

# NEURO NEWS

## \*\*\*\*From the Director\*\*\*\*

We are pleased to announce that Jim Heys will be stepping into the position of Recruitment Chair for the Neuroscience Program. Jim's duties will include serving as a member of the Neuroscience Directorate. He will be the NP contact person for organizing our presence at grad fairs (SfN, ABRCMS, SACNAS, etc). Jim is taking over the position that Chris Gregg has held for the past 2 years. The NP would like to extend our gratitude for all of Chris's service to the program. He has also served for 4 years on the Admissions committee. Chris was instrumental in creating our recruitment video that we have posted on our web page. If you haven't seen it, please click here: <https://neuroscience.med.utah.edu/application.php> and scroll to the video. He has also let me know that version 2.0 is coming soon.

Welcome Jim to your new position!

## \*\*\*\*2019 Incoming Students\*\*\*\*

**Erin Bigus**, Pomona College  
**Fei Chang**, Nanjing Medical University  
**Maggie Chvilicek**, Seattle University  
**Rachel Gatlin**, Western Washington University  
**Kevin Sattler**, University of Texas, Austin  
**Mitali Tyagi**, Jiwaji University  
**Kaliana Veros**, SUNY, Buffalo  
**Adam Weinbrom**, Gettysburg College

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

Since the last issue of NeuroNews, the Neuroscience Program congratulates the following students on successfully passing their qualifying exams: **Keith Jones (Mickey lab)**;

and dissertation proposals: **Jenifer Einstein (Shepherd lab)**, **Charlotte Magee (Fleckenstein lab)** and **Dominic Skinner (Lane lab)**,

and dissertation defenses: **Brent Young (Tian lab)**, **Donn Van Deren, Jr. (Capecchi lab)**, and **Kyle Jenks (Shepherd lab)**.

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

**Dominic Skinner (Lane lab)** is the recipient of the *Pierre and Claudette McKay Lassonde New Venture Development Scholarship*.

**Danielle Giangrasso (Keefe lab)** has been awarded a *Skaggs Graduate Research Fellowship* for 2019-2020.

**Daniel Lathen (Rothenfluh lab)** has been selected as a trainee on the Genetics Training Grant for 2019-2021.

## \*\*\*\*SEMINAR SERIES 2019-2020\*\*\*\*

**September 17: Nicola Allen, Ph.D.**, Salk Institute  
**October 15: C. Savio Chan, Ph.D.**, Northwestern U.  
**November 19: Helen Bateup, Ph.D.**, UC - Berkeley  
**January 21: Aaron Batista, Ph.D.**, U. of Pittsburgh  
**February 18: Grant Gordon, Ph.D.**, U. of Calgary  
**March 17: David McCormick, Ph.D.**, U. of Oregon  
**April 21: David Olson, Ph.D.**, UC - Davis

see more details at:

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

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

**Sept. 5: Neuroscience Program: Meet the New Students Reception**  
 Jewish Community Center; 5-8PM

**Sept. 10: Bioscience Symposium**

**Oct. 19-23: The Society for Neuroscience Annual Meeting**  
 held this year in Chicago, IL.

**Nov. 1: Annual Neuroscience Program Symposium @ Snowbird**  
*"Molecular Machines Drive Your Brain: Current Trends in Cellular and Molecular Neuroscience"*

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

This year's invited speakers:

**Aaron Gitler, Ph.D.**, Stanford University  
**Samara Reck-Peterson, Ph.D.**, HHMI  
**Ruth M. Barrientos, Ph.D.**, The Ohio State University  
**Craig Montell, Ph.D.**, UC - Santa Barbara  
**Megan Williams, Ph.D.**, University of Utah  
**Sungjin Park, Ph.D.**, University of Utah  
**Jason Shepherd, Ph.D.**, University of Utah  
**Janet Iwasa, Ph.D.**, University of Utah

*A call for abstracts for the SFN poster session at Snowbird will be coming soon.*

**Feb. 7, 2020: Neuroscience Program Recruitment Weekend.**

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

**J. Scott Lauritzen:** Below is a list of all the publications on which I am coauthor for the past year. The most notable one is the last on the list, which is the Cell paper on which I am co-first author that announced our creation and initial exploration of the complete electron microscopy volume of an adult fruit fly brain (largest brain captured at synaptic resolution to date). We got a lot of press on this, and it was a finalist for the AAAS Science magazine's 2018 People's Choice for Scientific Breakthrough of the Year.

