Annual Meeting
of the
Rocky Mountain Regional Neuroscience Group

May 11, 2018
Anschutz Medical Campus
University of Colorado Denver
RMRNG Chapter of the Society for Neuroscience Annual Meeting  
May 11, 2018  
Anschutz Medical Campus  
Aurora, Colorado

8:30 am  Registration & Coffee: Research Complex 2, 2nd Floor Trivisible Room

9:00 am  Welcome and Introductions: Hensel Phelps Auditorium  
Dr. John Thompson, President, RMRNG Chapter of SFN  
“Gliaal Contributions to Circuit Function”

9:10 am  Dorothy Schafer, PhD, University of Massachusetts Medical School  
"A Synaptic Feast: Microglial Phagocytosis Governing Neural Circuit Plasticity”

9:55 am  Marc Freeman, PhD, Vollum Institute, Oregon Health & Sciences University  
“Astrocyte control of neural circuit function and behavior”

10:40 am  Gabriel Corfas, PhD, Kresge Hearing Research Institute, University of Michigan  
“From hidden to overt: uncovering the roles of glia in hearing and hearing loss”

11:25 am  Coffee Break

11:35 am  Panel Round Table

12:35-2:30 pm  Posters and Commercial Exhibits: RC2 Trivisible Room  
12:35 -1:30  Poster presentation (Odd Numbered Abstracts)  
1:35 – 2:30  Posters presentation (Even Numbered Abstracts)  
BOXED LUNCH will be available from 12:35-1:05pm

*********PLEASE COMPLETE BALLOTS BY 2:30pm*********
*********PLEASE TAKE POSTERS DOWN BY 2:45pm*********

2:35 PM  Student Presentations: Hensel Phelps Auditorium

Sarah Cook, University of Colorado Anschutz Medical Campus  
“β amyloid-induced disruption of CaMKIIα synaptic targeting”

Jordan Buck, University of Colorado, Boulder  
“Developmental nicotine exposure precipitates multigenerational maternal transmission of nicotine preference and ADHD-like behavioral, circadian, neuropharmacological, and epigenetic anomalies in adolescent mice”

Matthew Becker, University of Colorado Anschutz Medical Campus  
“Graded and bidirectional control of reach kinematics by a cerebellar nucleus”

Mancy Shah, University of Colorado, Boulder  
“Optical stimulation of midbrain dopamine neurons drives motivated self-administration in cocaine-experienced rats, but fails to elicit phasic neural encoding in nucleus accumbens”

4:05 pm  Refreshments, Business Meeting & Poster Awards: RC2 Trivisible Room

We would like to acknowledge and thank the 2017 RMRNG Planning Committee for their time and energy to bring about this exciting day of presentations. We also thank the Center for NeuroScience, the Neuroscience Graduate Program and the Departments of Neurology and Neurosurgery for their generous support of this meeting.

John Thompson, PhD  Gidon Felsen, PhD  Noah Goodson  
President, RMRNG  Treasurer, RMRNG  Student Steering committee
**Speaker Bios**

**Dorothy Schafer, PhD**
Dori Schafer received her bachelors from Mount Holyoke College in 2001 and her PhD from Dr. Matthew Rasband’s lab at UConn Health Center in 2008. As a graduate student, she identified worked to understand how myelinating glia regulate neuronal excitability. As a postdoc in Dr. Beth Stevens’ laboratory at Boston Children’s Hospital and Harvard Medical School, she began her work on microglia, resident brain immune cells. While microglia were long thought of as bystanders and ‘resting’ in the healthy brain, she identified that these cells were actively engulfing and eliminating synaptic connections (i.e. synaptic pruning) in the developing brain, a process necessary to sculpt synapses into mature neural circuits. She started her own lab at the University of Massachusetts Medical School in the Department of Neurobiology in 2015 where she continues her work to understand how these enigmatic microglia regulate neural circuit structure, function, and plasticity. The overall goal of her lab is to elucidate basic mechanisms by which microglia function within neural circuits and then to understand how these mechanisms become dysfunctional in neurological disease.

