

# NEURO NEWS

## From the Directorate

### \*New School Year - New Changes\*

Welcome to a new academic year! The Program leadership would like to announce a few important changes and updates. First and foremost, we welcome Dr. David Krizaj as Interim Director, effective July 1, 2017. Dr. Dorsky remains on the Program Directorate as co-Director, and we plan to schedule a vote for a permanent Director by the end of the year.

We would also like to remind everyone of the revised Curriculum that will take effect for our incoming first-year class. Neuroanatomy and Developmental Neuroscience courses will both now be a half-semester in the fall, and we have added Literature Review and Grant Writing courses to spring semester. These courses will be taken with students from the MB/BC Programs, and will culminate in a formal Capstone Exam consisting of a written and oral proposal defense.

The Neuroscience Program underwent our periodic Graduate Council review last year, and received numerous commendations and significant support from our internal and external reviewers. Several constructive recommendations were also provided, and the Program leadership met with University Administration to agree on plans to address these points. A full summary of these plans will be communicated to all Program members as soon as a final Memorandum of Understanding is drafted.

### \*NEUROSCIENCE INITIATIVE NEWS\*

#### **“Research Initiative Seeks to Understand Neural Pathways in Deep Brain Stimulation”**

The University of Utah Neuroscience Initiative recently announced Christopher Butson, PhD, Associate Professor in Bioengineering and the Scientific Computing and Imaging Institute, was awarded funding for his project, “Differentiating Neural Circuits Modulated During Therapeutic Versus Ineffective Deep Brain Stimulation”.

Dr. Butson’s research focuses on improving treatment for movement disorder (e.g. Parkinson’s disease) patients by developing technology to aid clinicians in programming Deep Brain Stimulation (DBS) systems. In these systems, electrodes are placed in the brain to help control involuntary movements and tremors through electrical stimulation of certain regions.

This research combines computational, imaging and clinical research approaches to differentiate the unique neural circuits stimulated during DBS. For this project, Dr. Butson and his team will evaluate specialized imaging data from DBS patients who have had both positive outcomes and negative side effects. This research will develop sophisticated algorithms which will attempt to predict the neural pathways affected by the stimulation. It is hoped once these pathways are identified, they will provide a guide for physicians to use in treatment to maximize beneficial outcomes and mitigate negative side effects for DBS patients.

## \*\*\*\*2017 Incoming Students\*\*\*\*

**Alicia Goin**, University of Puget Sound  
**Keith Jones**, East Carolina University  
**Daniel Lathen**, Brigham Young University  
**Alexander MacKenzie**, University of Michigan, Ann Arbor  
**Vinay Sridhar**, University of Texas, Dallas  
**Amber Syage**, California State Polytechnic University  
**Guang Yang**, University of Utah (MD/PhD student)  
**Abigail Zimmermann**, Montana State University

## \*\*\*\*ACADEMIC DEFENSES\*\*\*\*

Since the last issue of NeuroNews, the Neuroscience Program congratulates the following students on successfully passing their qualifying exams: **Danielle Giangrasso (Keefe lab)**, **Ariadne Penalve (Douglass lab)**;

and dissertation proposals: **Kevin Huang (Park lab)**, **Jace King (Anderson lab)**, **Ana Santos (Park lab)**, **Nancy William (Coon lab)**, and **Anne Gibson (Keefe lab)**;

and dissertation defenses: **Meredith Gibbons Hasenoehrl (Wilcox lab)**, **Rebecca Pfeiffer (Marc lab)** and **Jefferson Brown (Marc lab)**.

## \*\*\*\*STUDENT AWARDS\*\*\*\*

**Pratyush Suryvanshi (Brennan lab)** have been selected as University of Utah Graduate Research Fellows. This award covers \$17,700 of their stipend, and 80% of their health insurance.

**Jaycie Loewen (Wilcox lab)**, has been awarded an NRSA Fellowship.

**Brent Young (Tian lab)** and **Michelle Reed (Baehr lab)** were awarded fellowships on the T32 Vision Training Grant.

## \*\*\*\*NEW FACULTY\*\*\*\*

Since the last issue of NeuroNews we have added the following new faculty:

**Tracey Lamb, Ph.D., Associate Professor of Pathology.** Research: Microbiology and immunology.

**Jie Zhang, Ph.D., Research Assistant Professor of Anesthesiology.** Research: Cellular and molecular mechanisms of pain and fatigue.

