

TANENBAUM SYMPOSIUM 2024

**Precision Medicine for Epilepsy  
and Related Neurodevelopmental  
and  
Neuropsychiatric Disorders**

Oct. 10, 2024

8:30am to 5pm

BMO Centre, Krembil Research Tower  
60 Leonard Ave. Toronto

**REGISTER**

## Tanenbaum Symposium 2024: Introduction

The future of medicine is dynamic and presently in great flux, with recent major impacts of population-based, disease specific genetic databases, metabolomics, proteomics, gene therapy, human based stem cells and organoids, all potentially curated and tied together with artificial intelligence (AI). Here we plan to examine the intersection and overlap of epilepsy, neurodevelopmental/neuropsychiatric disorders, often inter-related by mitochondrial dysfunction, an understudied aspect of the neurobiology of disease.

We present a novel interdisciplinary approach to diagnosing and treating these disorders looking at their overlapping pathogenesis and genetic backgrounds, with a view to translating from the bench to the patient, from the patients (especially genetic databases) to the bench, and with the help of industry back to treating the patient. Precision medicine is the way of using multiple streams of relevant data to treat that specific patient, instead of treating the broader disease category into which the patient has been classified. This entails the application of a population-based disease specific database coupled with that patient's specific genome and analyses of that patient's specific biomarkers including data from their own derived genetically-true derived brain tissue (e.g. brain organoids) coupled together with AI to decide on that specific patient's optimal therapy.

This symposium will include research experts in epilepsy genetics, neurodevelopmental epileptic disorders, neuropsychiatric disorders, mitochondrial disorders, human-based 2D and 3D brain cultures, gene therapy, artificial intelligence and the roles of industry in using these novel insights and diagnostic approaches for drug development/drug trials, and leveraging industry to impact treatments, particularly in the underserved world.

## Tanenbaum Symposium 2024: Program

### 8:30am – Registration

### 8:45-9:00am – Welcome

- Dr. Peter Carlen and Dr. Jaideep Bains

### 9:00-10:30am – Genetics in Epilepsy: Optimizing Diagnoses and Treatment

- Chair: Dr. Danielle Andrade
- Dr. Danielle Andrade - Genetic Epilepsies: From Neurodevelopmental to Neurodegenerative Disorders
- Dr. James Eubanks - Precision Medicine: How a Patient-Specific Mouse Model Facilitated the Identification of a Prospective treatment for CDKL5 Deficiency Disorder
- Dr. Anne Bassett - Disease Mechanisms and Treatment in a Human Genetic Model of Schizophrenia
- Q&A

### 10:30-10:45am – Break

### 10:45am-12:15pm – New Technologies for Precision Medicine in Brain Disorders

- Chair: Dr. Peter Carlen
- Dr. Peter Carlen - Using 2D and 3D (Organoid) Cerebral Cultures to Diagnose and Treat Developmental Epileptic Encephalopathies
- Dr. Liliana Attisano - Developing Complex Human Brain Organoid Models
- Dr. Amy Ramsey - AAV-Mediated Gene Therapy for GRIN Neurodevelopmental Disorder
- Q&A

## Tanenbaum Symposium 2024: Program

**12:15-1:45pm - Lunch Break and Posters from Labs and Interested Companies**

**1:45-3:15pm – Mitochondria: Understudied Key Factor in Diagnosing and Treating Epilepsy**

- Chair: Dr. Ana Andreazza
- Dr. Shebani Sethi, Keynote Speaker - Metabolic Psychiatry: Ketogenic therapy in Schizophrenia and Bipolar - Results from a Pilot Clinical Trial
- Dr. Ana Andreazza and Jaehyoung Choi - Brain, Mitochondria & Metabolism: Transdiagnostic Dimensions, and Using AI to Assess Mitogene Risk in Bipolar and Other Neuropsychiatric Disorders

**3:15-3:30pm – Break**

**3:30-4:45pm – Precision Medicine and Industry**

- Chair: Dr. Miron Derchansky
- Dr. Mark Tarnopolsky - The Use of Multi-Ingredient Supplements to Target Mitochondrial Dysfunction in Neurological Disorders
- Dr. Miron Derchansky - De-Risking Clinical Trials with Precision Medicine and Digital Biomarkers
- Dr. Amza Ali - Precision and Imprecision Medicine: Outreach to the Developing World
- Q&A

**4:45-5:00pm – Closing Remarks**

## Tanenbaum Symposium 2024: Speakers

### **Danielle Andrade, MD, MSc, FRCPC, CSCN (EEG)**

Professor of Medicine (Neurology), University of Toronto

Director Adult Genetic Epilepsy Program and  
Medical Director Epilepsy Program, University  
Health Network

President-Elect Canadian League Against Epilepsy

### **James Eubanks, PhD**

Senior Scientist

Head, Division of Experimental and Translational  
Neuroscience

Krembil Research Institute

University Health Network

Professor, Departments of Surgery, Physiology,  
Pharmacology and Toxicology, Institute of Medical  
Sciences, University of Toronto

### **Anne Bassett, CM, MD, FRCPC**

Dalglish Chair in 22q11.2 Deletion Syndrome

Professor, Department of Psychiatry, University of  
Toronto

Associate Staff, Division of Cardiology, University  
Health Network

Director, The Dalglish Family 22q Clinic for  
Adults, Toronto General Hospital, University  
Health Network

Director, Clinical Genetics Research Program,  
Centre for Addiction and Mental Health

### **Jaehyoung Choi**

PhD Candidate, Department of Pharmacology and  
Toxicology, University of Toronto

## Tanenbaum Symposium 2024: Speakers

### **Mark Tarnopolsky, MD, PhD, FRCP(C)**

McMaster Children's Hospital / Hamilton Health Sciences Foundation Chair in Neuromuscular Disorders

Professor of Pediatrics and Medicine, CEO and CSO, Exerkine Corporation

Division Head of Neuromuscular and Neurometabolic Disorders

Neuromuscular, Neurogenetic and Neurometabolic Physician

McMaster University Children's Hospital

### **Ana Andreazza, PharmD, PhD**

Canada Research Chair in Molecular Pharmacology of Mood Disorders

Thomas C. Zachos Chair in Mitochondrial Research

Professor, Departments of Pharmacology and Toxicology and Psychiatry, University of Toronto  
Scientific Director, Mitochondrial Innovation Initiative

### **Shebani Sethi, MD, ABOM**

Clinical Associate Professor, Departments of Psychiatry and Behavioral Sciences, Stanford University

Founding Director, Metabolic Psychiatry Flagship Clinical Research Program, Stanford University School of Medicine

Diplomate, American Board of Psychiatry & Neurology

Diplomate, American Board of Obesity Medicine

Founder, Metabolic Psychiatry Labs Inc.

## Tanenbaum Symposium 2024: Speakers

### **Amy Ramsey, PhD**

Associate Professor, Departments of Pharmacology and Toxicology and Physiology, University of Toronto

### **Miron Derchansky PhD, MBA**

Managing Director, Blackletter Consulting Group  
Liliana Attisano, PhD  
Professor, Department of Biochemistry, Donnelly Centre, University of Toronto

### **Amza Ali MD, MSc, FRCP, FAAN, FAES, MBA**

Head, Department of Neurology, Kingston Public Hospital  
Senior Associate Professor of Medicine and Neurology, University of the West Indies  
Neurologist and Epileptologist

### **Peter L. Carlen MD, FRCPC**

Tanenbaum Chair in Neuroscience, Krembil  
Professor, Departments of Medicine (Neurology), Physiology and Biomedical Engineering, University of Toronto  
Neurologist/Epileptologist, University Health Network