**Marc Freeman, PhD**
Marc Freeman is the Director of the Vollum Institute at Oregon Health and Sciences University (since 2016), having moved from the Department of Neurobiology at the University of Massachusetts Medical School where he was the Vice Chairman of Neurobiology and an Investigator with the Howard Hughes Medical Institute. Since 2003 his laboratory has aimed to understand the development of glial cells and their roles in nervous system assembly, circuit physiology and behavior, and neuropathology. Freeman's research focuses on the molecular basis of neuron-glia signaling after injury, in particular how neurites and synapses drive their own auto-destruction, how neuronal debris signals to glia for timely clearance, and how these neuron-glia signaling events might go awry in disease. He completed his BSc at Eastern Connecticut State University, received his PhD at Yale University, and carried out his postdoctoral studies at the University of Oregon.

**Gabriel Corfas, PhD**
Gabriel Corfas obtained an MSc in Biological Sciences from the University of Buenos Aires and a doctorate in Neurobiology from the Weizmann Institute of Science in Israel. During his postdoctoral training, first at Washington University in St. Louis, MO and then at Harvard Medical School, he contributed to the identification and cloning of the trophic factor neuregulin and defining its mechanism of action. In 1996 he became faculty at Harvard Medical School and Boston Children’s Hospital (BCH), becoming Professor of Neurology and Otolaryngology, and director of basic research in Otolaryngology at BCH. Since 2014 Corfas is the Director of the of Kresge Hearing Research Institute and associate chair for research for the Department of Otolaryngology and Head and Neck Surgery at the University of Michigan in Ann Arbor.
Dr. Corfas’ laboratory is dedicated to understanding the molecular mechanisms of neuron-glia interactions and roles of glia in health and disease, and using this knowledge towards developing treatments for nervous system disorders. Some of the Corfas’ lab key discoveries include a novel mechanism for ErbB4 receptor signaling in embryonic neural precursors and its role in cortical development; the effects of social isolation on central nervous system myelination and its implications for cognition and behavior; identification of trophic factors that mediate synapse formation and regeneration in the inner ear and their use in hearing restoration; identification of a drug that prevents and ameliorates small fiber neuropathy; defining the effects of transient demyelination on hearing; and uncovering the roles of enteric glia in gastrointestinal motility.
This committee selected the ‘Leading Edge of Neuroscience’ Seminar theme, invited the keynote speakers and moderated the Panel discussion with the speakers!
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POSTER LIST

1. Sodium channels and ankyrin G are differentially distributed in axons with intermittent myelination
   University of Colorado, Anschutz Medical Campus

2. Use of systematic stimulation mapping and functional/structural imaging to improve localization of seizure onset in patients with drug-resistant epilepsy
   Blanco Prado, Rossana, Drees, Cornelia MD, Thompson, John A. PhD,
   Department of Neurology, Department of Neurosurgery

3. PAK1 regulation of oligodendrocyte differentiation and myelination.
   Tanya L. Brown, Lisbet T. Finseth, Wendy B. Macklin
   University of Colorado Anschutz Medical Campus, CDB

4. Neuronal microtubule dysfunction leads to adult-onset decline in motor function in mice
   Georgia Buscaglia¹, Jayne Aiken², Jeff Moore², Emily Bates¹
   ¹Department of Pediatrics, ²Department of Cell and Developmental Biology

5. Structure-Activity Relationship of the Transient Receptor Potential Melastatin 2 (TRPM2) and the Peptide Tat-M2NX: Potential Therapeutic Target in Cerebral Ischemia
   Ivelisse Cruz-Torres¹, Paco S. Herson ¹,²
   ¹University of Colorado Anschtz Medical Campus, Deparment of Pharmacology
   ²University of Colorado Anschtz Medical Campus, Department of Anesthesiology

6. The role of mTORC2 in oligodendrocyte differentiation and myelination
   Kristin D Dahl, Hannah A Hathaway, Wendy B Macklin
   Cell & Developmental Biology, University of Colorado Anschtz Medical Campus

7. Electrophysiological Substrates of the Behavioral Inhibition System and the Behavioral Activation System: A Systematic Review
   Marielle L. Darwin, Deana B. Davalos
   Department of Psychology, Colorado State University

8. The Effects of Differential Housing during Adolescence on Conditioned Fear with a Social Cue
   *Lamya’a M. Dawud¹, Esteban Loetz², Elizabeth Hoeffkin², Brian Lloyd¹, Rachel Beam¹, Kim Cowie²,
   Tassawwar Khan¹, Benjamin Greenwood², Sondra T. Bland²
   ¹Department of Integrative Biology, ²Department of Psychology, University of Colorado Denver, Denver, CO

