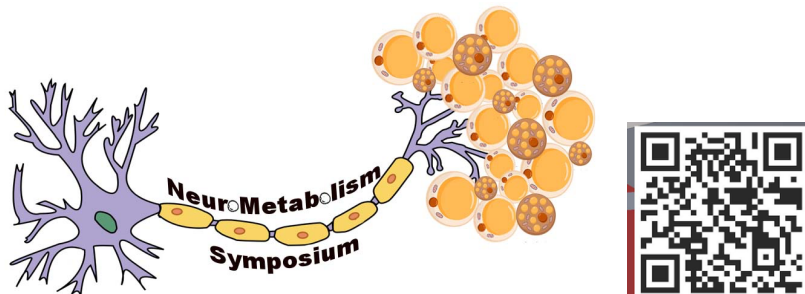


**The Ohio State University (OSU) – Department of Neurological Surgery  
Translational Research In NeuroMetabolism Symposium (TRINS)  
Second Annual International Meeting - 2024**

Thursday April 11, 2024 at OSU Campus, James L035, 460 W 10<sup>th</sup> Ave, Columbus OH  
(followed by 3rd Annual Preventative Health of Adipose Tissue (PHAT) Regional Meeting, April 12<sup>th</sup>, 2024)



**Thursday April 11<sup>th</sup> 2024:**

**8am:** Registration, coffee & light breakfast (hang posters in lobby of DHLRI across the street)

**8:30am: Introduction and Welcome, Dr. Kristy Townsend, Dept. Neurological Surgery, OSU**

**5 Short talks – invited external and internal speakers (25min + 5min Q&A)**

1. **Brain – clinical – Evan Reynolds, University of Michigan:** The association between metabolic risk factors and brain health outcomes
2. **Brain – basic/translational – Alexis Stranahan, Medical College of Georgia:** Neuroimmune signaling at the blood-brain and blood-CSF interfaces in obesity
3. **NeuroMetab – translational-clinical/tools – Victor VanLaar, OSU:** Gene Therapy and the Dopamine Pathways – strategies for targeting neurodegeneration, overeating, and substance abuse.
4. **NeuroMetab – basic/translational – Camilla Scheele, Univ. Copenhagen:** Brown fat in a metabolic crosstalk with the central nervous system.
5. **Gut – clinical – Patrick Sweigert, OSU:** Trends in the Medical and Surgical Treatment of Morbid Obesity
6. **Abstract Winner - 10min – Gargi Mishra, PhD Candidate OSU;** Molecular, Cellular and Developmental Biology (MDCB) Graduate Program: Uncovering Sensory Nerve Functions in White Adipose Tissue

**11:45: Keynote Address (45min + 15min Q&A)- Michael Czech, UMass Medical School  
“Neurometabolism of adipose tissues and beyond”**

**1pm:** Lunch and trainee roundtables with speakers

**2pm:** 5 Short talks – invited and internal speakers (25min + 5min Q&A)

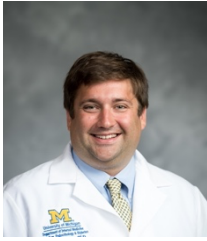
1. **Gut – basic/translational – Darleen Sandoval, UColorado Anschutz:** Gut Instincts: The role of the gut-brain axis in the success of bariatric surgery
2. **Pancreas/DM – clinical – Kathleen Dungan, OSU:** Diabetes Therapeutics and Neurometabolism
3. **Pancreas/DM – basic/translational – Sarah Stanley, Mt Sinai:** Central and peripheral neural circuits modulating glucose metabolism
4. ~~**PN – clinical – Brian Dalm, OSU – CANCELED DUE TO DEATH IN THE FAMILY**~~
5. **PN – basic/translational – Deanna Kroetz, OSU:** Human Genetic and Translational Studies of Chemotherapy Induced Peripheral Neuropathy (CIPN)
6. **Abstract Winner – 10 min – Connor Mahler, Research Associate, Indiana Biosciences;** Subpopulation of Ventromedial Hypothalamus Cells Stimulate Adipose Tissue Thermogenesis Via Preoptic Outputs

**4:30-5:30: Posters – Lobby of DHLRI (across the street from James)**

**6pm:** joint speaker dinner PHAT/TRINS – @ Watershed – Shuttle leaves DHLRI at 5:45pm

*TRINS was organized by Dr. Kristy Townsend, Associate Professor in Neurological Surgery at The Ohio State University, and PI of the Neurobiology and Energy Balance lab, where research is focused on mechanisms of neural plasticity in the brain and peripheral nerves, impacting the regulation of metabolic health. <https://ktownsendlab.com/> Twitter/X: @neuroadipo*

