

NEURO NEWS

Changes in the Directorate, Curriculum chair, Admissions committees New NP faculty members

****From the Director****

I'd like to thank **Greg Clark (Biomedical Engineering)** for his selfless service as the Curriculum Committee chair. He is a master of the curriculum arcana and we are profoundly grateful for the fantastic job he has done over the past 6 years, the generosity of undivided attention he has brought to help a generation of NP students, and for the willingness to help out to smoothen the transition.

We are pleased to announce that **Sungjin Park (Neurobiology & Anatomy)** will be stepping into the position of Curriculum Chair for the Neuroscience Program. Sungjin's duties will include serving as a member of the Neuroscience Directorate. He will be the NP contact person approving all curriculum, supervisory committees, teaching requirements, etc as it pertains to our student's program of study.

Sungjin has large shoes to fill.

I think I speak for all of us when I say that we are looking forward to learning more about groundbreaking work that Dr. Clark is conducting on the design of prosthetic arms equipped for sensorimotor transduction, work that has been generating so much national and international attention.

Thank you -

From the Admissions Committee Chair Hilary Coon

The Neuroscience Program admissions committee recently invited **Dr. Jason Shepherd** (Neurobiology & Anatomy), to join our returning members: **Hilary Coon** (Psychiatry), **Sophie Caron** (School of Biological Sciences), **Frans Vinberg** (Ophthalmology & Visual Sciences), **Anna Docherty** (Psychiatry), **Adrian Rothenfluh** (Psychiatry), **Neda Nategh** (Electrical & Computer Engineering), and **Robert Welsh** (Psychiatry). Student committee chairs: **Alicia Goin**, **Nate Ghena** and **Christopher Rudzitis**.

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 7th--so save the date!

****NEW FACULTY****

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

Moriel Zelikowsky, Ph.D., Assistant Professor of Neurobiology & Anatomy. Research: Neural circuits underlying psychogenic stress.

Daniel Scoles, Ph.D., Associate Professor of Neurology. Research: Investigating neurodegenerative diseases both mechanistically and developing therapeutics.

Dean Castillo, Ph.D., Assistant Professor of School of Biological Sciences. Research: Genetic and neural mechanisms that lead to the rapid evolution of complex traits such as female and male mating behavior.

Brain Awareness Week

Brain Awareness Week (BAW) is coming up from March 16-21! 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 21st), 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 2020 Co-Chairs: **Laura Bell** and **Aniket Ramshekar**, Graduate Students, Neuroscience Program

STUDENT AWARDS

Guang Yang (Shcheglovitov lab) is the recipient of the Developmental Biology Training Grant

Arnulfo Tunon-Ortiz (Williams lab) is the recipient of the Developmental Biology Training Grant.

Ariadne Penalva (Douglass lab) was selected as one of the 100 hot projects in neuroscience at SfN.

<https://twitter.com/endairatena/status/1187093799593566209?s=19>

Danielle Giangrasso Keefe lab has been awarded the Skaggs Graduate Research Fellowship.

Other Important Dates

Feb. 7: 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 7th from 6:00-9:00pm. There will be, of course, the usual amounts of food and drink **AND chocolate fountain!**

March 16-21: National Brain Awareness Week. Laura Bell and Aniket Ramshekar are the co-chairs of the committee this year.

May 14: Annual Neuroscience Student Symposium
Student organizer: Arnulfo Tunon-Ortiz

November 6: Annual Snowbird Symposium
Student organizer: Alicia Goin

SEMINAR SERIES 2019-2020

Remaining seminars for this year:

January 21: Aaron Batista, Ph.D., U. of Pittsburgh
"Neural population mechanisms of learning"

February 18: Grant Gordon, Ph.D., U. of Calgary
"Astrocytes in the Hungry Brain"

April 21: David Olson, Ph.D., UC - Davis
"Chemical Control of Neural Plasticity: Psychedelics and the Next-Generation of Neurotherapeutics"

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

POSTDOC AWARD

Maddie Kyrke-Smith, postdoc, **Shepherd Lab**, was awarded a 2-year NARSAD Fellowship for her project, "Regulation of developmental synaptic pruning in the visual cortex by Arc, as a model for Schizophrenia".

ACADEMIC DEFENSES

Since the last issue of NeuroNews, the Neuroscience Program congratulates the following students on successfully passing their qualifying exams: **Daniel Lathen (Rothenfluh lab)**, and **Aniket Ramshekar (Hartnett lab)**;

and dissertation defenses: **Josh Barrios (Douglass lab)**, and **Andrew Moran (Wachowiak lab)**.