   Marisa DeGuzman ¹,², Megan Shott,² Brogan Rossi,² Mark L. Laudenslager,² Guido K.W. Frank¹,²
   ¹University of Colorado Anschtz Medical Campus Neuroscience Program, ²Department of Psychiatry

10. Neuromodulation of motor learning and performance mediated by optogenetic stimulation of the basal forebrain
    Dane C. Donegan, Jordan L. Hickman, Xiaoyu Peng, Cristin G. Welle
    University of Colorado, Anschutz Medical Campus

11. Functional circuits for sensorimotor decision making
    Jaclyn Essig, Gidon Felsen
    University of Colorado, Anschutz Medical Campus
12. Short chain fatty acid drug sodium butyrate delays Parkinson’s disease progression in transgenic mice comparable to sodium phenylbutyrate treatment outcomes.
Stephanie M. García1,2, Wenbo Zhou3, Catherine Lozupone1, Curt R. Freed1
1School of Medicine, University of Colorado Anschutz Medical Campus, 2Neuroscience Program

13. Prdm13 is required for Ebf3+ amacrine cell formation in the retina
Noah, B, Goodson1,2, Jhenya, Nahreini1, Grace, Randazzo1, Ana, Uruena3, Jane, E, Johnson3, Joseph, A, Brzezinski1,2
1University of Colorado Denver, Department of Ophthalmology, United States
2University of Colorado Denver, Neuroscience Graduate Program, United States
3University of Texas Southwestern Medical Center, Department of Neuroscience, United States

14. Nanoscale organization of inhibitory synapses in somatic and dendritic compartments
Katlin M. Hahm1, Kevin C. Crosby2, Sara E. Gookin2, Katharine R. Smith2
1Neuroscience Graduate Program, 2Pharmacology Department Anschutz Medical Campus, University of Colorado.

15. Temporally precise VNS enhances motor learning and performance of a skilled forelimb reach task
Jordan Hickman, Xiaoyu Peng, Dane Donegan, Cristin Welle
University of Colorado Anschutz Medical Campus

16. Duration-dependent neural control of voluntary exercise
Jennifer Jaime1, Margaret K Tanner1,2, Natalie Haddad3, Mykola Ostrovskyy1,2, Nicolette A Moya1, Megan Miner1, Benjamin N Greenwood1
University of Colorado Department of Psychology1, Integrative Biology2, Chemistry3

17. Selective deubiquitination of CaV3.2 T-type calcium channels prevents hyperexcitability of peripheral nociceptors and alleviates post-surgical pain
Sonja Lj. Joksimovic1, Srđjan M. Joksimovic1, Vesna Tesic1, Agustín García Caballero2, Vesna Jevtović-Todorović1, Gerald W. Zamponi2, Slobodan M. Todorović1
1Department of Anesthesiology, University of Colorado Denver, Anschutz Medical Campus, Aurora, CO, USA
2Department of Physiology and Pharmacology, Cumming School of Medicine, University of Calgary, Canada

18. The generation of multiple output channels from the olfactory bulb.
Shelly, T, Jones1,2, Joel, Zylberberg1,2,3, Nathan, E, Schoppa,1,2
1Department of Physiology and Biophysics, 2Neuroscience Program, 3Computational Biology Program, University of Colorado Anschutz Medical Campus, Aurora CO, 80045

19. Shep/SUP-26 is a conserved translational regulator that controls dendrite morphogenesis in sensory neurons
Eugenia C. Olesnicky1, Simona Antonacci2, Niko Popitsch3, Meghan C. Lybecker1, Michael B. Titus1, Shawna Thornton1, Racquel Valadez1, Paul G. Derkach1, Amber Marean2, Katherine Miller2, Samuel K. Mathai2, *Darrell J. Killian2
1Department of Biology, University of Colorado Colorado Springs, Colorado Springs, CO, 80918
2Department of Molecular Biology, Colorado College, Colorado Springs, CO, 80903
3Children’s Cancer Research Institute, St. Anna Kinderkrebsforschung, A-1090 Vienna, Austria

