

Whistler Scientific Workshop on Brain Functional Organization, Connectivity, and Behavior, March 1-4, 2020

Sunday, March 1

Noon – 6pm Check-in
6:00 – 8:00pm Opening Reception and Poster Session, Whistler Westin, Emerald A
Badge pickup at the desk outside of Emerald A
(2 blue drink tickets in badge)

Monday, March 2

7:30 – 8:30a Breakfast, Alpine CD

**Session 1 Brain Anatomy and Function: Moderator – Todd Constable
Alpine AB**

8:30 – 9:00a Charlotte Murphy
Topographical neural gradients support unique modes of operation

9:00 – 9:30a Casey Paquola
Towards a Multi-Scale Model of the Cortex

9:30 – 10:00a Ann Sizemore-Blevins
Topological voids within the human cortex

10:00 – 10:30a Coffee, Alpine Foyer

10:30 – 11:00a Janine Bijsterbosch
Beyond connectivity: the role of spatial network topology in predicting behavior

11:00 - 11:30a James Haxby
Hyperalignment reveals individual differences in information encoded in fine-scale cortical topographies

11:30 - 12:00 Discussion: anatomy and function
Daniel Margulies, Alex Fornito, Todd Constable

12:00 – 4:30p Break-Box Lunch to go! Alpine Foyer

4:30 – 5:00p Coffee, Alpine Foyer

**Session 2 Brain and Behavior: Moderator – Dave O’Connor, Daniel Kessler
Alpine AB**

- 5:00 – 5:30p Chandra Sripada
When Interactions Attack: Controlling for Group x Phenotype Interactions in Predictive Modeling
- 5:30 – 6:00p Abigail Greene
Combining data from multiple sources improves predictive modeling
- 6:00 - 6:30pm Joshua Vogelstein
The role of the connectome in achieving artificial general intelligence
- 6:30 – 8:00pm Poster reception, Hors-D’oeuvres & Wine, Emerald A
(2 yellow drink tickets in badge)

Tuesday, March 3

7:30 – 8:30a Breakfast, Alpine CD

**Session 3 Dynamics Across Timescales: Moderator - Evelyn Lake, Monica Rosenberg
Alpine AB**

- 8:30 – 9:00a Valerio Zerbi
Combining fMRI with chemo- and optogenetics in the mouse to deconstruct brain network activity
- 9:00 – 9:30a Elizabeth Hillman
Exploring the neural basis of resting-state functional connectivity in awake mice
- 9:30 – 10:00a Evelyn Tang
The control of brain network dynamics across diverse scales of space and time
- 10:00 – 10:30a Coffee, Alpine Foyer
- 10:30 – 11:00a Javier Gonzalez-Castillo
Cognitive correlates of resting dynamic functional connectivity
- 11:00 – 11:30a Aaron Kucyi
Electrophysiological dynamics of antagonistic brain networks
- 11:30 – 12:00 Adeel Razi
Dynamic causal models of brain function
- 12:00 – 4:30p Break, Box lunch to Go! Alpine Foyer
- 4:30 – 5:00p Coffee, Alpine Foyer

Acknowledgements

Organizing committee

Jessica R. Cohen, Todd Constable, Michael Breakspear, Simon Eickoff, Emily Finn, Doris Floris, Alex Fornito, Xiaoping Hu, Daniel Margulies, Bruce Pike, Monica Rosenberg

Remote and On-site Coordinator: Tricia Ginnetti

Staff: Lesley Nadeau-Foti, Daniele Milano

Poster Presentation Titles/Authors

Sunday, March 1 & Monday, March 2, 2020

- 1. Multi-scale imaging of mouse cortical networks across behavioral states.** Daniel Barson, Ali Hamodi, Xilin Shen, Luke Newell, Gyorgy Lur, R. Todd Constable, Jessica A. Cardin, Michael C. Crair, Michael J. Higley.
- 2. Neuroimaging predicts personalized motor function after perinatal stroke: A machine learning study.** HL Carlson, BT Craig, J Hodge, D Rajashekar, P Mouches, ND Forkert, A Kirton.
- 3. Differentiated Effects of Normal Aging on Cortical Networks of Executive Functioning.** Lia Chen, Elizabeth B. Riley, Adam K. Anderson, Eve De Rosa.
- 4. Temporal sequences of brain activity at rest are constrained by white matter structure and modulated by cognitive demands.** Eli J. Cornblath, Arian Ashourvan, Jason Z. Kim, Richard F. Betzel, Rastko Ciric, Azeez Adebimpe, Graham L. Baum, Xiaosong He, Kosha Ruparel, Tyler M. Moore, Ruben C. Gur, Raquel E. Gur, Russell T. Shinohara, David R. Roalf, Theodore D. Satterthwaite, and Danielle S. Bassett.
- 5. Altered functional brain dynamics during facial affect processing in chromosome 22q11.2 deletion syndrome.** Eli J. Cornblath, Xiaosong He, Kosha Ruparel, Rastko Ciric, Graham L. Baum, Tyler M. Moore, Ruben C. Gur, Donna M. McDonald-McGinn, Beverly Emanuel, Elaine H. Zackai, Russell T. Shinohara, Theodore D. Satterthwaite, David R. Roalf, Raquel E. Gur, and Danielle S. Bassett.
- 6. Relating preoperative functional connectivity abnormalities in pain circuitry to outcome of surgical treatment for trigeminal neuralgia.** Hayden Danyluk, Stefan Lang, Tejas Sankar.
- 7. Language deficits can be predicted from rs-fMRI anatomical ROI connectivity maps better than from functional ROI connectivity maps.** Daniel DiGiovanni, Danilo Bzdok, Denise Klein, Louis Collins.
- 8. Using the connectome predictive modeling approach to predict age from distributed patterns of white matter fiber density and cross-section.** Dennis Dimond, Thijs Dhollander,

Amanda Ip, Christiane S. Rohr, Ryann Tansey, Kirk Graff, Robert E. Smith, Catherine Lebel, Deborah Dewey, Alan Connelly, Signe Bray.