****FACULTY NEWS****

Greg Clark lab:

1) Mark Brinton, a postdoc in Greg Clark's lab, recently won the Innovation in Research and Technology contest hosted by Ripple Neuro LLC.

2) Our manuscript, "Intuitive neuromyoelectric control of a dexterous bionic arm using a modified Kalman filter", was recently published in the Journal of Neuroscience Methods. This manuscript highlights a portable neural prosthetic system that provides intuitive and dexterous control to amputees. <https://www.science-direct.com/science/article/pii/S016502701930319X?via%3Dihub>

3) The inaugural issue of the University of Utah Magazine (formerly Continuum) highlights our research at the U restoring motor and sensory function to people after hand amputation <https://magazine.utah.edu/issues/winter-2020/a-new-hope/>

The article also showcases the rich benefits of collaborative multi-disciplinary efforts involving several key participants across the health-sciences and lower campuses, including the Departments/Divisions of Biomedical Engineering, Electrical and Computer Engineering, Orthopedics, PM&R, and Neurosurgery, as well as partners in the local neurotechnology industry that are direct or indirect spin-offs from the U.

The UU Magazine story poignantly profiles three of our recent subjects--Matthew Beckstead, Keven Walgamott, and Perry Pezarossi. Their challenges span a range of medical conditions. Yet in each case, not only can they control an advanced dexterous prosthetic hand (the DEKA "LUKE" arm) in a relatively natural, intuitive way just by thinking about it, but they also receive the feelings of touch back from the hand—and, in part, begin to feel whole again. The on-line version of the article also includes the COE video showing the system in action.

A few additional long-form pieces in high-profile publications are probably also forthcoming soon (e.g., Washington Post, December; Science Illustrated, tbd). They're part of an avalanche of publicity and attention associated with our related July 2019 Science Robotics paper <https://robotics.sciencemag.org/content/4/32/eaax2352> demonstrating that biomimetic sensory feedback improves the dexterous use of an advanced bionic limb.

As of August, that related work had gone somewhat viral in the popular press, generating nearly 400 news articles and ½ billion views world-wide, worth over \$4 million in advertising. By one professional estimate, this is "easily the most covered research project from any part of the U in at least several years."

We're presently seeking FDA approval for take-home trials, intended to further progress toward bringing people a new hope.

4) Also, a nice recent article in WaPo about our team's neuroprosthesis research, and others' related work too.

https://www.washingtonpost.com/health/new-prosthetic-limbs-go-beyond-the-functional-to-allow-people-to-feel-again/2019/12/13/ac2fac10-d4ca-11e9-86ac-0f250cc91758_story.html

Clark lab continued:

5) Jake George, graduate student, recently presented an outreach/teaching exercise at the Society for Neuroscience. The exercise titled, "Training the Next Generation of Jedi Scientists," allows students to control a virtual bionic arm with low-cost electrophysiology equipment from Backyard Brains. This exercise is now open-source and available online at: <https://github.com/JacobAGeorge/JediScientist>. It's fun way to get students excited about STEM & Neuroscience (e.g., Brain Awareness Week) or to teach students about biopotentials.

ALUMNI NEWS

Elliot Smith: Qasim, S.E., Miller, J., Inman, C.S. et al., 2019, Memory retrieval modulates spatial tuning of single neurons in the human entorhinal cortex. *Nat Neurosci*, 22:2078–2086 doi:10.1038/s41593-019-0523-z.

O'Sullivan, J., Herrero, J., **Smith, E.**, Schevon, C., McKhann, G.M., Sheth, S.A., Mehta, A.D. and Mesgarani, N., 2019, Hierarchical Encoding of Attended Auditory Objects in Multi-talker Speech Perception. *Neuron*, 18 December, 104(6):1195-1209. e3.

Goldstein, H.E., **Smith, E. H.**, Gross, R.E., Jobst, B.C., Lega, B.C., Sperling, M.R., Worrell, G.A., Zaghloul, K.A., Wanda, P.A., Kahana, M.J., Rizzuto, D.S., Schevon, C.A., McKhann II, G.M., and Sheth, S.A., 2019, Risk of seizures induced by intracranial research stimulation: analysis of 770 stimulation sessions. *Journal of Neural Engineering*, Volume 16, Number 6.

Smith, E.H., Horga, G., Yates, M.J. et al., 2019, Widespread temporal coding of cognitive control in the human prefrontal cortex. *Nat Neurosci*, 22:1883–1891, doi:10.1038/s41593-019-0494-0.

