



# 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**

**June 2016**

## President's Column

Hello All.

I trust you enjoy reading The Synapse as much as I do. Information about coming events, articles of interest about brain related issues and summaries of the luncheon lectures make for interesting reading each month. Recently it has come to our attention that numerous copies of The Synapse are being sent via regular mail to non-members, a task which takes a fair amount of time and resources. As announced in May, your Board of Directors decided that non-members who want hard copies mailed to them may receive three free copies after which an annual subscription fee of \$25 will be charged. Emailed copies continue to be free and members continue to have the option of mailed copies (although we do encourage email if it is feasible). This change will become effective with August's issue. Please let Kate know if you wish to make any changes to your subscription.

Regards,  
*Helen Richardson, President*



## May Lecture Luncheon

*By Julie Branford, Past President*

### **"Stroke in 2016: Cause, Care and Cure"**

Noah Beadell, an MD who specializes in caring for adults with diseases and disorders of the brain, spinal cord and nerves, and has specialized training in vascular neurology



(the treatment of stroke and diseases of the blood vessels in the brain), gave us some very interesting information and stories to contemplate. Dr. Beadell is part of the Oregon Stroke Center, the largest enroller in many research studies, allowing Oregonians the chance to participate in the leading edge of technology.

He commented that stroke is the #4 cause of death – about 1 out of 19 deaths are due to strokes. Each year 795,000 people have a stroke and of these stroke victims, 610,000 are first strokes. One in four will have a second stroke. Most (85-88%) victims have the ischemic type of stroke, where a clot has blocked blood flow. About 12-15% have hemorrhagic strokes, where a vessel bursts due to weakness and spills blood in the brain.

"Which type of stroke is more dangerous?" The danger is determined by the location of the stroke more than by the type. If the stroke occurs in the outer surface of the brain, the

damage is less than strokes that occur deep in the brain.

- 25% are embolic (a clot that has broken free from somewhere else in the body) and these most likely occur when there has been a break in the hip, femur, or arm and fat breaks out of the bone and travels to the brain. This is why orthopedists are particularly careful about strokes after a major break in a bone.
- 15% are from clots released from large arteries in the neck and spine and then move to the brain. These clots are made up of plaque from carotid arteries and vertebral arteries in the spine.
- 22% are small vessel strokes that happen deep in the brain and tend to cause a lot of damage. These strokes are often triggered by high blood pressure, diabetes, and/or smoking.
- Another type of stroke is tied to atrial fibrillation (a-fib). If a person has a-fib for more than 6 minutes at a time, the person is more likely to suffer from an eventual stroke.

Cures? Prevention is the “best cure,” he said. Aside from that, the New England Journal of Medicine in January of 2015 showed research that indicated that using tPA (tissue plasminogen activator) within three hours from the start of stroke symptoms for an ischemic stroke is very helpful. Following the tPA with a thrombectomy (where the clot is surgically removed from the affected vessel) is even more effective. The big caveat is that “time is of the essence” since brain cells start to die within 10 minutes of the onset of a stroke. Only 10% of patients arrive in time for tPA to be administered. Many people claim to want to “sleep off” the symptoms of a stroke. They then have ongoing problems because of the delay in treatment.

Things we can do to change stroke outcomes:

- Prevent strokes by lowering blood pressure, stopping smoking, lowering LDL cholesterol, and maintaining a healthy weight. Taking a baby aspirin also helps many people.

- Remember: **FAST**
  - Face droop
  - Arm weakness
  - Speech difficulties
  - Time to call 911 (Time lost is brain loss!)

He then mentioned some other interesting symptoms including the “neglect syndrome” where a person “recognizes” only half of his or her body: putting make-up on only one side of the face; eating the meal from only one side of the plate; and the “stranger in the shower” problem. This was highlighted by a woman in the shower who suddenly believed a stranger was in there with her. She ran to her husband in fear. As it turned out, she was simply not recognizing her left arm as being her own!

Dr. Beadell mentioned a few problem areas they are investigating.

