

NEURO NEWS

Neurobiology & Anatomy Welcomes New Faculty

The Department of Neurobiology and Anatomy is very pleased to welcome two new faculty to the department in 2019:

Dr. Jim Heys was awarded a Ph.D. in Neuroscience in 2013 working with Dr. Michael Hasselmo at Boston University where he examined the neural encoding of 3D space and discovered fundamental differences in the way species represent their own location. He then pursued postdoctoral training in the laboratory of Dr. Daniel Dombeck at Northwestern University where he discovered principles for the topographic organization of cells that encode spatial information in the brain, and also identified neuronal populations in the hippocampus that represent elapsed time and are involved in representation of space and time for episodic memory. The overarching goal of Jim's research is to understand the neural mechanisms by which memories are encoded and recalled in the brain. He uses cellular and subcellular resolution functional imaging methods to monitor and manipulate the activity of hundreds of neurons simultaneously in the intact brain of the mouse during memory guided behavior. Ultimately, he will investigate how specific neural mechanisms that underlie memory formation may breakdown in neurodegenerative diseases such as Alzheimer's.

Jim started at the U on January 1, 2019.



Dr. Moriel Zelikowsky received her Ph.D in Psychology from UCLA in 2011, where she investigated the role of the hippocampus and prefrontal cortex in fear learning, memory and extinction in the laboratory of Michael Fanselow. She then pursued her postdoctoral training in the Department of Biology and Biological Engineering at Caltech in the laboratory of David J. Anderson, where she identified a role for the neuropeptide Tac2 in the control of prolonged social isolation stress. Moriel will combine her expertise in animal behavior and systems neuroscience towards investigating the neural circuitry and molecular mechanisms underlying stress, anxiety and social behavior. By applying cutting-edge molecular genetic tools to further our understanding of animal behavior and emotion, she aims to identify novel therapeutic targets for the treatment of mental health-related disorders such as PTSD, anxiety and depression.

Moriel will start summer of 2019.



*****From the Admissions Committee Chair
Hilary Coon*****

The Neuroscience Program admissions committee recently invited **Drs. Alessandra Angelucci** (Ophthalmology & Visual Sciences), **Neda Nategh** (Electrical & Computer Engineering), and **Robert Welsh** (Psychiatry) to join our returning members: **Hilary Coon** (Psychiatry), **Sophie Caron** (School of Biological Sciences), **Frans Vinberg** (Ophthalmology & Visual Sciences), **Anna Docherty** (Psychiatry), and **Adrian Rothenfluh** (Psychiatry). Previous committee members **Drs. Sungjin Park, Skyler Jennings,** and **Michael Deans** have completed their commitments and we appreciate their service. Student committee chairs: **Charlotte Magee** and **Dominic Skinner**.

The committee has been active and we have received a total of 119 applications from students across the US and world. This is about the same number of applications we received last year.

NP faculty and current students are invited to meet our top candidates at a dinner reception and poster session to be held at the JCC on February 8th--so save the date!

*****Brain Awareness Week*****

Brain Awareness Week (BAW) is coming up from March 11-16! During the week, students and faculty from the University of Utah will visit local elementary and high schools to teach them about the brain. During our visits, we have volunteers from various departments introduce different modules, including human brain anatomy with real cadaver brains, sensory and perception interactives, model organisms & microscopes, and the opportunity to test bio-electrical impulses using EMG. This year we've updated and added to our existing modules, so be sure to check them out! At the end of the week (March 16th), we will spend a day at Salt Lake City Public Library where everyone is welcome to come experience the fun. If you are interested in volunteering or have any questions, send us an email at neurobaw@gmail.com. See you soon!

Brain Awareness 2019 Co-Chairs: **Christie Wnukowski, Danielle Giangrosso,** and **Laura Bell,** Graduate Students, Neuroscience Program

*****ACADEMIC DEFENSES*****

Since the last issue of NeuroNews, the Neuroscience Program congratulates the following students on successfully passing their qualifying exams: **Jenifer Einstein (Shepherd lab), Arnulfo Tunon-Ortiz (Lamb lab), Dominic Skinner (Lane lab), Charlotte Magee (Fleckenstein lab), Laura Bell (Shcheglovitov lab) and Guang Yang (Shcheglovitov lab);**

and dissertation proposals: **Danielle Giangrosso (Keefe lab);**

and dissertation defenses: **Leonardo Parra (Jorgensen lab), Anthony Umpierre (Wilcox lab), Jaycie Loewen (Wilcox lab), Yueqi Wang (Shcheglovitov lab), Jace King (Anderson lab), Tyler Hanak (Fujinami lab), Sarah Anderson (Vetter lab), Hui Xu (Fu lab) and Feliks Royzen (White lab).**

*****Other Important Dates*****

Feb. 8: Neuroscience Program Recruitment. Our annual reception devoted to recruiting student candidates for the upcoming academic year will be held at the Jewish Community Center, 2 North Medical Drive, Friday, February 9th from 6:00-9:00pm. There will be, of course, the usual amounts of food and drink **AND chocolate fountain!**

March 11-17: National Brain Awareness Week. Christine Wnukowski and Laura Bell are the co-chairs of the committee this year.

