

# FAIR Data Sharing for Discovery and Translation in CNS Injury

## November 13

Tuesday, 12:30 pm

Weekly Colloquium

Billings Building  
Rosedale Conference Room



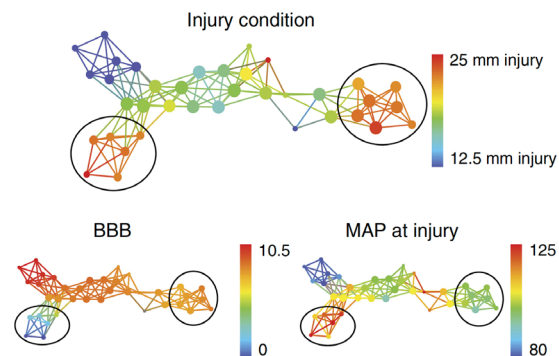
**Speaker: Adam R. Ferguson, Ph.D.**  
Associate Professor and Principal Investigator, Weill Institute for Neurosciences  
Brain and Spinal Injury Center (BASIC)  
Department of Neurological Surgery  
University of California, San Francisco (UCSF)  
Principal Investigator, San Francisco VA Medical Center

**Host: Rajiv R. Ratan, M.D., Ph.D.**

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My research focuses on mechanisms of recovery after neurological trauma. Injuries to the brain and spinal cord invoke numerous, interacting biological processes that work in concert to determine recovery success. Some of these biological processes have contradictory effects at different phases of recovery. For example, mechanisms of synaptic regulation can contribute to cell death in the early phases of recovery but may promote plasticity and restoration of function at later stages. Understanding the mechanisms of recovery in the complex microenvironment of the injured central nervous system (CNS) requires large-scale integration of biological information and functional outcomes (i.e., biomedical informatics). Our work uses a combination of laboratory studies and 'big-data' approaches to provide an information-rich picture of the syndrome produced by trauma in translational *in vivo* models. The long-term goal of this research is to provide system-level therapeutic targets for enhancing recovery of function after brain and spinal injury.



Nielson JL, Paquette J, Liu AW, Guandique CF, Tovar CA, Inoue T, Irvine KA, Gensel JC, Kloke J, Petrossian TC, Lum PY, Carlsson GE, Manley GT, Young W, Beattie MS, Bresnahan JC, Ferguson AR. Topological data analysis for discovery in preclinical spinal cord injury and traumatic brain injury. *Nat Commun.* 2015 Oct 14; 6:8581. PMID: 26466022; PMCID: PMC4634208.

Rosenzweig ES, Brock JH, Lu P, Kumamaru H, Salegio EA, Kadoya K, Weber JL, Liang JJ, Moseanko R, Hawbecker S, Huie JR, Havton LA, Nout-Lomas YS, Ferguson AR, Beattie MS, Bresnahan JC, Tuszynski MH. Restorative effects of human neural stem cell grafts on the primate spinal cord. *Nat Med.* 2018 May; 24(4):484-490. PMID: 29480894.

Huie JR, Diaz-Arrastia R, Yue JK, Sorani M, Puccio A, Okonkwo DO, Manley GT, Ferguson AR and the TRACK-TBI Investigators. Testing a multivariate proteomic panel for TBI biomarker discovery: A TRACK-TBI Pilot Study. *J Neurotrauma.* 2018 Aug 07. PMID: 30084741.

