## HBI Research Day 2025 Program

#### Glia, Growth, and Guided Trips: Advances from Cells to Psyche

Thursday June 12, 2025 | 8:30 am - 5:30 pm

Libin Theatre | Hippocrates Atrium | Azrieli Atrium





#### Agenda

| 8:30 - 9:00   | Research Day Check in   Foyer outside of Libin Theatre  |
|---------------|---|
| Session 1     | Guardians and Gatecrashers<br>Chair: Dr. Grant Gordon and Jordan Culp   Libin Theatre   |
| 9:00 - 9:05   | Opening Remarks - Dr. David Park  |
| 9:05 - 9:25   | Dr. Debbie Kurrasch "Tanycytes function as a neural progenitor cell in the embryonic hypothalamus"  |
| 9:25 - 9:45   | Dr. Carlos Camara-Lemarroy "Remote ischemic conditioning<br>modifies the glial transcriptome: towards a new therapy for<br>neurodegeneration" |
| 9:45 - 10:00  | Sam Storey "Spatial and functional heterogeneity of Muller glia shapes retinal microenvironment in zebrafish"                                 |
| 10:00 - 10:20 | Dr Maryam Faiz "The gut-microbiota astrocyte axis in stroke"  |
| 10:20 - 11:05 | Coffee break & Exhibitor Session   Hippocrates Atrium   |
| Session 2     | Tumors and Transformations<br>Chair: Dr. Artee Luchman and Aimee Clarke   Libin Theatre   |
| 11:05 - 11:25 | Dr. Ana Nikolic "Epigenetics and cell state plasticity in adult glioblastoma"   |
| 11:25 - 11:45 | Dr. Augusto Andrade "Exploiting the challenging tumor<br>microenvironment of pediatric gliomas for therapeutic<br>development"                |
|               |   |



#### Agenda

| 11:45 - 12:00 | Shannon Snelling "An EGFRvIII mRNA-LNP vaccine prototype for glioblastoma"  |
|---------------|---|
| 12:00 - 12:10 | Trainee Poster Teasers  |
| 12:10 - 1:30  | Lunch and Poster Session   Azrieli Atrium<br>Poster Session 1 (12:10 - 12:40)<br>Poster Session 2 (1:00 - 1:30)                                   |
| Session 3     | Expanding Minds, Emerging Voices<br>Chair: Dr. Vikram Karnik   Libin Theatre  |
| 1:30 - 2:15   | Theme: Psychedelics in Treating Neurologic/Psychiatric Disease<br>Panel Discussion and Q&A<br>Drs. Matt Hill and Leah Mayo                        |
| Session 4     | Trainee Talks and Awards<br>Chair: Dr. Sarah McFarlane   Libin Theatre  |
|               |   |
| 2:15 - 2:35   | Postdoc of the Year - Dr. Lizheng Wang "Primary Cilia: Small<br>Structures, Big Impact on Astrocyte Development"                                  |
| 2:35 - 2:55   | PhD of the Year - Dylan Guan "Beyond cognition: Enhancing<br>behavioral, sensory, and motor assessments in<br>neurodegenerative disease research" |



#### Agenda

2:55 - 3:10 Announcement of poster winners
3:10 - 3:20 Afternoon break | HMRB Atrium
Session 5 Keynote Presentation Chair: Dr. Jiami Guo | Libin Theatre
3:20 - 4:20 Keynote Lecture: Dr. Ben Deneen "Glial control of brain tumors and brain circuits"
4:20 - 4:30 Closing remarks - Dr. Signe Bray

4:30 - 5:30 Reception | Azrieli Atrium



#### Keynote



#### Keynote Guest: Dr. Ben Deneen, PhD

Professor and Dr. Russell J. and Marian K. Blattner Chair Department of Neurosurgery Department of Neuroscience Center for Cell and Gene Therapy Director, Center for Cancer Neuroscience Baylor College of Medicine, Houston, Texas

My laboratory investigates the molecular and cellular mechanisms regulating the development, diversity, and physiological roles of glial cells in the developing and adult central nervous system (CNS). We identified several key transcription factors that regulate developmental gliogenesis and also contribute to neurological disorders, including stroke and white matter injury. These developmental transcription factors are also expressed in mature astrocytes, prompting us to further examine their roles in the adult brain. To achieve this, we generated a host of new mouse models that enabled us to identify region-specific transcriptional dependencies for astrocytes that regulate circuit function. Another area of interest in my lab is the functional genomics of brain tumors, where my lab as leveraged our expertise in glial development and neuroscience to develop several de novo, native mouse models of glioma and ependymoma. Combining these models with highthroughput, in vivo functional genomics screens, we recently identified several novel oncogenic drivers of glioma that specifically function through selective remodeling of the neuronal microenvironment towards hyperactivity and epileptic states. These studies are at the forefront of the burgeoning field of Cancer Neuroscience, which brings the principles of cancer biology and neuroscience to bear on the clinical problem of brain tumors.