- There are no medicines to reduce swelling and cell death following a hemorrhage in the brain. Iron is needed in our blood, but is very toxic to brain cells. When there is a hemorrhage in the brain, the iron actually kills brain cells. One drug being tested to remedy this is Deferoxamine, which binds iron to keep from spreading further throughout the brain.
- Following a TIA (trans ischemic stroke), a patient has few options for preventing a secondary stroke. Ischemic strokes are blood clots that deprive “downstream” areas of the brain needed blood flow. One classic remedy is baby aspirin taken daily. There is ongoing research investigating whether coupling Plavix and aspirin daily is more effective than using just aspirin alone.
- The walking gait of a stroke victim can be affected. Dalfampridine is being tested to determine if it helps recover a person’s normal gait.

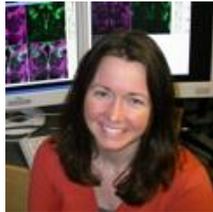


Dr. Beadell will be moving back to Nebraska in two months, so we felt very fortunate to have him give this presentation to us prior to his departure. We will miss him!

## June Lecture Luncheon

Join us on Monday, June 20 at 11:30 a.m. at the Multnomah Athletic Club for a lecture luncheon with Mary Logan, Ph.D., who will present “**Learning on**

**the Fly: How Drosophila provide novel insight in neurodegenerative diseases.**”



Dr. Logan’s work has identified signaling pathways that control glial cell recognition and phagocytosis of degenerating axons, which occurs following trauma, including ischemia and degenerative diseases such as multiple sclerosis.

**11:30-11:45 Registration and Social Time**

**11:45 Lunch Served**

**12:00 – 1:00 Luncheon and Lecture**

Cost

\$25 Members

\$25 Guests of Members

**\$30 Non-Members**

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

<https://goo.gl/Wt7jrw>

Registration will close at midnight on Wednesday, June 15.

*This month we will be served open-faced chicken cordon bleu. Please note there is only one option for all vegetarian/ vegan/ gluten free requests.*

## Brain in the News

*By George Ivan Smith,  
BRAINet Member*

Over millennia, artists have stimulated the brain's visual pathways to create illusions. Today, scientists can explain most of how our color vision works.

Elizabeth Dougherty, *Harvard Medicine*, Winter 2016, describes how light from a scene enters through the pupil and is focused on the retina—a wisp of tissue that's an extension of the brain. Its outermost layer is made of more than a hundred million light-sensitive photoreceptor cells, of which six to seven million are cone cells that support color vision in humans.

The three types of cone cells are sensitive to blue, green or red light. The tips of the cones are filled with light-sensitive proteins called opsins. When a photon strikes an opsin, the photon is changed into an electrochemical in milliseconds. When this change is complete, the opsins reset, allowing for the seemingly endless translation of light into electrical energy that our brain perceives as color.

Photoreceptor cells process incoming signals by making contextual comparisons. “Your eyes are constantly comparing things,” says John Dowling, a Harvard research professor, “so what you see depends not only on what you're looking at but also on the surrounding illumination.”

“Contrast is the driver in the retina,” says Michael Marmor, a professor of ophthalmology at Stanford, and author of a 2009 book *The Artist's Eyes*. He recently began to use new electron microscope techniques to make a precise three-dimensional map of the human retina's central region, which mediates high acuity vision.

There's more; read the whole article: *Brain in the News* May 2016, “Eye of the Beholder.”



## Brain Resource Center Needs Volunteers

Did you know that OBI has a Brain Resource Center (BRC) at the Center for Health and Healing? Located on the 8<sup>th</sup> Floor, the BRC serves as a resource center for patients and families to learn about a wide variety of diseases and syndromes that affect the brain.

Our volunteers ensure materials are up to date and in stock, help patients and families find the information they seek, and provide a welcoming smile to all visitors. Days and hours of volunteering are flexible. If you are a member interested in volunteering your time at the Brain Resource Center, please contact Kate Stout at 503-494-0885 or [stoutk@ohsu.edu](mailto:stoutk@ohsu.edu).



### **BRAINet Contacts:**

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**BRAIN**  
*Institute*

### ***Featured Event***

#### **Science on Tap**

#### **Every Brain Needs Music: Neuroscience, Performance and Song**

Join Dr. Larry Sherman, an OHSU neuroscientist and accomplished pianist, as he combines musical performance and mind stimulating lecture into a lively discussion focusing on the impact that music has on the brain.

**When:** Friday, June 24, 7:30 p.m.

**Where:** Alberta Rose Theater

**Cost:** \$15

For more information and to purchase tickets, please visit:

<http://goo.gl/hPw1hn>