

# NEURO

ANNUAL REPORT  
2023-2024



CLINICAL  
**NEURO**  
SCIENCES  
CALGARY 🍁 CANADA

# Department Vision

Achieving excellence by delivering compassionate care, advancing innovative research, and inspiring learning and wellbeing.

# Department Mission

To provide universally outstanding care that is culturally safe and timely; to lead in research, education, and innovation; and to create a work environment that is stimulating, collaborative and supportive.



## Cover

DCNS members and patient representatives collaborate at our January 2024 retreat.

CLINICAL  
**NEURO**  
SCIENCES  
CALGARY • CANADA



Alberta Health  
Services



UNIVERSITY OF  
CALGARY



Patient representative Katherine Li shares her experiences with DCNS members at our retreat.

## Department of Clinical Neurosciences

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Our Annual Report covers the period  
from April 1, 2023 to March 31, 2024  
to align with our AHS fiscal year.

# Message from the Department Head

## Dr. Nathalie Jetté

This past year marked my first full year as the head of the department, and it has been an extraordinary experience to witness the remarkable work being done across our team. It's been an honour to meet so many talented faculty, leaders, learners and support staff (some for the first time) and to see the depth of their contributions to education, research and clinical care. The sheer number of accomplishments and innovations happening within our department has been inspiring.

One of the highlights of the year was our strategic planning retreat. Bringing everyone together provided a unique opportunity to align our goals and start crafting a vision for the next five years. Through collaborative discussions and a shared commitment to excellence, we laid the groundwork for a comprehensive strategic plan. This plan will serve as a guiding framework, helping us prioritize key activities.

Reflecting on this past year, I am especially proud of the many accolades earned by our department members. Achievements such as securing five of the seven Cumming School of Medicine Distinguished Achievement Awards for 2023 underscore the exceptional calibre of our team. (Read about these awards and many others received by members, starting on Page 41.)

Additionally, we saw a record number of promotions, a testament to the talent and dedication of our faculty. And 13 new members joined our department over the year—many of them from our exceptional residency programs.

These successes wouldn't be possible without the leadership of our Section heads and Program leaders, whose guidance keeps our operations running smoothly.

As we look ahead, the coming year will bring challenges, particularly with changes with the health care system. New organizational structures are emerging, and while these transitions may seem daunting, they also offer opportunities.



**Department Head Dr. Nathalie Jetté**

Every shift allows us to challenge inertia, embrace innovation, and enhance the ways we support our patients, learners, and colleagues. I encourage everyone to see these changes as a chance to improve and evolve.

As I mentioned, our strategic plan is well underway. Over the past year, we conducted a thorough needs assessment and held our retreat to gather input and finalize our mission, vision, goals, and objectives.

We're now moving toward the next phase: defining detailed activities for each objective, complete with metrics to ensure accountability. Looking ahead, we aim to finalize the strategic plan activities by late spring or early summer 2025 and begin the official implementation phase. While some initiatives are already in motion, the coming year will see a more structured rollout.

By mid-2026, we aim to have a fully implemented





**With Alberta Health Services Executive Director and tournament MC Paul Wright and Heather Innes, Director of Community Engagement & Donor Relations at Calgary Health Foundation.**

plan with clear deliverables that demonstrate our progress.

This five-year plan will not only guide us through the immediate future but also set a precedent for sustainable growth and innovation.

One of the most exciting developments in the past year was the creation of new leadership roles within the department. Roles such as the Vice Chair for WellBeing and the Equity, Diversity, and Inclusion (EDI) Committee represent critical steps toward fostering a supportive and inclusive environment for everyone. These roles are already making a difference in helping us better support one another and prioritize holistic wellbeing.

Finally, I want to take a moment to thank every member of our department. Whether you are a faculty member, learner, staff, or collaborator, your contributions are vital to our collective success. The achievements we've celebrated this year and the plans we're putting in place for the future are a direct result of your dedication, collaboration, and support. Together, we are building a stronger, more

resilient department, ready to tackle the challenges and opportunities of the years to come.

Thank you for your trust, your hard work, and your commitment to excellence. I am excited about what lies ahead and am grateful to be on this journey with all of you.

I hope you enjoy our annual report.

Dr. Nathalie Jetté  
 Professor and Head  
 Department of Clinical Neurosciences



**Dr. Demchuck with stroke fellow Dr. Rhonda Lun at Foothills Medical Centre.**

## Deputy Department Head's Report

Last year was another year of great progress for the Department. It has been remarkable to observe and support Dr. Jetté in her first year in the role of Department Head.

I am sure the faculty would attest that Nathalie's steadfast dedication to the role has been outstanding. Her organizational skills and determination were most evident in her ability to get to so many Department of Clinical Neurosciences members this past year. I was also most impressed by her resolve in finding creative solutions for some of the challenges we faced this year. We have a DCNS Department Head who does not rest until a problem is resolved!



