Green
Univeristy of Arizona

Zoe Tapp
Pre-Doctoral Research Fellow, The Ohio State University

Don't have time to visit every poster during the poster session? Hear short 3 min talks from the top trainee poster submissions.Monday's Data Blitz session will feature 20 of the top poster abstracts selected to give a fast-paced, 3 min presentation on their research. Presenters will be selected from all trainees who are NNS members and are an

undergraduate student, graduate student, medical student, postdoctoral fellow, or medical resident. This is a terrific way to elevate your poster and share your latest research findings with a broader audience.

Monday, Jul 12: Conference Room A **01:00 PM - 02:00 PM**

W01 - Current Topics in Concussion

Co-Chairs: Kelly Sarmiento & Russell Gore

Conference Room A

Gregory Myer
Director, Sports Performance And Research Center (SPARC), Emory University

Kelly Sarmiento
Public health advisor, Centers for Disease Control and Prevention

Monica Vavilala

Russell Gore
Director, Complex Concussion Clinic, Shepherd Center

This session will cover emerging topics in concussion, including clinical management and engaging patients and their families through education strategies. The Shepherd Center's Dr. Russell Gore and the Centers for Disease Control and Prevention's Kelly Sarmiento will chair this session. Additional speakers include Emory University's Dr. Greg Myer who will cover how to manage internal fluid dynamics to protect the brain from external head trauma.

Monday, Jul 12: Conference Room A **01:00 PM - 02:00 PM**

W01-01 - Post-Concussive Vestibular Impairment: Pathophysiology and Implications for Management

Conference Room A

Russell Gore
Director, Complex Concussion Clinic, Shepherd Center

Vestibular, oculomotor, and balance impairments are common following mild traumatic brain injury (mTBI) and increase the risk for protracted recovery. More than 80% of patients with chronic symptoms after mTBI report symptoms of dizziness, imbalance, and/or visual instability. The pathophysiology underlying these sensory impairments remains elusive and may include both injury of peripheral sensory end organs and/or injury to central networks involved in visual-vestibular processing. This presentation will discuss clinically identifying this subgroup of patients after mTBI, current understanding of these injury mechanisms, and effective interventions.

Monday, Jul 12: Conference Room A **01:00 PM - 02:00 PM**

W01-02 - Your role in educating patients and their families about concussion

Conference Room A

Kelly Sarmiento
Public health advisor, Centers for Disease Control and Prevention

The Children's Health Act of 2000 (H.R. 4365) charged CDC's Injury Center to implement a public information campaign to broaden public awareness of the health consequences of traumatic brain injury (TBI). In response, CDC developed and launched the HEADS UP initiative. Over the last 20 years, CDC HEADS UP's initiative has grown into a cohesive suite of educational materials that share a common goal: to help protect children and adolescents from concussions and other serious brain injuries by raising awareness, enhancing knowledge, and informing action to improve prevention, recognition, and response to concussions. Ms. Sarmiento will provide an update for ...

Monday, Jul 12: Conference Room A **01:00 PM - 02:00 PM**

W01-03 - Perioperative Care for Concussion

Conference Room A

Monica Vavilala

Monday, Jul 12: Conference Room A **01:00 PM - 02:00 PM**

W01-04 - Inside-Out: Harnessing Internal Fluid Dynamics to Protect the Brain from External Head Trauma

Conference Room A

Gregory Myer
Director, Sports Performance And Research Center (SPARC), Emory University

The World Health Organization (WHO) has projected that by the year 2020, Traumatic Brain Injury (TBI) will rank third as a leading cause of the global burden of disease and injury. Current efforts to protect the brain are from outside the skull (helmets, mouthpieces, padding) have not led to any significant reduction in the incidence, nor the extent, of concussive brain injury as they do not limit movement and collision of the brain within. Jugular compression is hypothesized to produce a tighter fit (like “bubble wrap”) of the brain within the cranium, thereby reducing absorbed intracranial forces. In this session ...

Monday, Jul 12: Conference Room B **01:00 PM - 02:00 PM**

W02 - Rigor, Reproducibility, and Statistics in Neurotrauma Research

Co-Chairs: Bruce Lyeth & Gene Gurkoff

Conference Room B

Ben Fitzpatrick
Professor, Loyola Marymount University

Bruce Lyeth
Professor Emeritus, University of California, Davis

Gene Gurkoff
Associate Professor, University of California, Davis

Nicole Lazar
Professor, Pennsylvania State University

Reproducibility of preclinical research is becoming an increasing concern. Efforts in pharmaceutical companies to reproduce high-profile publications have produced alarming failure rates (Begley and Ellis, 2012). Flawed statistical design and analysis are widely recognized (Ioannidis et al, 2014) as an important part of this problem. Button et al (2013), for example, estimated that roughly 50% of published neuroscience studies have power less than 20%. To reduce waste in and accelerate translation of preclinical research, NIH has developed new “Rigor and Reproducibility” guidelines for grant applications (Lauer, 2015). Building on the NNS 2019 workshop, “Deploying Best Practices for Scientific Rigor in ...

Monday, Jul 12: Conference Room E **01:00 PM - 02:00 PM**

W02-01 - Overview of Issues that Lead to Reproducibility Problems in Neurotrauma Research

Conference Room E

Bruce Lyeth
Professor Emeritus, University of California, Davis

This workshop session will discuss issues and problems encountered in neurotrauma research that could contribute to reproducibility. We will begin with definitions of reproducibility and rigor followed by a discussion of common barriers to reproducibility. These barriers include appropriately describing experimental subjects and unique problems with the use of antibodies in biological experiments. Preclinical investigations of new therapeutics will be discussed comparing investigative versus confirmatory research. Finally, we will discuss how the pursuit of novelty and innovation can be a barrier to reproducibility.

Monday, Jul 12: Conference Room A **01:00 PM - 02:00 PM**

W02-02 - Prospective Sample Size Determination for Neurotrauma Research Design

Conference Room A

Ben Fitzpatrick
Professor, Loyola Marymount University

Reproducibility of preclinical animal research has become a source of great concern in recent years. A number of studies have demonstrated difficulties in replicating high-profile results. To address these concerns, NIH has developed new Rigor and Reproducibility guidelines for the grant applicants and reviewers. Among other things, these guidelines call for careful development of the experimental design.A heavy focus on p-values as surrogate for false discovery rates often overlooks the equally important issue of statistical power. When many studies are under-powered, false discovery rates can increase dramatically, with p-values providing poor assessment of scientific discovery. In this talk we will ...

Monday, Jul 12: Conference Room A **01:00 PM - 02:00 PM**

W02-03 - Moving to a World Beyond ’p<0.05’

Conference Room A

Nicole Lazar
Professor, Pennsylvania State University

Recent years have seen an increase for calls to abandon the terminology of "statistical significance" and strict thresholdssuch as 0.05 for determining which scientific results are of interest or worthy of publication in the professional literature. In this talk I will describe the background of the movement and some of the popular proposed alternatives to thetraditional -- though flawed -- "p<0.05" approach. I will also discuss the sorts of institutional change that are neededin order to move to this new way of presenting statistical analysis and what those new modes might look like for scientists.

Monday, Jul 12: Conference Room C **01:00 PM - 02:00 PM**

W03 - Preclinical SCI Models: Bladder and bowel function: Preclinical techniques to explore the patient self-evaluations

Co-Chairs: Gregory Holmes & Charles Hubscher

Conference Room C

Charles Hubscher
Professor, University of Louisville

Emily Besecker
Assistant Professor, Gettysburg College

Gregory Holmes
Professor, Pennsylvania State University College of Medicine

Robert Hoey

Monday, Jul 12: Conference Room B **01:00 PM - 02:00 PM**

W03-01 - Bladder functional assessments

Conference Room B

Robert Hoey

Monday, Jul 12: Conference Room B **01:00 PM - 02:00 PM**

W03-02 - Gastrointestinal functional assessments

Conference Room B

Emily Besecker
Assistant Professor, Gettysburg College

Monday, Jul 12: Conference Room D **01:00 PM - 02:00 PM**

W04 - Preclinical TBI Models 1: Emerging Models (Special Session of the Chinese Neurotrauma Scholar Association (CNSA))

Co-Chairs: Dong Sun & Edward Dixon

Conference Room D

Cheryl Wellington
University of British Columbia

Dong Sun
Profesor, Virginia Commonwealth University

Edward Dixon
Director, Brain Trauma Research Center, University of Pittsburgh School of Medicine

Riyi Shi
Mari Hulman George Professor of Applied Neuroscience; Director, Center for Paralysis Research, Purdue University

Zhihui Yang
Assistant Professor, University of Florida

The classical TBI models that have been used in TBI research are mostly rodent models generated over 20 years ago. These models including fluid percussive injury, cortical impact injury, weight drop model etc. resemble some or partial neuropathological development of TBI seen in clinic. In recent years, several new models have emerged to represent the increasing clinical cases of mild repetitive injury, blast injury for better clinic translation. The selection of a model system is critical for achieving research goals. This session will introduce recently developed new rodent TBI models and discuss their relevance for clinical translations. The session will ...

Monday, Jul 12: Conference Room D **01:00 PM - 02:00 PM**

W04-01 - Neurodegeneration following mild blast-induced traumatic brain injury in rats

Conference Room D

Riyi Shi
Mari Hulman George Professor of Applied Neuroscience; Director, Center for Paralysis Research, Purdue University

Traumatic brain injury (TBI) is associated with increased risk for chronic neurodegeneration, impacting post-injury quality of life. However, little is known about how these deficits initiate and manifest and the key pathological contributors leading to post-TBI neurological sequelae. Survivors of blast-induced traumatic brain injury (bTBI) have increased susceptibility to Parkinson's disease (PD), characterized by α-synuclein aggregation and the progressive degeneration of nigrostriatal dopaminergic neurons. In a pre-clinical investigation using rats, a single mild blast TBI (mild b-TBI) induced significant elevation of permeability of blood brain barrier, accompanying inflammatory indicators. Specifically, we evaluated the changes of α-synuclein and tyrosine hydroxylase (TH), ...

Monday, Jul 12: Conference Room D **01:00 PM - 02:00 PM**

W04-02 - Mild repetitive closed head TBI models

Conference Room D

Zhihui Yang
Assistant Professor, University of Florida

Monday, Jul 12: Conference Room D **01:00 PM - 02:00 PM**

W04-03 - Introduction to the CHIMERA model

Conference Room D

Cheryl Wellington
University of British Columbia

Monday, Jul 12: Conference Room A **01:00 PM - 01:03 PM**

DB01-01: Intrinsic differences of animal and human spinal cord stem/ progenitor responses to inflammatory and regenerative factors

Abdul Mounnem Kassab, University of Ottawa

Conference Room A

Abdul Mounnem Kassab
Neurosurgery Resident, University of Ottawa

Abdul Mounnem Kassab, University of Ottawa, Ahmad Galuta, University of Ottawa; Diana Ghinda, University of Ottawa; Ryan Sandarage, University of Ottawa, Jason Kwan, University of Ottawa, Eve Tsai, University of OttawaBackground: While the use of neural stem/progenitor cells (NSPCs) has been reported as a promising therapeutic approach for spinal cord injury repair, the direct comparison of adult primary animal spinal cord NSPCs have not been directly compared to human NSPCs under the same culture conditions to characterize intrinsic differences between human and animal NSPC response to inflammatory and regenerative factors.Objective: To improve the clinical translation of animal-based NSPC therapies to ...

Monday, Jul 12: Conference Room A **01:03 PM - 01:06 PM**

DB01-02: CCL2-Induced Macrophage Accumulation in the Dorsal Root Ganglia Correlates With Persistent Paw Hypersensitivity

Jon Richards, Drexel University

Conference Room A

Jon Richards
Drexel University

Jonathan Richards, Drexel University, Megan Detloff, Drexel University;Background: Inflammation in the nervous system can mediate the development and persistence of pathological pain states. Hypothesis: Intraganglionic microinjection of CCL2 is sufficient to induce macrophage accumulation and concomitant hypersensitivity of the corresponding dermatomes. Methods: Unilateral injections of recombinant rat CCL2 or vehicle were administered to the C7-8 DRG of uninjured Sprague Dawley rats. Neuropathic pain was assessed using von Frey and mechanical conflict avoidance paradigms (MCAP). Immunohistochemistry was used to quantify macrophages (ED1+) and microglia (IBA1+) in the DRG and ipsilateral dorsal horn. DRG macrophage phenotype and cytokine profile was analyzed using ...

Monday, Jul 12: Conference Room A **01:06 PM - 01:09 PM**

DB01-03: TBI disrupts remapping and phase coding in CA1 and impairs sharp-wave ripple generation

Christopher Adam, University of Pennsylvania

Conference Room A

Christopher Adam
PhD Candidate , University of Pennsylvania

Christopher Adam, University of Pennsylvania, Carlo Cottone, University of Pennsylvania; Kim Gagnon, University of Pennsylvania; Victoria Johnson, University of Pennsylvania, John Wolf, University of Pennsylvania/ CMCVAMC;Cognitive deficits, including learning and memory impairments, are commonly reported following TBI, and hippocampal dysfunction is often linked with these deficiencies. TBI-associated cognitive deficits can be present even in the absence of overt cell loss in the hippocampus, suggesting functional impairments of hippocampal circuits following even mild TBI. In order to investigate the physiological mechanisms underlying these functional impairments, we subjected rats to a lateral fluid percussion injury of 1.8 atmospheres (resulting in a mild ...

Monday, Jul 12: Conference Room A **01:09 PM - 01:12 PM**

DB01-04: Brain-neuronal, astroglial and oligodendrocytic protein-targeted autoantibody response following severe traumatic brain injury

Lindsey Morrow, University of Florida

Conference Room A

Lindsey Morrow
Undergraduate Researcher, University of Florida

Lindsey Morrow, University of Florida, Drashti Patel 1, Haiyan Xu 1, Leah Vaughan 2, John Williamson 3, Amy Wagner 2, Richard Rubenstein 4, Claudia Robinson 5, Kevin Wang 1, Zhihui Yang 1, 1 University of Florida, , Gainesville, USA 2 University of Pittsburgh, , Pittsburgh, USA 3 Malcom Randall VA Hospital, , Gainesville, USA 4 SUNY-Downstate, , Brooklyn, USA 5 Baylor College, , Houston, USATraumatic brain injuries (TBI) affect about 2 million Americans each year. Following primary injury, brain-specific proteins are released into the extracellular space and eventually into circulation. This might trigger an autoimmune response in a subset of ...

Monday, Jul 12: Conference Room A **01:12 PM - 01:15 PM**

Inhibition of CSPGs receptors promotes replacement of spinal specific neurons by human directly reprogrammed neural precursor cells and improves functional recovery after spinal cord injury

Seyed Mojtaba Hosseini, University of Manitoba

Conference Room A

Seyed Mojtaba Hosseini
PhD Student, University of Manitoba

Spinal cord injury (SCI) results in progressive degeneration of spinal cord neurons and damage to the neural circuitry. To date, effective replacement of neurons and functional restoration of spinal circuits remain challenging. Transplantation of neural precursor cells (NPCs) offers a promising approach for neuronal replacement in SCI. However, our studies indicate limited success in neurogenesis by transplanted NPCs in the hostile milieu of SCI. We identified that injury-induced upregulation of chondroitin sulfate proteoglycans (CSPGs) impedes survival and integration of engrafted NPCs after SCI. Our in vitro investigations revealed CSPGs inhibit NPCs by signaling through two protein tyrosine phosphatase receptors, LAR ...