Benedict Albensi: has been named one of five Manitoba-based researchers collaboration with 300 other Canadian scientists on 19 research teams to help prevent, treat and cure age-related neurodegenerative diseases. (read more:) <http://www.sbrc.ca/2019/06/canadian-consortium-on-neurodegeneration-in-aging-ccna-phase-2-funding-announcement-includes-mb-researchers/>

His Apple podcast entitled, "How the brain remembers?" was released on Dec 25th. See link: <https://podcasts.apple.com/us/podcast/035-dr-ben-albensi-how-do-brains-remember/id1463016517?i=1000460725790>

is listed now on www.Expertscape.com in top 1% across the world for the number of publications in 2 categories as shown below:

Alzheimers disease (0.57%), <http://expertscape.com/au/alzheimer+disease/Albensi%2C+B+C>

memory (0.98%), <http://expertscape.com/au/memory/Albensi%2C+Benedict+C>

and was promoted to Senior Editor for the Journal of Alzheimer's disease (JAD) <https://www.j-alz.com/board>

RECENTLY PUBLISHED

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. doi: 10.1002/dvdy.1. Epub 2018 Dec 10.

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.*, Mar 13, 39(11):2025-2040. doi: 10.1523/JNEUROSCI.1854-18.2018. Epub 2019 Jan 15.

Anderson, S.R., Roberts, J.M., Zhang, J., Steele, M.R., Romero, C.O., Bosco, A., and **Vetter, M.L.**, 2019, Developmental Apoptosis Promotes a Disease-Related Gene Signature and Independence from CSF1R Signaling in Retinal Microglia. *Cell Rep.*, May 14;27(7):2002-2013.e5. doi: 10.1016/j.celrep.2019.04.062.

Barker, B.S., Spampanato, J., McCarren, H.S., Smolik, M., Jackson, C.E., Hornung, E.N., Yeung, D.T., **Dudek, F.E.**, and McDonough, J.H., 2019, Screening for Efficacious Anticonvulsants and Neuroprotectants in Delayed Treatment Models of Organophosphate-induced Status Epilepticus. *Neuroscience*, Nov 26;425:280-300. doi: 10.1016/j.neuroscience.2019.11.020. [Epub ahead of print]
PMID: 31783100 <https://www.ncbi.nlm.nih.gov/pubmed/31783100>

Giagrasso, D.M., Furlong, T.M., and **Keefe, K.A.**, 2019, Characterization of striatum-mediated behavior and neurochemistry in the DJ-1 knock-out rat model of Parkinson's disease. *Neurobiology of Disease*, Nov 15;134:104673. doi: 10.1016/j.nbd.2019.104673. [Epub ahead of print]

Jenks, K., and **Shepherd, J.D.**, 2020. Experience-dependent development and maintenance of binocular neurons in the mouse visual cortex. *Cell Reports*, in press.

Kim, D.-K., Kim, J.A., Park, J., **Niazi, A.**, Almishaal, A., and **Park, S.**, 2019, The release of surface-anchored α -tectorin, an apical extracellular matrix protein, mediates tectorial membrane organization. *Science Advances*, 5, eaay6300. 10.1126/sciadv.aay6300. The manuscript is covered in News and Features on Nature middle east. <https://www.natureasia.com/en/nmiddleeast/article/10.1038/nmiddleeast.2019.156>

Skinner, D. D., and **Lane, T. E.**, 2019, Review: CXCR2 Signaling and Remyelination in Preclinical Models of Demyelination. (Cover Article) *DNA and Cell Biology*. <https://doi.org/10.1089/dna.2019.5182>

Trankner, D., Boulet, A., Peden, E., Focht, R., **Van Deren, D.**, and **Capecchi, M.**, 2019, A microglia sublineage protects from sex-linked anxiety symptoms and obsessive compulsion. *Cell Reports*, 29: 791-799.

POST DOC POSITION

The **Robert Renden (NP alumni)** Lab is looking to fill two postdoc positions, available immediately. The ideal candidate will have substantial electrophysiology and/or cell and molecular biology experience, a neuroscience related background, and an interest in examining presynaptic function and short term plasticity in normal, aged mice, and those where presynaptic mitochondrial function has been perturbed. The announcement for one of the positions can be found at: http://bit.ly/renden_postdoc1. Interested candidates can also contact **Dr. Renden** directly via email (rendenr@unr.edu).

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