ISN/ASN SATELLITE MEETING ON MYELIN BIOLOGY

PROGRAM

THURSDAY, AUGUST 1

2:00 - 4:00  Arrival and check-in
3:45 - 4:15  Refreshments
4:15 - 4:30:  Introduction and Welcome - Joel Levine
4:30 - 5:30  Plenary lecture I – Glial Ensheathment and support of axons
Marc Freeman
5:30 - 7:30  Symposium 1: Extrinsic/intrinsic regulation of oligodendrocyte development
Chair: Tim Kennedy

Intrinsic and extrinsic regulation of myelination and remyelination in the CNS
Charles ffrench-Constant
Modulation of oligodendrocyte development by voltage-gated calcium channels
Pablo Paez
Oligodendrocyte precursor cells become heterogeneous with age: different functional cell states?
Thora Karradottir
Prohibitins in developmental myelination
Emma Wilson (short talk - Feltri lab)

8:00  Welcome reception and informal BBQ dinner

FRIDAY, AUGUST 2

7:30 - 8:30  Breakfast (Eco-Café)
8:30 - 10:00  Symposium 2: Immune cells in the normal and diseased CNS; what are they doing there?
Chair: Boris Zalc

Lymphatics in the CNS and their role in neurological diseases
Joni Kipnis
Immune mechanisms underlying induction and regulation of remyelination and late-onset autoimmunity
Stephen Miller
The impact of T cells on CNS remyelination
Denise Fitzgerald

10:00 - 11:00  Coffee and Poster Session
11:00 - 1:00  **Symposium 3**: Trauma and other diseases of myelin  
Chair: Steve Levison

Locomotor recovery following contusive spinal cord injury does not require oligodendrocyte remyelination  
Wolfram Tetzlaff

Development of the drug to target myelin-derived axon growth inhibitors to repair  
Toshihide Yamashita

Oligodendroglia and NG2+ cell vulnerability to oxidative damage at breaches of the blood brain barrier during secondary degeneration following neurotrauma  
Melinda Fitzgerald (short talk)

Conditional inactivation of the translation initiation factor eif2b5 gene in oligodendrocytes induced a delayed acute neurological distress  
Odile Boespflug-Tanguy (short talk)

Divergent oligodendrocyte phenotypes driven by RASopathy mutations associated with MAPK activation level  
Alejandro Lopez-Juarez (short talk)

1:00 - 2:30  **Lunch and Poster Session**

2:30 - 3:30  **Plenary lecture 2**: Myelin injury and repair in multiple sclerosis  
Jack Antel  
Chair: Tim Kennedy

3:30 - 5:00  **Symposium 4**: Trophic dependence and demyelination  
Chair: Terri Wood

Are myelin lipids metabolic energy reserves in white matter tracts?  
Klaus Nave

Gene edited mouse lines with multiple levels of stable hypomyelination  
Alan Peterson

Subtle myelinopathy triggers autoimmune demyelination and progressive atrophy  
Andrew Caprariello (short talk-Stys lab)

Mitochondrial localization, dynamics, and bioenergetics are regulated in oligodendrocytes by netrin1  
Diana Nakamura (short talk – Kennedy)

5:00 - 5:30  **Coffee break**

5:30 - 7:00  **Young investigator symposium 1**: Molecular control of normal and remyelinating oligodendrocyte and their precursors  
Chair: Haley Titus

Oligodendrocytes in the motor cortex from patients with ALS have an RNA trafficking deficit  
Samantha Barton

Single-cell transcriptomic analysis aeevals molecular diversity of human oligodendrocyte precursor cells  
Xitis Chamling
The role of mTOR in oligodendrocyte susceptibility to demyelination and efficiency of remyelination
Luipa Khandker
MMP7: an essential player for the removal of remyelination-inhibiting fibronectin aggregates?
Rianne Gorter
Microglial Neuropilin-1 “transactivates” NG2 cell proliferation in the developing and remyelinating brain
Amin Sherafat
The functional role of Transferrin Receptor 1 in peripheral nerve myelination
Jonathan DeGeer

8:00 Dinner

SATURDAY, AUGUST 3

7:30 - 8:30 Breakfast (Eco-Café)
8:30 - 10:30 Symposium 5: New approaches to remyelination
Chair: Wendy Macklin

Molecular imaging of the mechanisms driving disability worsening in Multiple Sclerosis
Bruno Stankoff
Sterols and cholesterol synthesis as targets for remyelination
Drew Adams
Hyaluronan fragments regulate myelin gene expression and remyelination through non-canonical toll-like receptor-4 signaling
Larry Sherman
Motor learning promotes remyelination via oligodendrogenesis, myelin remodelling, and surviving
Ethan Hughes
10:30 - 11:00 Coffee break