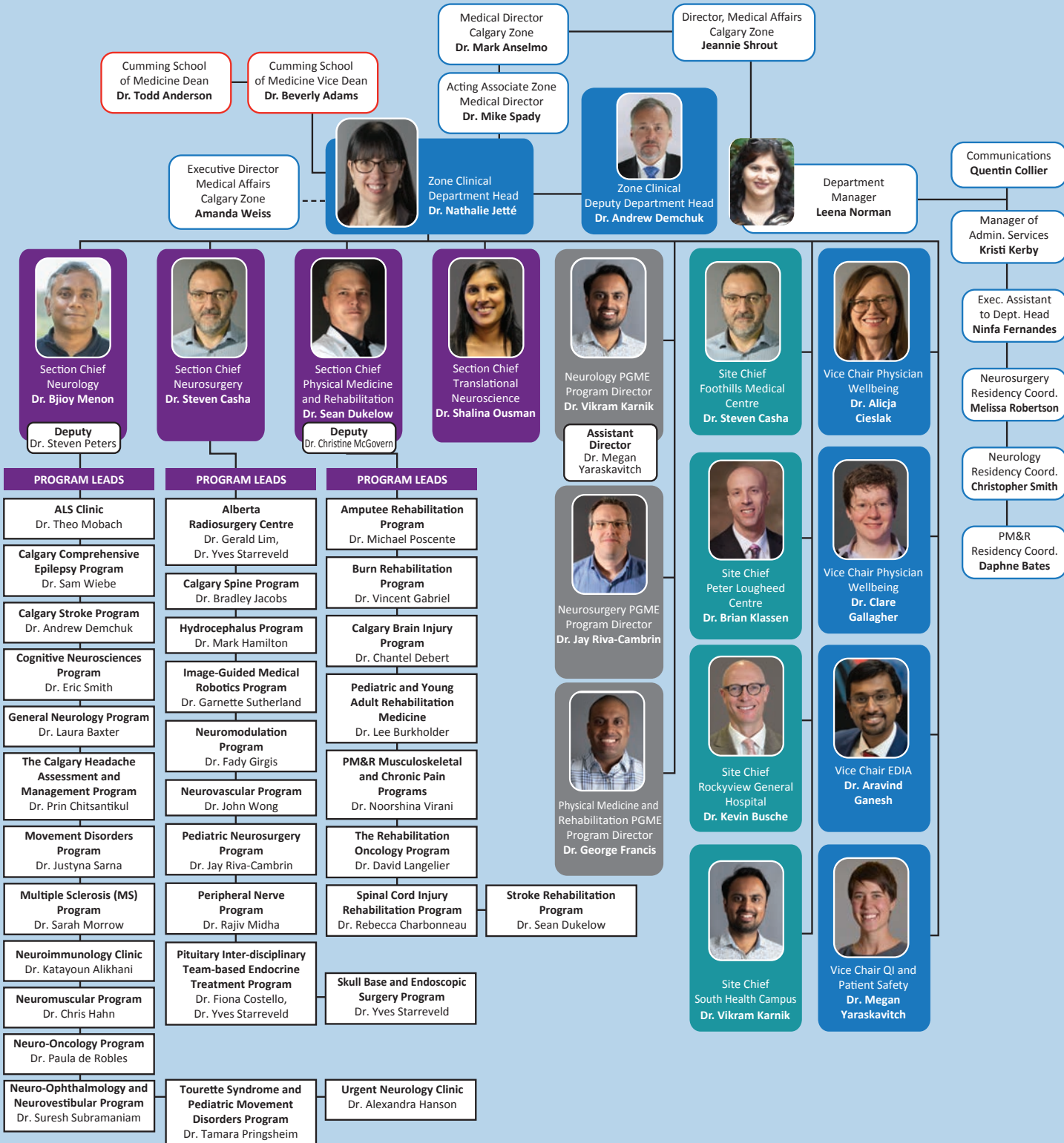
**Dr. Andrew Demchuk**

Progress has also been made in a distributive model of leadership with a number of important vice-chair roles having now been established to better DCNS for our faculty, programs and most importantly for our patients.

In my role as Deputy Department Head, I continue to focus primarily on mentorship of early career investigator faculty in DCNS. Dr. Keith Sharkey and I met with several of our junior faculty as part of annual DCNS/Hotchkiss Brain Institute mentorship committee meetings. The infectious energy, enthusiasm and progression were very evident amongst all early career faculty members who participated.

Although these meetings are only one hour per year per faculty, we encourage each of our early career researchers to reach out for our assistance at any time if we can help you grow professionally through advice/guidance; goal setting, skill development, promotion or other. We are keen to knock any barriers we can that are in your way! Please reach out!

# LEADERSHIP





# RECRUITMENT

**R**ecruitments to our department build clinical capacity and add expertise in our research endeavors. New hires bring energy and inquisitiveness that ensure we are always providing the best care to our patients. Established recruits come with deep understanding of areas we may not currently serve, and allow our teams to collaborate in innovative ways.