May 9: Annual Neuroscience Student Symposium
Student organizer: Arnulfo Tunon-Ortiz

November 1: Annual Snowbird Symposium
Student organizer: TBD

*****SEMINAR SERIES 2018-2019*****

Remaining seminars for this year:

January 15: Bitu Moghaddam, Ph.D., OHSU
"Anxiety as a disorder of action computation by the prefrontal cortex"

February 19: Axel Brunger, Ph.D., Stanford U.
"Molecular mechanisms of synaptic neurotransmitter release"

March 19: Patrick Kanold, Ph.D., U. of Maryland, College Park
"Circuits and plasticity in the developing auditory cortex: How you learned your mother's voice"

April 16: Yun Zhang, Ph.D., Harvard U.
"Circuit mechanisms underlying olfactory learning"

see more details at:
<http://neuroscience.med.utah.edu/meetings.php>

*****NEW FACULTY*****

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

Norman Taylor, M.D., Ph.D., Associate Professor of Anesthesiology. Research: Brain circuit manipulation in freely behaving animals to understand the neurobiology of behavior and disease.

Jan Kubanek, Ph.D., Assistant Professor of Biomedical Engineering. Research: Developing ultrasound-based approaches to stimulate or inhibit neurons, or to release drugs at specific brain regions.

Robert C. Welsh, Ph.D., Professor of Psychiatry. Research: The use of neuroimaging technologies to understand and diagnose otherwise poorly understood illnesses in the areas of Neurology and Psychiatry.

Jim Heys, Ph.D., Assistant Professor of Neurobiology & Anatomy. Understanding the circuit, cellular and sub-cellular neural mechanisms underlying learning and memory.

FACULTY NEWS

Jason Shepherd (Neurobiology & Anatomy):

1) Gave a TedMed talk in November highlighting his work on viral mechanisms for RNA transfer in the brain.

2) Selected for the Ben Barres Early Career Acceleration Award (\$2.5M over 5 years) from the Chan-Zuckerberg Initiative (CZI). The CZI was founded by Mark Zuckerberg, CEO of Facebook, and his wife Pricilla Chan to provide new solutions to human disease. The CZI has launched the neurodegeneration challenge network to bring new people with innovative ideas in the field of Alzheimer's research.

3) Invited to participate as a delegate in the 53rd annual International Achievement Summit in NYC in September, 2019.

Josh Bonkowsky (Pediatrics) was appointed as the new Division Chief of Pediatric Neurology in the Department of Pediatrics, and Director of the Precision Medicine Program at Primary Children's.

Matt Wachowiak (Neurobiology & Anatomy) was elected President of The Association for Chemoreception Sciences, to begin in 2019.

Great press for **Chris Gregg's (Neurobiology & Anatomy)** Cell Reports paper on accelerated evolution of non-coding regions in the genome:
[https://www.cell.com/cell-reports/fulltext/S2211-1247\(18\)30176-1](https://www.cell.com/cell-reports/fulltext/S2211-1247(18)30176-1)

University of Utah Health Press Release: <https://healthcare.utah.edu/publicaffairs/news/2018/03/animal-genome.php>

The story was picked up by major news outlets both in the U.S. and abroad:
 NBC News, Newsweek, Cosmost (AUS), Swedish Television, Front Line Genomics (GBR), Genome Web, Futurism, Australian Broadcasting Company
 And more!

Postdoctoral Fellow position

Postdoctoral Fellow - Developmental Neurobiology
 Deans Laboratory, Department of Neurobiology & Anatomy, University of Utah

We are recruiting motivated and talented postdoctoral fellows to fill NIH-funded research positions in the Deans laboratory at the University of Utah. Our lab focuses on the contribution of Planar Cell Polarity (PCP) signaling towards multiple aspects of Inner Ear development in the mouse. We apply basic developmental biology, mouse genetics, and biochemical approaches to uncover key aspects of sensory hair cell differentiation and innervation. One of the following research projects could be yours: (i) transcriptional regulation of hair cell development and polarization, (ii) PCP signaling and axon guidance during cochlear innervation, or (iii) mechanisms of tissue patterning that guide planar polarity.

For consideration send a CV and list of references to **Michael Deans**, PhD (michael.deans@utah.edu).