Zhang, X., Coates, K., Dacks, A., Gunay, C. **Lauritzen, J.S.**,... Gaudry, Q. (2019) Local synaptic inputs support opposing, network-specific odor representations in a widely projecting modulatory neuron. *eLife*, 8:e46839DOI:10.7554/eLife.46839.

Sayin, S., De Backer, J.-F., Wosniack, M.E., Lewis, L.P., Siju, K.P., Frisch, L.-M., Schlegel, P., Edmondson-Stait, A., Sharifi, N., Fisher, C.B., Calle-Schuler, S.A., **Lauritzen, J.S.**,...Kadow, I.C.G. (2018) A neural circuit arbitrates between perseverance and withdrawal in hungry *Drosophila*. *bioRxiv* 259119; doi: <https://doi.org/10.1101/259119>.

Felsenberg, J., Jacob, P.F., Walker, T., Barnstedt, O., Edmondson-Stait, A., Pleijzier, M.W., Otto, N., Schlegel, P., Sharifi, N., Perisse, E., Smith, C.S., **Lauritzen, J.S.**,... Waddell, S. (2018) Integration of parallel opposing memories underlies memory extinction. *Cell*, 175(3):709-722. e15. doi: 10.1016/j.cell.2018.08.021. Epub 2018 Sep 20.

Zheng, Z.‡, **Lauritzen‡, J.S.**,... Bock, D.D. (2018)A complete electron microscopy volume of the brain of adult *Drosophila melanogaster*. *Cell*, 174(3): 730-743. e22. doi: 10.1016/j.cell.2018.06.019. Epub 2018 Jul 19. ‡Co-first author

<https://www.hhmi.org/news/complete-fly-brain-imaged-at-nanoscale-resolution>

<https://www.sciencemag.org/news/2018/07/tour-de-force-researchers-image-entire-fly-brain-minute-detail>

**Jeff Yarch:** Yarch, J., Larsen, H., Chen, M., and **Angelucci, A.** (2019) Morphological Cell Types Projecting from V1 Layer 4B to V2 Thick and Thin Stripes. *Journal of Neuroscience*, 29 July, 1096-19; DOI: <https://doi.org/10.1523/JNEUROSCI.1096-19.2019>

**Benedict Albensi:** My radio interview the online story from the radio program: <https://globalnews.ca/news/5499597/potential-blood-test-for-dementia-exciting-news-for-doctors-patients-says-manitoba-expert/>

Announcement on my sex differences in AD grant (mouse models) for approx. 729K: <https://www.sbrca.ca/2019/02/albensi-czubryt-dixon-and-fernyhough-receive-canadian-institutes-of-health-research-cihr-funding-totalling-more-than-3-5m/>

Announcement on my new human clinical trial grant for AD for approx. 215K <http://www.sbrca.ca/2019/05/world-class-team-of-researchers-at-st-boniface-help-grow-mbs-agri-sector/>

Announcement on our new team grant for CCNA members only (about 300 of us) for \$46 million: <http://www.sbrca.ca/2019/06/canadian-consortium-on-neurodegeneration-in-aging-ccna-phase-2-funding-announcement-includes-mb-researchers/>

Press release for ACRES-Global. I am a co-Chair on this team and co-author of the worlds' first clinical research site standard: <https://www.medindia.net/health-press-release/acres-launches-global-accreditation-of-clinical-research-sites-424715-1.htm>

## \*\*\*ALUMNI NEWS cont.\*\*\*

**Elliot Smith:** is now Research Assistant Professor, Department of Neurosurgery, University of Utah; John Rolston lab. Welcome back!

