26th Annual Kentucky Spinal Cord & Head Injury Research Trust (KSCHIRT) Symposium

May 18-19, 2021

PROGRAM SUMMARY

Tuesday, May 18

10:00 – 10:10 Opening Remarks
Joe Springer, Ph.D., Interim Director, SCoBIRC

SESSION ONE
Innovative Approaches for Diagnosis, Prognosis and Treatment of TBI

10:10 – 10:15 Introduction of Keynote Speaker
Chair: Kathryn Saatman, Ph.D.

10:15 – 11:00 Keynote Lecture: Brain-derived exosomes as a prognostic tool for traumatic brain injury
David Meaney, Ph.D., University of Pennsylvania

11:00 – 11:25 Extracellular vesicle biomarkers for alzheimer’s and traumatic brain injury
Dimitrios Kapogiannis, M.D., National Institute of Aging

11:25 – 11:50 Immunological mechanisms underlying damage and repair of the injured brain
Dorian McGavern, Ph.D., National Institute of Neurological Disorders and Stroke

11:50 – 12:05 Question & Answer

12:05 – 12:45 Poster Session

Oral Gavage as a Measure of Gut Dysfunction after Spinal Cord Injury
Olivia Bodart, University of Kentucky
Optimization of engineered erodible thermal hydrogels for mitochondrial transplantation.  
*Felicia Michael, University of Kentucky*

Mechanisms Of Thromboinflammation Following Experimental Traumatic Brain Injury.  
*Brad Hubbard, University of Kentucky*

Effects of Acute Ethanol Intoxication on Spinal Cord Injury Outcomes.  
*Ethan Glaser, University of Kentucky*

**Question & Answer**

**Lunch**

**SESSION TWO**  
**SCI Pathophysiology – Influences of Gut Microbiome and Spinal Learning**  
Chair: *Sasha Rabchevsky, Ph.D.*

1:30 – 1:55  
Gut dysbiosis as a disease modifying factor after SCI  
*Kristina Kigerl, Ph.D., Ohio State University*

1:55 – 2:20  
The pain of polytrauma: how pain input after SCI can increase tissue loss and undermine long-term recovery  
*James Grau, Ph.D., Texas A&M University*

2:20 – 2:30  
**Question & Answer**

**SESSION THREE**  
**Neuroinflammation in TBI and SCI**  
Chair: *Adam Bachstetter, Ph.D.*

2:30 – 2:55  
Peripheral monocyte-specific control of TBI-induced neuroinflammation by EPH signaling  
*Michele Theus, Ph.D., Virginia-Maryland College of Veterinary Medicine*
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2:55 – 3:20  Targeting neuroinflammation in SCI  
*John Gensel, Ph.D., University of Kentucky*

3:20 – 3:30  Question & Answer

3:30 - 4:10  Poster Session

Systematic Analysis of Mitochondria Centric Pathophysiological Changes After Traumatic Brain Injury Using Combination of Bioenergetics, Metabolomics and Biochemical Approaches  
*Hemendra Vekaria, University of Kentucky*

Brief oxygen exposure following blunt head trauma improves survival and reduces pathologic signs of traumatic optic neuropathy with variable, time-dependent ER stress responses in the retina.  
*Shelby Hetzer, University of Cincinnati*

Modulating Astrogliosis To Promote Repair After Spinal Cord Injury.  
*Amy Chen, University of Kentucky*

MicroRNA-223 regulates sexual dimorphic gene expression in mouse bone marrow derived macrophages following inflammatory challenge  
*Paresh Prajapati, University of Kentucky*

Question & Answer
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**SESSION FOUR**

**Emerging Topics**
Chair: *James Shaughnessy, DMD.*, Chairman of Kentucky Spinal Cord and Head Injury Research Trust

10:00 – 10:10
Inulin supplementation mitigates gut microbiome dysbiosis and restores cerebral blood flow in mice with mild traumatic brain injury
*Lucille M. Yanckello, University of Kentucky Trainee*

10:10 – 10:20
Effects of genetic and circadian manipulations of the clock pathway on outcomes of mouse contusive spinal cord injury
*Lukasz Slomnicki, Ph.D., University of Louisville Trainee*

10:20 - 10:30
Therapeutic implications of a changing SCI demographic
*Andrew Stewart, Ph.D., University of Kentucky Trainee*

10:30 – 10:40
Neuromodulation of spinal locomotor circuitry to elicit stepping after pediatric spinal cord injury
*Katie Lucas, PhD, DPT., University of Louisville Trainee*

10:40 – 10:55
**Question & Answer**

10:55 - 11:05
**Comments from James Shaughnessy**

11:05 - 11:50
**Featured Speaker**
Advocacy: Setting the table to talk politics
*Matthew Rodreick, Unite 2 Fight Paralysis*

11:55 – 12:35
**Poster Session**

Traumatic brain injury induces acute changes to the microbiome in mice without overt damage to the small and large intestine.
*Anthony DeSana, University of Kentucky*
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Longitudinal Analysis of Gut Microbiome Composition After Experimental Cervical Spinal Cord Injury
Jessica Newton, University of Kentucky

Mapping of the substrate for production of swallow and cough within the rostral nucleus of the tractus solitarius (NTS)/paramedian reticular nucleus by electrical stimulation.
Nick Musselwhite, University of Louisville

Traumatic injury and interleukin-1 receptor 1: potential implications at CNS barriers.
Colleen Bodnar, University of Kentucky

12:35 – 1:20 Lunch

SESSION FIVE Multidisciplinary Approaches for SCI Therapeutics
Chair: Samir Patel, Ph.D.

1:20 – 1:45 Transplanting neural progenitor cells to promote repair of the injured cervical spinal cord
Michael Lane, Ph.D., Drexel University

1:45 – 2:10 Sensory cortical control of movement in health and disease
Kajana Satkunendrarajah, Ph.D., Medical College of Wisconsin

2:10 – 2:35 Synthetic material and stem cell-based multimodal approaches to investigating recovery neurobiology of injured spinal cords
Yang (Ted) D. Teng, Ph.D., Department of Physical Medicine & Rehabilitation, Harvard Medical School, Spaulding Rehabilitation Hospital Network, and Mass General Brigham, Boston, MA, USA

2:35 – 2:50 Question & Answer
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(continued)

SESSION SIX  Vascular Damage/Repair Following TBI
Chair: Lei Chen, M.D., Ph.D.
2:50 - 3:15 Impairments in cerebral blood flow regulation following mild traumatic brain injury
Sushmita Purkayastha, Ph.D., Southern Methodist University

3:15 – 3:40 Vascular damage and subsequent repair following moderate traumatic brain injury
Andre Obenaus, Ph.D., University of California, Irvine

3:40 – 4:05 Preclinical studies on the use of targeted antibody-antioxidant enzyme conjugates for vascular protection in TBI-associated neuroinflammation
Servio Ramirez, Ph.D., Temple University

4:05 - 4:20 Question & Answer

4:20 - 4:30 Tribute to Edward D. Hall, Ph.D. & Closing Remarks
Joe Springer, Ph.D., Interim Director, SCoBIRC