



The BRAINet SYNAPSE

BRAINet is a friends group of the OHSU Brain Institute (OBI) that helps build community awareness, interest, and support for neuroscience research at OHSU.

BRAINet Synapse Newsletter

April 2017

President's Message

*By Helen Richardson,
BRAINet President*

Happy Spring BRAINet Members and Friends!

We have just been treated to three interesting lectures having to do with criminality, feelings and the interesting world of sleep and dreams. Twenty-two years ago the Dana Institute sponsored the first Brain Awareness Week. Initially focused on Washington, D.C. in order to educate those in the federal government who held the purse strings, the educational effort has expanded so significantly that 2016 saw 43 countries and 40 U.S. states holding activities that reached more than 190,000 people.

We at BRAINet are proud to be part of OHSU's participation in bringing current knowledge and information about the brain to the general public in an effort to educate and provide avenues for those with neurological issues or concerns to connect to resources for assistance.

Best regards,
Helen Richardson, President



April Lecture Luncheon

Our lecture luncheon will be on **Monday, April 17, at 11:30 a.m.** at



the Multnomah Athletic Club. We will have a special presentation giving an update on geriatric medicine and dementia screening by

Emily Morgan, M.D., and Annette Totten, Ph.D.



11:30 Registration and Lunch Served

12:00-1:00 Lecture

To register and pre-pay to secure your reservation please visit:

<https://goo.gl/GfA3Rd>

Registration will close at midnight on Wednesday, April 12.

This month we will be served Open-Faced Chicken Cordon Bleu.

How the Oregon Charitable Tax Checkoff Program boosted one researcher's career

By *Adriana M. Seelye, Ph.D.*



Like many aspiring young clinical researchers, my journey began with an NIH funded post-doctoral fellowship with a goal to

eventually develop my own independent research program. As a neuropsychologist with specialty training in smart home technologies and aging, I am interested exploring how we can develop new innovative assessment tools to improve the early detection and diagnosis of Alzheimer's Disease.

With these interests and background, I was fortunate to obtain a fellowship position in the NIA-funded [Layton Aging and Alzheimer's Disease Center](#) at OHSU working under the mentorship of [Dr. Jeffrey Kaye](#), who is an authority in investigating the use of innovative technology to improve successful aging.

As a post-doctoral fellow, I was eligible to apply for several regional pilot grant opportunities designed for junior investigators who need pilot data to support larger national grant applications.

In 2015 I competed successfully for a research grant made possible by Oregon citizens through the [Alzheimer's Disease Research Fund](#) of the Oregon Charitable Tax Checkoff Program.

Securing this grant allowed me to carry out a 1-year pilot study to explore how monitoring the driving patterns of older adults can be used as a new tool for measuring brain health.

We tracked frequency, time of day, routes traveled, and amount of time spent driving in a small sample of seniors for 6 months. Results from this and future studies will help researchers understand how changes in routine driving habits as people age may be related to risk for developing dementia.

Having practical, non-invasive tools that can identify Alzheimer's Disease as early as possible will be critical for effective treatment once medications become available.

Receiving grant support from the Oregon Charitable Tax Checkoff Program provided me with the opportunity to gather pilot data that I recently used to support a national (NIH) multi-site grant application for research on a larger scale to advance earlier detection, diagnosis, and treatment of Alzheimer's Disease.

My NIH grant application would not have been possible without the generosity of Oregon citizens through the Charitable Tax Checkoff Program. After completing my post-doctoral fellowship I was able to obtain an assistant faculty position and am on a clear path to developing an independent program to advance research on Alzheimer's Disease.

Adriana M. Seelye, Ph.D. is an early career investigator in the [Oregon Center for Aging & Technology \(ORCATECH\)](#) and the [Layton Aging and Alzheimer's Disease Center](#) at OHSU.

You can contribute to Alzheimer's research—in Oregon—by donating part, or all, of your tax refund to "Alzheimer's Disease Research" on Schedule OR-DONATE, Oregon Charitable Checkoff Donations, on your 2016 tax form.

This research will increase our understanding of Alzheimer's and bring us closer to new treatments, test ways to give effective support to caregivers and families of persons with Alzheimer's disease and

pave the way for additional funding from the National Institutes of Health and other national research programs. Funds are administered through OHSU under the direction of Oregon Partnership for Alzheimer's Research.