Wenzel, M., Han, S., **Smith, E.H.**, Hoel, E., Greger, G., House, P.A., and Yuste, R. (2019) Reduced Repertoire of Cortical Microstates and Neuronal Ensembles in Medically Induced Loss of Consciousness. *Cell Systems*, <https://www.sciencedirect.com/science/article/pii/S2405471219300778?via%3Dihub>

**Kerry-Ann Stewart Mitchell:** recently completed her residency in Plastic & Reconstructive Surgery at the University of Southern California, and started Fellowship in Neuroplastic Surgery at Johns Hopkins University. This is a joint fellowship in the Departments of Neurosurgery and Plastic Surgery. Her research will focus on intracranial device testing in a translational model of epilepsy, and will allow her to combine her background in neuroscience research and clinical reconstructive surgery.

**Tyler Hanak:** is currently working as a Neurophysiologist II at Nuvasive Clinical Services, SLC, UT.

**Arie Mobley:** has published a textbook "Neural Stem Cells and Adult Neurogenesis". She was featured in her hometown newspaper: [http://www.richfieldreaper.com/news/local/article\\_f18c5504-a4e8-11e9-881f-57bed33dedcc.html?sfns=mo](http://www.richfieldreaper.com/news/local/article_f18c5504-a4e8-11e9-881f-57bed33dedcc.html?sfns=mo)

A description of the book can be found at the publisher's website: <https://www.elsevier.com/books/neural-stem-cells-and-adult-neurogenesis/mobley/978-0-12-811014-0>

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

**Hanak, T.J.**, Libbey, J.E., Doty, D.J., Sim, J.T., DePaula-Silva, A.B., and **Fujinami, R.S.** (2019) Positive Modulation of mGluR5 Attenuates Seizures and Reduces TNF- $\alpha$  Macrophages and Microglia in the Brain in a Murine Model of Virus-Induced Temporal Lobe Epilepsy. *Exp Neurol*, 311:194-204.

DePaula-Silva, A.B., Gorbea, C., Doty, D.J., Libbey, J.E., Sanchez, J.M.S., **Hanak, T.J.**, Cazalla, D., and **Fujinami, R.S.** (2019) Differential transcriptional profiles identify microglial- and macrophage-specific gene markers expressed during virus-induced neuroinflammation. *J Neuroinflamm*, 16:152.

Johnstone, T.B.C., McCarren, H.S., Spanpanato, J., **Dudek, E.F.**, McDonough, J.H., Hogenkamp, D., and Gee, K.W. (2019) Enaminone Modulators of Extrasynaptic  $\alpha$ 4 $\beta$ 3 $\delta$   $\gamma$ -Aminobutyric AcidA Receptors Reverse Electrographic Status Epilepticus in the Rat After Acute Organophosphorus Poisoning. *Front Pharmacol.*, doi: 10.3389/fphar.2019.00560. eCollection 2019.

Marro, B.S\*, **Skinner, D.D\***, Cheng, Y., Grist, J.J., Dickey, L.L., Eckman, E., ... **Lane, T.E.** (2019) Disrupted CXCR2 signaling in oligodendroglia lineage cells enhances myelin repair in a viral model of multiple sclerosis. *Journal of Virology*. <https://doi.org/10.1128/JVI.00240-19>

**Royzen, F.**, Williams, S., Fernandez, F.R., and **White, J.A.** (2019) Balanced synaptic currents underlie low-frequency oscillations in the subiculum. *Hippocampus*, doi: 10.1002/hipo.23131. [Epub ahead of print]

Spanpanato, J., Pouliot, W., Bealer, S.L., Roach, B., and **Dudek, E.F.** (2019) Antiseizure and neuroprotective effects of delayed treatment with midazolam in a rodent model of organophosphate exposure. *Epilepsia*, doi: 10.1111/epi.16050. Epub 2019 May 24.