20. Diurnal variation in neuroplasticity-related intracellular signaling within the prefrontal cortex in response to conditioned fear extinction training.
Esteban C. Loetz1, Nicholas J. Tuta2, Elizabeth R. Woodruff2, Brian Lloyd1, Kim Browne1, Sondra T. Bland1, Robert L. Spencer2
1Dept of Psychology, University of Colorado Denver,
21. Synapse regulation by NFAT-dependent transcription
Tyler P. Martinez 1, 2, Emily S. Gibson 1, Jennifer L. Sanderson 1, Mark L. Dell’Acqua 1, 2, 3
1 Department of Pharmacology CU Anschutz, 2 Linda Crnic Institute for Down Syndrome CU Anschutz, 3 Neuroscience Program CU Anschutz

22. The relationship between radial optic flow perception and neurodegeneration in Parkinson’s Disease: A volumetric MRI analysis
*Guttu Maskalo, John A. Thompson PhD 2, Olga Klepitskaya, MD 3, Victoria S. Pelak MD 3,4
2 Department of Neurosurgery, University of Colorado School of Medicine, Aurora, CO
3 Department of Neurology, University of Colorado School of Medicine, Aurora, CO
4 Department of Ophthalmology, University of Colorado School of Medicine, Aurora, CO

23. A novel mouse cerebellar stroke model with motor and cognitive deficit
*Myriam Moreno-Garcia, Roxanna Schmidt, Molly Kubesh, and Nidia Quillinan
University of Colorado Anschutz Medical Campus

24. The role of mTOR signaling in enhanced fear extinction produced by acute, voluntary exercise
*Nicolette Moya, Margaret K. Tanner 1, Jennifer Jaime 2, Esteban C. Loetz 2, Holly S. Hake 2, J.K.P Davis 2
1 University of Colorado Denver, Department of Integrative Biology,
2 University of Colorado Denver, Department of Psychology

25. HIV induces activity-dependent excitotoxic effects via cGMP-dependent protein kinase II activation in the FIV infection model
Cell and Molecular Biology, College of Veterinary Medicine and Biomedical Sciences, Department of Biomedical Sciences, Department of Microbiology, Immunology, and Pathology, Molecular, Cellular and Integrative Neuroscience, Colorado State University

26. The requirement of AKAP79 palmitoylation in synaptic plasticity
Alicia M. Purkey, Kevin M. Woolfrey, Kevin C. Crosby, Dominik G. Stich, Jason Aoto and Mark L. Dell'Acqua
University of Colorado Anschutz Medical Campus

27. Delta-catenin haploinsufficiency induces synaptic pathology and autism-associated behavior changes
*Kaila A. Nip, Matheus Sathler, Henry Scott, Tyler Garver, Jiayi Shou and Seonil Kim
Department of Biomedical Sciences, Colorado State University, Fort Collins, CO 80523

28. Views from below: An intestinal window into a nervous system
Luke A. Schwerdtfeger 1 & Stuart A. Tobet 1, 2
1 Department of Biomedical Sciences, Colorado State University
2 School of Biomedical Engineering, Colorado State University

29. GluA2-lacking AMPA receptor expression in dopamine D1 or D2 receptor neurons affects behavior differently
Jiayi Shou, Angelica Tran, Natasha Snyder, Eric Bleem, and Seonil Kim
1 Department of Biomedical Sciences, Colorado State University, Fort Collins, CO 80523
2 Molecular, Cellular and Integrative Neuroscience Program, Colorado State University, Fort Collins, CO 80523
3 Cellular and Molecular Biology Program, Colorado State University, Fort Collins, CO 80523
30. Evaluation of deep brain stimulation neuroprotection and long-term safety in a patient implanted for 16 years.
Jasmine Singh, Cristin Welle
1University of Colorado Department of Neurosurgery, 2University of Colorado Department of Bioengineering

31. Beta-amyloid increases neuronal Ca2+ activity in hippocampal neurons via reduction of nicotinic acetylcholine receptor-mediated inhibitory inputs
Julianna Sun, Seonil Kim
Department of Biomedical Sciences, Molecular, Cellular and Integrative Neurosciences Program

