Message from the Director:

This past week, a number of us attended the annual Society for Neuroscience Meeting in San Diego; Purdue was well represented. We had a number of students and faculty assist in our graduate student recruitment effort - thank you for all your assistance! We had over 60 students sign up to learn more about Purdue's graduate programs. Speaking of graduate students, we do hope you will join us for our December Social on the 1st - see the information below - faculty, students, and postdocs are all welcome to attend.

Pictured: Matthew Arvin, Graduate Student, MCMP

Finally, in our last edition, we mentioned some of the exciting activity taking place in Purdue's Hearing area. The new website was recently launched, please check it out.

- Donna Fekete, Director

PURDUE INSTITUTE FOR
INTEGRATIVE
NEUROSCIENCE
Where science meets engineering

PURDUE INSTITUTE FOR INTEGRATIVE NEUROSCIENCE

December Social

Join us!

Please join us for a Purdue Institute for Integrative Neuroscience Graduate Student & Postdoc December Social! Faculty are more than welcome (encouraged even) to join.

When: Thursday, December 1st from 4-7pm
Where: Atrium of the Birck Nanotechnology Center
Why: PIIN would like for you to get to know each other better, and as one of our primary goals is to increase interdisciplinary research, we are willing to put our money where our mouth is. After the December social, there will be an opportunity to submit a 1 page proposal for support (up to 2k) of a novel research project. In addition to the novelty of the research, the involvement of students from different laboratories and the interdisciplinary nature of the project will be considered as an additional criteria for approval.

More detailed guidlines will be provided to those who attend.

Please join us for a fun evening - we'll provide some team building/ ice breaking exercises as well as snacks and beverages.

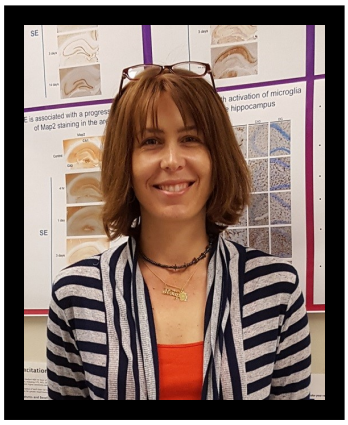
Let us know you're coming!

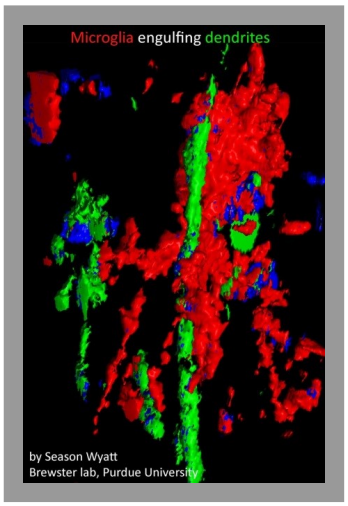
PURDUE UNIVERSITY
www.purdue.edu/neuroscience

Featured Faculty Member:

Amy L. Brewster received her bachelor's degree in Biology from The University of Puerto Rico, Cayey in 1999, and a Ph.D. degree in Biological Sciences from The University of California, Irvine in 2006. Then, she pursued postdoctoral training at Baylor College of Medicine/Texas Children's Hospital in Houston, TX (2007-2013). Her pre- and postdoctoral research focused on identifying cellular and molecular mechanisms driving neuronal and dendritic hyperexcitability in the hippocampus using rodent models of developmental and adult epilepsy (genetic and acquired epilepsies). Dr. Brewster's pre-doctoral work demonstrated that the mRNA expression, protein levels, and subcellular distribution of the hyperpolarization-activated cyclic nucleotide-gated (HCN1-4) channels evolve during postnatal development of the rat hippocampus, and are altered following early-life seizures. Her post-doctoral work demonstrated that seizure-induced hyperactivation of the mammalian target of

rapamycin signaling cascade contributes to the dendritic pathology (i.e. altered expression of dendritic cytoskeletal proteins and ion channels), memory deficits, and epileptiform activity in various rodent models of adult and pediatric epilepsy. Currently, Dr. Brewster is an assistant professor of Behavioral Neuroscience in the Department of Psychological Sciences. She continues to use her expertise in cellular, molecular, and behavioral neuroscience to identify and understand the underlying causes of epilepsy and its cognitive comorbidities.