## NEUROSURGERY



Dr. Candice  
Poon

## NEUROLOGY



Dr. Laura  
Baxter



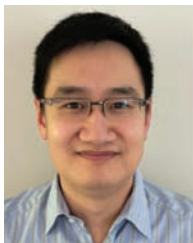
Dr. Gabriela  
Gilmour



Dr. Nathalie  
Jetté



Dr. Gord  
Jewett



Dr. Collin  
Luk



Dr. Erica  
McKenzie



Dr. Sarah  
Morrow



Dr. Aaron  
Switzer

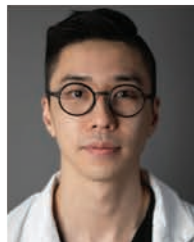
## PHYSICAL MEDICINE & REHABILITATION



Dr. Sarah  
Frehlich



Dr. Geoff  
Frost



Dr. Ricky  
Kwok



Dr. David  
Langelier

# PROMOTIONS

## NEUROLOGY

### Professor (GFT)



Dr. Philip Barber



Dr. Lawrence Korngut

### Clinical Professor



Dr. Suresh Subramaniam

### Clinical Associate Professor



Dr. Katayoun Alikhani



Dr. Simer Bal

### Clinical Associate Professor



Dr. Alicja Cieslak



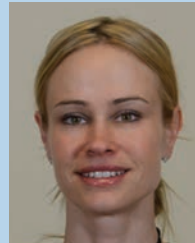
Dr. Paula De Robles



Dr. Theo Mobach



Dr. Steven Peters



Dr. Katie Wiltshire



Dr. Megan Yaraskavitch

## PHYSICAL MEDICINE & REHABILITATION

### Associate Professor (GFT)

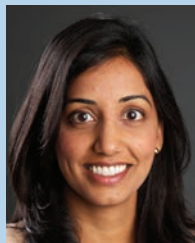


Dr. Vince Gabriel

### Clinical Associate Professor



Dr. George Francis



Dr. Vithya Gnanakumar



Dr. Arun Gupta

### Clinical Assistant Professor



Dr. Jacqui Stone

## NEUROSURGERY

### Associate Professor (GFT)



Dr. Fady Girgis



Dr. Yves Starreveld

## CROSS-APPOINTED

Clinical Associate Professor: Dr. Katie Lin

Associate Professor (GFT): Dr. Serena Orr

Tenure and Professor (GFT): Dr. Julia Jacobs-LeVan

Professor (GFT): Dr. Morris Scantlebury

# MEMBERSHIP

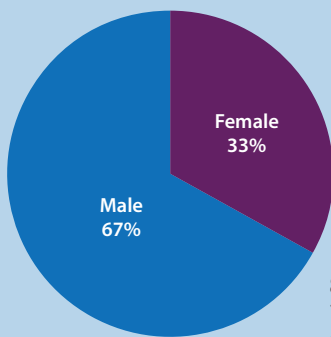
Our department continues to grow in its three clinical areas: Neurology, Neurosurgery and Physiatry.

We have over 230 members in our department, of whom 178 are faculty with a primary appointment. Their roles are roughly split between Clinical/Adjunct, Major Clinical and GFT.

We celebrate equity, inclusion and diversity in our ranks and strive to improve our hiring, promotion and leadership processes across the department.

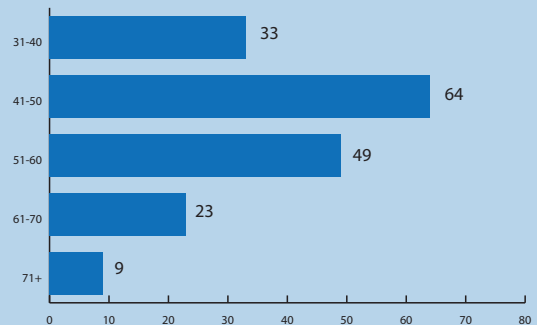
## 178 Faculty Members

(With Primary Appointments)

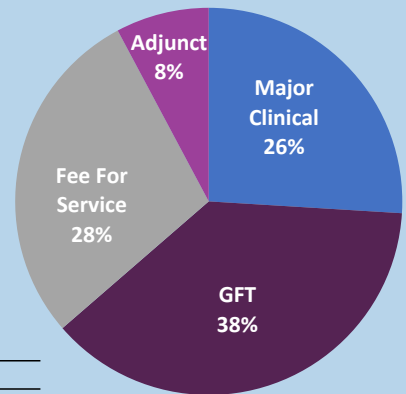


178 faculty with primary appointment in DCNS  
>220 faculty including joint and adjunct positions