**Dr. Deborah Kurrasch** is a Professor in the Department of Medical Genetics at the University of Calgary and a Scientist in the Alberta Children's Hospital Research Institute and the Hotchkiss Brain Institute.

Her research is focused on characterizing the genetic programs that govern hypothalamic development, and how exposure to environmental chemicals changes these programs, using zebrafish, mice and human brain organoids as model organisms.



His current research interests include the gut-brain axis, biomarkers and neuroprotection in MS and neuroinflammatory disorders of the CNS. The main focus of this work is translational, where basic neuroscience research is developed into clinical applications and novel therapies for MS and related disorders.









**Sam Storey** is a fourth-year Neuroscience PhD candidate in the McFarlane Lab. He explores how Müller glia — the cells that drive retinal regeneration in fish but stay dormant in humans — behave and vary across the retina.

By combining bioinformatics with hands-on lab experiments, Sam is working to uncover what makes these cells tick and why they differ between species. Outside of research, he enjoys building tools that make bioinformatics more accessible for scientists at all levels.

**Dr. Maryam Faiz** is an Assistant Professor in the Department of Surgery at the University of Toronto. She is soon to be an Associate Professor in the Department of Cell Biology and Anatomy at the (one and only!) University of Calgary.

Her research focuses on understanding astrocytes as key mediators of brain injury and novel targets for brain repair. The Faiz lab investigates how astrocytes are established during cortical development, the roles of astrocytes in the injured brain, and the direct lineage reprogramming of astrocytes into other neural cell types.





**Dr. Matt Hill** is a Professor in the Departments of Cell Biology and Anatomy and Psychiatry at the Hotchkiss Brain Institute at the University of Calgary, the inaugural Chair of the Mental Health Initiative in Stress and Trauma and the Deputy Director of the Mathison Centre for Mental Health Research and Education.

Dr. Hill's research has primarily focused on endocannabinoid signaling, its dynamic regulation by stress and how it modulates neural circuits governing stress, fear and anxiety.



**Dr. Leah Mayo** is the Parker Psychedelics Research Chair and an Assistant Professor in Psychiatry at UCalgary.

Her research group focuses on exploring novel psychedelic- and cannabinoid-based therapeutics for stress-related psychiatric disorders.





**Dr. Ana Nikolic** is a neuropathologist and clinician scientist with an interest in brain tumours, especially glioblastoma. She completed medical school at the University of Toronto, Neuropathology training at the University of Calgary, and PhD under the tutelage of Dr. Marco Gallo at the University of Calgary.

Her research uses a combination of preclinical experimental, systems biology and bioinformatics techniques to help understand how GBM cells change in time and space.



**Shannon Snelling** is a PhD candidate in the labs of Dr. Jennifer Chan and Dr. Douglas Mahoney in the Arnie Charbonneau Cancer Institute and the Riddell Centre for Cancer Immunotherapy. Her work is focused on testing emerging immunotherapies including vaccines, CAR-T, and CAR-M therapy for glioblastoma.

Shannon is interested in neuro-immunology and understanding the mechanism of action of immunotherapies in the brain.





**Dr. Augusto Faria Andrade** is a cancer biologist specializing in pediatric neuro-oncology. He is an Assistant Professor in the Department of Biochemistry and Molecular Biology at the Cumming School of Medicine.

His research focuses on the interplay between chromatin state and immune cells, and how this relationship influences tumor progression and therapeutic response.



**Dr. Lizheng Wang** is a postdoctoral fellow in Dr. Jiami Guo's lab in the Department of Cell Biology and Anatomy. He joined the Guo Lab in 2021 and has been awarded CIHR, ACHRI, and HBI postdoctoral fellowships, as well as the 2024 CIHR Brain Star Award.

His recent research on primary cilia and astrocytes was published in Nature Neuroscience.





**Dylan Guan** is an MD/PhD student at the University of Calgary. He holds an Honours Bachelor of Science from the University of Toronto, with a major in Neuroscience and minors in Physiology and Psychology.

Dylan is a Vanier Scholar, Killam Laureate, and has received doctoral awards from the Alzheimer's Society Research Program, Vascular Training Platform (VAST), and Hotchkiss Brain Institute.

His research focuses on better understanding early clinical manifestations of Alzheimer's disease, including cognitive, behavioral, sensory, and motor changes.



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