



# 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**

**August 2016**

## July Lecture Luncheon Summary

*By Helen Richardson,  
BRAINet President*

Dr. David Wilson gave an eye-opening lecture entitled *Neuroscience Exposed! The eye as a model of neurologic disease*. As a tongue in cheek introduction to the theme of his talk, he pointed out that the Eye of Horus, used as a symbol for protection, is



Dr. David Wilson



visually similar to a part of the brain. Other interesting bits of information include the fact that the ostrich's eye is actually bigger than its brain.

In people, 30% of our brain is devoted to vision, indicating the importance of it.

The eye, he told us, is the most accessible part of the brain. Because many diseases that affect the brain also affect the eye, exploring the process and impact of those diseases on the eye provides insight into those processes in the brain, a more difficult organ to examine.

While MRIs and PET scans show the structure and function of the brain, it is possible to see the eye in much greater detail with other technology because the eye can be used to turn inward to see itself in great detail. Using adaptive optics, the eye's individual cells can be seen, a view of more than 1,000 times greater detail that other scans permit. This allows

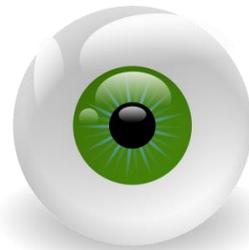
scientists to see how cells and tissue are affected by disease or other elements.

Optical coherent tomography, co-invented by Dr. David Huang at Casey Eye Institute, is a non-invasive imaging test that allows one to see and map each of the layers of the retina and their thicknesses. A cross section of the retina can determine the amount of blood flow being supplied to the retina.

Visual field technology is analogous to a PET scan. These tests are necessary to see if medical interventions are actually being effective. Like the brain, the retina doesn't repair itself. Precise measures are useful in investigating the effectiveness of new and developing treatments.

Dr. Wilson talked about treatments that are being developed for various diseases of the eye. He explained that gene therapy involves inserting into a cell a virus that is stripped of its ability to spread itself, which is then considered a normal gene intended to replace a mutated gene lacking in that cell. Gene therapy is proving to be effective for diseases such as juvenile macular degeneration that involves one abnormal gene. He believes that in five years

gene therapy will be useful for treating many diseases.



Another treatment approach is what we call 'stem cell therapy' which Dr. Wilson told us is actually cell-

based therapy. The original concept didn't work as envisioned but this approach involves replacing with new cells those that have died. This approach uses cells taken from a part of the body and chemically modifying them to behave like stem cells (pluripotent or iPS stem cells). These cells are then injected in the location where cells have died with the hope that they will replace those dead cells. The problem to be resolved is getting the iPS cells to survive. Dr. Wilson believes it will take 10 to 20 years for this approach to become a viable treatment option.

This fascinating lecture gave us a window through which we could see emerging therapeutic approaches to the eye as an accessible model to use in addressing neurologic diseases. Dr. Wilson is Chair of the Department of Ophthalmology, Director of the Casey Eye Institute, and Thiele-Petti Chair in Ophthalmology in the School of Medicine at OHSU.

**Don't forget to RSVP!**

***BRAINet Members Only***

**Summer Tour**

This year's summer tour for BRAINet members will be on Tuesday, August 30, from 3:30-5:00. **Dr. Lissa Baird**, Medical Director of Pediatric Neuro-oncology, will give a guided tour of the control room to the new intraoperative MRI machine in Doernbecher Children's Hospital.

Capacity is limited. Please RSVP to Kate Stout ([stoutk@ohsu.edu](mailto:stoutk@ohsu.edu)) to confirm your membership status and reserve a space.

## Brain in the News

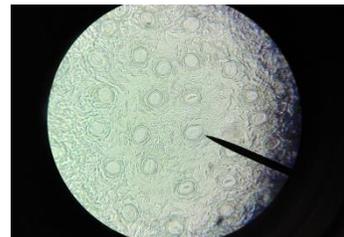
by George Ivan Smith, BRAINet member

Guy McKhann, M.D., in Dana.org's May 31, 2016, *Brain in the News* article "Mini-Brains, Major Capabilities," describes remarkable research.

Advances in technology let us make advances in neurological research. Through new imaging methods we've learned about the structure of the living brain and how its parts work.