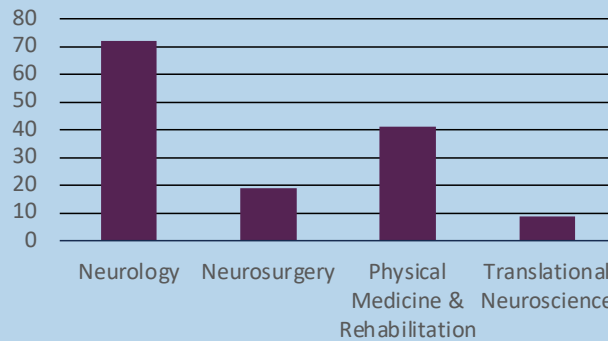
## Age Distribution



## Appointment Type

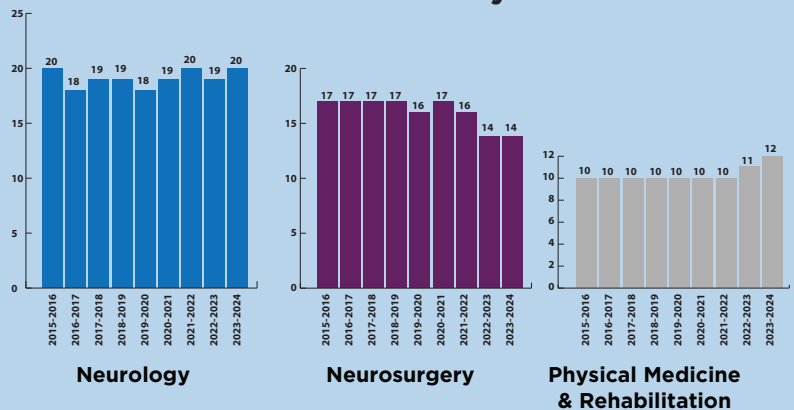


## Members Per Section



## Resident Education by Section

The Department of Clinical Neurosciences is exceptionally proud of our three residency programs that are home to 46 talented residents doctors.