**John Rolston, M.D., Ph.D., Assistant Professor of Neurosurgery.** Research: Epilepsy and neural engineering.

## \*\*\*\*SEMINAR SERIES 2017-2018\*\*\*\*

**September 19: Damien Fair, PA-C, Ph.D.,** Oregon HSU

**October 17: Anders Dale, Ph.D.,** UC San Diego

**November 21: Benjamin Arenkiel, Ph.D.,** Baylor C. of Medicine

**January 16: Matthew Kennedy, Ph.D.,** U. Colorado, Denver

**February 20: Katherine Nagel, Ph.D.,** NYU Neuroscience I.

**March 20: Mriganka Sur, Ph.D., FRS,** MIT

**April 17: Joshua Sanes, Ph.D.,** Harvard U.

see more details at:

<http://neuroscience.med.utah.edu/meetings.php>

## \*\*\*\*Other Important Dates\*\*\*\*

**Sept. 6: Neuroscience Program: Meet the New Students Reception**

Jewish Community Center; 5-8PM

**Sept. 12: Bioscience Symposium**

**Oct. 27: Annual Neuroscience Program Symposium @ Snowbird**

*"The Role of Epigenetics in Neuroscience"*

<http://neuroscience.med.utah.edu/snowbird.php>

This year's invited speakers:

**Elizabeth Heller, Ph.D.,** The University of Pennsylvania

**Farah Lubin, Ph.D.,** University of Alabama, Birmingham

**Marcelo Wood, Ph.D.:** University of California, Irvine

**Elisabeth Conradt, Ph.D.,** University of Utah

**Hilary Coon, Ph.D.,** University of Utah

**Chris Gregg, Ph.D.,** University of Utah

**Nov. 11-15: The Society for Neuroscience Annual Meeting** held this year in San Diego, CA.

**Feb. 9, 2018: Neuroscience Program Recruitment Weekend.**

## \*\*\*\*NEW ADMINISTRATIVE ASSISTANT\*\*\*\*

The NP welcomes **Jessica Chapman** as a part-time administrative assistant. Jessica joined the Molecular Biology/Biological Chemistry Program full-time in May and assisting the NP July 1. She is our social media front person. She is actively posting on Facebook and Twitter.

Contact her for all things social media:  
[Jess.Chapman@utah.edu](mailto:Jess.Chapman@utah.edu)

Facebook: <https://www.facebook.com/UUNeuro/>  
Twitter: [https://twitter.com/UU\\_Neurosci](https://twitter.com/UU_Neurosci)

\*\*\*\*ALUMNI NEWS\*\*\*\*

**Benedict Albeni:** was invited to join the Canadian Consortium on Neurodegeneration in Aging and in association with this group is a co-applicant on a team grant.

Canadian Consortium on Neurodegeneration in Aging (CCNA). CAN 137794. Team Theme 1 – Clinical Genetics and Gene Discovery. Co-applicant. \$6,063,172 total.

Djordjevic, J., Thomson, E.\*, Chowdhury, S.R., Snow, W., Perez, C., Wong, T.P., Fernyhough, P., and **Albeni, B.C.** (2017) Brain region- & sex-specific alterations in mitochondrial function & NF-κB signaling in the TgCRND8 mouse model of Alzheimer's disease. \*This author is a co-first author. *Neuroscience*. NSC-17-992. in press.

This study provides important new evidence on gender differences in Alzheimers disease mediated by NF-κB signaling in the mitochondria, a critical regulator of metabolism. Mitochondrial dysfunction in AD is a new view on what causes AD. Treatments targeting NF-κB signaling may have relevance for many types of mitochondrial disorders outside of just AD. We have another paper being submitted soon in a 2nd strain of AD mice where dysfunction in females occurs as early as 2 months way before any memory loss or evidence of pathological markers.