Monday, Jul 12: Conference Room A **01:15 PM - 01:18 PM**

DB01-06: Unique Challenges and Poor Outcomes of Pediatric Neurotrauma Cases in Northern India: Urgent Need for Global Action

Ahmad Ozair, King George's Medical University

Conference Room A

Ahmad Ozair
MBBS Candidate, King George's Medical University, India

Ahmad Ozair, Arjumand Faruqi, Ankur Bajaj. King George's Medical University, Lucknow, Uttar Pradesh, IndiaBackground: Trauma care systems continue to function inadequately in developing nations worldwide, contributing to poor outcomes in traumatic brain injury (TBI). We aimed to study the current clinical profile and outcomes of pediatric TBI patients reporting to the flagship trauma centre of Uttar Pradesh, the most populous province of India. Methods: A prospective cohort study was conducted on TBI patients aged under 18 years admitted to the Department of Neurosurgery of King George's Medical University, Lucknow over one year. Cases with significant missing data were excluded. Results: ...

Monday, Jul 12: Conference Room A **01:18 PM - 01:21 PM**

DB01-07: Association of Plasma Biomarkers and Blood Brain Barrier Dysfunction in Traumatic Brain Injury using Dynamic Contrast-Enhanced MRI

Saurabh Sinha, University of Pennsylvania

Conference Room A

Saurabh Sinha
University of Pennsylvania

Saurabh Sinha, University of Pennsylvania, Alexa Walter, Jeffrey Ware, James Gugger, Cillian Lynch, My Le Duyen, Hannah Zamore, Cian Dabrowski, Brigid Magdamo, Justin Morrison, Leroy Wesley, Ramon Diaz-Arrastia, Danielle Sandsmark, University of Pennsylvania;Background: Blood-brain barrier (BBB) disruption is a known component of traumatic brain injury (TBI), and has been implicated in TBI-related disability. Here we analyzed the relationship of plasma biomarker levels and dynamic contrast-enhanced (DCE) MRI as a measure of TBI-related BBB dysfunction. Methods: We examined blood-based biomarkers and neuroimaging from eleven adult patients (median age 29 years, 81.8% male) admitted to the hospital following non-penetrating TBI (54.5% motor ...

Monday, Jul 12: Conference Room A **01:21 PM - 01:24 PM**

DB01-08: Unique Oxidative Stress and Neuroinflammation Signatures in Pain and Reward Brain Regions after TBI

Julia Malewicz, Wayne State University

Conference Room A

Julia Malewicz
Wayne State University

Julia Malewicz, Wayne State University, Alyssa Goodwin, Detroit VA Medical Center/ Wayne State University; Min Wu, Detroit VA Medical Center/ Wayne State University; Scott Lloyd, Detroit VA Medical Center/ Wayne State University, Kelly Bosse, Detroit VA Medical Center/ Wayne State University, Alana Conti, Detroit VA Medical Center/ Wayne State UniversityPersistent pain is experienced by over half of the ~3 million people annually affected by traumatic brain injuries (TBIs). Opioid therapies often induce paradoxical pain sensitization and addiction liability in TBI patients, underscoring the need to ascertain dynamic pain and reward alterations post-TBI to advance treatment. TBI escalates reactive oxygen species ...

Monday, Jul 12: Conference Room A **01:24 PM - 01:27 PM**

DB01-09: Assessing Antioxidant Nanoparticle Efficacy Following Traumatic Brain Injury in Mice

Aria Tarudji, University of Nebraska-Lincoln

Conference Room A

Aria Tarudji
Graduate Research Assistant, University of Nebraska-Lincoln

Aria Tarudji, University of Nebraska-Lincoln, Anthony Convertine, Missouri University of Science and Technology;Forrest Kievit, University of Nebraska-LincolnExcess reactive oxygen species (ROS) and lipid peroxidation products (LPOx) are released following traumatic brain injury (TBI), causing progression of secondary injury such as the increase of ROS and cell-death. We expected that scavenging the excess ROS would ameliorate the secondary injury. Thus, we utilized core-cross-linked nanoparticle (ANP) that readily scavenges ROS through the thioether bond. ANP was synthesized through thiol-ene and thiol-Michael reactions with the size of around 24 nm and scavengers around 9.93 µmol ROS/mg NP1. Controlled cortical impact (CCI) (4 m/s ...

Monday, Jul 12: Conference Room A **01:27 PM - 01:30 PM**

DB01-10: Effects of blast injury on multi-focal ultrastructural changes in neurons and synapses and long-term behavioral deficits in mice

Heather Siedhoff, University of Missouri

Conference Room A

Heather Siedhoff
PhD Candidate, University of Missouri

Heather Siedhoff, University of Missouri, Shanyan Chen, University of Missouri; Ashley Balderrama, University of Missouri; Runting Li, University of Missouri; Landry M. Konan, University of Missouri; Hailong Song, University of Missouri; Catherine E. Johnson, Missouri University of Science and Technology; DeAna Grant, University of Missouri; Tommi White, University of Missouri; Ibolja Cernak, Mercer University School of Medicine at Macon; Timothy Hoffman, Truman VA Hospital Research Service; Jiankun Cui, Truman VA Hospital Research Service; University of Missouri/ Ralph G. DePalma , Uniformed University of the Health Sciences; Zezong Gu, University of Missouri/ Truman VA Hospital Research Service;Blast-induced mild traumatic brain injury ...

Monday, Jul 12: Conference Room A **01:30 PM - 01:33 PM**

DB01-11: Objective Eye Tracking Metrics of Vision and Autonomic Dysfunction Distinguish Concussed and Healthy Adolescents

DIVYA JAIN, University of Pennsylvania

Conference Room A

Divya Jain
University of Pennsylvania, University of Pennsylvania

DIVYA JAIN, University of Pennsylvania, Kristy Arbogast, Children's Hospital of Philadelphia/ University of Pennsylvania; Catherine McDonald, University of Pennsylvania/ Children's Hospital of Philadelphia;Olivia Podolak, Children's Hospital of Philadelphia, Susan Margulies, eorgia Institute of Technology, Kristi Metzger, Children's Hospital of Philadelphia, David Howell, Children's Hospital Colorado, Mitchell Scheiman, University of Colorado School of Medicine, Christina Master, Children's Hospital of Philadelphia/ University of Pennsylvania; Visual and autonomic system disturbances are common after concussion and predict prolonged recovery in adolescents. Eye tracking is a potential rapid and objective supplement to current clinical assessments of these deficits in concussed adolescents. Participants aged 13 to ...

Monday, Jul 12: Conference Room A **01:33 PM - 01:36 PM**

DB01-12: Evaluation of axonal injury for acute spinal cord injury using filtered diffusion weighted magnetic resonance imaging

Spencer Murphy, Medical College of Wisconsin

Conference Room A

Spencer Murphy
Medical College of Wisconsin

Spencer Murphy, Medical College of Wisconsin, Robyn Furger, Medical College of Wisconsin; Shekar Kurpad, Medical College of Wisconsin; Volkan Arpinar, Medical College of Wisconsin, Andrew Nencka, Medical College of Wisconsin, Kevin Koch, Medical College of Wisconsin, Matthew Budde, Medical College of Wisconsin;Axonal injury is a fundamental pathophysiology that directly affects long-term function after traumatic spinal cord injury (SCI). T2-weighted MRI is sensitive to edema and has high diagnostic utility, but it is not sensitive to axonal injury. Diffusion tensor imaging (DTI) is sensitive to microscopic injury, but it is also complicated by edema that can mask the underlying tissue damage. ...

Monday, Jul 12: Conference Room A **01:36 PM - 01:39 PM**

DB01-13: blocking kor activation prevents morphine-induced attenuation of recovery following sci

Josephina Rau, Texas A&M Health and Science Center

Conference Room A

Josephina Rau
Texas A&M Health and Science Center

Josephina Rau, Texas A&M Health and Science Center, Annebel Hemphill, Texas A&M Health and Science Center; Kendall Araguz, Texas A&M Health and Science Center; Rachel Cunningham, Texas A&M Health and Science Center, Michelle Hook, Texas A&M Health and Science Center;Immediately following spinal cord injury (SCI) patients experience pain, associated with injury to the spinal tissue and nerves as well as accompanying peripheral injuries. This pain is treated with opioids. Approximately 80% of people with SCI are treated with morphine (Stampas et al., 2020). Alarmingly, we found that this early opioid administration is associated with pain in the chronic phase of ...

Monday, Jul 12: Conference Room A **01:39 PM - 01:42 PM**

DB01-14: Aging with brain injury: Age-at-injury influences the glial response to TBI in juveniles

Tabitha Green, Univeristy of Arizona

Conference Room A

Tabitha Green
Univeristy of Arizona

Tabitha Green, Univeristy of Arizona, Sean Murphy, Univeristy of Arizona; J.Bryce Ortiz, Univeristy of Arizona/ Phoenix Veteran AffairsIntroduction: Glia influence neuronal development and aging. However, few translational studies have examined how age-at-injury affects the glial response to TBI. We hypothesized that rats injured before pubertal onset would exhibit a greater glial response, that persists into early adulthood, compared to rats injured near pubertal onset. Materials and methods: Post-natal-day (PND)17 and PND35 rats (n=90) received midline fluid percussion injury or sham surgery. In three cortical regions (peri-injury, S1BF, perirhinal), we investigated the glial response relative to age-at-injury (PND17/PND35), time post-injury (tissue ...

Monday, Jul 12: Conference Room A **01:42 PM - 01:45 PM**

DB01-15: Neurovascular elimination of extracellular tau is impaired after traumatic brain injury

Max Eisenbaum, Roskamp Institute

Conference Room A

Max Eisenbaum
PhD Candidate, Roskamp Institute

Max Eisenbaum1,2, Andrew Pearson1,2, Arissa Gratkowski1, Benoit Mouzon1,2,3, Michael Mullan1,2, Fiona Crawford1,2,3, Joseph Ojo1,2 and Corbin Bachmeier1,2,4 1Roskamp Institute, Sarasota, FL, USA, 2The Open University, Milton Keynes, United Kingdom, 3James A. Haley Veterans' Hospital, Tampa, FL, USA, 4Bay Pines VA Healthcare System, Bay Pines, FL, USA; Introduction. Exposure to repetitive head injuries has been associated with the accumulation of extracellular tau in the brain, which may contribute to the pathogenesis of neurodegenerative tauopathies. These studies investigated the role of the cerebrovasculature in the elimination of extracellular tau from the brain, and the influence of repetitive mild traumatic brain injury (r-mTBI) ...

Monday, Jul 12: Conference Room A **01:45 PM - 01:48 PM**

DB01-16: Intranasal administration of L-Myc immortalized human neural stem cells after cortical impact injury enhance spatial learning

Eleni Moschonas, University of Pittsburgh

Conference Room A

Eleni Moschonas
Predoctoral Fellow, University of Pittsburgh

Eleni Moschonas, University of Pittsburgh, Margarita Gutova, City of Hope; Jeffrey Cheng, University of Pittsburgh; Lusine Tsaturyan, City of Hope, Vikram Adhikarla, City of Hope, Russell Rockne, City of Hope, Rithika Reddy, University of Pittsburgh, Corina Bondi, University of Pittsburgh, Anthony Kline, University of PittsburghThe self-renewal capacity of neural stem cells (NSCs) and their inherent ability to migrate to sites of CNS damage and proliferate holds high therapeutic potential in attenuating functional impairments after traumatic brain injury (TBI). To explore the potential therapeutic efficacy of NSCs for TBI, anesthetized adult male rats received either a controlled cortical impact of moderate ...

Monday, Jul 12: Conference Room A **01:48 PM - 01:51 PM**

DB01-17: Investigating the Mechanisms of C1q in Driving Microglial Polarization After Spinal Cord Injury.

Pooja Sakthivel, UC Irvine

Conference Room A

Pooja Sakthivel
UC Irvine

Pooja Sakthivel, UC Irvine, Aileen Anderson, UC IrvineMicroglia, the immune cells of the central nervous system, transition into an activated state within minutes after spinal cord injury (SCI). Following SCI, activated microglia predominantly exist in an inflammatory ‘M1’ state, which is detrimental to neuronal repair. However, these microglia have the potential to be polarized towards an anti-inflammatory ‘M2’ state which promotes neuronal repair. Thus, understanding how microglial activation/polarization is initiated and maintained will identify novel targets to promote repair and regeneration after SCI. One molecular regulator of interest is C1q, the initiator molecule of the complement cascade that is highly ...

Monday, Jul 12: Conference Room A **01:51 PM - 01:54 PM**

DB01-18: Posttraumatic hypothermia reduces inflammasome signaling and pyroptotic cell death after moderate traumatic brain injury

Nadine Kerr, University of Miami

Conference Room A

Nadine Kerr
University of Miami

Nadine Kerr, University of Miami, Lindsay M Milich, University of Miami; James S Choi, University of Miami;Juan Pablo de Rivero Vaccari, University of Miami, Jae K Lee, University of Miami, Robert W Keane, University of Miami, Helen M Bramlett, University of Miami, W Dalton Dietrich, University of Miami;Therapeutic hypothermia has shown to have success in reducing secondary injury in preclinical and clinical TBI studies. Our published work has shown that therapeutic hypothermia decreases nod-like receptor protein 1 (NLRP1) inflammasome signaling, a key component of the innate immune response, acutely after TBI. We also demonstrated that microglial inflammasome activation is involved ...

Monday, Jul 12: Conference Room A **01:54 PM - 01:57 PM**

DB01-19: Sleep Fragmentation Enhances Inflammation and Compromises Stress-Responsive Neuronal Activity Following Traumatic Brain Injury

Zoe Tapp, Ohio State University

Conference Room A

Zoe Tapp
Pre-Doctoral Research Fellow, The Ohio State University

Zoe Tapp, Ohio State University, Julia Kumar, Ohio State University; Sydney Cornelius, Ohio State University; Alexa Oberster, Ohio State University, Ravi Atluri, Ohio State University, Kristina Witcher, Ohio State University, Sam Houle, Ohio State University, Chelsea Bray, Ohio State University, John Velasquez, Ohio State University, Juan Peng, Ohio State University, John Sheridan, Ohio State University, Jonathan Godbout, Ohio State University, Olga Kokiko-Cochran, Ohio State UniversityTraumatic brain injury (TBI) impairs restoration of homeostasis in response to stressors through suppression of the hypothalamic-pituitary-adrenal (HPA)-axis. We hypothesize that sleep fragmentation (SF) is a physiologically relevant stressor that engages the dysfunctional HPA-axis after TBI ...

Monday, Jul 12: Conference Room A **01:57 PM - 02:00 PM**

DB01-20: Impact of mild lateral fluid percussion injury on mature pre-existing oligodendrocytes

Alexandra Adams, Rutgers University

Conference Room A

Alexandra Adams
PhD Candidate, Rutgers University

Alexandra Adams, Rutgers University; Jihyun Kim, Rutgers University, Biological Sciences; Bryan Pfister, New Jersey Institute of Technology; Haesun Kim, Rutgers University, Biological Sciences; Impact of mild lateral fluid percussion injury on mature pre-existing oligodendrocytesAlexandra Adams, Jihyun Kim, Bryan J Pfister, Haesun A KimRutgers University, Biological Sciences, Newark, NJ, New Jersey Institute of Technology, Biomedical Engineering, Newark, NJMyelin loss in brain is a common occurrence after traumatic brain injury (TBI) that results from impact-induced acceleration forces to the head. Axons within the white matter tracts are especially vulnerable to mechanical strain and subsequent axonal injury. Little is known about the effect ...

Monday, Jul 12 **02:00 PM - 03:30 PM**

Poster Session A

Live Poster Session for Group A Join us in SpatialChat for LIVE poster presentations using a unique, interactive platform. Click Here to Enter SpatialChat: https://spatial.chat/s/NNS2021 *If you miss this live session, you can connect with the poster presenter in the Poster Hall section of the virtual platform. There you can view their poster, send them a message, live chat or even watch a recorded video presentation if they have provided one.How to Attend LIVE Poster Sessions Go to SpatialChat to log in. When logging in enter your full name and group or company affiliation, e.g., Rio Febrian (CCHF/Emory). In the ...