***Special Thank You** to the Department of Neurological Surgery and Dept. Chair Dr. Russell Lonser for sponsorship of this meeting, and for administrative support from Justin Feezell, Allison Gere, and Katie Shade. PHAT/TRINS are run in tandem as a partnership with the Davis Heart and Lung Research Institute (DHLRI) and the Center for the Preventative Health of Adipose Tissue (PHAT) with Dr. Kristin Stanford, Dr. Tom Hund (Director), Penny Jones and Jen Bennett. Dr. Stanford was a co-organizer of the TRINS Meeting in 2024.*



**Evan L. Reynolds, PhD**

Assistant Professor, Department of Epidemiology and Biostatistics, Michigan State University

**Final Talk Title:** The association between metabolic risk factors and brain health outcomes

**Talk Description:** The talk will present results from our studies that determined the association between metabolic risk factors and brain health outcomes, in several

populations. In addition, I present results from our study that assessed the effect of surgical weight loss on change in cognitive function.

**Speaker Bio:** Dr. Evan Reynolds is an Assistant Professor in the Department of Epidemiology and Biostatistics at Michigan State University. The overarching goal of his research is to predict and prevent the onset of neurologic complications of diabetes, including cognitive impairment and peripheral neuropathy. As a data scientist, he aims to assess the association between metabolic risk factors and these diabetes complications by applying novel statistical methodologies to diverse clinical cohorts and large-scale databases.



**Alexis M. Stranahan, PhD**

**Final Talk Title:** Neuroimmune signaling at the blood-brain and blood-CSF interfaces in obesity

**Talk Description:** Obesity disrupts and distorts interactions between peripheral lymphocytes, glial cells, and neurons. These effects are sexually dimorphic and differential recruitment of anti-inflammatory cytokines is associated with female resistance to obesity and its comorbidities. Here, we present data linking anti-inflammatory signaling at the blood-brain and blood-cerebrospinal fluid interfaces with sexually dimorphic susceptibility to neuroinflammation in obesity.

**Speaker Bio:** Alexis M. Stranahan is an Associate Professor in the department of Neuroscience and Regenerative Medicine at the Medical College of Georgia. Her research program focuses on neuroimmune regulation of synaptic plasticity in mouse models of obesity. She is a standing member of the Pathophysiology of Obesity and Diabetes (POMD) study section and serves on the editorial board of the Journal of Neuroscience, Neurobiology of Aging, and Journal of Neuroinflammation.



**Victor S. Van Laar, PhD**

**Final Talk Title:** Gene Therapy and the Dopamine Pathways – strategies for targeting neurodegeneration, overeating, and substance abuse.

**Talk Description:** The nigral and VTA dopamine neurons of the CNS play crucial roles in regulating movement and reward responses, and alterations in the function and health of these neurons can lead to movement disorders, eating disorders, and substance abuse. Therapeutic strategies utilizing gene therapy show promise to restore the function of dopamine neurons and alleviate

symptoms of these disorders.

**Speaker Bio:** Victor Van Laar is a research scientist in the laboratory of Krystof Bankiewicz, in the the department of Neurological Surgery at The Ohio State University. He earned his BS in Biochemistry at Iowa State University, followed by a PhD in Neuroscience at the University of Pittsburgh. Dr. Van Laar's research focuses on understanding the role of mitochondrial dysfunction, cellular bioenergetics, and neuronal homeostasis in neurodegenerative diseases and other neurologically related disorders. Utilizing novel approaches for the delivery of therapeutic agents to target specific regions in the brain, Dr. Van Laar is also exploring gene therapy approaches to treating these brain disorders.

**Camilla Scheele, PhD**

**Final Talk Title:** Brown fat in a metabolic crosstalk with the central nervous system.

**Talk Description:** Since the discovery of functionally competent, energy-consuming brown adipose tissue (BAT) in adult humans, much effort has been devoted to exploring this tissue as a means for increasing energy expenditure to counteract obesity. However, despite promising effects on metabolic rate and

insulin sensitivity, no convincing evidence for weight-loss effects of cold-activated human BAT exists to date. The hypothalamus regulates energy homeostasis, receiving peripheral signals and balancing feeding accordingly. Therefore, in the further exploration of BAT as a potential source of novel drug targets, we study the hypothalamic orchestration of BAT activity and the relatively unexplored BAT feedback mechanisms on neuronal regulation. We are using omics approaches to map signalling molecules from human brown fat, followed by computational prediction and high content screening approaches in a library of neuronal cell lines, to identify candidate signalling molecules in a BAT to brain crosstalk.