32. Dorsal striatum modulation of fear extinction and relapse
Margaret K Tanner 1, Nicolette A Moya 2, Jennifer Jaime 2, Jazmyne KP Davis 2, Esteban C Loetz 2, Benjamin N Greenwood 2
1University of Colorado Denver, Department of Integrative and Systems Biology
2University of Colorado Denver, Department of Psychology

33. The RNA binding protein Shep works in combination to regulate neuronal development and morphology.
Shawna M Thornton, Eugenia Olesnicky-Killian
University of Colorado, Colorado Springs

34. Alterations in oscillatory activity of CeM neurons in mice lacking Cav3.1 isoform of T-channels during isoflurane-induced unconsciousness
*Tamara Timic Stamenic, Simon Feseha, Slobodan M Todorovic
Department of Anesthesiology, CU Denver

35. Belle interacts with Shep to regulate neuron morphology in Drosophila
Brandon Titus, Jeremy Bono, Eugenia Olesnicky Killian
University of Colorado, Colorado Springs

36. Inter-hemispheric analysis of compensatory neural activity and volumetric changes in deep brain stimulation patients
Daniel R. Uy BS1, Aviva Abosch MD PhD2, John A. Thompson PhD2
1Department of Cell and Developmental Biology--Master of Science in Modern Human Anatomy
2Department of Neurosurgery, University of Colorado School of Medicine

37. Nrf2 and glutathione pathway regulation are increased in juvenile oligodendrocytes
Dylan Verden 1, 2, Mikaela C Neal 5, Jared T Ahrendsen 1, 2, Christian Schroeder 3, Paco S Herson 1, 4, Wendy B Macklin 1, 2
1Neuroscience Graduate Program, University of Colorado Anschutz Medical Campus
2Department of Cell and Developmental Biology, University of Colorado Anschutz Medical Campus
3 Department of Pharmacology, University of Colorado Anschutz Medical Campus
4 Department of Anesthesiology, University of Colorado Anschutz Medical Campus
5 University of Colorado, Colorado Springs

38. The Analgesic Effect Of Satellite Glial Signaling In Models Of Chronic Pain
Alison X. Xie1, Sarah Taves2, Aric Madayag2, Ken D. McCarthy2, Anna P. Malykhina1
1University of Colorado, Denver, Surgery, Aurora, USA
2 University of North Carolina, Chapel Hill, Pharmacology, Chapel Hill, USA

39. The RNA binding protein Caper regulates larval locomotor behavior
Lauren A Young, Eugenia Olesnicky Killian, PhD, Jeremy Bono, PhD
University of Colorado at Colorado Springs
40. **Endothelial cell-specific functions of TSPAN12 in retinal vascular development and blood-retina barrier maintenance**  
Chi Zhang¹#, Maria B. Lai¹#, Verity Johnson¹-², Ralf H. Adams³, Zhe Chen¹, and *Harald J. Junge¹  
¹Department of Molecular, Cellular, and Developmental Biology, University of Colorado, Boulder  
²ArcherDx, Boulder, CO 80301, USA  
³Max Planck Institute for Molecular Biomedicine, Department of Tissue Morphogenesis, and University of Münster, Faculty of Medicine, Röntgenstrasse 20, D-48149 Münster, Germany  
#These authors contributed equally

41. **Phenylbutyrate can halt progression of Parkinson’s disease even after disease onset in transgenic mice**  
Wenbo Zhou, PhD and Curt R. Freed, MD  
Division of Clinical Pharmacology, Department of Medicine, University of Colorado Denver, Aurora, CO 80045

42. **Mapping somatodendritic circuits of midbrain dopamine neurons**  
Sarah Zych, Christopher P. Ford  
University of Colorado Anschutz Medical Campus

43. **Effects of Exercise Training on Cognitive Outcomes: a synthesis of the randomized controlled meta-analyses**  
*Jeffrey Kellerson, BS¹, Alex Tagawa, BS², Lilian Hoffecker, PhD³, Patricia C. Heyn, PhD⁴  
¹Biomedical Science and Biotechnology, University of Colorado Anschutz Medical Campus  
²Center for Gait and Movement Analysis, Children's Hospital Colorado  
³Health Sciences Library, University of Colorado Anschutz Medical Campus  
⁴Department of Physical Medicine & Rehabilitation, University of Colorado Anschutz Medical Campus