RECENTLY PUBLISHED

An, J.-Y., Lin, K., Zhu, L., Werling, D.M., Dong, S., Brand, H., Wang, H.Z., Zhao, X., Schwartz, G.B., Collins, R.L., Currall, B.B., Dastmalchi, C., Dea, J., Duhn, C., Gilson, M.C., Klei, L., Liang, L., Markenscoff-Papadimitriou, E., Pochareddy, S., Ahituv, N., Buxbaum, J.D., **Coon, H.**, Daly, M.J., Kim, Y.S., Marth, G.T., Neale, B.M., Quinlan, A.R., Rubenstein, J.L., Sestan, N., State, M.W., Willsey, A.J., Talkowski, M.E., Devlin, B., Roeder, K., and Sanders, S.J., 2018, Genome-wide de novo risk score implicates promoter variation in autism spectrum disorder, *Science*, DOI: 10.1126/science.aat6576

Anderson, S.R., and **Vetter, M.L.**, 2019, Developmental roles of microglia: A window into mechanisms of disease. *Dev Dyn*, Jan;248(1):98-117.

Anderson, S.R., Zhang, J., Steele, M.R., Romero, C.O., Kautzman, A.G., Schafer, D.P., and **Vetter, M.L.**, 2019, Complement targets newborn retinal ganglion cells for phagocytic elimination by microglia. *J. Neurosci*, in press.

Coon, H., Darlington, T.M., DiBlasi, E., Callor, W.B., Ferris, E., Fraser, A., Yu, Z., **William, N.**, Das, S.C., Crowell, S.E., Chen, D., Anderson, J.S., Klein, M., Jerominski, L., Cannon, D., Shabalin, A., **Docherty, A.**, Williams, M., Smith, K.R., Keeshin, B., Bakian, A.V., Christensen, E., Li, Q.S., Camp, N.J., and Gray, D., 2018, Genome-wide significant regions in 43 Utah high-risk families implicate multiple genes involved in risk for completed suicide, *Mol Psychiatry*, Oct 23. Doi: 10.1038/s41380-018-0282-3.

Marc, R.E., **Sigulinsky, C.L.**, **Pfeiffer, R.L.**, Emrich, D., **Anderson, J.R.**, and **Jones, B.W.**, 2018, Heterocellular Coupling Between Amacrine Cells and Ganglion Cells. *Front Neural Circuits*, Nov 14;12:90. doi: 10.3389/fncir.2018.00090. eCollection 2018. PMID: 30487737

Merrikhi, Y., Clark, K., and **Noudoost, B.**, 2018, Concurrent influence of top-down and bottom-up inputs on correlated activity of Macaque extrastriate neurons, *Nature Communications*, in press.

Umpierre, A.D., **West, P.J.**, **White, J.A.**, and **Wilcox, K.S.**, 2018, Conditional Knockout of mGluR5 from Astrocytes during Epilepsy Development Impairs High-Frequency Glutamate Uptake, *J. Neurosci.*, Nov 30. pii: 1148-18. [Epub ahead of print]. PMID: 30504280.

Cheng, Y.*, **Skinner, D.D.***, and **Lane, T. E.***, 2019, Innate Immune Responses and Viral-Induced Neurologic Disease, *J. Clin. Med.*, 8:3. <https://doi.org/10.3390/jcm8010003>

STUDENT AWARDS

Danielle Giangrosso (Keefe lab) is the recipient of the Hiramoto Fellowship.

Anne Gibson (Keefe lab) is the recipient of the Skaggs Research Fellowship as well as an American Foundation for Pharmaceutical Education Fellowship (AFPE).

Dominic Skinner (Lane lab) was selected to attend the ACTRIMS (Americas Committee for Treatment and Research in Multiple Sclerosis) Young Scientist Summit this month.

****STUDENT NEWS****

Anne Gibson and **Heidi Febinger** are very excited to announce that they have started a podcast, Cinema Science Podcast, in which UofU graduate students chat about the science behind popular movies, TV shows, and games! In addition to the podcast, **Ariadne Penalve** is managing a Cinema Science Blog, where interested volunteers can either add their own scientific opinion on a released episode or write an entirely new article on the neuroscience behind any concept/show out there! In addition to creating more content, it will also provide a great opportunity for those students interested in gaining experience in science writing for the general public. For more information and to download episodes, please check out our website at: www.CinemaSciencePodcast.com.

****ALUMNI NEWS****

Sean Flynn: will be returning to the University of Utah as the new Associate Director for the Neuroscience Initiative. He is filling the vacancy left when Sumit Bhattacharya departed to Boston. Sean starts his new position on January 14th. Welcome back Sean!!

Eric Bend: **Renee** and I are employed as Human Molecular Geneticists at PreventionGenetics in Marshfield, Wisconsin.