Epilepsy is characterized by the occurrence of unprovoked seizures and is highly comorbid with cognitive and behavioral deficits along with catastrophic consequences such as sudden unexpected death. Unfortunately, antiepileptic drugs are ineffective at suppressing seizures in 20-40% of epileptic individuals and do not help with comorbid mental conditions. Thus, Dr. Brewster's research goal is to identify potential therapeutic targets for the prevention, treatment, and control of this disease. Pharmacogenetic manipulations are used in combination with histological, high-resolution imaging, biochemical, and behavioral approaches to determine the role of neuroimmune crosstalk (microglia-dendrites) in the modulation of neuronal connectivity, synaptic function, and hyperexcitability in experimental and human epilepsy. One area of research is to determine the spatiotemporal and functional associations between the activation of microglia-mediated neuroinflammatory and phagocytic signaling cascades, and the changes in dendritic/synaptic architecture that occur following episodes of prolonged seizures in rodents and in brain samples resected from individuals with drug-resistant epilepsy; A second area of investigation focuses on the role of the immune classical complement pathway and microglia-mediated synapse pruning in the synaptic pathology and memory deficits that often occur in temporal lobe epilepsy.

NIH Offerings

NIH is allowing a one-time application for both Training Grants and NRSA winners for additional funds to cover the mandatory salary increase for postdocs. Please visit the following link:
http://grants.nih.gov/grants/guide/notice-files/NOT-OD-17-002.html

In order to acknowledge the significant contributions of postdoctoral researchers to our research mission, eligible NRSA awardees may request supplemental funds as outlined below. Specifically, recipients of Kirschstein-NRSA institutional training grant and individual fellowship awards supporting currently active postdoctoral trainees and fellows at levels 0, 1, and 2, ending after December 1, 2016, may apply for one-time supplemental funding to support the stipend increase using the Parent Announcement for Administrative Supplements to Existing NIH Grants, PA-16-287.

Join Us for a Seminar
Tuesday, Nov. 29th, 2016
10:30 – 11:30 pm, DLR 221

"Leveraging Induced Pluripotent Stem Cell Technology to Advance Neuroscience Research"

ABSTRACT

Reprograming technology using human induced pluripotent stem cells (iPSCs) holds great promise in the field of neuroscience. The ability to mimic specific subtypes of human cells, complementing previous *in vivo* phenotypes and post-mortem data, is incredibly valuable to the field. Furthermore, the combination of cutting-edge genome-editing and iPSCs offers the opportunity to study patient specific risk factors or disease specific mutations in a physiologically -relevant cell type, during the time-course of disease progression. To reliably examine healthy or diseased cells, cell quality and reproducibility must be achieved, especially when working with such dynamic cells as stem cells. Using industrial scale manufacturing techniques, we have generated several highly enriched iPS-derived neuronal cells with a variety of characteristics and functionalities. These cell types include cortical neurons (both glutamatergic and GABAergic), mid-brain dopaminergic neurons, motor neurons and astrocytes. Herein we will show characterization of these cryopreserved and ready-to-use cells, both normal and diseased, in addition to showing application and disease-specific data across a variety of disease progressions.

ABOUT THE SPEAKER

Dr. Freitas received her Ph.D. in Molecular Endocrinology with a focus in hormone regulation in the brain from Harvard University and Federal University of Sao Paulo. During this time, she investigated how the glia activates thyroid hormone for neuronal metabolism, she used a co-culture model to investigate protein activation or ubiquitination. She then completed her post-doctoral training at the University of California, San Diego in the Pediatrics Department where she studied the role of iPS-derived glial cells in a neuro-inflammation model for autism. After completing her post-doctoral work, she joined CDI as a Field Application Scientist where she is leveraging her training to enable the use of stem-cell derived cells in the scientific community.

Sponsored by:
Cellular Dynamics International

Refreshments will be provided.

Cellular Dynamics International (CDI) *is the leading provider of human induced pluripotent stem cell (iPSC)-derived cell types for drug discovery, disease modeling, target validation & toxicity testing. The company's iCell® product lines provide terminally differentiated, fully functional human cells that exhibit true human biology in vitro and are experiencing rapid implementation in the drug discovery space.*

Neuroscience & Physiology Area Seminars

11/29 Dr. Donna Fekete: "Developing from a hollow sphere to an inner ear: morphogens matter"
LILY 1-117 @ 1:30 PM

Purdue University Chorafas Foundation Awards

Purdue University
Chorafas Foundation Awards

Deadline: February 3, 2017

Purdue University will nominate one young PhD graduate student researcher for the 2017 Chorafas Foundation Award. The **$5,000** award, made available by the Dimitris N. Chorafas Foundation, is intended as a prize for advanced studies and/or research during or shortly after graduation. The Dimitris N. Chorafas Foundation was founded in 1992 under the leadership of Prof. Dimitris N. Chorafas. Each year, the Foundation awards prizes to more than 20 universities, with the goal of stimulating promising young researchers.

Process:

- Selection of a Purdue nominee will be a two-phase process. Students are invited to submit pre-proposals for the Chorafas Foundation award by **Friday, February 3, 2017.** A maximum of 5 finalists will be selected to submit a full nomination package. The deadline for submitting full nomination packets is **March 24, 2017.**
- The requirements and criteria for pre-proposals and final proposals are provided on page 2.
- All pre-proposals should be sent to the **attention of Donna Young, Office of Research, College of Engineering (ARMS 2000),** or electronically as one PDF File to dsyoung@purdue.edu.