11:00 - 12:30 Symposium 6: Role of other glia in myelin diseases
Chair: Juana Pasquini

The rise and fall of microglia driving central nervous system remyelination
Veronique Miron
Conditional knockout of LKB1 from astrocytes increases inflammatory activation and metabolic dysfunction: effects on EAE disease
Doug Feinstein
Neuroregenerative and protective functions of Leukemia Inhibitory Factor
Steven Levison
12:30 - 5:00  
**Lunch and free time**

5:00 - 5:30  
**Coffee break**

5:30 - 6:30  
**Young investigator symposium 2:** Oligodendrocyte development and myelin plasticity in aging  
Chair: Haley Titus

**Transient expression of the glutathione antioxidant system during juvenile oligodendrocyte development**  
Dylan Verden

**Prohibitin 1 preserves axon and myelin integrity in the peripheral nervous system**  
Gustavo Della-Flores Nunes

**Importin 13 is a novel regulator of axon caliber growth and myelination**  
Jenea Bin

**Mechanosensing controls CNS myelin sheath elongation**  
Marie Bechler

6:30 - 7:30  
**Open panel discussion:** MS, where will we be in 5 years, 10 years?  
Panel: Carlos Pedraza, Jack Antel

8:00  
**Dinner**

9:30  
**Bonfire - BYOB**

**SUNDAY, AUGUST 4**

7:00 - 8:00  
**Breakfast**

8:00 - 9:45  
**Symposium 7:** Oligodendrocyte function in learning and synaptic transmission,  
Chair: Akiko Nishiyama

**Axon-oligodendrocyte communication in motor and non-motor learning**  
Bill Richardson

**Effects of oligodendrocyte depolarization on the synaptic function at destination synapses in the hippocampus**  
Yoshihiko Yamazaki

**Role of GABAergic synapses of oligodendrocyte progenitors in regulating axonal myelination and function of parvalbumin interneurons**  
Maria Cecilla Angulo (short talk)

**Environmental enrichment strongly influences oligodendrocyte production and lineage progression in the young adult brain**  
Madeline Nicholson (short talk- Xiao lab)

9:45 – 10:09  
**Coffee Break**
Symposium 8: Oligodendrocyte development and myelination in adult animals
Chair: Judy Grinspan

Outside looking in: exploring external inputs on myelin
Holly Colognato

GPNMB inhibits oligodendrogenesis from neural stem cells in the adult brain
Jayshree Samanta

Investigating the role of fractalkine signalling in oligodendrocyte genesis in normal and demyelinated brain
Anastassia Voronova

The innate capacity of MS oligodendroglia to produce efficient myelinating oligodendrocytes
Sabah Mozafari (short talk - Anne Baron lab)

New insights on the cellular dynamics that drive production within the oligodendrocyte lineage
David Gonsalvez (short talk)

12:15 Buses depart: To Montreal (The Intercontinental Hotel) and Airport (Pierre Elliott Trudeau airport), a boxed lunch is supplied

LIST OF POSTERS

(Posters are displayed for the entire meeting)

Pre-existing mature oligodendrocytes participate in remyelination.
Clara M. Bacmeister, Helena J. Barr, Crystal R. McClain, and Ethan G. Hughes

Motor learning modulates the dynamics of developmental and post-injury cortical Oligodendrogenesis.
Helena J. Barr, Clara M. Bacmeister, Crystal R. McClain, Michael A. Thornton, and Ethan G. Hughes

Tracking the evolution of CNS remyelinating lesion with neutral red dye Maryna Baydyuk, David S. Cha, Jingwen Hu, Reiji Yamazaki, Evan M. Miller, Victoria N. Smith, Katherine A. Kelly, and Jeffrey K. Huang

Higher Firmicutes/Bacteroidetes ratio in oral microbiome of identical twins with most severe multiple sclerosis
Anne I. Boulleme, Demetrios Skias and Douglas L. Feinstein

Deep Learning for High-Throughput Quantification of Oligodendrocyte Ensheathment at Single-Cell Resolution
Darvan Chitsaz, Yu Kang T Xu, Robert A Brown, Qiao Ling Cui, Jack P Antel, Timothy E Kennedy
The Function of Tuberous Sclerosis Complex in CNS Myelin Maintenance
Angelina V. Evangelou, Jennifer N. Bourne, Wendy B. Macklin & Teresa L. Wood

Mechanisms of white matter loss due to the antiretroviral elvitegravir.
Roth, L.M.; Zidane, B.; Festa, L; Putatunda, R; Romer, M.; Jordan-Sciutto, K.L., Grinspan, J.B.