Monday, Jul 12: Grand Ballroom **03:30 PM - 04:00 PM**

P01 - Patient Perspective: TBI

Co-Chairs: Courtney Robertson & Rusty Gore

Grand Ballroom TBI

Courtney Robertson

Elizabeth Kelly

Russell Gore
Director, Complex Concussion Clinic, Shepherd Center

Speakers: Russell Gore & Elizabeth Kelly

Monday, Jul 12: Conference Room A **04:00 PM - 05:15 PM**

S06 - Enhancing Translatability of Preclinical TBI Research

Co-Chairs: Patrick Bellgowan & Michelle LaPlaca

Conference Room A

Candace Floyd
Associate Professor, University of Utah

Ina Wanner
Associate Research Neuroscientist, UCLA

J. Russell Huie
Assistant Prof. Researcher, University of California, San Francisco

Michelle LaPlaca
Professor, Georgia Tech / Emory

Patrick Bellgowan
Deputy Associate Director, NINDS, Division of Neuroscience

This session will discuss methods and approaches for enhancing translation in preclinical research including the use of common data elements. As part of the National Research Action Plan (NRAP) for TBI, the NIH and other federal funding agencies have begun to invest in and expand infrastructure for accelerating access to preclinical TBI research with the goal of incentivising secondary data analysis that may accelerate translation bench-to-bedside. This session will feature leaders from the extramural TBI research committee in describing several of the efforts and provide time for discussion ideas and future directions for enabling this community to accelerate translation of ...

Monday, Jul 12: Conference Room E **04:00 PM - 05:15 PM**

S06-01 - Building the TBI Preclinical Research Infrastructure

Conference Room E

Patrick Bellgowan
Deputy Associate Director, NINDS, Division of Neuroscience

The NIH coordinates TBI research activities with other federal agencies through the National Research Action Plan (NRAP). This brief presentatation will outline the initial strategy for enabling translation of preclinical research findings and describe the goals of creating the current goals and funding strategies that will be detailed by other panelists. Ultimately, the success of these efforts will depend upon participation and adoption of the tools and resources by the TBI preclinical research community.

Monday, Jul 12: Conference Room E **04:00 PM - 05:15 PM**

S06-02 - Analysis and Path Forward for Preclinical CDEs in TBI Research

Conference Room E

Candace Floyd
Associate Professor, University of Utah

Monday, Jul 12: Conference Room E **04:00 PM - 05:15 PM**

S06-03 - Leveraging the Open Data Commons - TBI (ODC-TBI) for Advancing Preclinical TBI Research

Conference Room E

J. Russell Huie
Assistant Prof. Researcher, University of California, San Francisco

Monday, Jul 12: Conference Room E **04:00 PM - 05:15 PM**

S06-04 - Preclinical Paths of Validating and Reproducing Translatable Assessment Tools in Neurotrauma

Conference Room E

Ina Wanner
Associate Research Neuroscientist, UCLA

Developing clinically applicable fluid and MRI biomarkers for neurotrauma advances insights in underlying pathophysiologies and facilitates clinical translation. The Translational Outcomes Project in Neurotrauma (TOP-NT) consortium objective is to validate MRI and biomarkers of neurotrauma. We facilitate collaboration and established neurotrauma SOPs for surgeries, severity assessment and preanalytical variables. Injured/sham rats are interleaved, gender is randomized, analyses are blinded, and samples are exchanged to determine site-differences. Biomarker assays are compared using calibrants, MRI protocols are harmonized, and analytical accuracies reported. Cross-site standardization is done using mild and moderate controlled cortical impact in rats. Adaptation for fluid percussion and rotational acceleration ...

Monday, Jul 12: Conference Room B **04:00 PM - 05:15 PM**

S07 - Mechanisms and Targeting of Inflammation in TBI

Co-Chairs: Adam Bachstetter & Olga Kokiko-Cochran

Conference Room B

Adam Bachstetter
University of Kentucky

Josh Morganti
Assistant Professor, University of Kentucky

Levi Wood
Assistant Professor, Georgia Institute of Technology

Olga Kokiko-Cochran
Assistant Professor, The Ohio State University

Rachel Rowe
Assistant Research Professor, University of Colorado Boulder

The current symposium will highlight the emerging science addressing the interaction of age and TBI, with a focus on the role of glia and neuroinflammation. We have five speakers who address the interactions of neuroinflammation, aging, and TBI from unique scientific prescriptive. Learning objectives, include an appreciate that chronic dysfunction in glia could be a translational target for reducing the negative impact of TBI in young and aged individuals.

Monday, Jul 12: Conference Room B **04:00 PM - 05:15 PM**

S07-01 - Microglia as a novel therapeutic target to mitigate TBI-induced sleep disturbances

Conference Room B

Rachel Rowe
Assistant Research Professor, University of Colorado Boulder

Monday, Jul 12: Conference Room B **04:00 PM - 05:15 PM**

S07-02 - Systems Analysis Identifies Neuronal Inflammatory Signaling after Repetitive Mild TBI in Mice

Conference Room B

Levi Wood
Assistant Professor, Georgia Institute of Technology

Although it is increasingly recognized that neural immunity plays a role in traumatic brain injury (TBI), we still have limited unerstanding of the roles that neurons, astrocytes, and microglial play in potentiating neuroinflammation, tissue pathology, and loss of cognitive function. We profiled protein expression of pro-inflammatory cytokines and phosphorylation of intracellular signaling pathways in mice that experienced repetitive mild closed head injuries. Surprisingly our data show that cytokines (e.g., RANTES, IL-17) and pro-inflammatory phospho-protein signaling (e.g., phospho-p38) are localized to neurons hours after injury. Thus, this talk will define a previously under-appreciated role for neurons as modulated of neural immunity ...

Monday, Jul 12: Conference Room B **04:00 PM - 05:15 PM**

S07-03 - Aging and TBI: emerging evidence for the role of glia and inflammation

Conference Room B

Olga Kokiko-Cochran
Assistant Professor, The Ohio State University

Monday, Jul 12: Conference Room B **04:00 PM - 05:15 PM**

S07-04 - Effects of advanced age upon astrocyte-specific responses to acute traumatic brain injury in mice

Conference Room B

Josh Morganti
Assistant Professor, University of Kentucky

Monday, Jul 12: Conference Room C **04:00 PM - 05:15 PM**

S08 - Modulation of Spinal Cord Excitability in the Pathology and Treatment of Chronic Pain

Co-Chairs: Michael Hildebrand & Eve Tsai

Conference Room C

Eve Tsai, MD,PhD
Associate Professor, Neuroscience Program, Ottawa Hospital Research Institute

Michael Hildebrand
Associate Professor, Carleton University

Rebecca Seal

Rushna Ali
Clinical Instructor, spectrum health medical group

The dorsal horn of the spinal cord is an essential component of the pain pathway. A complex neuronal network within the dorsal horn combines incoming pain-related signals from the periphery with descending modulation from the brain before sending the integrated pain-related messages back to the brain. Still poorly understood are the roles of specific neurons and receptors within this spinal pain network as well as how trauma and disease change spinal excitability to drive chronic pain. As in the vast majority of biomedical basic science research, current knowledge is based primarily on rodent models of pain processing. In this session, ...

Monday, Jul 12: Conference Room C **04:00 PM - 05:15 PM**

S08-01 - A gene therapy approach to treat persistent pain derived from spinal studies of rodents and monkeys

Conference Room C

Rebecca Seal

Monday, Jul 12: Conference Room C **04:00 PM - 05:15 PM**

S08-02 - Human models of spinal pain processing: Identification of molecular pain targets in males vs females

Conference Room C

Michael Hildebrand
Associate Professor, Carleton University

Monday, Jul 12: Conference Room C **04:00 PM - 05:15 PM**

S08-03 - Spinal Cord Stimulation: New Paradigms and Advances in Treatment of Chronic Pain

Conference Room C

Rushna Ali
Clinical Instructor, spectrum health medical group

Monday, Jul 12: Conference Room D **04:00 PM - 05:15 PM**

S09 - Emerging Trends in Molecular TBI Biomarkers

Co-Chairs: David Menon & Kevin Wang

Conference Room D

Andras Buki
professor and chair, Clinical Center of the Univerity of Pécs Department of Neurosurgery

Brent Winston
The use of metabolomics for the prognosis of short- and long-term outcome in adult severe traumatic, University of Calgary
David Menon
Professor & Head of Division, University of Cambridge

Iqbal Sayeed
Associate Professor, Emory University

Kevin Wang
Professor, Director, University of Florida

Manish Bhomia
Assistant Professor, Uniformed Services University of the Health Sciences

The use of metabolomics for the prognosis of short- and long-term outcome in adult severe traumatic brain injury (sTBI) Mohammad M. Banoei1, Chel Hee Lee1, James Hutchison2, David A Wishart3, Brent W. Winston1,4 on behalf of the Canadian Critical Care Translational Biology Group (CCCTBG) and the Canadian Traumatic Brain Injury Research and Clinical Network (CTRC) 1Department of Critical Care Medicine, Faculty of Medicine, University of Calgary, Alberta, Canada. 2Departments of Pediatrics and Critical Care, Sick Kids and The University of Toronto, Toronto, Ontario, Canada. 3Departments of Biological Sciences, Computing Sciences and Medicine and Dentistry, University of Alberta, Alberta, Canada. 4Departments ...

Monday, Jul 12: Conference Room D **04:00 PM - 05:15 PM**

S09-01 - Predictive power of blood biomarkers: Paving a path forward

Conference Room D

Andras Buki
professor and chair, Clinical Center of the Univerity of Pécs Department of Neurosurgery

Monday, Jul 12: Conference Room D **04:00 PM - 05:15 PM**

S09-02 - Metabolomics biomarkers for neurotrauma

Conference Room D

Brent Winston
The use of metabolomics for the prognosis of short- and long-term outcome in adult severe traumatic, University of Calgary

Monday, Jul 12: Conference Room D **04:00 PM - 05:15 PM**

S09-03 - The Utility of MicroRNA Biomarkers for Traumatic Brain Injury

Conference Room D

Manish Bhomia
Assistant Professor, Uniformed Services University of the Health Sciences

Monday, Jul 12: Conference Room D **04:00 PM - 05:15 PM**

S09-04 - Non-Brain biomarkers in preclinical and clinical TBI

Conference Room D

Iqbal Sayeed
Associate Professor, Emory University

Utility of Osteopontin as a Blood Biomarker in TBI Identifying accurate, noninvasive and cost-effective diagnostic methodologies for patients with brain injury is recognized as an urgent need by clinicians and scientists alike. Patients with a moderate-to-severe TBI still lack a clinically approved treatment to enhance the processes underlying functional recovery. Factors contributing to this situation include failure to use prognostic indicators and surrogate biomarkers to better define the target population for testing a potential intervention and reliably identifying a treatment effect. Blood biomarkers can play a critical role in characterizing both the severity and temporal profiles of TBI. Osteopontin (OPN) ...

Monday, Jul 12: Conference Room E **04:00 PM - 05:15 PM**

S10 - Equity in Neurotrauma: What can we do at the trainee level? A panel discussion hosted by TEAM

Co-Chairs: Theresa Currier Thomas & Tiffany Greco

Conference Room E

Gretchen Neigh

Ramesh Ragupathi

Monday, Jul 12 **05:15 PM - 05:30 PM**

Break

Monday, Jul 12 **05:15 PM - 05:20 PM**

Monday End-of-Day Announcements

Program Chair: Michelle LaPlaca

Michelle LaPlaca
Professor, Georgia Tech / Emory

Monday, Jul 12: Zoom **05:30 PM - 07:00 PM**

TEAM Escape Room Networking Event

Chair: Theresa Currier Thomas

Zoom Social Event TEAM

Welcome to the TEAM Neurotrauma networking event! We will be running virtual escape rooms made by Trappedintheweb.com. These are non-linear text-based escape rooms that will be run by small groups using the breakout room function in Zoom and navigated by a member of TEAM via their shared screen. Your virtual escape room will require your group to work together to solve various puzzles, unlock mysteries, locks, and doors, find the right place to go, and ultimately escape. A brief intro video and scene setup will play at the start of the session immediately followed by everyone being randomly put into ...

Tuesday, Jul 13 **09:00 AM - 06:00 PM**

Collaborations & Catching Up

Optional Networking

Tuesday, Jul 13 **09:00 AM - 10:00 AM**

Breakfast & Learn Workshop by Abbott

Tuesday, Jul 13 **09:30 AM - 09:45 AM**

Morning Office Yoga

Tuesday, Jul 13 **10:00 AM - 10:15 AM**

Opening Annoucements & Journals Update

Michelle LaPlaca, David Brody (Editor-in-Chief, Journal of Neurotrauma), Helen Bramlett (Editor-in-Chief, Neurotrauma Reports)

Michelle LaPlaca
Professor, Georgia Tech / Emory

Tuesday, Jul 13: Grand Ballroom **10:15 AM - 11:00 AM**

Keynote 02 - Ariel Levine - Spinal Cord Biology at Single Cell Resolution

Grand Ballroom | Keynote | SCI

Ariel Levine
Stadtman Investigator, NINDS/NIH

Single cell sequencing has the potential to revolutionize our understanding of biology, including how adult neural tissue responds to injury. Dr. Levine will present her lab's work using this exciting approach to profile the adult mouse spinal cord and to track how each spinal cord cell type responds to injury. In particular, she will highlight how single cell sequencing revealed a population of microglia that can degrade myelin debris after injury and a rare sub-type of neurons that express a regeneration-associated gene signature.

Tuesday, Jul 13 **11:00 AM - 11:15 AM**

Break

Tuesday, Jul 13: Conference Room A **11:15 AM - 12:30 PM**

S11 - Big Data and AI for Translational Neurotrauma

Co-Chairs: Adam Ferguson & Jessica Nielson

Conference Room A

Abel Torres Espin
Assistant professor, University of California San Francisco

Adam Ferguson
Professor, Neurological Surgery, University of California School of Medicine

Alan Kaplan
Research Scientist, Lawrence Livermore National Laboratory

Frederick Korley
Associate Professor, University of Michigan

Jessica Nielson
Assistant Professor, University of Minnesota

Over the last 50 years, the exponential rise of digital knowledge and computing power has rapidly shaped science. As a result, massive quantities of data are created and stored in digital formats. Current medical practice is evidence-based, rating the strength of scientific evidence for deciding translation from research to medical implementation. Building evidence for translation is particularly difficult in neurotrauma due to heterogenous populations and complex syndromes. These factors create a gap in rigorous scientific evidence hampering the management and treatment of neurotrauma. Data-intensive research can help overcome some of these limitations through the power of computing, big-data, machine learning ...

Tuesday, Jul 13: Conference Room A **11:15 AM - 12:30 PM**

S11-01 - High performance computing and artificial intelligence (AI) for neurotrauma

Conference Room A

Alan Kaplan
Research Scientist, Lawrence Livermore National Laboratory

Data-driven methods hold promise for aiding in the prognosis of TBI. Large collections of data are being collected encompassing clinical variables, blood biomarkers, imaging, demographics and comprehensive outcome assessments over time. However, in many cases we lack the ability to mechanistically interpret the data, since they result from complex and often unknown interactions. In addition, they contain many missing values and consist of heterogeneous data elements which render them difficult to use in standard predictive methods. In this work, we develop flexible machine learning models that characterize the high-dimensional structure of the data and allow us to perform many tasks ...

Tuesday, Jul 13: Conference Room A **11:15 AM - 12:30 PM**

S11-02 - Machine learning for developing prognostic models in TBI

Conference Room A

Frederick Korley
Associate Professor, University of Michigan

There are limited well validated prognostic models for predicting outcomes from TBI. Prognostic models are critically important to informng discussions between clinician and patients/families regarding the expected recovery course follow injury. They also inform decisions regarding the appropriate treatment strategies. This talk will present an overview of existing prognostic models in TBI, unmet gaps in knowledge and how machine learning can be leveraged to develop more accurate prognostic models in TBI.