**Elliot Smith:** Liou, J.-Y., **Smith, E.H.**, Bateman, L.M., McKhann, II, G.M., Goodman, R.R., Greger, B., Davis, T.S., Kellis, S.S., House, P.A., and Schevon, C.A., (2017) Multivariate regression methods for estimating velocity of ictal discharges from human microelectrode recordings. *Journal of Neural Engineering*, Volumn 14, Number 4.

**J. Scott Lauritzen:** Zheng, Z., Lauritzen, J.S., Perlman, E., Robinson, C.G., Nichols, M., Milkie, D., Torrens, O., Price, J., Fisher, C.B., Sharifi, N., Calle-Schuler, S.A., Kmecova, L., Ali, I.J., Karsh, B., Trautman, E.T., Bogovic, J., Hanslovsky, P., Jefferis, G.S.X.E., Kazhdan, M., Khairy, K., Saalfeld, S., Fetter, R.D., and Bock, D.D. (2017) A Complete Electron Microscopy Volume Of The Brain Of Adult Drosophila melanogaster. *bioRxiv*, doi: <https://doi.org/10.1101/140905>

**Tim Simeone:** **Simeone, T.A.**, Matthews, S.A., and Simeone, K.A. (2017) Synergistic protection against acute flurothyl-induced seizures by adjuvant treatment of the ketogenic diet with the type 2 diabetes drug pioglitazone. *Epilepsia*, Aug;58(8):1440-1450.

**Simeone, T.A.**, Simeone, K.A., and Rho, J.M. (2017) Ketone Bodies as Anti-Seizure Agents. *Neurochem Res.*, Jul;42(7):2011-2018.

\*\*\*\*News Worthy\*\*\*\*

**Jason Shepherd** (Neurobiology & Anatomy) was awarded a R01 from NIMH.

Daniel Scoles (Neurology) was awarded an R01 from NINDS, with **Stefan Pulst** (Neurology) as a co-investigator.

The **Stefan Pulst** lab had back-to-back Nature papers (see page 4).

Article in Wired by DARPA director features some of the neuroprosthesis work out of the **Greg Clark** lab: <http://www.wired.co.uk/article/darpa-arati-prabhakar-humans-machines>

**Tom Lane** was awarded an MS Center Grant from the National Multiple Sclerosis Society. This is a 5 year award and was the only center grant awarded last year - it's a prestigious award with other universities like Hopkins, Michigan etc having these. It's the first one for Utah. Other investigators include **Bob Fujinami**, June Round, Ryan O'Connell, John Rose, Noel Carlson and E.K. Jeung.

\*\*\*\*Postdoctoral Position\*\*\*\*

**Vinberg Lab:**

**Postdoctoral position available in Visual Neuroscience at the Moran Eye Center, University of Utah.**

Opportunity to join a well-funded (including NIH funding) new laboratory studying physiologically relevant mechanisms in the retinal neurons using modern electrophysiology, imaging and genetic methods. Our work is focused on understanding the pathobiology of major blinding diseases including age-related macular degeneration and diabetic retinopathy. We are performing both basic research and more translational work using animal models and donor human tissue. The applicant should either have experience in electrophysiology or live cell imaging or a strong motivation to learn these techniques. The candidate will get extensive mentoring in experimental techniques and other areas important for a successful scientific career. I will be also fully supporting candidate's career advancement including networking and attendance to 1-2 conferences per year. Position is available immediately. Interested should email a short description of their research interests and future plans, and C.V. with a list of two references to [frans.vinberg@hsc.utah.edu](mailto:frans.vinberg@hsc.utah.edu).

## \*\*\*\*RECENTLY PUBLISHED\*\*\*\*

Becker, L.A., Huang, B., Bieri, G., Ma, R., Knowles, D.A., Jafar-Nejad, P., Messing, J., Kim, H.J., Soriano, A., Auburger, G., **Pulst, S.M.**, Taylor, J.P., Rigo, F., and Gitler, A.D. (2017) Therapeutic reduction of ataxin-2 extends lifespan and reduces pathology in TDP-43 mice. *Nature*, 544:367-371.