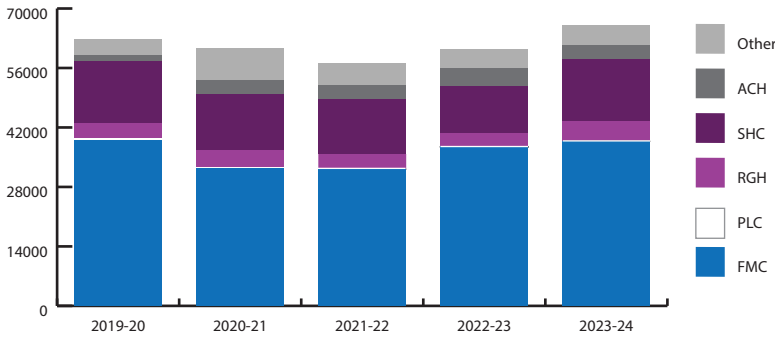




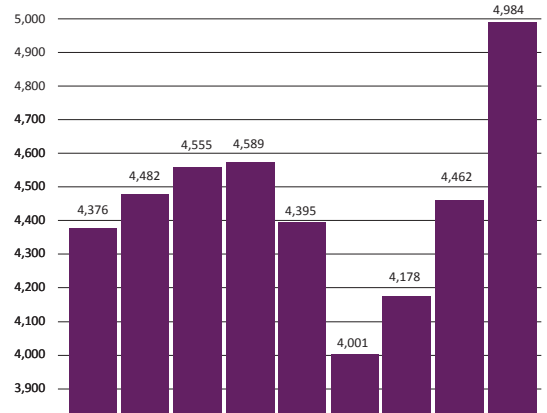
# CLINICAL METRICS

## Total Outpatient Visits by Site

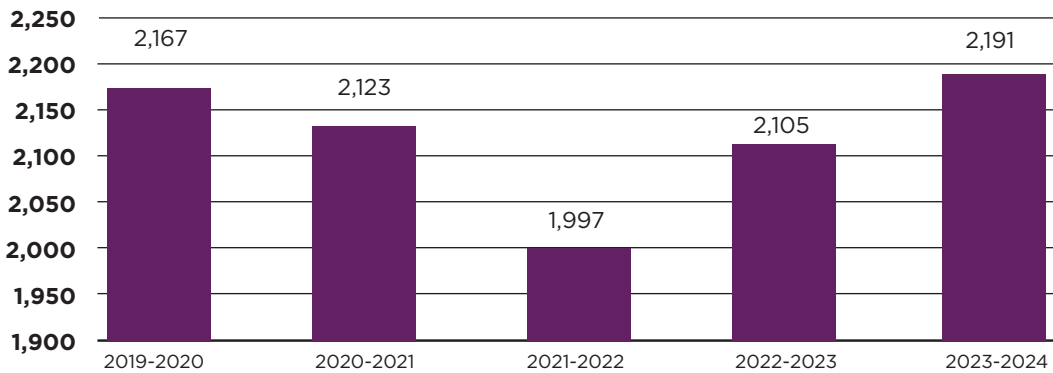
AMHSP physicians



## Total Discharges

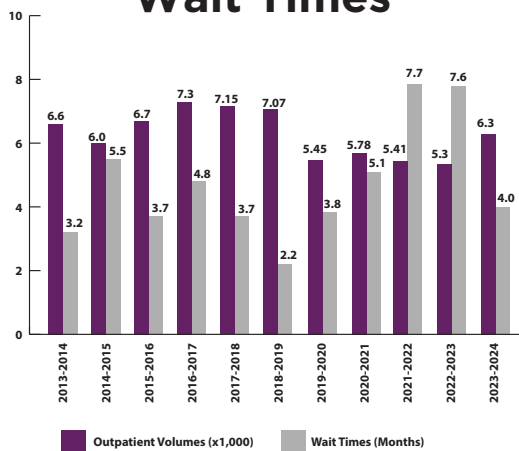


## Neurosurgery OR Cases

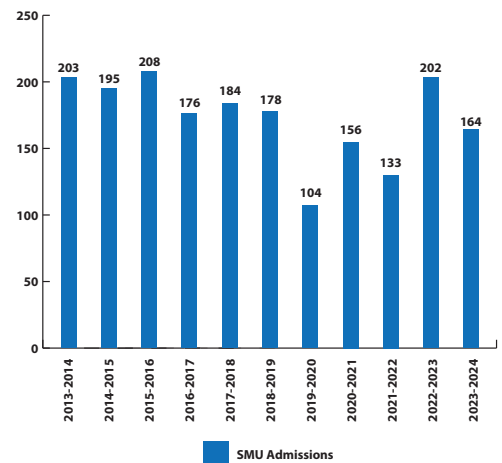


Includes all sites (FMC, SHC, ACH). Does not include endovascular procedures (~300/yr)

## EMG Outpatient Volumes/ Wait Times



## SMU Admissions



# Neurosciences Quality Council Update

The Neurosciences Quality Council meets every other month to review and endorse requests for quality improvement / analytics support and ensures project initiation and alignment with Departmental and Alberta Health Services priorities.

Current members:

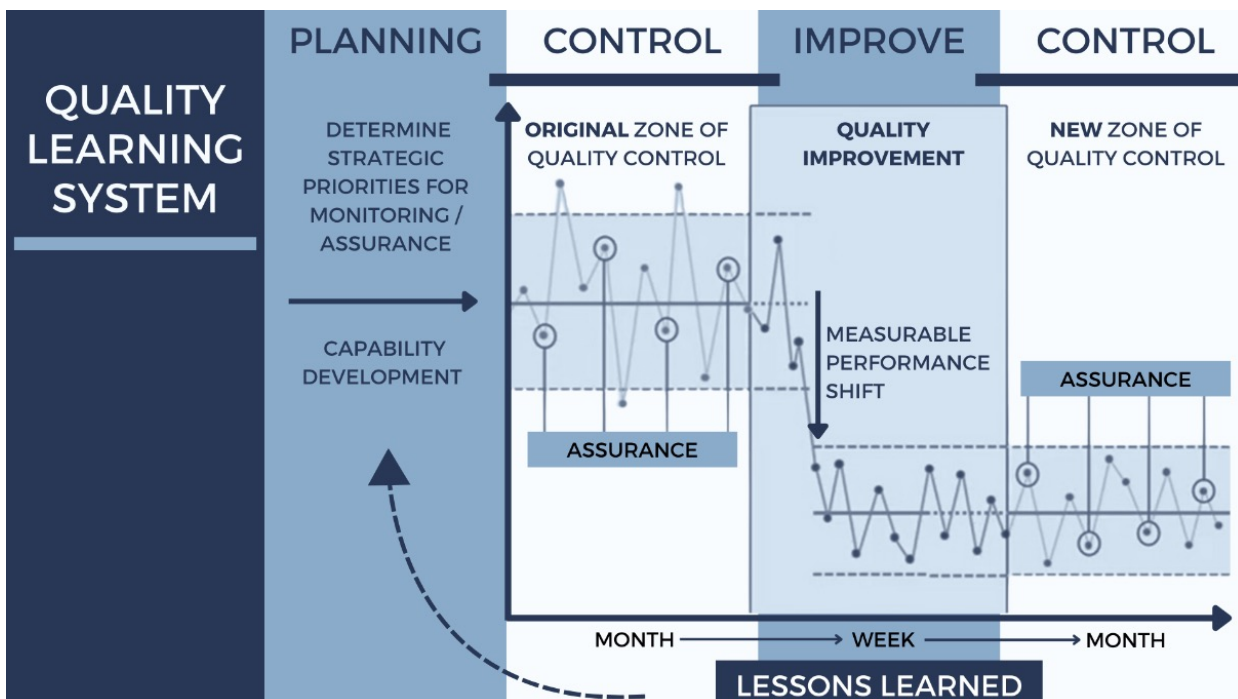
## Co-Chairs:

- Dr. Megan Yaraskavitch, DCNS Vice-Chair, Quality Improvement and Patient Safety
- Erin Barrett, DCNS Quality Improvement Lead