Tuesday, Jul 13: Conference Room A **11:15 AM - 12:30 PM**

S11-03 - Causal network modeling for postraumatic stress and TBI

Conference Room A

Jessica Nielson
Assistant Professor, University of Minnesota

Tuesday, Jul 13: Conference Room A **11:15 AM - 12:30 PM**

S11-04 - Data-driven mining of real world neurotrauma data

Conference Room A

Abel Torres Espin
Assistant professor, University of California San Francisco

Data collected during routinely health care delivery from different sources (e.g. electronical health records, billing, disease registries) is known as real world data (RWD), as opposite to designed trials and clinical experiments. The increasing facility to use RWD in electronic form has gained attention as a mean to generate medical evidence (real world evidence or RWE) and as a source for data discovery and hypothesis generation while reducing cost of clinical research. Although the use of RWD has rapidly grown, there are challenges to be considered such as the quality of data, data heterogeneity, uncertainty of data collection methods or ...

Tuesday, Jul 13: Conference Room B **11:15 AM - 12:30 PM**

S12 - Naturally Occurring Canine Spinal Cord Injury - A Powerful Translational Model of SCI

Co-Chairs: Natasha Olby & Yvette Nout-Lomas

Conference Room B

Natasha Olby
Professor of Veterinary Neurology/Neurosurgery, North Carolina State University College of Veterinary Medicine

Nick Jeffery
Professor, Small Animal Clinical Sciences, Texas A&M University

Sarah Moore
Professor, The Ohio State University

Yvette Nout-Lomas
Associate Professor, Colorado State University

This session will provide a comprehensive summary of naturally occurring spinal cord injury in dogs. Pet dogs suffer from spinal cord injury at a high rate, reflecting genetic predisposition to degenerative conditions of the vertebral column and intervertebral disc. The resulting acute injuries span peracute contusive injury and mixed contusive compressive injuries. The frequency with which specific types of injury occur, the ready access to diagnostic and therapeutic modalities used in human spinal cord injury and the desire for treatment have resulted in detailed knowledge of outcomes of different severity injuries and a wealth of potential participants for clinical trials. ...

Tuesday, Jul 13: Conference Room B **11:15 AM - 12:30 PM**

S12-01 - An introduction to naturally occurring spinal cord injury in pet dogs

Conference Room B

Sarah Moore
Professor, The Ohio State University

This talk (part 1 of a 3 part session) will provide background information on canine spontaneous spinal cord injury as it relates to translational neurotrauma research, with a particular emphasis on injury presentation in the veterinary setting and on how dogs with spontaneous spinal cord injury can represent a valuable veterinary disease model for enhancing scientific discovery and ultimately can contribute to enhancing the pace of translating promising laboratory results into clinical success.

Tuesday, Jul 13: Conference Room B **11:15 AM - 12:30 PM**

S12-02 - Biomarkers and Outcome Measures in Canine Spinal Cord Injury

Conference Room B

Natasha Olby
Professor of Veterinary Neurology/Neurosurgery, North Carolina State University College of Veterinary Medicine

Veterinarians use a variety of assessments to determine injury severity, predict outcome and monitor recovery. These include assessments of motor, sensory and autonomic function, imaging characteristics and morphometry, serum and CSF biomarker concentrations and electrophysiological evaluation of motor and sensory function, as well as local spinal cord circuitry excitability. This session will describe these assessments, focusing on ceiling and floor effects, reliability and practicality as well as their predictive power. The manner in which biomarkers have been combined into clinical trials to assist in stratification of injury severity will be described.

Tuesday, Jul 13: Conference Room B **11:15 AM - 12:30 PM**

S12-03 - Clinical Trials in Canine Spinal Cord Injury

Conference Room B

Nick Jeffery
Professor, Small Animal Clinical Sciences, Texas A&M University

Clinical trials in canine spinal cord injury Interest in clinical trials in spinal cord injury in pet dogs centers on their potential to bridge the translational gap between laboratory animal (often rodent) models and humans with spinal cord injury. Dogs are uniquely well positioned to fulfil this role because they have naturally-occurring injuries that can be classified into severity categories similar to those used in humans. Furthermore, clinical diagnostics and therapies are similar to those applied to humans, dog size and behavior enable outcome measures similar to those used in humans and follow-up over months to years is routinely available. ...

Tuesday, Jul 13: Conference Room C **11:15 AM - 12:30 PM**

S13 - Management and Outcomes in Severe Pediatric TBI

Co-Chairs: Andrew Reisner & Courtney Robertson

Conference Room C

Andrew Reisner
Chair of Neurotrauma,, Children's Healthcare of Atlanta

Beth Costine-Bartell
Assistant Professor, Massachusetts General Hospital, Harvard Medical School

Christian Baumann
Associate Professor of Neurology, University Hospital Zurich

Courtney Robertson

Laura Blackwell
Children's Healthcare of Atlanta

The session will focus on both clinical and research aspects of TBI in children. There are 4 talks: 1) Pediatric severe TBI is enhanced by evidence-based guidelines - Andrew Reisner, 2) Developmental Considerations in the 0-4yr Population with Closed Head Injuries - Laura Blackwell, 3) Enhancing sleep to improve TBI outcomes: current evidence and a pediatric study protocol - Christian Baumann and Joëlle Albrecht, 4) Determining pathophysiology and repair in a piglet model of severe pediatric TBI - Beth Costine-Bartell.

Tuesday, Jul 13: Conference Room C **11:15 AM - 12:30 PM**

S13-01 - Pediatric severe TBI is enhanced by evidence-based guidelines

Conference Room C

Andrew Reisner
Chair of Neurotrauma,, Children's Healthcare of Atlanta

Tuesday, Jul 13: Conference Room C **11:15 AM - 12:30 PM**

S13-02 - Developmental Considerations in the 0-4yr Population with Closed Head Injuries

Conference Room C

Laura Blackwell
Children's Healthcare of Atlanta

Tuesday, Jul 13: Conference Room C **11:15 AM - 12:30 PM**

S13-03 - Enhancing sleep to improve TBI outcomes: current evidence and a pediatric study protocol

Conference Room C

Christian Baumann
Associate Professor of Neurology, University Hospital Zurich

Tuesday, Jul 13: Conference Room C **11:15 AM - 12:30 PM**

S13-04 - Determining the pathophysiology of tissue damage in a piglet model of severe pediatric TBI

Conference Room C

Beth Costine-Bartell
Assistant Professor, Massachusetts General Hospital, Harvard Medical School

“Hemispheric Hypodensity” is a pattern of traumatic brain injury that is associated with a subdural hematoma (SDH), cortical impact, seizures, and brief apneic episodes followed by tissue destruction of the cortical ribbon with sparing of the deep gray matter. In toddlers, the SDH is often unilateral and the tissue destruction is spans multiple vascular territories in the hemisphere underlying the SDH with sparing of the contralateral hemisphere. Infants often have bilateral SDH, less damage, and the pattern of damage is bilateral and patchy. The tissue damage evolves over hours or days. There is no therapy. To date, the majority of ...

Tuesday, Jul 13: Conference Room D **11:15 AM - 12:30 PM**

S14 - Repetitive Low-Level Blast Exposure in the Military

Co-Chairs: Donald Marion & David Cook

Conference Room D

Daniel Perl
Professor, Uniformed Services University

David Cook
Res. Associate Prof., VA Medical Center / Univ. of Washington

Donald Marion
Dr., Traumatic Brain Injury Center of Excellence, DHA

Jessica Gill

Stephen Ahlers
Director, Operational and Undersea Medicine Directorate, Naval Medical Research Center

Walter Carr
Research Psychologist, Walter Reed Army Institute of Research

Various active military populations are exposed to repetitive low-level blast (LLB) overpressure. While there usually is no overt injury, there is increasing concern that the repetitive exposure to explosive breaching, high caliber sniper rifles, recoilless rifles, mortars, or artillery may cause subclinical brain injury. As a result, in 2018 Congress mandated a longitudinal medical study on blast pressure exposure in members of the Armed Forces during combat and training, including members who train with any high overpressure weapon system (2018 National Defense Authorization Act, Section 734). In compliance with this directive, a workgroup has been assembled to delineate the scope ...

Tuesday, Jul 13: Conference Room D **11:15 AM - 12:30 PM**

S14-01 - Effects observed among personnel following repeated, low-level blast exposures in military training

Conference Room D

Walter Carr
Research Psychologist, Walter Reed Army Institute of Research

This presentation is an overview of methods and findings in several years of Walter Reed Army Institute of Research field studies of blast exposure during routine military training protocols. Several different training environments will be described. The emphasis will be on behavioral effects associated with blast although neurotrauma biomarker and epidemiological results will also be referenced.

Tuesday, Jul 13: Conference Room D **11:15 AM - 12:30 PM**

S14-02 - Insights and lessons learned from the assessment of repetitive low-level blast exposure in military populations

Conference Room D

Stephen Ahlers
Director, Operational and Undersea Medicine Directorate, Naval Medical Research Center

We have been studying the effects of low-intensity blast exposure in military personnel and in animal models for about 15 years. One of the first questions we addressed in an animal model was the determination of what intensity of blast overpressure is actually low-intensity exposure, presumably an exposure where there was an absence of acute symptoms. Once this was determined we next examined the effects of repeated exposure in our animal models since understanding cumulative effects of repetitive low-intensity blast exposure in the military populations we serve was our primary focus. To a very large extent there was, and has ...

Tuesday, Jul 13: Conference Room D **11:15 AM - 12:30 PM**

S14-03 - Effects of low level blast on serum genetic, immunologic and brain microstructural biomarkers

Conference Room D

Jessica Gill

Tuesday, Jul 13: Conference Room D **11:15 AM - 12:30 PM**

S14-04 - Interface Astroglial scarring in military Service Members with blast-related mTBI

Conference Room D

Daniel Perl
Professor, Uniformed Services University

A proportion of service members who are exposed to blast develop persistent neurologic/behavioral symptomatology that severely interferes which their ability to carry out a wide range of normal brain functions. The biologic nature of this problem has remained unclear for a long time. In 2016, we described a unique pattern of glial scarring in the brains among highly symptomatic service members who had suffered significant blast exposure. We referred to this abnormalities as interface astroglial scarring (IAS) and this was not seen in the brains of survivors of impact TBI (Lancet Neurol. 15:944-953, 2016). Since then, additional similar cases of ...

Tuesday, Jul 13: Conference Room E **11:15 AM - 12:30 PM**

S15 - Rethinking Drug Delivery to the Injured CNS

Co-Chairs: Sarah Stabenfeldt & Scott Olson

Conference Room E

Ashok Shetty
Professor and Associate Director, Texas A&M Univ College of Medicine

Costas Arvanitis
Assistant Professor, Georgia Institute of Technology

Rachel Sirianni

Sarah Stabenfeldt
Associate Professor, Arizona State University

Scott Olson
University of Texas Health Science Center

Title of Ashok K. Shetty's talk:Effects of Intranasal Treatment of hMSC-derived Extracellular Vesicles after TBI on Cognition, Mood, Microglia, andNLRP3 Inflammasomes

Tuesday, Jul 13: Conference Room E **11:15 AM - 12:30 PM**

S15-01 - Biological considerations for systemic nanoparticle delivery after TBI

Conference Room E

Sarah Stabenfeldt
Associate Professor, Arizona State University

Tuesday, Jul 13: Conference Room E **11:15 AM - 12:30 PM**

S15-02 - Recent advances in intrathecal delivery for spinal cord and brain diseases

Conference Room E

Rachel Sirianni

Tuesday, Jul 13: Conference Room E **11:15 AM - 12:30 PM**

S15-03 - Intranasal delivery of MSC-derived A-1 exosomes to treat TBI

Conference Room E

Ashok Shetty
Professor and Associate Director, Texas A&M Univ College of Medicine

Tuesday, Jul 13: Conference Room E **11:15 AM - 12:30 PM**

S15-04 - RNA delivery in the brain with focused ulrasound and cationic nanpaprticles

Conference Room E

Costas Arvanitis
Assistant Professor, Georgia Institute of Technology

S15.4 - Talk Description (Arvanitis): While RNA-based therapeutics offer unique advantages for treating brain diseases their potential remains unfulfilled due to the lack of robust and effective RNA-based drug delivery strategies. In this talk, I will highlight how the combined abilities of microbubble enhanced focused ultrasound (MB-FUS) to alleviate vascular and interstitial barriers to transport with those of weakly cationic nanoparticles to prolong RNA circulation and augment cell uptake can lead to a marked improvement (more than 10-fold) in siRNA delivery and gene targeting in the brain.

Tuesday, Jul 13 **12:30 PM - 01:00 PM**

Lunch Break / Free Time

Tuesday, Jul 13: Zoom **12:30 PM - 01:00 PM**

NNS Business Meeting

Zoom

Tuesday, Jul 13 **12:30 PM - 01:00 PM**

Lunch & Learn Workshop

Tuesday, Jul 13: Conference Room A **01:00 PM - 02:00 PM**

DB02 - Data Blitz

Top 20 Posters

Conference Room A SCI TBI

Alison Gammons
Minneapolis VA Health Care System

Athanasios Alexandris
Postdoctoral Fellow, Johns Hopkins University

Britahny Baskin
PhD Candidate, University of Washington; VA Puget Sound Health Care System

Caroline Machado
PhD Student, Federal University of Minas Gerais

Claire Werner
Anatomy PhD Candidate, Penn State University College of Medicine

Coleen Atkins
Associate Professor, University of Miami Miller School of Medicine

David Barton
Postdoctoral Research Fellow, University of Pittsburgh

Felicia Michael
University of Kentucky

Ian Gober
University of Pittsburgh

Jan Frankowski
PhD Candidate, University of California, Irvine

Katherine Giordano
PhD Candidate, University of Arizona College of Medicine-Phoenix

Leah Vaughan McQuillan
University of Pittsburgh

Madeleine Nowak
PhD Candidate, Indiana University

Marina Levochkina
University of Pittsburgh

Michelle Theus
Associate Professor, Virginia Tech

Nabil Awan
University of Pittsburgh

Paresh Prajapati
University of Kentucky

Pedro Andrade
UEF

Razia Sultana
DVM, PhD, Johns Hopkins School of Medicine

Rodney Ritzel
University of Maryland School of Medicine

Tyler Shick
University of Pittsburgh

Youngrim Lee
Johns Hopkins University

Don't have time to visit every poster during the poster session? Hear short 3 min talks from the top trainee poster submissions.Tuesday's Data Blitz session will feature 20 of the top poster abstracts selected to give a fast-paced, 3 min presentation on their research. Presenters will be selected from all trainees who are NNS members and are an

undergraduate student, graduate student, medical student, postdoctoral fellow, or medical resident. This is a terrific way to elevate your poster and share your latest research findings with a broader audience.

Tuesday, Jul 13: Conference Room B **01:00 PM - 02:00 PM**

W05 - How Understanding the Review Process May Impact the Preparation and Success of Grant Applications

Co-Chairs: Patrick Bellgowan & Diana Cummings

Conference Room B

Diana Cummings
Scientific Review Officer, NINDS/NIH

Linda Noble-Hauesslein
Professor, University of Texas at Austin

Natalia Strunnikova
Scientific Review Officer, NIH, NINDS

Patrick Bellgowan
Deputy Associate Director, NINDS, Division of Neuroscience

Paula Elyse Schauwecker
Scientific Review Officer, NIH/Center for Scientific Review

W. Dalton Dietrich
Professor, University of Miami Miller School of Medicine

Researchers at all career stages typically understand the benefits of obtaining programmatic information and support as they navigate the grant application process at the National Institutes of Health (NIH). An in-depth knowledge of NIH peer review can also provide advantages to applicants as they plan, prepare, and submit proposals; yet, this type of information is not as readily available to scientists at early points in their careers. This workshop focuses on informing trainees and early stage investigators about pertinent aspects of the NIH review process and how to effectively use that knowledge throughout the preparation, submission, and review of a ...