Aref-Eshghi, E., **Bend, E.G.**, Hood, R.L., Schenkel, L.C., Carere, D.A., Chakrabarti, R., Nagamani, S.C.S., Cheung, S.W., Campeau, P.M., Prasad, C., Siu, V.M., Brady, L., Tarnopolsky, M.A., Callen, D.J., Innes, A.M., White, S.M., Meschino, W.S., Shuen, A.Y., Paré, G., Bulman, D.E., Ainsworth, P.J., Lin, H., Rodenhiser, D.I., Hennekam, R.C., Boycott, K.M., Schwartz, C.E., and Sadikovic, B., 2018, BAFopathies' DNA Methylation Epi-Signatures Demonstrate Diagnostic Utility and Functional Continuum of Coffin–Siris and Nicolaides–Baraitser Syndromes, *Nature Communication*. 2018; 9:4885 [PMID: 30459321]

Tim Simeone: Knowles, S., Budney, S., Deodhar, M., Matthews, S.A., Simeone, K.A., and **Simeone, T.A.**, 2018, Ketogenic diet regulates the antioxidant catalase via the transcription factor PPAR γ 2, *Epilepsy Res.*, 147:71-74.

Warren, T.J., **Simeone, T.A.**, Smith, D.D., Grove, R., Adamec, J., Samson, K.K., Roundtree, H.M., Madhavan, D., and Simeone, K.A., 2018, Adenosine has two faces: Regionally dichotomous adenosine tone in a model of epilepsy with comorbid sleep disorders, *Neurobiol Dis.*, 114:45-52.

Simeone, T.A., Simeone, K.A., Stafstrom, C.E., and Rho, J.M., 2018, Do ketone bodies mediate the anti-seizure effects of the ketogenic diet? *Neuropharmacology*, 133:233-241.

Simeone, K.A., Hallgren, J., Bockman, C.S., Aggarwal, A., Kansal, V., Netzel, L., Iyer, S.H., Matthews, S.A., Deodhar, M., Oldenburg, P.J., Abel, P.W., and **Simeone, T.A.**, 2018, Respiratory dysfunction progresses with age in Kcna1-null mice, a model of sudden unexpected death in epilepsy, *Epilepsia*, 59(2):345-357.

Iyer, S.H., Matthews, S.A., **Simeone, T.A.**, Maganti, R., and Simeone, K.A., 2018, Accumulation of rest deficiency precedes sudden death of epileptic Kv1.1 knockout mice, a model of sudden unexpected death in epilepsy, *Epilepsia*, 59(1):92-105.

Prachee Avasthi: was featured in the current issue of The Scientist magazine in their “Scientist to Watch” series (with a mention of the Utah Neuroscience Program): <https://www.the-scientist.com/scientist-to-watch/prachee-avasthi-explores-how-cells-build-and-maintain-cilia-65111>

She also received a big funding award: <https://www.kucancercenter.org/about-us/news/nih-research-award>

Benedict Albeni: Babulal, G.M., Quiroz, Y.T., **Albeni, B.C.**, Arenaza-Urquijo, E., Astell, A.J., Babiloni, C., Bahar-Fuchs, A., Bell, J., Bowman, G.L., Brickman, A.M., Chételat, G., Ciro, C., Cohen, A.D., Dilworth-Anderson, P., Dodge, H.H., Dreux, S., Edland, S., Esbensen, A., Evered, L., Ewers, M., Fargo, K.N., Fortea, J., Gonzalez, H., Gustafson, D.R., Head, E., Hendrix, J.A., Hofer, S.M., Johnson, L.A., Jutten, R., Kilborn, K., Lanctôt, K.L., Manly, J.J., Martins, R.N., Mielke, M.M., Morris, M.C., Murray, M.E., Oh, E.S., Parra, M.A., Rissman, R.A., Roe, C.M., Santos, O.A., Scarmeas, N., Schneider, L.S., Schupf, N., Sikkes, S., Snyder, H.M., Sohrabi, H.R., Stern, Y., Strydom, A., Tang, Y., Terrera, G.M., Teunissen, C., van Lent, D.M., Weinborn, M., Wesselman, L., Wilcock, D.M., Zetterberg, H., and O’Byrant, S.E., 2018, Perspectives on ethnic and racial disparities in Alzheimer’s disease and related dementias: Update and areas of immediate need, *Alzheimer’s & Dementia*, <https://doi.org/10.1016/j.jalz.2018.09.009>

Do you have something to submit in the next issue of NeuroNews?
Send your information to: Tracy Marble, Program in Neuroscience
401 MREB, FAX: 581-4233, or e-mail: tracy.marble@hsc.utah.edu