**QI leaders Erin Barrett (left) and Dr. Megan Yaraskavitch.**

	Operations	Physicians
100 / 111	MacNeil Cornez	Steven Peters
101 / 112	Danielle Michaud	Steve Casha, Mark Hamilton (sabbatical)
Electrodiagnostics	MacNeil Cornez	
TNR	Tanya McFaul, Jason Knox	Arjun Ghuman
SHC U58	Casey Jalbert	
Ambulatory	Kathy McPhail, Matt Cortez, Stephanie Kauffman	(prev) Lara Cooke
Analytics	Brandy Pratt	



**Journey to Quality: Led by Dr. M. Yaraskavitch and Erin Barrett**

Approval: September 2022

Neuro Quality Council recognizes the need to establish a departmental quality system, and develop quality improvement literacy as a key component for realizing this quality system. The quality system is comprised of three elements:

- Quality planning: Setting the strategic course through priority identification and goal setting.
- Quality assurance and control: Establishing or following standards, measuring performance and addressing differences between measured state and ideal state.
- Quality improvement: Focused efforts and methodology to address the differences noted within quality assurance and control.

To develop quality improvement literacy, the Quality Council has developed:

- The QuLL Newsletter: Quality improvement Learning and Leadership. Discusses journey to quality resources, and shares both departmental quality highlights and horizons (upcoming work).
- UCalgary DCNS QI Website Presence ([cumming.ucalgary.ca/departments/dcms/qi](http://cumming.ucalgary.ca/departments/dcms/qi)). Contains resources, article and video links to improve foundational knowledge.
- Neuro Base: Introduction to quality and quality improvement. Video resource to support Quality Council goal is to have 80% of Neurosciences staff (clinical and operational) have exposure to quality and quality improvement.

**Neurosurgery Complications: Led by Dr. S. Casha and Erin Barrett**

Initiated: May 2022

Coming soon: Complications reporting in Connect Care via standard discharge summary. The complication listing is based on both common complications reported in literature and demonstrated in health information management coding (ICD-10). Complications will be graded

using the Clavien-Dindo grading system. The aim is to improve accuracy of complications abstraction, already occurring within health information management, and provide a basis for ongoing quality improvement activities related to reducing in-hospital complications rates.

The Neurosurgery Complications Dashboard will be updated to reflect complications reporting once live.

Clavien, P. A., Barkun, J., de Oliveira, M. L., Vauthey, J. N., Dindo, D., Schulick, R. D., de Santibañes, E., Pekolj, J., Slankamenac, K., Bassi, C., Graf, R., Vonlanthen, R., Padbury, R., Cameron, J. L., & Makuuchi, M. (2009). The Clavien-Dindo classification of surgical complications: five-year experience. *Annals of surgery*, 250(2), 187-196. <https://doi.org/10.1097/SLA.0b013e3181b13ca2>



# Neurosciences

## Quality Council Update (continued)

### Spine Early Recovery After Surgery (ERAS) - Led by Dr. M. Yang and Erin Barrett

Go-Live: July 1, 2023

The ERAS Spine program is based on 16 recommendations that span the entire peri-operative journey of the patient. The ERAS Spine team is managing this work in two unique ways:

Focused interventions based on problem areas. Data analysis has revealed key opportunities for improvement, particularly around post-operative mobilization and early catheter removal.



- Early Urinary Catheter Removal to Reduce Urinary Tract Infections: Awarded best poster presentation at the 10th Annual ERAS World Congress.
- Learning Collaborative to Promote Mobilization Documentation: Encouraging early and consistent mobilization following lumbar fusion surgery.

Data collection has been almost 100% automated through Connect Care mapping. The team has reduced reliance on manual data abstraction by mapping key fields in the Connect Care system, enabling automated data extraction. This data is then validated with clinical teams and displayed on a Tableau dashboard to provide visibility for key stakeholders.

- Data mapping process is complete, except for complications data at discharge, which will be captured using the same process as for Neurosurgery complications.

### Code Stroke - Led by Dr. M. Almekhlafi, Macneil Cornez, Lindsay Beaulieu and Erin Barrett

Go live: February 2024

This project was initiated in response to recommendations from a prior quality assurance review. Analysis demonstrated variation in response to suspected stroke of admitted

inpatients across the Calgary zone, with Recognition to Treatment Times exceeding best practice standards.

Improvement events with subsequent process design and risk mitigation strategies were held with stakeholders across the zone. New 'Code Stroke' process implementation was supported through robust zonal communication plan to both operational and clinical stakeholders.

Six month review demonstrates improvement in response times for inpatient stroke. Improvement intervention resulted in a reduced time from symptom recognition to CT (94 min pre to 85 min post, SD 84 min), and recognition to treatment time (1.6 hours pre to 0.8 hours post, SD 1.9 hours). Review results are being shared with key stakeholders to ensure process improvement is sustained.

### Neurology KQI / PPIP - Led by Dr. L. Cooke and Dr. M. Yaraskavitch







Between 2022 and 2023, a national eDelphi process was completed, which identified 40 critical and feasible quality indicators to drive quality initiatives for excellent inpatient neurology care.