Tuesday, Jul 13: Conference Room B **01:00 PM - 02:00 PM**

W05-01 - Your First R01 as an Early Stage Investigator (ESI)

Conference Room B

Linda Noble-Hauesslein
Professor, University of Texas at Austin

Tuesday, Jul 13: Conference Room B **01:00 PM - 02:00 PM**

W05-02 - A View into Scientific Review at the Center for Scientific Review (CSR)

Conference Room B

Paula Elyse Schauwecker
Scientific Review Officer, NIH/Center for Scientific Review

This session will provide a brief overview of the pathway of an application after submission and the review process at the Center for Scientific Review including: (1) assignment of an application to an institute and study section in the Division of Receipt and Referral at the Center for Scientific Review (CSR), (2) the roles of the SRO and Program Officer (PO) before, during and after a meeting, (3) what types of applications are reviewed at CSR, (4) the difference between a standing study section and special emphasis panel (SEP) at CSR, and (5) how a research grant application is reviewed ...

Tuesday, Jul 13: Conference Room B **01:00 PM - 02:00 PM**

W05-03 - Understanding and Navigating Scientific Review at NINDS

Conference Room B

Natalia Strunnikova
Scientific Review Officer, NIH, NINDS

Understanding and Navigating Scientific Review at NINDS. Individual NIH Institutes have their own Scientific Review Branches (SRB) that review programs with specific instructions and customized review criteria. The applications received in response to IC initiated programs with specific research strategy, tailored instructions and requirement for applicants, customized review criteria and the variety of different mechanisms. It is critical to read the IC focused FOAs and RFAs instructions before you submit your application.

Tuesday, Jul 13: Conference Room B **01:00 PM - 02:00 PM**

W05-04 - The Role and Perspective of a Peer Reviewer and Study Section Chair

Conference Room B

W. Dalton Dietrich
Professor, University of Miami Miller School of Medicine

In this presentation we will first discuss various expectations experienced reviewers look for in competitive grant applications. These characteristics range from well-planned specific aims to convincing preliminary data supporting individual studies and the overall application. The actual steps of the study section review process will then be described from the perspective of the Chair. Chair responsibilities can vary according to the specific funding mechanism and scoring criteria. Finally adherence to a well described scoring system based on the specific strengths and weakness of the proposal will be emphasized. This presentation will provide useful information to attendees especially in the early ...

Tuesday, Jul 13: Conference Room B **01:00 PM - 02:00 PM**

W05-05 - The Second Level of Review – An Institute's Advisory Council

Conference Room B

Patrick Bellgowan
Deputy Associate Director, NINDS, Division of Neuroscience

All NIH grants that are proposed to be funded recieve two levels of review. Accompanying presentations in this panel will describe the processes, procedures, and environment in which the first level of review occurs. This presentation will provide a description and details regarding the 'second' level of review which is more commonly known as 'Council' review. Details will be provided regarding the various components of each NINDS Council meeting (Open and Closed Sessions), who attends, who and what is presented, and how decisions are made. Attendees should have a better understanding of their Program Officer's role in the second level ...

Tuesday, Jul 13: Conference Room C **01:00 PM - 02:00 PM**

W06 - Toward "Pan-Neurotrauma" Common Data Elements for Large Scale Data Sharing

Co-Chairs: Karim Fouad & Adam Ferguson

Conference Room C

Adam Ferguson
Professor, Neurological Surgery, University of California School of Medicine

Karim Fouad
Professor, University of Alberta

Publishing raw data is becoming a standard in many research areas. The advantages of publishing raw data is to reduce 'publication bias' (selective publication of only positive), to shine a light on unpublished and 'dark' data, and to promote reproducibility and translational efforts. Over the last several years distinct efforts have been undertaken in traumatic brain injury (TBI) and spinal cord injury (SCI) research to developed common data elements (CDEs) and enable the ability to share data with interoperability in mind. The preclinical TBI CDEs were developed by NIH/NINDS workgroups whereas the the preclinical SCI CDEs were developed through a ...

Tuesday, Jul 13: Conference Room C **01:00 PM - 02:00 PM**

W06-01 - The Open Data Commons for SCI

Conference Room C

Karim Fouad
Professor, University of Alberta

Publishing raw data is becoming a standard in many research areas. The advantages of publishing raw data is to reduce 'publication bias' (selective publication of only positive), to shine a light on unpublished and 'dark' data, and to promote reproducibility and translational efforts. Over the last several years distinct efforts have been undertaken in traumatic brain injury (TBI) and spinal cord injury (SCI) research to developed common data elements (CDEs) and enable the ability to share data with interoperability in mind. The preclinical TBI CDEs were developed by NIH/NINDS workgroups whereas the the preclinical SCI CDEs were developed through a ...

Tuesday, Jul 13: Conference Room C **01:00 PM - 02:00 PM**

W06-02 - The Open Data Commons for TBI and Pan-neurotrauma CDEs

Conference Room C

Adam Ferguson
Professor, Neurological Surgery, University of California School of Medicine

Tuesday, Jul 13: Conference Room D **01:00 PM - 02:00 PM**

W07 - Updates to the International Standards for Neurological Classification of Spinal Cord Injury (ISNCSCI)

Co-Chairs: Keith Tansey & Ruediger Rupp

Conference Room D

Keith Tansey
Professor/Senior Scientist/Physician, U Miss Med Ctr/Methodist Rehab/Jackson VAMC

Ruediger Rupp
Priv.-Doz. Dr.-Ing., Heidelberg University Hospital

This lunch talk will discuss the 2019 updates to the International Standards for Neurological Classification of Spinal Cord Injury (ISNCSCI) and introduce the new Expedited ISNCSCI (E-ISNCSCI) and Research Options ISNCSCI (RO-ISNCSCI). The update highlights include new definitions for the zone of partial preservation and for documenting non-SCI related examination findings. The E-ISNCSCI is designed to use the minimum number of examination steps to document the Neurological Level of Injury (NLI) and the ASIA (American Spinal Injury Association) Impairment Scale (AIS). The RO-ISNCSCI suggests small additions to the ISNCSCI exam (tracking hyper and hypo-algesia and deep tendon reflexes) and ways ...

Tuesday, Jul 13: Conference Room D **01:00 PM - 02:00 PM**

W07-01 - 1)The expedited ISNCSCI exam (E-ISNCSCI), 2) The research options ISNCSCI exam (RO-ISNCSCI)

Conference Room D

Keith Tansey
Professor/Senior Scientist/Physician, U Miss Med Ctr/Methodist Rehab/Jackson VAMC

Tuesday, Jul 13: Conference Room D **01:00 PM - 02:00 PM**

W07-02 - The 2019 ISNCSCI updates and their prognostic implications

Conference Room D

Ruediger Rupp
Priv.-Doz. Dr.-Ing., Heidelberg University Hospital

Tuesday, Jul 13: Conference Room E **01:00 PM - 02:00 PM**

W08 - Preclinical TBI Models 2: Gyrencephalic models

Co-Chairs: Audrey Layfrenaye & Susan Margulies

Conference Room E

Audrey Layfrenaye
Assistant Professor, Virginia Commonwealth University

Susan Margulies
Professor and Chair, Georgia Institute of Technology and Emory University

Victoria Johnson

Session description: Traumatic brain injury (TBI) can lead to significant long-term morbidities as well as significant societal and personal loss. While great progress has been made and many promising therapies have been discovered using lissencephalic rodent models, therapies derived from rodent studies have failed to translate into beneficial interventions clinically. The high reliance solely on lissencephalic species for preclinical TBI research has been argued to be partially responsible for this translational failure, in that some robust processes and mechanisms found in rodents may not occur in humans. However, therapies targeting processes that occur in higher order gyrencephalic animals, would stand ...

Tuesday, Jul 13: Conference Room E **01:00 PM - 02:00 PM**

W08-01 - A central fluid percussion injury model in micropigs for the study of diffuse TBI

Conference Room E

Audrey Layfrenaye
Assistant Professor, Virginia Commonwealth University

Tuesday, Jul 13: Conference Room E **01:00 PM - 02:00 PM**

W08-02 - Modeling clinically-relevant neuropathologies of focal and diffuse TBI

Conference Room E

Victoria Johnson

Tuesday, Jul 13: Conference Room E **01:00 PM - 02:00 PM**

W08-03 - Rotational loading in a piglet model of pediatric TBI

Conference Room E

Susan Margulies
Professor and Chair, Georgia Institute of Technology and Emory University

Tuesday, Jul 13: Conference Room A **01:00 PM - 01:03 PM**

DB02-01: Responsiveness to Exercise following TBI is associated with Inflammatory Burden

Leah Vaughan, University of Pittsburgh - PM&R

Conference Room A

Leah Vaughan McQuillan
University of Pittsburgh

Vaughan Leah, University of Pittsburgh - PM&R, C Singh, Centre for Neuro Skills; Erica Fan, University of Pittsburgh; G Cumpa, Centre for Neuro Skills, Luca Shanley, University of Pittsburgh, Amy Wagner, University of Pittsburgh, Grace Griesbach, Centre for Neuro Skills;The neuroplastic response to exercise, as determined by brain derived neurotrophic factor (BDNF), may be impacted by TBI. Moreover, TBI may lead to lasting changes in immune function associated with regulation and/or activation of neurotrophic and neurorestorative processes relevant to TBI-induced morbidity. We explored BDNF responsiveness to exercise and its association with serum inflammatory markers following TBI. Maximum respiratory oxygen uptake ...

Tuesday, Jul 13: Conference Room A **01:03 PM - 01:06 PM**

DB02-02: Whole-brain mapping of inhibitory circuits following traumatic brain injury

Jan Frankowski, University of California, Irvine

Conference Room A

Jan Frankowski
PhD Candidate, University of California, Irvine

Jan Frankowski, University of California, Irvine, David Lyon, University of California, Irvine; Robert Hunt , University of California, Irvine;Inhibitory interneurons expressing the neuropeptide somatostatin (SST) are among the most vulnerable to injury. In hippocampus, SST interneurons have been shown to be preferentially lost in multiple neurotrauma models and display a massive reorganization of local synaptic network connections following controlled cortical impact injury (CCI). Here we used rabies virus tracing paired with whole-brain clearing and light sheet microscopy to quantify monosynaptic inputs onto SST+ neurons in uninjured control and CCI-injured mice. In uninjured mice, SST+ neurons receive local inputs, as expected, ...

Tuesday, Jul 13: Conference Room A **01:06 PM - 01:09 PM**

DB02-03: Non-neurological organ dysfunction after traumatic brain injury: secondary analysis of Bio-ProTECT

David Barton, University of Pittsburgh

Conference Room A

David Barton
Postdoctoral Research Fellow, University of Pittsburgh

David Barton, University of Pittsburgh; Erica Fan, University of Pittsburgh; Nabil Awan, University of Pittsburgh; Raj Kumar, Mount Sinai; Gina McKernan, University of Pittsburgh; Michael Frankel, Emory University; David W. Wright, Emory University; Amy Wagner, University of Pittsburgh;Non-neurological organ dysfunction (NNOD) may be a prevalent complication and contribute to poor outcome after TBI. The objective of this study is to describe the incidence of NNOD after TBI in a rigorously conducted randomized clinical trial, and further test if NNOD is associated with mortality and GOSE at 6-months post-injury. We performed a secondary analysis of data from the Bio-ProTECT biomarker study ...

Tuesday, Jul 13: Conference Room A **01:09 PM - 01:12 PM**

DB02-04: Elimination of lipid-laden microglia in old mice reverses age-related neurological dysfunction and neuroinflammation after TBI

Rodney Ritzel, University of Maryland School of Medicine

Conference Room A

Rodney Ritzel
University of Maryland School of Medicine

Ritzel Rodney, University of Maryland School of Medicine, Yun Li , University of Maryland School of Medicine; Yun Jiao , University of Maryland; Sarah Doran , University of Maryland School of Medicine, Niaz Khan , University of Maryland School of Medicine, Rebecca Henry , University of Maryland School of Medicine, Junyun He , University of Maryland School of Medicine, Jordan Carter, University of Maryland School of Medicine, Ethan Glaser 1, University of Maryland School of Medicine, Bogdan Stoica , University of Maryland School of Medicine, Alan Faden , University of Maryland School of Medicine, Junfang Wu , University of Maryland ...

Tuesday, Jul 13: Conference Room A **01:12 PM - 01:15 PM**

DB02-05: Interleukin 7 Regulates Adaptive Immunity and Promotes Neurorecovery After Moderate to Severe Traumatic Brain Injury

Tyler Shick, University of Pittsburgh

Conference Room A

Tyler Shick
University of Pittsburgh

Tyler Shick, University of Pittsburgh; Leah Vaughan, University of Pittsburgh; Ian Gober, University of Pittsburgh; Ashley Russell, University of Pittsburgh; Vincent Vagni, University of Pittsburgh; Patrick Kochanek, University of Pittsburgh; Amy Wagner, University of PittsburghTBI produces a robust pro-inflammatory response and cellular immunity derangements, which we hypothesize may be relevant to function and adaptive immunity long-term. Our previous findings suggest elevated IgM autoantibodies to the pituitary and/or hypothalamus may support neurorepair in a clinical TBI population. Since Interleukin 7 (IL-7) has a role in lymphoproliferative processes and antibody production, we hypothesize that recombinant humanized (rh)IL-7 may be neuro-reparative post-TBI. Adult ...

Tuesday, Jul 13: Conference Room A **01:15 PM - 01:18 PM**

DB02-06: Serum Estradiol Associations with Patient Characteristics and Mortality after Moderate-To-Severe TBI: A BioProTECT Study Analysis

Ian Gober, University of Pittsburgh

Conference Room A

Ian Gober
University of Pittsburgh

Gober Ian, University of Pittsburgh, Ashley Russell , University of Pittsburgh; David Barton , University of Pittsburgh; Nabil Awan , University of Pittsburgh, Raj Kumar, Mount Sinai Medical Center, Michael Frankel , Emory Univeristy, David Wright , Emory Univeristy, Amy Wagner , University of Pittsburgh;Endocrine homeostasis is disrupted in moderate-to-severe TBI, specifically affecting the hypothalamic-pituitary-gonadotrophic axis and facilitating extra-gonadal sex hormone production. Previous observational longitudinal studies show that serum estradiol (E2) is elevated acutely after moderate-to-severe TBI and is associated with morbidity and mortality. ProTECT III, a multi-site randomized clinical study, assessed progesterone's effects on TBI outcomes and its companion ...

Tuesday, Jul 13: Conference Room A **01:18 PM - 01:21 PM**

DB02-07: Colony stimulating factor-1 receptor inhibition as a pharmacodynamic mechanism to track peripheral inflammation after TBI

Katherine Giordano, University of Arizona College of Medicine-Phoenix

Conference Room A

Katherine Giordano
PhD Candidate, University of Arizona College of Medicine-Phoenix

Giordano Katherine, University of Arizona College of Medicine-Phoenix, SM Murphy, University of Arizona COM-P; M Saber, University of Arizona COM-P/ Barrow Neurological Institute at Phoenix Children's Hospital; TRF Green , University of Arizona COM-P/ Barrow Neurological Institute at Phoenix Children's Hospital, LM Rojas-Valencia , University of Arizona COM-P/ Barrow Neurological Institute at Phoenix Children's Hospital/ Phoenix VA Health Care System, JB Ortiz , University of Arizona COM-P/ Barrow Neurological Institute at Phoenix Children's Hospital/ Phoenix VA Health Care System, J Lifshitz , University of Arizona COM-P/ Barrow Neurological Institute at Phoenix Children's Hospital/ Phoenix VA Health Care System, RK Rowe, ...

