



# Neuroscience Research Institute Newsletter

Issue 1

June 2021

## Statement from Benjamin Segal, MD - Director - Neuroscience Research Institute

The overall mission of the Neuroscience Research Institute (NRI) is to support innovative and impactful translational research across the Ohio State University that deepens our understanding of the pathogenesis of neurological diseases, and leads to the discovery of novel biomarkers and therapeutic targets for conditions as diverse as Alzheimer's Disease, Parkinson's Disease, traumatic brain and spinal cord injury, ALS and multiple sclerosis, among others. In order to meet this goal, the NRI will prioritize facilitating collaborations between clinicians and scientists, fostering educational and professional development activities for junior investigators in the field, and building a world class infrastructure to support translational neuroscience research, including a state of the art integrated database.



A number of significant accomplishments have been made over the past year. In October, Dr. Erica Bell joined us as Administrative Director of the NRI.

Under her leadership, the NRI biorepository and brain bank is now operational, with a freezer farm in West Campus, point of care labs at multiple outpatient and inpatient sites, and a main processing lab in the Biomedical Research Tower. These efforts have been greatly facilitated by the hire of Ashley Muhlenkamp, MS, as the Biorepository Lab Supervisor. The biorepository and brain bank will serve as a resource for investigators in translational neurology/ neuroscience research across the medical center and OSU at large. We also initiated a new seed grant program, emphasizing innovative team science and projects that bridge bench to bedside, and awarded funds to 4 teams of OSU researchers, through a peer review process. The awardees will be announced further down in this newsletter.

In addition to a new Leadership Council, three committees have been formed under the NRI umbrella including:

- The Biorepository and Database Committee, with the mission of assisting in the development, oversight and maintenance of the multidisciplinary biorepository and brain bank with and integrated database supported by the NRI.
- The Education and Mentorship Committee, responsible for developing and coordinating educational activities and training programs related to neurological and neuroscience research on behalf of the Institute.
- The Translational Research and Cross-Collaborations Committee, with the mission of providing recommendations and guidance, and helping to facilitate, collaborative neuroscience research projects between clinicians and scientists within the NRI and across the University.

The members of these committees have primary appointments in Neurology, Neurosurgery, Neuroscience, Pathology, Anesthesiology, and Psychiatry at OSU and at Nationwide Children's Hospital.

The NRI is at an exciting stage of development, and a steep upward trajectory lies ahead! We welcome you to participate in upcoming NRI sponsored symposia and workshops over the year, that we will advertise in coming months, and to join our collaborative and diverse community of investigators and practitioners committed to making strides in the treatment of neurological diseases and conditions, here at the Ohio State University!

## **Introduction from Erica Bell, PhD - Administrative Director - NRI**

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As Administrative Director for the NRI, my primary role is to oversee the biorepository and biomarker efforts for neurological diseases in addition to the development of educational, career development, and mentorship programs for junior faculty and trainees. Although I am new to the NRI, I have been an Associate Professor in the College of Medicine since 2018 and a faculty member within the Translational Therapeutic program in the Comprehensive Cancer Center at Ohio State since 2010. My research focus has been molecular biomarkers of adult and pediatric brain tumors using omics-based approaches such as next-generation sequencing techniques and proteomics. Specifically, I have significant experience overseeing correlative biomarker endpoints on multiple international phase II and III clinical trials. In my first 6 months as part of the NRI, we have revamped the organizational structure of the NRI, built the infrastructure and implemented a robust brain bank and biorepository (NRI-BBB), and have successfully completed grant reviews for the Seed grants. I am honored to be a part of this outstanding research community and excited for our future growth and implementation of our biorepository and increasing biomarker efforts throughout all neurological diseases. I am also passionate about faculty and leadership development and currently serve on the Faculty Experience Group for the COM. Please feel free to connect with me at any time. It is a true honor to help all NRI faculty and trainees expand their current resources and help assist with collaborations and other research needs.