- 9. Individualized Patterns of Structural Asymmetry Characterize Different Language Profiles within Autism**, D. Floris, T. Wolfers, M. Zabihi, N. Holz, EU-AIMS LEAP Consortium, J. Buitelaar, C. F. Beckmann.
- 10. Functional connectivity network individualization in early childhood**. Kirk Graff, Ryann Tansey, Amanda Ip, Christiane Rohr, Dennis Dimond, Deborah Dewey, Signe Bray.
- 11. Task activation and functional connectivity offer distinct insight into brain-behavior relationships**. Abigail Greene, Siyuan Gao, Stephanie Noble, Dustin Scheinost, R. Todd Constable.
- 12. Resting-state Functional Connectivity Differences between Children with Autism Spectrum Disorder, with Tuberous Sclerosis Complex, and Healthy Controls**. Seyhmus Guler, Onur Afacan, Alexander L. Cohen, and Simon K. Warfield.
- 13. Implementation of a pre- and in-scan system to reduce head motion in pediatric participants with ASD**. Corey Horien, Scuddy Fontenelle IV, Kohrissa Joseph, Nicole Powell, Chaela Nutor, Diogo Fortes, Maureen Butler, Kelly Powell, Deanna Macris, James McPartland, Fred R. Volkmar, Dustin Scheinost, Katarzyna Chawarska, R. Todd Constable.
- 14. The BigMac dataset: linking tissue microstructure with diffusion MRI signals throughout the brain**. Amy FD Howard, Alexandre A Khrapitchev, Adele Smart, Greg Daubney, Jeroen Mollink, Istvan N Huszar, Connor Scott, Nicola Sibson, Rogier B Mars, Jerome Sallet, Saad Jbabdi* , Karla L Miller* * joint contribution.
- 15. Connectome Predictive Modeling of Face-Name Associations in Mild Cognitive Impairment**. Michelle Karker, Scott Peltier, Allison Moll, Julia Laing, Benjamin Hampstead.
- 16. Prediction from networks with node features with application to neuroimaging**, Daniel Kessler, Keith Levin, Elizaveta Levina.
- 17. Simultaneous cortex-wide cell-type specific fluorescence Ca²⁺ imaging and whole-brain fMRI reveals relationships between cellular activity and the BOLD signal**. Evelyn MR Lake, Xinxin Ge, Xilin Shen, Peter Herman, Fahmeed Hyder, Dave O'Connor, Francesca Mandino, Dustin Scheinost, Xenophon Papademetris, Michael C Crair*, R Todd Constable*. *Supervised jointly.
- 18. Common and unique neural connectivity at the interface of motor, behavioral, and cognitive symptoms in Parkinson's disease: a commonality analysis of the functional connectome**. Stefan Lang, Zahinoor Ismail, Mekale Kibreab, Iris Kathol, Justyna Sarna, Oury Monchi.
- 19. Modulation of arousal reveals flexible hubs of brain networks**. Kangjoo Lee, Corey Horien, Bronwen Garand-Sheridan, Dave O'Conner, Evelyn Lake, Dustin Scheinost, Ian Quinn, R. Todd Constable.
- 20. Functional mapping of the entorhinal cortex reveals a hub for synaptic excitability in young 3xTg mouse model for Alzheimer's disease**. Francesca Mandino, Ling Yun Yeow, Chai Lean

Teoh, Chun-Yao Lee, Renzhe Bi, Hasan Mohammad, Lee Sejin, Han Gyu Bae, Seung Hyun Baek, Lee Hanqing Jasinda, Mitchell Kim Peng Lai, Sangyong Jung, Yu Fu, Malini Olivo, John Gigg, Joanes Grandjean.

21. **Identifying states with dynamic Connectome Predictive Modelling.** David O'Connor, Dustin Scheinost, R. Todd Constable.
22. **Neuro-electrical evidence of sympathetic activity contributing to fMRI signals,** PS Ozbay, C Chang, D Picchioni, H Mandelkow, MG Chappel-Farley, P van Gelderen, JA de Zwart, JH Duyn.
23. **Predicting behavioral impairment using resting-state brain connectomes in older adults.** Scott Peltier, Bruno Giordani, Henry Paulson, Rachael Snyder, Benjamin Hampstead.
24. **Linear versus deep learning for 3D brain images.** Saige Rutherford, Mike Angstadt, Chandra Sripada.
25. **ADHD-related behaviours associate with inter-subject synchrony in young children.** Ryann Tansey, Kirk Graff, Christiane Rohr, Dennis Dimond, Amanda Ip, Deborah Dewey, & Signe Bray.
26. **Stability and similarity of the pediatric connectome as developmental measures.** Tamara Vanderwal, Jeffrey Eilbott, Clare Kelly, Todd S. Woodward, Michael P. Milham, F. Xavier Castellanos.
27. **Functional Brain Networks Involved in Lexical Decision.** Samantha Tze Sum Wong, Vina M. Goghari, Nicole Sanford, Ryan Lim, Cameron Clark, Paul D. Metzack, Susan L. Rossell, Abhijit Chinchani, Mahesh Menon, Todd S. Woodward.
28. **Delineating an atlas of task-based functional brain networks in fMRI cognitive neuroscience: rather than just pretty pictures.** Todd S. Woodward & Tamara Vanderwaal.
29. **Paired sensory stimulation and rTMS induces long-term plasticity.** Ming Zhong, Chunqi Qian and Galit Pelled.