**Speaker Bio:** Associate Professor at the Novo Nordisk Foundation Center for Basic Metabolic Research at the University of Copenhagen, Denmark. Prof. Scheele received her PhD at Karolinska Institutet in Stockholm, Sweden. Her research focus concerns human brown fat, its potential to counteract obesity and type 2 diabetes and its role in metabolism. Her research team characterized human supraclavicular brown fat and demonstrated, that brown fat progenitors can be isolated from adult humans and differentiated in vitro while maintaining features of brown fat. They concluded that human brown fat is a heterogeneous tissue and to gain deeper insight in the development of thermogenic adipocytes they study adipose progenitors from several human adipose depots. In a recent single cell study they describe a new cell type -the SWAT cells, arising from the same progenitor cell as adipogenic cells, but a multipotent and secretory properties. Another major research interest of her group is to identify adipokines specifically secreted from brown fat, with the hypothesis that there are yet unknown brown adipokines, i.e. batokines, with an important role in regulating human metabolism and brown fat development. In 2020, she was awarded an ERC consolidator grant to study peptide-mediated crosstalk between BAT and brain.

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**Patrick J. Sweigert, MD**

Assistant Professor of Surgery

Division of General and Gastrointestinal Surgery

Department of Surgery

The Ohio State University Wexner Medical Center

**Final Talk Title:** Trends in the Medical and Surgical Treatment of Morbid Obesity

**Talk Description:**

Exploring the multimodal clinical management of obesity while highlighting the impact of metabolic and bariatric surgery on health outcomes.

**Speaker Bio:** Dr. Patrick Sweigert is an Assistant Professor of Surgery at The Ohio State University Wexner Medical Center. He attended the University of Dayton, graduating with a B.S. in Biochemistry. He obtained his medical degree from the Loyola University Chicago Stritch School of Medicine. He went on to complete his training in General Surgery at Loyola University Medical Center which included a research fellowship focusing on surgical Health Services Research. He completed a clinical fellowship in MIS/Bariatric Surgery at The Ohio State University Wexner Medical Center and subsequently accepted a position to join the faculty. Dr. Sweigert is passionate about delivering high-quality minimally invasive surgical care that is personalized to each patient's individual condition, and educating tomorrow's leaders

in Surgery. His research focuses on improving delivery of surgical care by advancing the safety and efficacy of minimally invasive procedures. When not at work, he enjoys spending time with family, watching college football, and traveling.



**Darleen Sandoval, PhD**

**Final Talk Title:** Gut Instincts: The role of the gut-brain axis in the success of bariatric surgery

**Talk Description:** Changing gut anatomy with bariatric surgery induces widespread physiological changes including sustained changes in multiple aspects of feeding behavior. This presentation explores potential gut to brain signaling mechanisms that are hypothesized to drive these changes in feeding behavior.

**Speaker Bio:** Dr. Sandoval is currently Professor in Pediatrics and Medicine at University of Colorado-Anschutz Medical Campus with a primary appointment in the Section of Nutrition, and a secondary appointment in Endocrinology. Dr. Sandoval received her Ph.D. in Exercise Science at Arizona State University and did a Postdoctoral Fellowship at Vanderbilt University in the Division of Endocrinology. Her research has two general themes. One is focused on understanding the role of the gut hormone, glucagon-like peptide-1 (GLP-1) on glucose homeostasis and how dysregulation of GLP-1 is involved with the onset of type 2 diabetes mellitus. The other is focused on understand the mechanisms underscoring the success of surgery, but also how bariatric surgery impacts physiology. She has over 125 publications on this work and have been funded by the NIH, the American Diabetes Association, and various other foundation and pharmaceutical research grants. She is co-founder and past co-chair of the Women's Interprofessional Network of the ADA, co-found of WIELD (Women Inspiring and Elevating Leadership in Diabetes) and is co-host of the DiabetesBio podcast (podcast for the Diabetes Journal).



**Kathleen Dungan, MD**

**Final Talk Title:** Diabetes Therapeutics and Neurometabolism

**Talk Description:**

· Diabetes is a major public health concern. Therapeutic approaches have focused on the major pathophysiologic findings including beta cell dysfunction and insulin resistance. However the role of the neuroendocrine interactions in treatment and outcomes are underappreciated and discussed here.

· Preliminary objectives:

- o Summarize the spectrum of neuroendocrine dysfunction in diabetes mellitus
- o Highlight the current standards of care for diabetes mellitus
- o Analyze the neurometabolic effects of diabetes therapies
- o Demonstrate the impact of diabetes therapies on neurologic outcomes (tentative)

**Speaker Bio:** Kathleen Dungan, MD, MPH is Professor of Medicine in the Division of Endocrinology, Diabetes & Metabolism at the Ohio State University where she serves as the Interim Director and Director of the Diabetes Center of Excellence. Dr. Dungan earned her medical degree from the Ohio State University, and completed her residency in Internal Medicine and fellowship in Endocrinology at the University of North Carolina. She then completed her Masters in Public Health at The Ohio State University. She has regularly appears on the "Best Doctors" list. She has served as primary investigator for NIH and other externally sponsored clinical research in glycemic management of hospitalized patients. She has served as lead investigator, steering committee, or national lead for a number of multi-center clinical trials of diabetes therapeutics. She serves as Associate Editor for Endotext and has published widely on inpatient and outpatient diabetes therapeutics and monitoring.