### **Ashley Muhlenkamp, MS - NRI-BBB Lab Supervisor**

I joined the NRI as the Biorepository Lab Supervisor in January 2021. Before joining the NRI-BBB, I attended The Ohio State University where I received my B.S. in Pharmaceutical Sciences and my M.S. in Pharmacology. Previously I served as a Genetic Technologist in the Institute for Genomic Medicine at Nationwide Children's Hospital constructing library generations for next generation sequencing in addition to biospecimen and nucleic acid processing. More recently, I served as a Regulatory Compliance Officer in the Clinical Trials Management Office at The Ohio State University Wexner Medical Center assisting research teams with IRB submissions and guidance as well as ensuring research teams adhered to regulatory requirements. I am looking forward to working with various research groups and physicians towards building this biorepository and being able to help researchers gain access to specimens that will advance their projects and ideas.

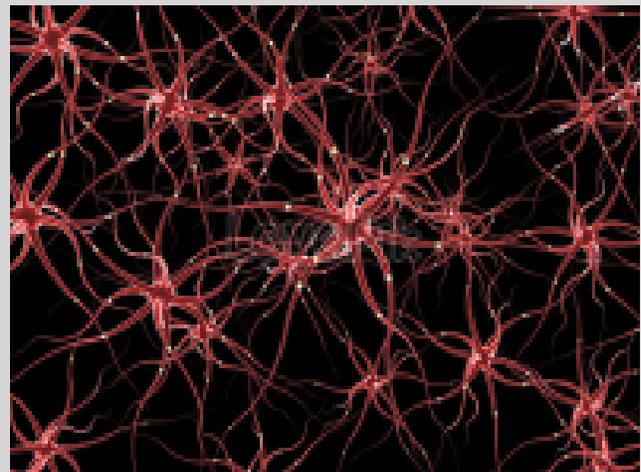


# Neuroscience Research Institute Brain Bank & Biorepository (NRI-BBB)

The goal of the Neurology Research Institute Brain Bank & Biorepository (NRI-BBB) is to establish a state of the art bank and biorepository at The Ohio State. The NRI-BBB facilitates novel research and clinical trials using samples collected by clinicians directly involved in patient care. The biorepository serves as a centralized site for the collection and storage of clinical specimens that researchers from across the OSU College of Medicine and OSUWMC can utilize clinical samples and data housed within the biorepository for their own research projects. This bank will allow researchers access to unique sample types that they may not have access to on their own. Samples to be stored and maintained within the NRI-BBB includes, but is not limited to CSF, blood, autopsy and surgical and/or biopsy specimens. The NRI Brain Bank & Biorepository will integrate the Buckeye Brain Bank and autopsy program under one protocol. Multiple point of care labs throughout OSU's medical center will be utilized to allow for sample processing, as well as the main processing lab located within the BRT (Biomedical Research Tower). A site at Science Village of Kinnear Road will house the "Freezer Farm" for long-term storage, which currently has 4 large -80 freezers. The NRI-BBB will be utilizing REDCap to house the database and electronic consents.

Please see our website for more details at:

<https://wexnermedical.osu.edu/neurological-institute/neuroscience-research-institute>



# SEED Grant Request Proposal Winners

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## Faith Brennan, PhD

*Research Scientist - Neuroscience*



***"Understanding microglial control of central nervous system disease and repair with spatiotemporal resolution"***

## Setty Magana, MD, PhD - Nationwide Children's (Neurology)

*Assistant Professor - Nationwide Children's (Neurology)*



***"Role of extracellular vesicles and miRNAs in multiple sclerosis pathogenic blood-brain-barrier dysfunction—a novel human 3D cerebrovascular-on-a-chip model"***