FRS adapters show developmental stage specific selectivity in their ability to mediate FGF-Receptor signaling in the oligodendrocyte-lineage
M. Furusho, A Ishii and R. Bansal

The Contribution of Activin A to Experience-dependent Oligodendrocyte Differentiation
Xiao Han, Blake Chancellor, Anastasia Nizhnik, Jesse Gray

Vesicle-associated membrane proteins in NG2 glia are necessary for proper myelination of the spinal cord
Robert Z. Horning, Christopher Fekete, Akiko Nishiyama

ERK1/2-MAPK signals through mTOR in Schwann cells to regulate myelin thickness and to maintain normal myelin and axonal integrity in sciatic nerves of older mice Akihiro Ishii, Miki Furusho, and Rashmi Bansal

Investigating the role of glial TGFβ in axon maintenance
Alexandria P Lasseter, Amy E Sheehan, Romina Barria, A. Nicole Fox1, Marc R Freeman

Myelin loss disrupts motor cortex circuit function
Laura Dailey Nettles, Helena J. Barr, and Ethan G. Hughes, Cristin G. Welle

Ultrastructural 3D Reconstruction of the White Matter
Nobuhiko Ohno, Tatsuhide Tanaka, Kazuhiro Ikenaka

A principled strategy for mapping enhancers to genes Dongkyeong Kim, Hongjoo An, Randall S. Shearer, Mohamed Sharif, Chuandong Fan, Jin-ok Choi, Sun Ryu, and Yungki Park

Glutamatergic regulation of remyelination after spinal cord injury
Nicole Pukos, Dana M. McTigue

GPR17 modulates oligodendrocyte precursor maturation during development but has a minor impact on myelin regeneration following demyelination insults.

Characterizing cellular expression of creatine synthesizing enzyme, guanidinoacetatemethyltransferase, in a new transgenic mouse model Rosko L, Chamberlain KA, Huang JK

Mechanisms of white matter loss due to HIV infection
Roth, L.M.; Espinoza-Akay, C.; Festa, L.; Jordan-Sciutto, K.L.; Grinspan, J.B.
Modulation of histamine 3 receptor activity in oligodendrocyte progenitors has a minor impact on cell maturation and myelin regeneration after injury.

Guoqing Sheng, Jonathan Farley, Petti Pang, Kristin Radzwill, Carrie Garron, Tarek A. Samad and Carlos Pedraza

A novel spontaneous mutant of the Eif2b5 gene, which is a causative gene for Vanishing white matter disease

Mika Terumitsu-Tsujita,, Hiroki Kitaura, Ikuo Miura, Yuji Kiyama, Fumiko Goto, Yoshiko Muraki, Shiho Ominato, Norikazu Hara, Anna Simankova, Norihisa Bizen, Kazuhiro Kashiwagi, Takahiro Ito, Yasuko Toyoshima, Akiyoshi Kakita, Toshiya Manabe, Shigeharu Wakana, Hirohide Takebayashi, Hironaka Igarashi

Digoxin regulates oligodendrocyte number, function, and myelin structure.

Titus, H.E., Miller, S.D

New animal model to study remyelination in subcortical white matter ischemia

Martin Valny, Irene L. Llorente, S. Thomas Carmichael

H-ferritin iron delivery to oligodendrocytes and myelination during development

Quinn Wade, Brian Chiou, Beth Neely, James Connor

The wmN1 Enhancer Region of the Mouse Myelin Proteolipid Protein Gene (mPlp1) is Indispensable for Expression of an mPlp1-lacZ Transgene in both the CNS and PNS Pankaj Patyal, Neriman T. Kockara, Patricia A. Wight

Targeted labeling of the oligodendrocyte lineage via an in-utero electroporated transposon system

William M Wood, Linda S Boshans, Hitoshi Gotoh, Akiko Nishiyama

Thyroid hormone for remyelination in multiple sclerosis (MS): A safety and dose-finding study

Lindsey Wooliscroft, Ghadah Altowaijri, Mary Samuels, Dennis Bourdette, Michelle Cameron

Excessive production of L-MPZ, a translational readthrough isoform of myelin protein zero (P0, MPZ), causes Charcot–Marie–Tooth disease (CMT)-like phenotype Yoshihide Yamaguchi, Yoshinori Otani, Nobuhiko Ohno, Jingjing Cui, Hiroko Baba