\*\*\*Greg Clark lab media coverage\*\*\*

We've just published a paper in Science Robotics showing that we can begin to restore the sense of touch after hand amputation, Luke-Skywalker style, by stimulating the remaining arm nerve sensory fibers.

Nerve stimulation that mimicked the body's natural firing patterns especially helped restore not only dexterity of a bionic arm (DEKA's "LUKE" arm), but also the ability to use the hand to explore and understand the world via tactile sensation.

The story has been picked up internationally (London Times, The Guardian), nationally (CNN, USA Today, NPR), locally (Des News, front page), Reddit (front page, but NSFW)...

CNN (home page story, with video) July 26, 2019:  
<https://www.cnn.com/2019/07/25/health/luke-skywalker-prosthetic-arm-scn-trnd/>

...and now: Twitter. By none other than... Yup. You guessed it: <https://twitter.com/HamillHimself/status/1156634184468746240?s=19>

With a moving tweet:



More completely, and a bit more formally:

Our Science Robotics paper using the DEKA LUKE arm with dexterous motor control enhanced by biologically realistic sensory feedback has just been published, 7/24/2019.

The paper demonstrates that sensory feedback provided by nerve stimulation improves motor control of a bionic hand, and that biomimetic neural activation patterns work better than do less natural ones.

Science Robotics:  
Biomimetic sensory feedback through peripheral nerve stimulation improves dexterous use of a bionic hand  
<https://robotics.sciencemag.org/content/4/32/eaax2352> (abstract and paper)  
<https://twitter.com/SciRobotics/status/1154391084669317127> (video)

The COE press release, with video:  
<https://www.coe.utah.edu/2019/07/24/prosthetic-arm-that-can-feel/> (and <https://unews.utah.edu/star-wars-inspired-arm/>)

(Continued on page 4)

\*\*\*\*Greg Clark lab media coverage continued\*\*\*\*

Below is a summary image of the publicity we've reviewed for this publication. The quote at the top is from Vincent Horiuchi (Public Relations Associate for the COE).

**“easily the most covered research project from any part of the U in at least several years”**

**THE UNIVERSITY OF UTAH**



- 375+ news articles, 450.4 M views, \$4.2 M in advertising
- Top 5% of **all** scientific manuscripts
- 8<sup>th</sup> highest-scoring manuscript from *Science Robotics*
- 99<sup>th</sup> percentile for manuscripts of same age



Mark Hamill  
@markhamill

“I never thought I would be able to feel in that hand again-It almost put me to tears” says recipient of LUKE Arm. Same here. I've had a Gibbon named for me, been a Pez dispenser, an electric toothbrush & Underoos-NOTHING is more satisfying than this.

George et al., *Science Robotics*, 2019

\*\*\*\*More Faculty News\*\*\*\*

**Jason Shepherd** on TEDMED <https://www.tedmed.com/talks/show?id=729641> and accompanying blog: <https://massivesci.com/articles/arc-protein-mind-control-memory-brains-shepherd-utah-tedmed-alzheimers/>

Chris Butson's (Director of Neuromodulation Research Faculty, Scientific Computing & Imaging (SCI) Institute) work was featured in the NIH Director's blog at the beginning of August. [https://directorsblog.nih.gov/2019/08/01/the-amazing-brain-deep-brain-stimulation/?fbclid=IwAR3q-UflkSvcSF6GsuZqOclD\\_z8MMVkhfAng0\\_OViekDnCIMSMcUASL5Twg](https://directorsblog.nih.gov/2019/08/01/the-amazing-brain-deep-brain-stimulation/?fbclid=IwAR3q-UflkSvcSF6GsuZqOclD_z8MMVkhfAng0_OViekDnCIMSMcUASL5Twg)

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)