Message from the Director

The establishment of the new Integrative Neuroscience Center at Purdue University was announced in mid October 2015 as part of the Pillars of Excellence in Life Sciences initiative. With over 100 faculty signed on as participants, there is genuine energy and excitement emanating from the research teams associated with the Center. Funds are targeted to support faculty hires, build up to 3 core facilities, and assist with Center activities over the next 5 years. The goal of the Center is to propel our research toward impactful advances in science and engineering by promoting collaborative interactions across traditional academic disciplines. On January 25, 2016, we held a half-day, inaugural Kickoff meeting at the Beck Agricultural Research. Below you will find conversation summaries initiated at the Kickoff, and we hope many more will follow.

- Donna Fekete, *Inaugural Director*

PS - Earlier this week you should have received an email regarding student information we are collecting. If you have not already done so, please forward that email to your students so they can respond. Thank you!

Purdue Aims to Grow Life Sciences

As we gathered in the bright and airy meeting room at the Beck Ag Center, we were warmly welcomed by Suresh Garimella, the Executive Vice President for Research and Partnerships. His message was an optimistic one; he challenged the faculty to raise Purdue's national and international profile in biology. To

foster excellence in life sciences more generally, our administration has committed a $260 million investment. This venture both acknowledges the deep roots in life sciences already in place, and also recognizes the need to water those roots to promote further growth. Two new Centers, in Neuroscience and Inflammation, Immunology & Infectious Disease, are joining the previously announced Major Moves efforts in Plant Science and Drug Discovery. Please bookmark the new life sciences website: www.purdue.edu/research/life-sciences/. By placing all of these Centers in Purdue's innovative Discovery Park, we hope to maximize the ability of scientists and engineers to work together toward new discoveries and applications, both to improve public health and to enhance our stewardship of critical natural resources. One of the first orders of business is to identify external candidates for the open position of Director of the Integrative Neuroscience Center. Faculty are encouraged to invite potential candidates to consult the job announcement on the Life Sciences website, or to forward the names of potential candidates to the search committee via email at neuro@purdue.edu. Finally, wrapping up our opening remarks, Keith Kluender provided inspiring comments regarding the goals and ambitions of the Center, and subsequently showcased our new website.

Junior Faculty Steal the Show

First on the agenda was a session where more than 20 pre-tenured faculty each gave a 2-minute "elevator pitch" of their research questions and technical approaches. What an amazing collection of creative, intellectual energy! Using a novel approach, Zhongming Liu is combining functional magnetic resonance imaging with EEG recordings to create high-resolution maps of human brain activity and connectivity. Alex Chubykin's "optogenetic" approach can open ion channels with laser light pulses to understand which brain circuits are responsible for encoding different visual stimuli. At the other end of the spectrum, Natalya Kaganovich explores audiovisual processing in normal children in comparison to those with neurodevelopmental disorders. Jessica Ellis is asking how fatty acids in the diet may impact neurological health and disease, while Tamara Kinzer-Ursem uses her deep knowledge of lipid chemistry to create new molecular tools to track proteins localized to brain synapses. The list goes on, and you are invited to link to each faculty member associated with the Center at our new website. A list of center membership, including email addresses was handed out; send requests for an electronic version to neuro@purdue.edu.

Graduate Training is a Group Responsibility

Chris Rochet led a session to hear ideas for creative enhancements of our neuroscience graduate training. We discussed the idea of using Center faculty to staff a series of team-taught core courses that recognize the need for cross-disciplinary training. Enthusiasm for targeted experiential training was high, with the hope that we could use core facilities as a hub to design appropriate courses or workshops. In particular, want to spread the word that we are seeking graduate students interested in working with us to create a SpringFest attraction, called "the Brain Bowl", to engage the public. Finally, Donna Fekete hopes to submit a Neuroscience graduate training grant later this spring on behalf of the Center.

Communicating Within and Beyond Purdue

Kaethe Beck convened a session on Center Communication and Engagement, where she introduced Paul Sturm, Director of Development for Discovery Park. With a Center in place to promote faculty research in neuroscience, we hope to assist Paul to identify and enlist Purdue alumni and friends in our activities. We also appreciate the value of marketing our "brand", so be on the lookout for a contest to design a logo for the Integrative Neuroscience Center, with a $500 prize awaiting the winner. How can you help? Send us spectacular images that showcase your data, equipment, or experiments-in-action. We urge faculty, postdocs, and students to submit updates about notable scientific publications, professional honors and activities, and major grants. We hope to become a clearing house for campus-wide advertising of neuroscience-related external and internal seminars, multi-lab research meetings, training workshops, sponsored symposiums, and funding opportunities —please remember to keep us in the loop! In turn, we will send bi-weekly in-house updates of these ongoing campus events and opportunities in neuroscience, and plan to have a monthly newsletter to share our activities and accomplishments with the public.

Cores and Facilities Will Propel Our Research in New Directions

Ulrike Dydak and Tom Talavage teamed up to promote upcoming university core facilities in brain imaging, including two major new instruments that will installed this Spring. Not only is there a small animal MRI housed in the Bindley Biosciences Center, but two Tesla 3T MRIs will soon provide unprecedented opportunities for imaging research on the Purdue campus. Jason Cannon described the value of creating a multi-user Animal Behavior Core at Purdue. The plan is to provide supervised and standardized behavioral assessments for rodents; other options will be explored to offer unique, technically advanced brain electrical recordings and/or imaging in concert with behavioral evaluation. Tim Kwok and Sophie Lelievre discussed the capabilities of the 3D3C tissue culture facility at the Birck

Nanotechnology Center to inform the neuroscience community about this new resource. The Neuroscience Center has been in discussion with this group to potentially expand the facility to include activities that could benefit the neuroscience community. We are planning a Neural Cell Engineering Core with expertise in generating iPSCs that are differentiated into neurons, preparing neuronal primary cultures and perhaps creating 3D neuronal organoids. Finally, we had a brief discussion about the needs on campus for a Gene Therapy Core. We envision having a staff scientist who can help in the design and construction of molecular tools that are rapidly evolving, such as constructs for optogenetics, biosensing, and gene editing.

Upcoming Seminars for the Neurobiology Position in the Biology Department:

February 15, 2016 - 10:00 AM
Lindsay Schwarz
MJIS 1001
"New Approaches for Uncovering Norepinephrine Circuit Organization and Function"

February 22, 2016 - 10:00 AM
Paul Fitzgerald
MJIS 1001
“Medial prefrontal cortex is a key locus in fear extinction: single neuron recordings in freely moving rodents”

If you were unable to attend our Kickoff Meeting, please fill out the faculty survey here.

Our mailing address is:

Purdue University Pillars of the Life Sciences
207 S. Martin Jischke Drive
Lafayette, IN 47907