Tuesday, Jul 13: Conference Room A **01:21 PM - 01:24 PM**

DB02-08: Poor sleep quality in TBI animals with epileptiform activity

Pedro Andrade, UEF

Conference Room A

Pedro Andrade
UEF

Andrade Pedro, UEF, Asla Pitkänen, UEF;Introduction: We have previously shown that transitional stage between non-REM and REM sleep is the period when the brain is most prone for generating epileptic seizures in rat lateral fluid-percussion model. We tested a hypothesis that presence of epileptic activity during sleep in rats with TBI will affect sleep architecture and quality of sleep.Methodology: TBI was induced with lateral fluid-percussion injury (FPI) in 27 adult male Spraque-Dawley rats (16 sham-operated rats served as controls). Starting at 7 months post-TBI, animals were continuously video-EEG monitored to assess sleep, epileptiform activity and seizures. A 24-h continuous EEG ...

Tuesday, Jul 13: Conference Room A **01:24 PM - 01:27 PM**

DB02-09: Sex as a biological variable in adverse outcomes following blast exposure

Britahny Baskin, University of Washington; VA

Conference Room A

Britahny Baskin
PhD Candidate, University of Washington; VA Puget Sound Health Care System

BritahnyBaskin, University of Washington; VA, Aric Logsdon , Veterans Affairs Puget Sound; Janet Lee , Veterans Affairs Puget Sound; Elaine Peskind , Veterans Affairs Puget Sound, William Banks , Veterans Affairs Puget Sound, David Cook , University of Washington/ Veterans Affairs Puget Sound, Abigail Schindler , University of Washington/ Veterans Affairs Puget Sound;Mild traumatic brain injury (mTBI) is a leading cause of disability worldwide. Approximately 75% of mTBIs among Operation Iraqi Freedom/Operation Enduring Freedom/Operation New Dawn (OID/OED/OND) are associated with exposure to high explosive detonations. Besides persistent post-concussive symptoms, 50-75% of these individuals experience extensive comorbid psychiatric and behavioral symptoms ...

Tuesday, Jul 13: Conference Room A **01:27 PM - 01:30 PM**

DB02-10: Impact of hepatic CPT2 knockout on neural cell survival post traumatic brain injury

Razia Sultana, Johns Hopkins School of Medicine

Conference Room A

Razia Sultana
DVM, PhD, Johns Hopkins School of Medicine

Sultana Razia, Johns Hopkins School of Medicine, Tiffany Chu, Johns Hopkins School of Medicine;Juliana Condoleo, Johns Hopkins School of Medicine;Susanna Scafidi, Johns Hopkins School of Medicine;Traumatic brain injury (TBI) is characterized by metabolic aberrations at cellular and sub-cellular level, including impaired oxidative glucose metabolism. Ketones (β-hydroxybutyrate (BHB)) are endogenous alternative substrate generated by liver that can cross BBB and modulate inflammation, NAD/NADP ratio, ATP and reactive oxygen species production. However, the requirement for endogenous liver-derived ketones after TBI and their contribution to neuronal survival thereafter remains unknown. In this study we aimed to determine if 1) loss of the liver-generated ...

Tuesday, Jul 13: Conference Room A **01:30 PM - 01:33 PM**

DB02-11: Assessing Individualized Epilepsy Risk after Moderate-to-Severe TBI

Nabil Awan, University of Pittsburgh

Conference Room A

Nabil Awan
University of Pittsburgh

Nabil Awan, University of Pittsburgh; Kristen Breslin, University of Pittsburgh; Dominic DiSanto, University of Pittsburgh; Raj Kumar, Icahn School of Medicine; Shannon Juengst, University of Texas Southwestern; Jerzy Szaflarski, University of Alabama at Birmingham; Ross Zafonte, Spaulding Rehabilitation Hospital; Robert Krafty, Emory University; Amy Wagner, University of PittsburghModerate-to-severe traumatic brain injury (TBI) increases the risk of post-traumatic epilepsy (PTE), yet standardized assessments of individual PTE risk are not available. We used the TBI Model Systems National Database (n=5,371) to develop a free app for PTE prediction to help clinicians with prognostication, prevention, and management of PTE and with clinical trial ...

Tuesday, Jul 13: Conference Room A **01:33 PM - 01:36 PM**

DB02-12: Pharmacological modulation of NMN and NAD+ metabolism protects against Wallerian degeneration in mammalian axons

Athanasios Alexandris, Johns Hopkins University

Conference Room A

Athanasios Alexandris
Postdoctoral Fellow, Johns Hopkins University

Alexandris Athanasios, Johns Hopkins University, Jiwon Ryu , Johns Hopkins University; Robert Harlan, Johns Hopkins University; James McKenney , Johns Hopkins University, Labchan Rajbhandari, Johns Hopkins University, Yiqing Wang , Johns Hopkins University, Susan Aja , Johns Hopkins University, David Graham , Johns Hopkins University, Arun Vankatesan , Johns Hopkins University, Vassilis Koliatsos , Johns Hopkins UniversityWallerian degeneration (WD) is a highly conserved axon self-destruction program that has been implicated in traumatic axonal injury and other neurological disorders. Several key players have been identified as drivers of WD that are centered on the regulation of the NAD+ metabolome. These include ...

Tuesday, Jul 13: Conference Room A **01:36 PM - 01:39 PM**

DB02-13: Impact Of Childhood Trauma On Post-concussive Neurobehavioral Symptoms

Alison Gammons, Minneapolis VA Health Care System

Conference Room A

Alison Gammons
Minneapolis VA Health Care System

Alison Gammons, Minneapolis VA Health Care System; Seth Disner, Minneapolis VA Health Care System, University of MinnesotaAdverse childhood experiences (ACEs) have been associated with a variety of adverse outcomes in adulthood including impaired stress response, changes in the immune and nervous systems, and poor physical and mental health. ACEs are relatively common among the general public, although higher rates are found among military veterans. The present analysis aimed to evaluate how childhood abuse and neglect might be associated with post-concussive neurobehavioral symptoms among veterans who have experienced mild traumatic brain injury (mTBI). The present study included 135 veterans (14.1% female, ...

Tuesday, Jul 13: Conference Room A **01:39 PM - 01:42 PM**

DB02-14: Neuroinflammatory processes are associated with anxiety and depressive-like behaviors secondary to mild traumatic brain injury

Caroline Machado, Federal University of Minas Gerais

Conference Room A

Caroline Machado
PhD Student, Federal University of Minas Gerais

Caroline Machado, Federal University of Minas Gerais, Bruna Oliveira , UFMG; Thomaz Diaz , UFMG; João Barros, UFMG, Gabriel Ferreira, UNICAMP, Thiago Cordeiro , UFMG, Victor Feracin, UFMG, Erika Vieira, UFMG, Gloria Franco, UFMG, Ana Silva , UFMG, Milene Rachid , UFMG, AntônioTeixeira, UTHealth, Aline Miranda , UFMGTraumatic brain injury (TBI) is a major public health problem. Cognitive deficits and psychiatric disorders are important sequelae of TBI. Its pathophysiology remain largely unexplored. Emerging evidence supports that TBI-associated neuropsychiatric sequelae is inflammatory based. Herein, we aim to investigate the role of inflammatory processes in anxiety and depressive-like behaviors secondary to mild ...

Tuesday, Jul 13: Conference Room A **01:42 PM - 01:45 PM**

DB02-15: Sex-specific alterations in inflammatory miRNAs in mouse brain and bone marrow CD11b+ cells following traumatic brain injury

Paresh Prajapati, University of Kentucky

Conference Room A

Paresh Prajapati
University of Kentucky

Prajapati Paresh, University of Kentucky, Wang-Xia Wang, University of Kentucky;Steven Pesina, University of Kentucky; Colleen Bodnar, University of Kentucky, Binoy Joseph, University of Kentucky, Adam Bachstetter, University of Kentucky, Joe E Springer, University of Kentucky;Sex is a key variable in the study of traumatic brain injury (TBI) and plays a significant role in acute and chronic neuroinflammatory responses. Myeloid cell behavior is a critical factor supporting reparative events following TBI. However, the molecular mechanisms contributing to a sexually dimorphic neuroinflammatory response is not well understood. We and others have previously shown that the levels of several inflammatory-related microRNAs are significantly ...

Tuesday, Jul 13: Conference Room A **01:45 PM - 01:48 PM**

DB02-16: Temporal Dynamics of Neutrophil-to-Lymphocyte Levels and Infections After Traumatic Brain Injury

Marina Levochkina, University of Pittsburgh

Conference Room A

Marina Levochkina
University of Pittsburgh

Levochkina Marina, University of Pittsburgh, Leah Vaughan, University of Pittsburgh;Nabil Awan, University of Pittsburgh;Amy Wagner, University of Pittsburgh;Neutrophil-to-Lymphocyte Ratios (NLR) have been explored in the traumatic brain injury (TBI) literature however, to date, no TBI studies have factored in infections. We collected demographic, clinical, and outcome data on patients with moderate-to-severe TBI (n=196). Culture reports, lowest daily absolute (ABS) lymphocyte levels, and highest daily ABS neutrophil levels were collected from electronic medical records 21 days post-TBI, while demographic and injury severity variables were collected from patient interviews. We utilized group-based trajectory (TRAJ) analysis to represent the dynamics of NLR levels ...

Tuesday, Jul 13: Conference Room A **01:48 PM - 01:51 PM**

DB02-17: Traumatic Axonopathy in Spinal Tracts after Impact Acceleration Head Injury: Evidence of SARM1-dependent Wallerian Degeneration

Youngrim Lee, Johns Hopkins University

Conference Room A

Youngrim Lee
Johns Hopkins University

Youngrim Lee1, Athanasios S. Alexandris1, Mohamed Lehar4, Zahra Alam1, Yiqing Wang1, Jiwon Ryu1, Payton Flores1, Vassilis E. Koliatsos1, 2, 3 , 1 Johns Hopkins University, Division of Neuropathology, Baltimore, USA, 2 Johns Hopkins University, Department of Neurology, Baltimore, USA, 3 Johns Hopkins University, Department of Psychiatry and Behavioral Sciences, Baltimore, USA, 4 Johns Hopkins University, Department of Otolaryngology-HNS, Baltimore, USATraumatic axonal injury (TAI) is a common traumatic brain injury (TBI)-associated neuropathology and a major cause of neurological impairments following TBI. As we and others have previously shown, TAI activates a highly conserved program of axonal self-destruction known as Wallerian degeneration ...

Tuesday, Jul 13: Conference Room A **01:51 PM - 01:54 PM**

DB02-18: Neuro-Ophthalmologic function in attention-deficit/hyperactivity disorder after repeat sports-related head impacts

Madeleine Nowak, Indiana University

Conference Room A

Madeleine Nowak
PhD Candidate, Indiana University

Madeleine K. Nowak, Indiana University; Patrick Quinn, Indiana University; Timothy Mickleborough, Indiana University; Sharlene Newman, Indiana University; Keisuke Kawata, Indiana University.Background: Athletes diagnosed with attention-deficit/hyperactivity disorder (ADHD) have increased complications and likelihood of experiencing concussion. Concussive and subconcussive head impacts (SHI) have been shown to impair ophthalmologic function in individuals with no diagnosis of ADHD. However, the influence ADHD has on neuro-ophthalmologic susceptibility to acute SHI has never been investigated. Purpose: The purpose of this study was to determine the neuro-ophthalmologic response to SHI in individuals diagnosed with ADHD. Method: In this case-control intervention study, soccer players diagnosed with ADHD ...

Tuesday, Jul 13: Conference Room A **01:54 PM - 01:57 PM**

DB02-19: Colonic Neuromuscular Transmission Failure in Female Rats after Spinal Cord Injury

Claire Werner, Penn State University College of Medicine

Conference Room A

Claire Werner
Anatomy PhD Candidate, Penn State University College of Medicine

Werner Claire, Penn State University College of Medicine, Lisa Willing, Penn State University College of Medicine; Gregory Holmes, Penn State University College of Medicine;After spinal cord injury (SCI), individuals commonly experience gastrointestinal comorbidities, including neurogenic bowel, a condition where colonic dysmotility causes chronic constipation and difficulty with evacuation. Located intrinsic to the gastrointestinal tract, the enteric nervous system (ENS) is not damaged by the initial trauma, serving as a potential pharmacologic target. The enteric neuromuscular control of colonic slow-wave propagation is a balance of excitatory and inhibitory inputs to Interstitial Cells of Cajal (ICC); pacemaker cells that are interposed between ...

Tuesday, Jul 13: Conference Room A **01:57 PM - 02:00 PM**

DB02-20: Spinal cord injury induces alterations in the regulation of gene expression by intron retention

Felicia Michael, University of Kentucky

Conference Room A

Felicia Michael
University of Kentucky

Michael Felicia, University of Kentucky, Samantha Danyi, University of Kentucky;Samir Patel, University of Kentucky;Pierre de la Grange, GenoSplice, Stefan Stamm, University of Kentucky, Alexander Rabchevsky, University of Kentucky;Spinal cord injury (SCI) often leads to severe muscle spasticity in response to stimuli below the lesion level. While hyper-activation of serotonin receptor 2C (5HT2C) is attributed to spasm onset and maintenance in rodent SCI models, a comprehensive understanding of molecular changes contributing to spasticity following chronic SCI is incomplete. We used a rat SCI model that results in tail muscle spasms without affecting bladder, bowel or locomotor function following complete transection at ...

Tuesday, Jul 13 **02:00 PM - 03:30 PM**

Poster Session B

Live Poster Session for Group B Join us in SpatialChat for LIVE poster presentations using a unique, interactive platform. Click Here to Enter SpatialChat: https://spatial.chat/s/NNS2021 *If you miss this live session, you can connect with the poster presenter in the Poster Hall section of the virtual platform. There you can view their poster, send them a message, live chat or even watch a recorded video presentation if they have provided one.How to Attend LIVE Poster Sessions Go to SpatialChat to log in. When logging in enter your full name and group or company affiliation, e.g., Rio Febrian (CCHF/Emory). In the ...

Tuesday, Jul 13: Grand Ballroom **03:30 PM - 04:00 PM**

P02 - Patient Perspective: SCI

Chair: Adam Ferguson

Grand Ballroom SCI

Adam Ferguson
Professor, Neurological Surgery, University of California School of Medicine

Chris Barr

Sanjay Dhall

Speakers: Chris Barr & Sanjay Dhall

Tuesday, Jul 13: Conference Room A **04:00 PM - 05:15 PM**

S16 - Injury Biomechanics as a Translational Tool

Co-Chairs: Lee Goldstein & Marzieh Hajiaghamemar

Conference Room A

David Camarillo
Associate Professor, Stanford University

Kristy Arbogast
Professor, Children's Hospital of Philadelphia and University of Pennsylvania

Lee Goldstein, MD, PhD
Associate Professor, Boston University School of Medicine & College of Engineering

Marzieh Hajiaghamemar
Assistant Professor, University of Texas at San Antonio

Susan Margulies
Professor and Chair, Georgia Institute of Technology and Emory University

Animal models of TBI, in which precise head kinematic loading can be applied and measured in a controlled laboratory setting, are critical to developing causality between biomechanics and neuropathology and predicting the likelihood and severity of TBI. However, an important challenge is to design animal studies that represent human brain biomechanics in real-world impact conditions. To illustrate translation between human biomechanical head impact studies to an animal model of TBI, this talk will describe a study where the goal was to determine the appropriate head kinematics that produce axonal stretch and brain tissue deformations in a porcine model similar to ...