## Kristy Townsend, PhD and Dave Arnold, MD

*Associate Professor - Neurosurgery*

*Associate Professor - Neurology*



***"Aging Of The Peripheral Nervous System And Loss Of Synaptic Fidelity At The Adipocyte And Muscle"***

## Cole Vonder Haar, PhD

*Assistant Professor - Neuroscience*



***"Microbiome-Induced Alterations to Catecholamine Processing after Traumatic Brain Injury"***

# Recent Achievements

within last 6 months

## Grants

- **Dave Arnold, MD (NIH)** received a R03 Grant for "Social Isolation and Loss of Physical Function: Defining a Novel Neuromuscular Phenotype" and a R01 grant for "Motoneuronal mechanisms underlying age-related muscle weakness"
- **Ruth Barrientos, PhD (NIH)** received a new R21 Award - "Restorative gene therapy on hippocampal spino-dendritic abnormalities: a focus on Alzheimer's disease"
- **Harry Fu, PhD and Jie Gao, PhD– Alzheimer's Association Research Grant**
- **Stephanie Gorka, PhD (NIH)** received two new R01 Awards - "Trauma and Neurobiological Threat Reactivity as Risk Factors for Alcohol Abuse in Youth" and "Neural Mechanisms and Predictors of an Ultra-Brief Suicide Prevention Strategy"
- **Mark Hester PhD (DOD)** Tuberous Sclerosis Complex Research Program; "Dissecting Mechanisms Underlying Brain Calcification in Tuberous Sclerosis Complex"
- **Margo Izzo, PhD (NSF)** Developing a collaborative infrastructure for educating STEM undergraduate students who are neurodiverse learners
- **Kristina Kigerl (NIH)** received a R01 Grant "Macrophage depletion therapy for spinal cord injury" (collab with University of Kentucky)
- **Marc J. Tassé, PhD (ACL/CDC)** VACcess: Increasing Access to COVID19 Vaccines for Buckeyes with Developmental Disabilities

## High-impact Publications

- Tingting Wang, J. N. Rashida Gnanaprakasam, Xuyong Chen, Siwen Kang, Xuequn Xu, Hua Sun, Lingling Liu, Hayley Rodgers, Ethan Miller, Teresa A. Cassel, Qiushi Sun, Sara Vicente-Muñoz, Marc O. Warmoes, Penghui Lin, Zayda Lizbeth Piedra-Quintero, **Mireia Guerau**, Kevin A. Cassidy, Song Guo Zheng, Jun Yang, Andrew N. Lane, Xiaotong Song, Teresa W.-M. Fan & Ruoning Wang "Inosine is an alternative carbon source for CD8-T-cell function under glucose restriction" *Nature Metabolism*. (2020)
- Annelise A. Madison, Martha A. Belury, Rebecca Andridge, Megan E. Renna, M. Rosie ShROUT, William B. Malarkey, Jue Lin, Elissa S. Epel & **Janice K. Kiecolt-Glaser** "Omega-3 supplementation and stress reactivity of cellular aging biomarkers: An ancillary substudy of a randomized, controlled trial in midlife adults." *Molecular Psychiatry* (2021)
- Karim Fouad, Phillip G. Popovich, Marcel A. Kopp & **Jan M. Schwab** "The neuroanatomical-functional paradox in spinal cord injury" *Nature Reviews Neurology* (2021)
- Tobias Zrzavy, Carmen Schwaiger, Isabella Wimmer, Thomas Berger, Jan Bauer, Oleg Butovsky, **Jan M Schwab**, Hans Lassmann, Romana Höftberger "Acute and non-resolving inflammation associate with oxidative injury after human spinal cord injury" *Brain* (2021)
- Freda M. Warner, Jacquelyn J. Cragg, Catherine R. Jutzeler, Lukas Grassner, Orpheus Mach, Doris D. Maier, Benedikt Mach, **Jan M. Schwab**, Marcel A. Kopp, John L.K. Kramer "Association of timing of gabapentinoid use with motor recovery after spinal cord injury" *Neurology* (2020)
- **Andrew R. Sas**, Kevin S. Carbajal, **Andrew D. Jerome**, Rajasree Menon, Choya Yoon, Ashley L. Kalinski, Roman J. Giger & **Benjamin M. Segal** "A new neutrophil subset promotes CNS neuron survival and axon regeneration" *Nature Immunology* (2021)
- **Tracy Bedrosian**, Judith Houtman, Juan Eguiguren, Saeed Ghassemzade, Nichole Rund, Nicole Novaresi, Lauren Hu, Sarah Parylak, Ahmet Denli, Lynne Randolph-Moore, Takashi Namba, Fred Gage and Tomohisa Toda T "Lamin B1 decline underlies age-related loss of adult hippocampal neurogenesis." *The EMBO journal* (2021)
- Daniel Koboldt, Katherine Miller, Anothny Miller, Jocelyn Bush, Sean McGrath, Kristen Leraas, Erin Crist, Summer Fair, Wesley Schwind, Saranga Wijeratne, James Fitch, Jeffrey Leonard, Ammar Shaikhouni, **Mark Hester**, Vincent Magrini, Mai-Lan Ho, Christopher Pierson, Richard Wilson, Adam Ostendorf, **Elaine Mardis, Tracy Bedrosian** "PTEN somatic mutations contribute to spectrum of cerebral overgrowth." *Brain, In Press* (2021)
- Kun Tan, Kim ME, Hye-Won Song, David Skarbrevik, Eric Babajanian, **Tracy Bedrosian**, Fred Gage, Miles Wilkinson "The RhoX gene cluster suppresses germline LINE1 transposition" (2021) *Proceedings of the National Academy of Sciences, In Press*
- **Cynthia Fontanella**, Guy Brock, Mary Fristad. "Cannabis Use and Suicidal Behavior and Long-term Harms—Reply" *JAMA Pediatr.* (2021)
- Michelle L. Humeidan, Joshua-Paolo C. Reyes, Ana Mavarez-Martinez, Cory Roeth **Christopher M. Nguyen**, Elizabeth Sheridan, Alix Zuleta-Alarcon, Andrew Otey, Mahmoud Abdel-Rasoul, Sergio D. Bergese, "Effect of Cognitive Prehabilitation on the Incidence of Postoperative Delirium Among Older Adults Undergoing Major Noncardiac Surgery" *JAMA Surg.* (2021)