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Brain in the News:

Warm-Sensitive Brain Cells

by George Ivan Smith, BRAINet member

Long-sought 'Warm-Sensitive' brain cells were identified by UCSF researchers, said Zachary Knight, PhD, in a 7-8-2016 online issue of *Cell*, as reported 7-8-16 in a *Brain in the News* article.

Results challenge accepted explanations of how mammals cool off when too warm.

Experiments dating back 80 years pointed to the preoptic hypothalamus (POA) a tiny area that governs sleep, hunger and sex, making it hard to pinpoint which cells and synapses detect and respond to warmth.

In the new study, Chan Lek Tan, PhD, led the team using a tool called phospho TRAP to see which genes were most selectively expressed in the POA cells active when they placed mice in warm environments. They found genes known as PACAP and BDNF were expressed in neurons activated in warmth.

The group used genetic tools to place fluorescent markers in POA cells expressing either PACAP or BDNF. They found a high level of overlap, suggesting these might be the warmth-sensing cells, so they again used genetic tools to engineer this cell population for monitoring with fiber optics. Mice placed in chambers built to allow rapid temperature changes showed PACP/ BDNF cells became active with temperature increases.

The response was within seconds, indicating

that the PACAP/BDNF cells get input from thermal sensors in the skin. This result sharply contrasts with prevailing models that propose POA cells somehow detect subtle changes in the body's core temperature. This finding goes against most textbooks.

When the researchers flipped their methodology, using optogenetic techniques, they saw robust and immediate behavior response. After light stimulation of PACP/BDNF cells mice sought a cooler spot immediately on a track with continuously varying temperature.

[http://www.cell.com/cell/pdf/S0092-8674\(16\)31079-0.pdf](http://www.cell.com/cell/pdf/S0092-8674(16)31079-0.pdf)

Oregon Care Partners Offering Free Caregiver Classes

Portland: April 7, 2017 – [Positive Approach™ to Alzheimer's & Dementia Care \(PAC\) Workshop](#)

Hillsboro: April 11, 2017 – [Living with Alzheimer's for Caregivers: Early Stage](#)

Beaverton: April 13, 2017 – [Navigating Challenging Behaviors: Strengthening Our Communication Skills as Caregivers](#)

Oregon City: April 21, 2017 – [Positive Approach™ to Alzheimer's & Dementia Care \(PAC\) Workshop.](#)



Upcoming BRAINet Lecture Luncheons

May 15 *“The science and science fiction of memory erasure”*

Matt Lattal, Ph.D.

Professor, Department of Behavioral Neuroscience

June 19 *“Engineering balance: Controlling balance in humans and robots”*

Robert Peterka, Ph.D.

Associate Professor, Biomedical Engineering

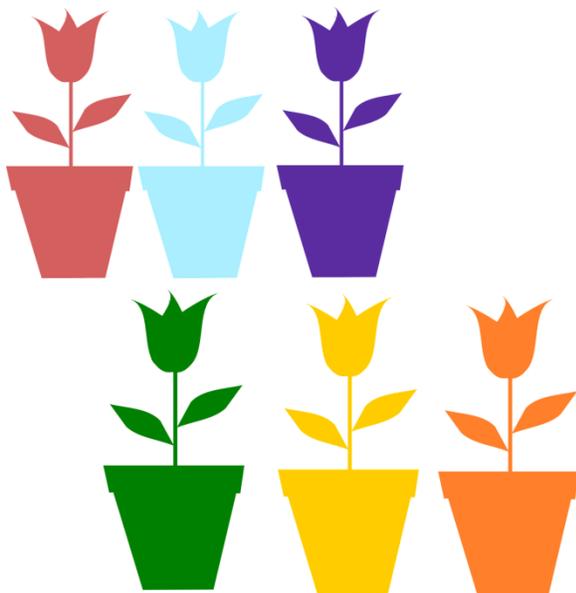
Faculty Member, Neuroscience Graduate Program

July 17 *“An update in pediatric neurology”*

Yoon-Jae Cho, M.D.

Chief, Division of Pediatric Neurology

Doernbecher Children’s Hospital



BRAIN
Institute

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