Tuesday, Jul 13: Conference Room A **04:00 PM - 05:15 PM**

S16-01 - Scaling loading conditions and assessments across species

Conference Room A

Susan Margulies
Professor and Chair, Georgia Institute of Technology and Emory University

Tuesday, Jul 13: Conference Room A **04:00 PM - 05:15 PM**

S16-02 - Toward Prevention of mild Traumatic Brain Injury

Conference Room A

David Camarillo
Associate Professor, Stanford University

Mild traumatic brain injury (mTBI) affects 55 million people worldwide and can lead to neurodegenerative disease. My goal is to enable early detection and prevention of mTBI. We have pioneered sensing of head acceleration through the teeth, which has spawned a new industry of “smart” mouthguards. In my laboratory, we use this acceleration data to drive finite element models of the brain, combined with sensitive neuroimaging to discover mechanisms of mTBI. I will present preliminary data that suggests that blood brain barrier disruption, a potential initiator of neurodegeneration, is a common mechanism of mTBI in contact sports. Finally, I will ...

Tuesday, Jul 13: Conference Room A **04:00 PM - 05:15 PM**

S16-03 - Head Impact Sensors to Define Loading Conditions for Pre-Clinical Models

Conference Room A

Kristy Arbogast
Professor, Children's Hospital of Philadelphia and University of Pennsylvania

Tuesday, Jul 13: Conference Room A **04:00 PM - 05:15 PM**

S16-04 - Biomechanics of Concussion and Relationship to Acute-Chronic Effects of Neurotrauma

Conference Room A

Lee Goldstein, MD, PhD
Associate Professor, Boston University School of Medicine & College of Engineering

This talk will present recent research on the biomechanics that drive and differentiate acute concussion and posttraumatic sequelae, including chronic traumatic encephalopathy (CTE). Results from animal models of blast exposure and closed-head impact injury conducted in unanesthetized mice under experimental conditions matched for head kinematics show that both insults reliably induce core features of acute neurotrauma and CTE neuropathology as in humans. However, closed-head impact injury, but not blast exposure, triggers a transient, lateralized neurobehavioral syndrome that recapitulates acute concussion in humans. The biomechanics that differentiate these injuries with respect to acute concussion but induce similar pathological sequelae result from ...

Tuesday, Jul 13: Conference Room B **04:00 PM - 05:15 PM**

S17 - Modeling and Investigating Opioid Use Following TBI: From Rodent to Human and Back Again

Co-Chairs: Alana Conti & Kelly Bosse

Conference Room B

Alana Conti
Associate Professor/Health Science Specialist, Wayne State University/John D. Dingell VA Medical Center

Christopher Olsen
Associate Professor, Medical College of Wisconsin

Kelly Bosse
Health Science Specialist/Adjunct Assistant Professor, Wayne State University

Kristen Dams O'Connor

Rachel Sayko Adams
Scientist, Brandeis University, Institute for Behavioral Health, Heller School for Social Policy & Management

Reports of pain symptoms after traumatic brain injury (TBI) are staggering, with opioids representing a common clinical strategy to manage pain in this population. As the opioid epidemic continues, emerging research has found that individuals who sustain a TBI remain at substantially higher risk for not only opioid use/misuse, but also for the most devastating outcomes of opioid misuse (i.e., overdose and death). Mechanisms underlying these risks remain unclear, but suggest a synergistic interaction between TBI and opioid exposure. Therefore, it is critical to address the distinct challenges faced by people with TBI who receive opioid therapy after injury, and ...

Tuesday, Jul 13: Conference Room B **04:00 PM - 05:15 PM**

S17-01 - Changes in Medial Prefrontal Cortex Associated with Elevated Oxycodone Seeking following Repeated Mild TBI

Conference Room B

Christopher Olsen
Associate Professor, Medical College of Wisconsin

Tuesday, Jul 13: Conference Room B **04:00 PM - 05:15 PM**

S17-02 - Opioid Exposure following TBI Exacerbates Pathological Post-injury Outcomes

Conference Room B

Alana Conti
Associate Professor/Health Science Specialist, Wayne State University/John D. Dingell VA Medical Center

Increases in prescription opioid use among Veterans with TBI reflects the broader, nationwide opioid abuse and dependence crisis and highlights the need to understand the long-term, progressive deficits, such as those related to reward-seeking and pain outcomes, that may selectively and disproportionately occur in TBI patients given post-injury opioid therapy. There is support for involvment of reactive oxidative species (ROS) mediators that are upregulated acutely after TBI and drive long-term proinflammatory microglial activation in TBI-induced pain. The prototypical opioid therapeutic, morphine, has been identified as a potent generator of ROS and strong activator of the immune system, opening the possibility ...

Tuesday, Jul 13: Conference Room B **04:00 PM - 05:15 PM**

S17-03 - Risks and Consequences of Opioid Use following TBI: A perfect storm

Conference Room B

Kristen Dams O'Connor

Tuesday, Jul 13: Conference Room B **04:00 PM - 05:15 PM**

S17-04 - History of TBI as a Risk Factor for Prescription Opioid Misuse and Adverse Consequences

Conference Room B

Rachel Sayko Adams
Scientist, Brandeis University, Institute for Behavioral Health, Heller School for Social Policy & Management

Dr. Adams' presentation will extend the discussion of the "perfect storm" theory introduced by Dr. Dams-O'Connor. She will describe empirical studies supporting the second and third stages of the "perfect storm" - that persons with TBI who use opioids are more likely to advance to opioid misuse or opioid use disorder (OUD); and if OUD is present, may face greater challenges accessing and experiencing successful substance use disorder treatment. Her talk will conclude with a discussion of implications for substance use treatment providers when treating clients with a history of TBI.

Tuesday, Jul 13: Conference Room C **04:00 PM - 05:15 PM**

S18 - Cellular Therapy for SCI: Clinical Trials and Emerging Approaches

Co-Chairs: Michael Fehlings & Ann Parr

Conference Room C

Ann Parr
Associate Professor, University of Minnesota

Katie Gant
Research Assistant Professor, The Miami Project to Cure Paralysis, University of Miami Miller School of Medicine

Michael Fehlings
Professor of Neurosurgery, University of Toronto

Michael Lane
Associate Professor, Drexel University & Marion Murray Spinal Cord Research Center (MMSCRC)

Mohamad Khazaei
Scientific Associate, Krembil Research Institute

Narihito Nagoshi
Assistant Professor - Orthopaedics, Keio University School of Medicine

Tuesday, Jul 13: Conference Room C **04:00 PM - 05:15 PM**

S18-01 - Next Generation stem cell therapy for cervical SCI

Conference Room C

Mohamad Khazaei
Scientific Associate, Krembil Research Institute

Tuesday, Jul 13: Conference Room C **04:00 PM - 05:15 PM**

S18-02 - iPS cell transplantation for SCI

Conference Room C

Narihito Nagoshi
Assistant Professor - Orthopaedics, Keio University School of Medicine

Tuesday, Jul 13: Conference Room C **04:00 PM - 05:15 PM**

S18-03 - Schwann cells therapy for SCI

Conference Room C

Katie Gant
Research Assistant Professor, The Miami Project to Cure Paralysis, University of Miami Miller School of Medicine

Tuesday, Jul 13: Conference Room C **04:00 PM - 05:15 PM**

S18-04 - Cellular Therapy in Preclinical SCI

Conference Room C

Michael Lane
Associate Professor, Drexel University & Marion Murray Spinal Cord Research Center (MMSCRC)

Tuesday, Jul 13: Conference Room D **04:00 PM - 05:30 PM**

S19 - Post-Traumatic Epilepsy: TBI and Epilepsy Crosstalk Studies

Co-Chairs: Kevin Wang & Lauren Harte-Hargrove

Conference Room D

Amy Wagner
Professor and Vice-chair Academic Development, University of Pittsburgh

Firas Kobeissy
Assistant professor, University of Florida

Kevin Staley

Lauren Harte-Hargrove
Associate Director of Research, CURE Epilepsy

Michelle Theus
Associate Professor, Virginia Tech

Victoria Johnson

This session represents a unique opportunity for the audience to learn about the Citizens United for Research in Epilepsy (CURE) Post-traumatic Epilepsy (PTE) Initiative, addressing individuals including veterans and military personnel affected by traumatic brain injury (TBI) and resulting in PTE. While brain injury and epilepsy have both been considered highly investigated and dissected in terms of pathology, diagnosis, and treatment, the area of PTE is underinvestigated and often underreported. PTE represents a debilitating complication of TBI causing chronic morbidity, while representing 5% of all epilepsies. Predicting which TBI patient will develop PTE can be challenging. Additionally, it is often ...

Tuesday, Jul 13: Conference Room D **04:00 PM - 05:15 PM**

S19-01 - The Role of Extracellular Matrix Injury in Post-Traumatic Epilepsy

Conference Room D

Kevin Staley

Tuesday, Jul 13: Conference Room D **04:00 PM - 05:15 PM**

S19-02 - Vascular Injury, Gliosis & Neurogenesis as Drivers for Post-Traumatic Epilepsy

Conference Room D

Michelle Theus
Associate Professor, Virginia Tech

Tuesday, Jul 13: Conference Room D **04:00 PM - 05:15 PM**

S19-03 - Identifying Proteomic, Metabolomic and MicroRNA Signatures for Spontaneous Seizures in a CD1-mouse Model TBI

Conference Room D

Firas Kobeissy
Assistant professor, University of Florida

Tuesday, Jul 13: Conference Room D **04:00 PM - 05:15 PM**

S19-04 - Neuropathological Mechanisms of Epileptogenesis in Post-Traumatic Epilepsy

Conference Room D

Victoria Johnson

Tuesday, Jul 13: Conference Room D **04:00 PM - 05:15 PM**

S19-05 - Genomic Risk Factors in Post-Traumatic Epilepsy

Conference Room D

Amy Wagner
Professor and Vice-chair Academic Development, University of Pittsburgh

Currently, there are no accepted biomarkers reflective of epileptogenesis or PTE risk, and there are no definitive preventatives or treatments for PTE. We have built prognostic models for PTE prediction that capture variance in PTE risk from clinical and demographic factors. While these models capture information important for PTE prediction, personal biology like genetic variation may further improve our ability to accurately predict who may go on to develop PTE after traumatic brain injury (TBI). Multiple reports suggesting genetic variation among candidate genes relevant to TBI and to epileptogenesis can increase PTE risk and accelerate time to first clinical seizure. ...

Tuesday, Jul 13: Conference Room E **04:00 PM - 05:15 PM**

S20 - Health Disparities in Neurotrauma

Co-Chair: Jill Daugherty & Monica Vavilala

Conference Room E

Jill Daugherty
Epidemiologist, CDC/DDNID/NCIPC/DIP

Monica Vavilala

Suresh Agarwal

For survivors, a TBI can lead to short- or long-term problems that may affect all aspects of a person's life, including the ability to work or build relationships with others, and it can change how a person thinks, acts, feels, and learns. While anyone is at risk for getting a TBI, some groups have a greater likelihood of dying from a TBI or living with long-term problems that resulted from the injury. This first talk will provide a summary of disparities in TBI incidence and outcome by demographics, with a particular focus on disparities by rural/urban residence. The second talk ...

Tuesday, Jul 13: Conference Room E **04:00 PM - 05:15 PM**

S20-01 - TBI disparities overview + rural/urban differences

Conference Room E

Jill Daugherty
Epidemiologist, CDC/DDNID/NCIPC/DIP

Tuesday, Jul 13: Conference Room E **04:00 PM - 05:15 PM**

S20-02 - Racial and Socioeconomic Outcome Disparities in Traumatic Brain Injury

Conference Room E

Suresh Agarwal

Tuesday, Jul 13: Conference Room E **04:00 PM - 05:15 PM**

S20-03 - Ideas for reducing TBI disparities

Conference Room E

Monica Vavilala

Tuesday, Jul 13 **05:15 PM - 05:30 PM**

Break

Tuesday, Jul 13 **05:15 PM - 05:20 PM**

Tuesday End-of-Day Announcements

Program Chair: Michelle LaPlaca

Michelle LaPlaca
Professor, Georgia Tech / Emory

Tuesday, Jul 13: Grand Ballroom **05:30 PM - 07:00 PM**

Awards Celebration & Trivia Social

Grand Ballroom Social Event

Coleen Atkins
Associate Professor, University of Miami Miller School of Medicine

Eve Tsai, MD,PhD
Associate Professor, Neuroscience Program, Ottawa Hospital Research Institute

Grace Griesbach
President, National Neurotrauma Society

Michelle LaPlaca
Professor, Georgia Tech / Emory

Award CeremonyImmediately followed by Grab your favorite cocktail and a device to compete for the title of "Biggest Neurotrauma Brain" Join us for an epic battle to see who has the "biggest brain" at Neurotrauma 2021! Test your trivia knowledge and earn bonus game points during this hour of fun. Who knows what you could win…gamification points will be provided for all participants with special bonus points for the top 3 winners!

Wednesday, Jul 14 **09:00 AM - 05:00 PM**

Collaborations & Catching Up

Optional Networking

Wednesday, Jul 14 **09:30 AM - 09:45 AM**

Stress Release - Progressive Muscle Relaxation Training

Wednesday, Jul 14 **10:00 AM - 10:15 AM**

Opening Announcements

Michelle LaPlaca

Michelle LaPlaca
Professor, Georgia Tech / Emory

Wednesday, Jul 14: Grand Ballroom **10:15 AM - 11:00 AM**

Keynote 03 - Donald G. Stein - 2020 NNS Honorary Award Keynote

Co-Chairs: Deborah Shear and Gary Dunbar

Grand Ballroom Keynote TBI

Donald Stein
Asa G. Candler Professor, Distinguished Professor, Emory University

When you come to a fork in the road, take it: 50+ years of research on brain damage, repair and functional recovery.The search for safe and effective treatments for TBI, stroke and other serious disorders of the brain and central nervous system has been difficult. It's not all that long ago (when I was a graduate student) that Ramon y Cajal's dictum, was taken as solid fact: "in the adult nervous system, everything may die, nothing may regenerate2. Observations of functional recovery after brain injury were thought of as 'tricks' or compensatory strategies, rather than considering the possibility that the ...

Wednesday, Jul 14 **11:00 AM - 11:15 AM**

Break

Wednesday, Jul 14: Conference Room A **11:15 AM - 12:30 PM**

S21 - Neurotrauma Advocacy: Building a Pathway for the Future

Co-Chairs: Grace Griesbach & Amy Wagner

Conference Room A

Alexander Rabchevsky
Professor, University of Kentucky

Amy Wagner
Professor and Vice-chair Academic Development, University of Pittsburgh

Barry Munro
Treasurer, North American Spinal Cord Injury Consortium

Grace Griesbach
President, National Neurotrauma Society

Michelle LaPlaca
Professor, Georgia Tech / Emory

Susan Connors
President/CEO, Brain Injury Association of America

A major goal of neurotrauma research is to improve both functional outcome and quality of life for individuals suffering from brain and spinal cord injury. In order to reach such a goal, it is becoming clear that is vitally important to known the needs of those who are affected, and the opportunities presented by research advancements to the legislative branch and broader community. This session will be devoted to understanding advocacy and to provide information on current advocacy opportunities for both SCI and TBI researchers to engage in for our ultimate goals and will include past and present NNS Presidents. ...

Wednesday, Jul 14: Conference Room A **11:15 AM - 12:30 PM**

S21-01 - NNS Recommendations for Advocacy

Conference Room A

Grace Griesbach
President, National Neurotrauma Society

Wednesday, Jul 14: Conference Room A **11:15 AM - 12:30 PM**

S21-02 - NNS Efforts for Advocacy

Conference Room A

Amy Wagner
Professor and Vice-chair Academic Development, University of Pittsburgh

As the 2018-2019 NNS Past President and the Program Chair for the 2019 Neurotrauma Symposium, I will summarize the rationale and need for an NNS advocacy committee. I will also walk session attendees through the NNS 2019 Stakeholder Workshop on Advocacy and the interactive development of three key recommendations identified through this workshop as a initial roadmap for the successful launch of the NNS Advocacy Committee.