For years, we've used animal models such as mice and rats, but the transition from rodent findings to human application has been limited. Not a single positive approach in rats has led to a successful stroke therapy in humans.

This may be changing. New technology lets us form "mini-brains—a developing human brain in a dish. A decade or so ago there was much talk



about stem cells. But using inseedinated egg cells raised ethical questions. So, investigators thought of

making stem cells from adult cells. And it is now routine to take a bit of skin, put it in a culture dish and grow cells that can be dedifferentiated back to stem cells. The Induced stem cells are called induced pluripotent stem cells, or iPSCs.

Creating iPSCs from an individual means one can make mature cells and put them back in the person who supplied the skin fibroblasts, and avoid tissue rejection that would occur if the cells were from a different person.

So, the iPSCs can be developed into brain cells. These can be made into "mini-brains," about the size of the head of a pin, and used to study how the brain develops, and how it is affected by a virus. Currently Johns Hopkins researchers are using mini-brains to study the Zika virus.

Read Dr. McKhann's full article:

[www.dana.org/News/Details.aspx](http://www.dana.org/News/Details.aspx)

## August Lecture Luncheon

Join us on Monday, August 15, at **11:00 a.m.** for a very special lecture luncheon at **Mirabella**, followed by a tour of the ORCATECH Life Lab Apartment.



Dr. Jeffrey Kaye is the director of both the Layton Aging and Alzheimer's Disease Center and ORCATECH. He will present a lecture titled "*A Vision for the Future of Aging and Technology*". For more

information about ORCATECH's Life Lab, please visit this [link](#).

**11:00 Lunch in the Park View Room**

**11:30 Lecture**

**12:30-1:00 Tour of Life Lab Apartment**

### Cost

\$25 Members

\$25 Guests of Members

*\$30 Non-Members*

To register and pre-pay to secure your reservation (you can renew your membership at the same time!), please visit:

<http://goo.gl/qh1GCi>

Registration will close at midnight on Wednesday, August 10.

**Space is limited!**

Mirabella is located at 3550 SW Bond Avenue, Portland. Further details regarding parking will be provided to registrants.

*This month we will be served Pecorino Romano-crusted chicken breast.*

The BRAINet Board is seeking members interested in participating in three task forces that have been created to envision the future of our programming:

- 1) Membership Task Force
- 2) Lecture Luncheons Task Force
- 3) Brain in a Box Task Force

If you would like to become more involved with BRAINet's leadership and development, please contact Helen Richardson ([gsgam@comcast.net](mailto:gsgam@comcast.net)).

## Volunteers Needed!

We are looking for compassionate, curious, and dependable volunteers to staff the Brain Resource Center on the 8<sup>th</sup> Floor of the Center for Health & Healing. Our volunteers help patients and their families find the information they need and keep our shelves stocked, all while being a friendly face in difficult times. You can choose how often and what hours you prefer to volunteer. Please contact Kate Stout for more information.



# It's that time of year!

## Renew your BRAINet membership today

BRAINet's mission is to foster awareness and support for the OHSU Brain Institute and neuroscience research by educating the public and engaging in community interaction. By joining our membership, you become part of a dynamic outreach organization that has a special connection to the inner-circle of everything neuroscience-related at OHSU.

You are able to join or renew online when you register for the August Lecture Luncheon. If you are registering guests, the membership will be associated with the primary registrant. You may also mail a check (made out to "OHSU Foundation") with your contact information to:

*OHSU Brain Institute  
Attn: Kate Stout  
3181 SW Sam Jackson Park Road  
Mail Code CR120  
Portland, OR 97239*

BRAINet Membership Levels	
Member	\$25
Friend	\$75
Supporter	\$250
Patron	\$500

You will receive an email confirmation upon receipt. Your membership will be in good standing from September, 2016 through August, 2017.

*Thank you for your support!*

### **BRAINet Contacts:**

**Kate Stout – Program Coordinator**  
503.494.0885 [stoutk@ohsu.edu](mailto:stoutk@ohsu.edu)

**Helen Richardson – President of BRAINet**  
[gsgam@comcast.net](mailto:gsgam@comcast.net)

**Nancy DeGraw – Membership Chair**  
[njdegraw@msn.com](mailto:njdegraw@msn.com)



**BRAIN**  
*Institute*