This past year a group of 11 peer neurologists were trained to facilitate audit and feedback "learning improvement" sessions with small groups of physicians. These discussions will initially target 2 quality indicators (benzodiazepine orders for patients admitted with seizure, use of urinary catheters for appropriate indications,) and 1 educational target (completion of requested EPAs (Entrustable Professional Activities) for resident education). Confidential personal individual reports show individual practice patterns relative to anonymized data of the group. Facilitated discussion and self-reflection allow for the development of personal learning plans for improvement.

Formal audit and feedback sessions will begin in November 2024 with peer facilitators. This initiative also enables neurologists to successfully complete two of the three requirements of the CPSA Physician Practice Improvement Program (PPIP).

# CODE STROKE

TIME IS BRAIN, SO **BE-FAST!**

<b>B</b> <b>BALANCE</b> • ACUTE loss of balance or coordination? • NEW / SUDDEN gait instability? 	<b>E</b> <b>EYES</b> • Eyes deviated to one side? • New visual changes? 	<b>F</b> <b>FACE</b> • Is one side drooping? 	<b>A</b> <b>ARMS / LEGS</b> • Unilateral limb weakness? • Weak grip strength? 	<b>S</b> <b>SPEECH</b> • Is it slurred? • Naming difficulties? 	<b>T</b> <b>TIME</b> <b>BE FAST!</b> TIME IS BRAIN! LAST SEEN NORMAL <24HRS? 
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**1** **PATIENT HAS SUDDEN STROKE SYMPTOMS? ASSESS USING BE-FAST.**

- Vital signs, blood glucose, Neuro vital signs. **BE-FAST POSITIVE** if one or more findings.
- When was the last time the patient was 'normal'? **LSN: Last Seen Normal**

**Recognition is NOW**

**2** **STAT! NURSE PAGE / CONTACT THE MRHP**

"STAT Code Stroke. Call ASAP! #-####. Pt LastName (MRN: xxx) LSN HH:MM."

- Confirm patient has an 18Ga IV or power-rated central catheter

5 min then escalate

**15 minutes to get to DI**

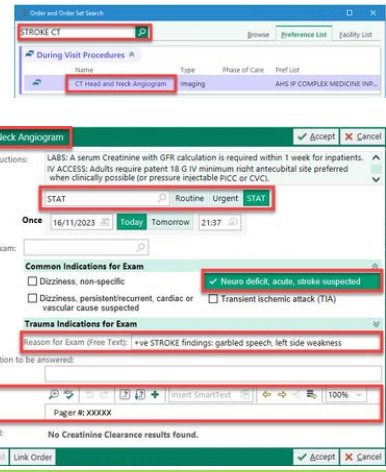
**3** **MRHP ASSESS - HIGH SUSPICION OF STROKE, MRHP PAGE STROKE #379**

**S** **STROKE TRIAGE FOR TREATMENT PROSPECT**

Recommend imaging based on clinical presentation / patient profile

**4** **MRHP ORDER CT-A: 'STROKE CT'**

**Order:** CT Head and Neck Angiogram  
**Priority:** STAT  
**Reason for Exam / Indication:** Neuro deficit, stroke suspected  
**Reason for Exam (Free Text):** +ve STROKE / BE-FAST findings  
**Comments:** Include Pager # (or Contact Number)



**5** **MRHP / UNIT Page #13003 to Activate FMC Stroke Treat Team**

En Route to CT STAT with ?Code Stroke from Unit xx, Patient Name, MRNxxx; +ve Stroke symptoms.

Code 66 / Code Blue activation if patient is experiencing acute physiologic compromise, airway threat, respiratory / cardiac arrest.

**6** **NURSE PREPARE AND TRANSPORT PATIENT TO DI**

- Ensure 18Ga IV / power-rated central catheter
- Nurse / Unit Clerk:** Call **DI** as leaving unit for 'Code Stroke':
- Bring appropriate emergency supplies (e.g. Red Bag)
- Do NOT wait for porter

PROCESS ONLY FOR CT-A IN CODE STROKE  
 FMC: 58885 (direct line to Vocera) "McCaig CT Tech"  
 "STAT Code Stroke from Unit xx. IV size / location confirmed."

**Recognition to Imaging 15 minutes**

## Movement Disorders Program / Vyalev

To support the implementation of a new Parkinson's disease medication and delivery system ('Vyalev'; foslevodopa/foscarbidopa solution), the Movement Disorders Program collaborated with the Quality Council. Together, they mapped the future medication initiation process and developed mitigation strategies using failure modes and effects analysis. This led to several interventions:

- Establishing tracking and communication structures within Connect Care
- Creating patient and provider education materials
- Liaising with partners in EMS and ED to ensure awareness and response plans

The first patient was initiated on the new medication in September 2024.