Wednesday, Jul 14: Conference Room A **11:15 AM - 12:30 PM**

S21-03 - Advocacy Pathways for SCI

Conference Room A

Alexander Rabchevsky
Professor, University of Kentucky

Wednesday, Jul 14: Conference Room A **11:15 AM - 12:30 PM**

S21-04 - Lessons from the North American Spinal Cord Injury Consortium (NASCIC)

Conference Room A

Barry Munro
Treasurer, North American Spinal Cord Injury Consortium

Wednesday, Jul 14: Conference Room A **11:15 AM - 12:30 PM**

S21-05 - Linking Local and National Efforts in TBI Advocacy

Conference Room A

Michelle LaPlaca
Professor, Georgia Tech / Emory

Wednesday, Jul 14: Conference Room A **11:15 AM - 12:30 PM**

S21-06 - Legislative Pathway for TBI

Conference Room A

Susan Connors
President/CEO, Brain Injury Association of America

Wednesday, Jul 14: Conference Room B **11:15 AM - 12:30 PM**

S22 - Frontiers in mTBI Imaging

Co-Chairs: Vince Calhoun & Ramon Diaz-Arrastia

Conference Room B

Inga Katharina Koerte
Prof., Harvard Medical School

Pratik Mukherjee

Ramon Diaz-Arrastia
Professor, University of Pennsylvania

Vince Calhoun

Repetitive head impacts (RHI) are sustained by millions of people in their work environment or while participating in contact-sports. RHI are commonly defined as repeated impacts to the head that do not elicit acute symptoms typically observed in concussions or mild traumatic brain injuries. Although, there are usually no acute symptoms following RHI, growing evidence suggests a link between exposure to RHI and mental health problems and neurodegenerative disorders later in life. Despite the large prevalence of RHI and the growing literature on the long-term effects associated with RHI, our understanding of the pathophysiological processes that lead to brain alterations ...

Wednesday, Jul 14: Conference Room B **11:15 AM - 12:30 PM**

S22-01 - MRI Biomarkers of mild TBI

Conference Room B

Pratik Mukherjee

Wednesday, Jul 14: Conference Room B **11:15 AM - 12:30 PM**

S22-02 - Imaging Changes Following Asymptomatic mild TBI

Conference Room B

Inga Katharina Koerte
Prof., Harvard Medical School

Repetitive head impacts (RHI) are sustained by millions of people in their work environment or while participating in contact-sports. RHI are commonly defined as repeated impacts to the head that do not elicit acute symptoms typically observed in concussions or mild traumatic brain injuries. Although, there are usually no acute symptoms following RHI, growing evidence suggests a link between exposure to RHI and mental health problems and neurodegenerative disorders later in life. Despite the large prevalence of RHI and the growing literature on the long-term effects associated with RHI, our understanding of the pathophysiological processes that lead to brain alterations ...

Wednesday, Jul 14: Conference Room B **11:15 AM - 12:30 PM**

S22-03 - Machine Learning Using Resting State Functional Network Connectivity for Detection of mTBI

Conference Room B

Vince Calhoun

Wednesday, Jul 14: Conference Room C **11:15 AM - 12:30 PM**

S23 - Multiple Dimensions of TBI-Related Neurodegeneration

Co-Chairs: Douglas Smith & Corina Bondi

Conference Room C

Corina Bondi
Assistant Professor, University of Pittsburgh

Douglas H. Smith
Professor, Center Director, University of Pennsylvania

Fiona Crawford
President & CEO, The Roskamp Institute Inc

Kristen Dams O'Connor

Sharon Juliano
Professor, USUHS

William Stewart
Professor, University of Glasgow

Wednesday, Jul 14: Conference Room C **11:15 AM - 12:30 PM**

S23-01 - (TReND): New Characterization of TBI-Related Neurodegeneration Pathologies

Conference Room C

William Stewart
Professor, University of Glasgow

Wednesday, Jul 14: Conference Room C **11:15 AM - 12:30 PM**

S23-02 - Long-term outcomes of TBI

Conference Room C

Kristen Dams O'Connor

Wednesday, Jul 14: Conference Room C **11:15 AM - 12:30 PM**

S23-03 - The expression of tau and its isoforms after TBI in the ferret

Conference Room C

Sharon Juliano
Professor, USUHS

Wednesday, Jul 14: Conference Room C **11:15 AM - 12:30 PM**

S23-04 - Targets for TBI-related neurodegeneration in different mouse models of repetitive mild TBI

Conference Room C

Fiona Crawford
President & CEO, The Roskamp Institute Inc

Our team has developed and characterized several different mouse models of repetitive mild TBI (r-mTBI), demonstrating different neurobehavioral, neuropathological and biochemical outcomes, which recapitulate features of human TBI and are thus of translational relevance. Our different r-mTBI models all utilize the same actual mTBI (midline, closed head impact) delivered in paradigms of different frequency and timecourse, in an attempt to mimic the heterogeneity of human r-mTBI. We have pioneered evaluation of these models at a wide range of timepoints post-injury, including truly chronic timepoints, in order to better determine the long-term effects of neurotrauma and the time-dependent pathobiological changes which ...

Wednesday, Jul 14: Conference Room D **11:15 AM - 12:30 PM**

S24 - Neural Immunity in TBI

Co-Chairs: David Loane & Levi Wood

Conference Room D

David Loane
Assistant Professor of Neuroscience, Trinity College Dublin, Ireland

Jonathan Godbout

Levi Wood
Assistant Professor, Georgia Institute of Technology

Linda Van Eldik
Director, Sanders-Brown Center on Aging, University of Kentucky

Michael J. Whalen
Associate Professor of Pediatrics/Critical Care Medicine, Massachusetts General Hospital

Susanna Rosi
Lewis and Ruth Cozen Chair II, Professor and Director of Neurocognitive Research, University of California San Francisco
Traumatic brain injuries elicit a neural immune response consisting of microglial and/or astrocytic activation with abilities to potentiate both acute injury and long-term tissue pathology and deficits in functional outcomes. Because neural immunity is mediated by both intra- extra-cellular signaling mechanisms that regulate neuronal, astrocytic, and microglial activity, understanding these signaling mechanisms and how to intervene in them represents an attractive translational pathway for TBI research. The goal of this session is to delineate recent findings on the role of neural immune signaling in regulating cellular response after various forms of TBI.

Wednesday, Jul 14: Conference Room D **11:15 AM - 12:30 PM**

S24-01 - Targeting Integrated Stress Response to reverse Cognitive and Behavioral deficits after Brain Injury

Conference Room D

Susanna Rosi
Lewis and Ruth Cozen Chair II, Professor and Director of Neurocognitive Research, University of California San Francisco

Wednesday, Jul 14: Conference Room D **11:15 AM - 12:30 PM**

S24-02 - Targeting Inflammatory Cytokine Dysregulation in Acute CNS Injury

Conference Room D

Linda Van Eldik
Director, Sanders-Brown Center on Aging, University of Kentucky

Our long-term research interest is in targeting the mechanisms by which abnormal inflammation in the brain contributes to the pathology and progression of brain disorders. Our strategy is to target one aspect of dysregulated inflammation in the brain, specifically disease- or injury-induced overproduction of proinflammatory cytokines. This mechanism is now widely appreciated as a direct contributor to neuronal damage and synaptic dysfunction, neurodegeneration and cognitive decline in diverse neurodegenerative diseases and CNS injury conditions. Therefore, our goal was to develop water-soluble, orally bioavailable, CNS-penetrant, chemically and metabolically stable small molecules that selectively suppress excessive proinflammatory cytokine production. My talk will ...

Wednesday, Jul 14: Conference Room D **11:15 AM - 12:30 PM**

S24-03 - Role of Interleukin-1 in Focal and Diffuse Experimental Traumatic Brain Injury in Mice

Conference Room D

Michael J. Whalen
Associate Professor of Pediatrics/Critical Care Medicine, Massachusetts General Hospital

Wednesday, Jul 14: Conference Room D **11:15 AM - 12:30 PM**

S24-04 - Chronic and Evolving Inflammation after Traumatic Brain Injury: Microglial Priming and Neuropsychiatry

Conference Room D

Jonathan Godbout

Wednesday, Jul 14: Conference Room E **11:15 AM - 12:45 PM**

S25 - Neurotechnology Advances to Improve SCI Outcomes

Co-Chairs: Kim Anderson and Maxwell Boakye

Conference Room E

Aaron Phillips
Professor, University of Calgary

Claudia Alejandra Angeli
Assistant Professor, University of Louisville

Kimberly Anderson
Professor, MetroHealth System-Case Western Reserve University

Maxwell Boakye
Professor, University of Louisville

Monica Perez
Scientific Chair Arms & Hands Lab; Professor, Shirley Ryan AbilityLab; Northwestern University

What's it like to be a participant in an early feasibility study of advanced neurotchnology for SCI? Analyzing data through the looking glass - Kim AndersonSynergistic neuromodulation strategies in SCI used in motor function recovery - Claudia Alejandra AngeliMechanism-guided development of a hemotherapy for SCI - Aaron PhillipsEpidural stimulation for chronic SCI - surgical and quality of life outcomes - Maxwell BoakyeNeurostimulation for SCI: A route to new treatments - Monica Perez

Wednesday, Jul 14: Conference Room E **11:15 AM - 12:30 PM**

S25-01 - What's it like to be a participant in an early feasibility study of advanced neurotechnology for SCI? Analyzing data through the looking glass.

Conference Room E

Kimberly Anderson
Professor, MetroHealth System-Case Western Reserve University

Very few people have the opportunity and chose to participate in an early feasibility study. The opportunity arose for me to participate in the early feasibility study testing the Networked Neuroprosthesis, an advanced neurotechnology targeting upper extremity and trunk function after SCI. Being a person with SCI and a scientist, I will describe my experience as a participant and provide an enhanced interpretation of my data. Included in the talk will be a description of my experience before, during, and after the implantation procedure, a description of the functions provided to me by the Networked Neuroprosthesis, and the real world ...

Wednesday, Jul 14: Conference Room E **11:15 AM - 12:30 PM**

S25-02 - Synergistic neuromodulation strategies in SCI used in motor function recovery

Conference Room E

Claudia Alejandra Angeli
Assistant Professor, University of Louisville

We have previously shown that chronic, motor complete SCI individuals can progressively recover voluntary movement and standing ability when lumbosacral spinal cord epidural stimulation (scES) is applied with task-specific parameters. Similarly, task-specific training combined with scES and intent enabled two out of four individuals to recovered the ability to walk over-ground with an assistive device. Here I will present how activity-based therapy used synergistically with scES neuromodulation can be used to restore motor function in individuals with motor complete spinal cord injury. I will compare two different training paradigms with scES, and evaluate whether standing and stepping can be concurrently ...

Wednesday, Jul 14: Conference Room E **11:15 AM - 12:30 PM**

S25-03 - Mechanism-Guided Development of a Hemotherapy for Spinal Cord Injury

Conference Room E

Aaron Phillips
Professor, University of Calgary

Wednesday, Jul 14: Conference Room E **11:15 AM - 12:30 PM**

S25-04 - Epidural stimulation for Chronic Spinal cord injury- surgical and quality of life outcomes

Conference Room E

Maxwell Boakye
Professor, University of Louisville

We will review results of spinal cord epidural stimulation (scES) at the University of Louisville for motor and cardiovascular improvement after spinal cord injury. In one of the most extensive series (N=25) to date, we will present surgical, training and device-related complications, motor and cardiovascular outcomes, functional and quality of life outcomes and patient satisfaction. We will draw conclusions regarding safety and impact of scES in this population and its [otential role in SCI care.

Wednesday, Jul 14: Conference Room E **11:15 AM - 12:45 PM**

S25-05 - Neurostimulation for Spinal Cord Injury: A Route to New Treatments

Conference Room E

Monica Perez
Scientific Chair Arms & Hands Lab; Professor, Shirley Ryan AbilityLab; Northwestern University

Wednesday, Jul 14 **12:30 PM - 01:00 PM**

Lunch Break / Free Time

Wednesday, Jul 14: Conference Room A **01:00 PM - 02:30 PM**

S26 - Special Session: Neurological Manifestations of COVID-19 and Potential Overlaps with Neurotrauma

Co-Chairs: Michelle Schober & Courtney Robertson

Conference Room A

Helena Radbruch
Dr., Charité

Kevin Wang
Professor, Director, University of Florida

Sherry Chou
Associate Professor, University of Pittsburgh

Susan Palasis
Division Chief, Pediatric Neuroradiology, Lurie Children's Hospital of Chicago

Palasis: This talk will review the most frequently encountered neuroimaging manifestations of COVID-19 encountered in children in the acute phase of disease and those with mustisystem inflammatory condition in childhood (MIS-C) based on a multi-center international collaborative study. Differences with adult COVID-19 presentations will reviewed.Radbruch: We demonstrate the presence of SARS-CoV-2 RNA and protein in anatomically distinct regions of the nasopharynx and brain. Furthermore, we describe the morphological changes associated with infection and present evidence of SARS-CoV-2 neurotropism. SARS-CoV-2 can probably follow neuroanatomical structures, penetrating defined neuroanatomical areas including the primary respiratory and cardiovascular control center in the medulla oblongata.Wang: ...

Wednesday, Jul 14: Conference Room A **01:00 PM - 02:30 PM**

S26-01 - Biologic mechanisms of neuroinvasion of COVID-19

Conference Room A

Helena Radbruch
Dr., Charité

Wednesday, Jul 14: Conference Room A **01:00 PM - 02:30 PM**

S26-02 - Clinical research: The Global Consortium Study of Neurologic Manifestations of COVID-19 (GCS Neuro-COVID) in Adults and Pediatrics

Conference Room A

Sherry Chou
Associate Professor, University of Pittsburgh

We will discuss the design and rationale of GCS-NeuroCOVID consortium to capture neurologic manifestations of this novel coronavirus and first reports from the adult population study.

Wednesday, Jul 14: Conference Room A **01:00 PM - 02:30 PM**

S26-03 - Neuroimaging findings in pediatric patients with COVID-19

Conference Room A

Susan Palasis
Division Chief, Pediatric Neuroradiology, Lurie Children's Hospital of Chicago

Wednesday, Jul 14: Conference Room A **01:00 PM - 02:30 PM**

S26-04 - Cytokine storm and neurobiomarkers: insights into the neurologic involvement in COVID-19

Conference Room A

Kevin Wang
Professor, Director, University of Florida

S26-04 - Cytokine storm and neurobiomarkers: insights into the neurologic involvement in COVID-19Speaker: Dr.Kevin Wang, University of Florida COVID-19 infection is associated with a spectrum of neurologic symptoms ranging from mild confusion, headache, and even more severe manifestations such as seizure or stroke, affecting almost a third of COVID-19 patients within 6 months and varying in time of presentation including “long-COVID.” With COVID-19 patients, a range of cytokine elevations in the infection phase has been reported. This parallels to the occurrence of cytokine storm in sepsis patients. Interestingly, delirium or altered mental status (AMS) represents a prevalent symptom associated with ...

Wednesday, Jul 14 **02:30 PM - 02:45 PM**

Break

Wednesday, Jul 14: Grand Ballroom **02:45 PM - 03:45 PM**

Keynote 04 - John Povlishock - 2021 NNS Honorary Award Address

Co-Chairs: Dalton Dietrich, James Stone, David Okonkwo

Grand Ballroom Keynote TBI

John Povlishock
Professor and Past Chair, Virginia Commonwealth University, School of Medicine

Wednesday, Jul 14: Conference Room B **03:45 PM - 04:00 PM**

Closing Remarks

Grace Griesbach & Courtney Robertson

Conference Room B

Courtney Robertson