DePaula-Silva, A.B., **Hanak, T.J.**, Libbey, J.E., and **Fujinami, R.S.** (2017) Theiler's murine encephalomyelitis virus infection of SJL/J and C57BL/6J mice: Models for multiple sclerosis and epilepsy. *J Neuroimmunol.*, 15;308:30-42. doi: 10.1016/j.jneuroim.2017.02.012. Epub 2017 Feb 12.

**Jenks, K.R.\***, Kim, T.\*, **Pastuzyn, E.D.\***, Okuno, H., **Taibi, A.V.**, Bito, H., Bear, M.F., and **Shepherd, J.D.** (2017) Arc restores juvenile plasticity in adult mouse visual cortex. *Proc National Acad Sci U S A*, in press.

Martin, E.A., Woodruff, D., **Rawson, R.L.**, and **Williams, M.E.** (2017) Examining Hippocampal Mossy Fiber Synapses by 3D Electron Microscopy in Wildtype and Kirrel3 Knockout Mice. *eNeuro*. Jun 19;4(3). pii: ENEURO.0088-17.2017. doi: 10.1523/ENEURO.0088-17.2017. eCollection 2017 May-Jun. PMID:28670619

**Pastuzyn, E.D.**, and **Shepherd, J.D.** (2017) Activity-dependent Arc expression and homeostatic synaptic plasticity are altered in neurons from a mouse model of Angelman syndrome. *Front Mol Neurosci*, 10:234.

**Rawson, R.L.**, Martin, E.A., and **Williams, M.E.** (2017) Mechanisms of input and output synaptic specificity: finding partners, building synapses, and fine-tuning communication. *Curr Opin Neurobiol*. Apr 4;45:39-44. doi: 10.1016/j.conb.2017.03.006. [Epub ahead of print] Review. PMID: 28388510

Scoles, D.R., Meera, P., Schneider, M.D., Paul, S., Dansithong, W., Figueroa, K.P., Hung, G., Rigo, F., Bennett, C.F., Otis, T.S., and **Pulst, S.M.** (2017) Antisense oligonucleotide therapy for spinocerebellar ataxia type 2. *Nature*, 544:362-366.

Spampanato, J., and **Dudek, F.E.** (2017) Targeted Interneuron Ablation in the Mouse Hippocampus Can Cause Spontaneous Recurrent Seizures. *eNeuro*, 12 July, 4 (4) ENEURO.0130-17.2017; DOI: <https://doi.org/10.1523/ENEURO.0130-17.2017>

## \*\*\*\*MORE NEWSWORTHY\*\*\*\*

**Jason Shepherd** (Neurobiology & Anatomy): <http://www.deseretnews.com/article/865686685/U-study-Could-gene-manipulation-be-a-boost-to-the-brain.html>

**Jason Shepherd** (Neurobiology & Anatomy): <http://www.dailymail.co.uk/sciencetech/article-4776286/Scientists-reverse-effects-aging-brains-mice.html>

**Deborah Yurgelun-Todd** (Psychiatry): <http://www.sltrib.com/sports/5569809-155/under-new-pac-12-initiative-and-funding>

**Jane Gunther, Ph.D.**, DABT (Dr. Roy Twyman's lab, 1998) as a volunteer Trustee on the Board of the cureCADASIL Association has created "CADASIL Connection", a webinar Speaker Series. Cerebral Autosomal Dominant Arteriopathy with Subcortical Infarcts and Leukoencephalopathy (CADASIL) is the most frequent genetic cause of stroke and vascular dementia. The objective of CADASIL Connection is to educate on current research in CADASIL, in particular, that which supports identification of potential therapeutics, biomarkers, and understanding of disease progression. The webinars are free and the schedule can be found at [cureCADASIL.org](http://curecadasil.org) under News/Events. <http://curecadasil.org/newsevents/>.

Dr. Jennifer Majersik, M.D., M.S., who is an Associate Professor of Neurology at the University of Utah School of Medicine and Director of the University of Utah Stroke Center, is a member of the cureCADASIL Scientific Advisory Board.

*Do you have something to submit in the next issue of NeuroNews?  
Send your information to: Tracy Marble, Program in Neuroscience  
390A BPRB, FAX: 581-4233, or e-mail: [tracy.marble@hsc.utah.edu](mailto:tracy.marble@hsc.utah.edu)*