**Sarah Stanley, MB BChir, PhD,**  
Associate Professor, Diabetes, Obesity and Metabolism Institute/Neuroscience,  
Icahn School of Medicine at Mount Sinai

**Final Talk Title:**

Central and peripheral neural circuits modulating glucose metabolism

**Talk Description:**

The central and peripheral nervous systems are key to the complex physiological interactions that determine blood glucose. However, our knowledge of the cellular responses, circuits, and physiological roles of neural populations that respond to changing glucose and how they are altered in disease is limited. This talk will outline our multidisciplinary approaches to begin to dissect the crucial contributions of central and peripheral neural circuits in glucose metabolism.

**Speaker Bio:** Sarah A. Stanley, M.B. B.Chir., Ph.D., is an associate professor at Mount Sinai School of Medicine with dual appointments in the Division of Endocrinology, Diabetes, and Bone Disease and the Department of Neuroscience. Her research focuses on investigating the roles of central and peripheral neural circuits in the regulation of glucose metabolism in physiology and disease.



**Deanna Kroetz, Ph.D.**

**Final Talk Title:** Human Genetic and Translational Studies of CIPN

**Speaker Bio:** Deanna Kroetz is Dean and Professor of The Ohio State University College of Pharmacy. Prior to joining Ohio State in late 2023, she was Professor and Chair of Bioengineering and Therapeutic Sciences and the Jere E. Goyan Presidential Chair for the Advancement of Pharmacy in the School of Pharmacy at the University of California San Francisco. She received her B.S. degree in Pharmacy from Ohio State University and her Ph.D. in Pharmaceutics from the

University of Washington, under the mentorship of Dr. René Levy. Dr. Kroetz was a PRAT Fellow in the Laboratory of Molecular Carcinogenesis at the National Cancer Institute under the mentorship of Dr. Frank Gonzalez before joining the faculty at the University of California San Francisco. She has received numerous awards, including the AAPS New Investigator Award in Pharmacokinetics, Pharmacodynamics and Drug Metabolism, the Josephine Failer Award from the Ohio State University Alumni Association, the Leon Goldberg Young Investigator Award and the Rawls Palmer Progress in Medicine Award from the American Society for Clinical Pharmacology and Therapeutics, fellow of the American Association of Pharmaceutical Scientists and the American Association for the Advancement of Science, and the Distinguished Alumna Award for Excellence in Pharmaceutical Sciences and Research from the University of Washington School of Pharmacy. Her research aims to understand the mechanisms underlying interindividual variation in drug response and toxicity, with a current focus on chemotherapy-induced peripheral neuropathy (CIPN). Her laboratory uses genomic approaches such as genome-wide genotyping and exome sequencing to identify genetic biomarkers of chemotherapy toxicity. Functional genomic studies use an induced pluripotent stem cell derived sensory neuron model to characterize genetic variants of interest and to understand the molecular basis for involvement of novel genes and pathways in neurotoxicity. They are also studying the role of the multidrug resistance protein MRP4 in immunosensitivity and response to immunotherapies. Dr. Kroetz served as the Director of the Pharmaceutical Sciences and Pharmacogenomics Graduate Program at UCSF from 2010 – 2019. She is currently the Deputy Editor-in-Chief of *Clinical and Translational Science*.

## KEYNOTE:



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## Bio:

Michael P. Czech is currently the Isadore and Fannie Foxman Professor at the University of Massachusetts Medical School, where he was also Chairman of the Department of Biochemistry (1981-1989) and founding Chair of the Program in Molecular Medicine (1989-2018). Czech's laboratory applies RNAi- and CRISPR-based technologies to address mechanisms of insulin signal transduction, metabolic regulation and insulin resistance in obesity and type 2 diabetes. His group's work revealed insights into signaling by receptors for insulin and the IGFs, and identified several new regulators of adipose tissue and systemic metabolism. He was also co-founder of two biotech companies. Czech is a member of the Scientific Review Board of HHMI, and has received the Elliot P. Joslin Medal (1998), the Banting Medal (2000) of the American Diabetes Association, and the 2009 Jacobaeus Prize presented in Umea Sweden.

## Talk Description:

Adipose tissues are highly innervated and function as central hubs of whole body metabolic regulation. The interplay between sympathetic nerve fibers and adipocytes thus provides a vast wealth of information about the NeuroMetabolism nexus.