Subject Areas for the Chorafas Award:

Research projects in the following areas are eligible for the Chorafas prize:

- Research, Development and Applications in Advanced Technology
- Life sciences and Medicine
- Physics, Chemistry, Sciences of the Very Small and the Very Large
- Formal sciences: Mathematics, Logic, Statistics and their Applications
- Hard Science Solutions to Millennium Problems
- Interdisciplinary Scientific Research

PULSe Computational and Systems Biology Training Group

It is our pleasure to inform you that PULSe is forming Computational and Systems Biology training group. The training group has been approved by the PULSe executive committee and as a final step in the process we need to finalize the membership of the group. We will be posting information on the PULSe website regarding the training group and membership. Prospective students will be informed regarding opportunities within this training group as they are recruited and admitted to the PULSe program starting this fall.

Please inform Tony Hazburn, Associate Professor, if you are interested in participating in the CSB training group and if you would like to be an administrative or a participatory member. Please note that we you can be an administrative member of one training group and be a participatory member of two training groups.

CASIS and NCATS Announce International Space Station Funding Opportunity Focused on Human Physiology Research

Part of a new four-year, $12 million partnership to fund research onboard the International Space Station U.S. National Laboratory. To view the funding opportunity, learn how to submit your proposal, and get the latest information on this initiative, please visit: www.casistissuechip.blogspot.com

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ATTENTION GRADUATE STUDENTS

Human Motor Behavior Group is looking for motivated students to become team members in their labs. Please visit the following link for additional information.

https://www.purdue.edu/hhs/hk/Biomechanics-MotorBehavior/get-involved/

Funding Opportunities

Opportunity	Award Amount	Deadline
NIH BRAIN Initiative: Foundations of Non-Invasive Functional Human Brain Imaging and Recording – Bridging Scales and Modalities (R01	**Varies**	**November 23, 2016**
NIH BRAIN Initiative: Non-Invasive Neuromodulation – New Tools and Techniques for Spatiotemporal Precision (RO1)	**Varies**	**November 23, 2016**
NSF Cultivating Cultures for Ethical STEM (CCE STEM)	**400,000-600,000**	**December 5, 2016**
NSF/NIH Smart and Connected Health (SCH)	**500,000**	**December 8, 2016**
Indiana Spinal Cord & Traumatic Brain Injury Research Fund	**160,000**	**December 9, 2016**
American Federation for Aging Research Grants for Junior Faculty	**Varies**	**December 15, 2016**
New Technologies and Novel Approaches for Large-Scale Recording and Modulation in the Nervous System (U01)	**Varies**	**December 21, 2016**
NIH/BARDA Antimicrobial Resistance Diagnostic Challenge	**Varies**	**January 9, 2017**
Standards to Define Experiments Related to the BRAIN Initiative (R24)	**Varies**	**January 10, 2017**
Data Archives for the BRAIN Initiative (R24)	**Varies**	**January 17, 2017**
Integration and Analysis of BRAIN Initiative Data (R24)	**Varies**	**January 19, 2017**
NIH BRAIN Initiative: Development of Next Generation Human Brain Imaging Tools and Technologies (UO1)	**Varies**	**January 20, 2017**
NIH-NCI Program Project Applications (P01)	**Varies**	**January 25, 2017**
NIH Animal and Biological Material Resource Centers (P40)	**Varies**	**January 25, 2017**
NIH BRAIN Initiative: Research on the Ethical Implications of Advancements in Neurotechnology and Brain Science (RO1)	**Varies**	**January 30, 2017**
HHS-AHRQ Developing Measures of Shared Decision Making (R01)	**500,000**	**February 5, 2017**
NIH Common Mechanisms and Interactions Among Neurodegenerative Diseases (R01)	**Varies**	**February 5, 2017**

NSF Integrative Strategies for Understanding Neural and Cognitive Systems (NSF-NCS)	**10,000-15,000**	**February 6, 2017**
NIH Perinatal Stroke (R01)	**324,000**	**February 7, 2017**
NIH High Impact Neuroscience Research Resource Grants (R24)	**Varies**	**February 14, 2017**
Comparative Biology of Neurodegeneration (R21)	**275,000**	**February 16, 2017**
HHS-CDC Development and Evaluation of Sports Concussion Prevention Strategies	**550, 000**	**February 16, 2017**
Simons Foundation Autism Research (SFARI) Initiative 2017 Pilot and Research Awards	**70,000-275,000**	**March 22, 2017**
NIH BRAIN Initiative: Research Career Enhancement Award for Investigators to Build Skills in a Cross-Disciplinary Area (K18)	**Varies**	**April 14, 2017**
http://www.grants.gov/searchgrants.html?agencyCode%3DDOD	**Varies**	**Varies**