## Awards

- **Dana McTigue, Ph.D.** is a 2021 recipient of the Hedwig van Ameringen Executive Leadership in Academic Medicine® (ELAM®) program award, a one-year fellowship designed for senior women faculty with high potential for advancement in an executive leadership role. Offered by the Drexel University College of Medicine
- **Jan Schwab, MD, PhD** recently won the David F. Apple Award from the American Spinal Injury Association.
- **Andrew Sas MD, PhD** was awarded the OSU Chronic Brain Injury paper of the year. Andrew Sas will be giving a CBI talk on June 18th.
- The Department of Neurology Neuroscience Day Awards for Best Presentations were awarded to **John Morena, MD, Hera Kamdar, MD, Markus Harrington, Sam Mackenzie, MD and Andrew Jerome, PhD**
- **Ben Segal, MD** was the 2021 Kenneth Johnson Invited Professor and Chair of ACTRIMS-ECTRIMS

# Upcoming Events

## Upcoming Grand Rounds

- June 3rd 7:30am- Combined Neurosurgery and Neurology Grand Rounds
  - <https://osu.zoom.us/j/93139851789?pwd=ODI1VkxpYUlsbU9FdnVJdm5xOW1DUT09>
- June 8th 7:30am- **Tammie Benzinger** from Washington University will be discussing Alzheimer's and Dementia
  - <https://osu.zoom.us/j/92736725849?pwd=VGlyZ1ZjTnFYcFhibWk5cXRBNE5RUT09>
- June 15th 7:30am- **Dan Ontaneda** from the Cleveland Clinic will be discussing Multiple Sclerosis
  - <https://osu.zoom.us/j/92736725849?pwd=VGlyZ1ZjTnFYcFhibWk5cXRBNE5RUT09>
- June 22nd 7:30am- **Clement Pillainayagam** from Ohio State will be discussing Neuro-Oncology
  - <https://osu.zoom.us/j/92736725849?pwd=VGlyZ1ZjTnFYcFhibWk5cXRBNE5RUT09>

## Philanthropy Event

- July 10th and 11th- **Challenge2ConquerALS** supporting ALS/ MND Multidisciplinary Clinic and Research Program at the OSUWMC
  - July 10th OHIO Cycle2ConquerALS
  - July 11th OHIO Skydive2ConquerALS
  - Barry Sanders will be the guest speaker
  - [www.challenge2conquerals.org](http://www.challenge2conquerals.org)



# Funding Announcements

## NIH Biosketch Format Update

- During the transition to the new Biosketch format, NIH will not withdraw applications that include the previous Biosketch format. Beginning with applications submitted on or after January 25, 2022, failure to follow the appropriate Biosketch format may cause NIH to withdraw your application from consideration.
- <https://grants.nih.gov/grants/guide/notice-files/NOT-OD-21-073.html>

## Department of Defense Funding Opportunities

- <https://cdmrp.army.mil/researchprograms>
- Currently Funded Programs (NRI-related):
  - Amyotrophic Lateral Sclerosis
  - Alzheimer's
  - Autism
  - Epilepsy
  - Multiple Sclerosis
  - Neurofibromatosis
  - Spinal Cord Injury

To submit announcements for future newsletters, please email [OSU-NRI@osumc.edu](mailto:OSU-NRI@osumc.edu).