# Vice-Chair Physician Wellbeing Report

As Department Head of Clinical Neurosciences, Dr. Nathalie Jetté recognized the importance of addressing and advocating for Physician Wellbeing on a departmental level and established the position of Vice Chair of Physician Wellness. In January of 2024, Drs. Alicja Cieslak (Neurology) and Clare Gallagher (Neurosurgery) were appointed as Co-Vice Chairs of Physician Wellbeing by Dr. Jetté and a selection committee. In January 2024, at the DCNS strategic plan facilitated session, Dr. Cieslak presented an introduction to this initiative. There was consensus among departmental members that focusing on physician wellbeing is a key pillar of the new strategic plan, with the goal of investing in the health, safety and wellbeing of department members. Over the next year, we will be working to finalize our priority activities based on the DCNS strategic plan.



**Dr. Alicja Cieslak**



**Dr. Clare Gallagher**

As the next order of business, both Co-Vice Chairs and Dr. Jetté completed the Stanford University Medical Director for Wellness course. This was a great introduction to the field of Physician Wellness and provided a basis to develop the Physician Wellbeing program in DCNS. In the spring of 2024, Dr. Cieslak was invited to present on the topic of Physician Wellbeing at the DCNS Grand Rounds to provide our members an introduction to the literature supporting the initiative of Physician Wellbeing and to review our departmental approach and aims.

A Wellbeing Executive Committee was established and two members from each of the three clinical sections were invited to join. Drs. Vithya Gnanakumar and Rodney Li Pi Shan are representing the Section of Physical Medicine and Rehabilitation. Drs. Candice Poon and Michael Yang are representing the Section of Neurosurgery. Drs. Justyna Sarna and Suresh Subramaniam are representing the Section of Neurology. To encompass the multiple facets of wellbeing, we also invited Dr. Aravind Ganesh as the EDIA Vice Chair and Dr. Megan Yaraskavitch as the Quality



## **Drs. Cieslak, Gallagher and Jetté completed the Stanford Wellness course in 2024.**

Improvement Vice Chair. The terms of reference for the Wellbeing Executive Committee have been developed and regular meetings initiated.

The Wellbeing Executive Committee attended a leadership retreat hosted by Well Doc Alberta this past year that provided the committee members a scientific foundation for the understanding of Physician wellbeing and discussion around topics of Recognition and Connectivity that could be used to optimize work place culture. Furthermore, in collaboration with Welldoc Alberta, wellness measurement surveys have been initiated for both Physical Medicine and Rehabilitation as well as Neurosurgery. The Section of Neurology had been before surveyed regarding wellness by the Neurology Physician health and wellness committee, as such, we decided to delay the surveying of Neurology until spring of 2025.

Finally, recognizing that physician wellbeing has advocates within our sections as well as in other departments, we have worked to develop a network of partners both within our department and the hospital to strengthen our wellbeing initiatives.

Wellbeing Executive Committee:

Dr. Clare Gallagher	Dr. Justyna Sarna
Dr. Alicja Cieslak	Dr. Candice Poon
Dr. Nathalie Jetté	Dr. Michael Yang
Dr. Rodney Li Pi Shan	Dr. Aravind Ganesh
Dr. Vithya Gnanakumar	Dr. Megan Yaraskavitch
Dr. Suresh Subramaniam	



# Vice-Chair Equity, Diversity, Inclusion and Accessibility Report

The DCNS Health Equity Rounds, conceived by Dr. Lara Cooke and ongoing for four years, continue to help the department confront several important topics in health equity with a focus on actionable insights to promote better experiences for patients, trainees, and colleagues and mitigate care disparities. These rounds are organized by an interdisciplinary committee of staff and trainees from across the clinical sections of DCNS who work together to prepare quarterly case-based presentations as part of our Grand Rounds.



**Dr. Aravind Ganesh**

Each session is led by a staff-and-trainee “dyad” and guest speakers are also brought in as appropriate. A total of 11 sessions have taken place to date and topics covered have included: care for Indigenous patients, patients living with disability, those experiencing homelessness or incarceration, as well as 2SLGBTQ+ individuals. The following sessions were held in the 2023-2024 academic year:

Infographics have also been prepared to summarize insights from each of the Health Equity Rounds sessions. The team plans to make these materials and associated presentations available for public review through the DCNS website in the coming year. Committee members for the 2023-2024 year included (alphabetically by last name): Drs. Laura Baxter, Veronica Bruno, Alicja Cieslak, Lara Cooke, Aravind Ganesh, Fady Girgis, Nicole Johnson, Vikram Karnik, Gerald Pfeffer, Nadia Popov, Jodie Roberts, Kirsten Sjonnesen, Catherine Veilleux, Shyanne Weigers, and Emma Woo.

We have been liaising with the Cumming School of Medicine’s EDIA Leads Committee to inform and learn from initiatives at other departments. We are also disseminating opportunities and resources provided by the Precision Equity & Social Justice Office (PESJO) to our DCNS members.

In 2024, the position of Vice-Chair EDIA was created. An important immediate goal for 2024-2025 is the formation of a DCNS EDIA committee for which the terms of reference and have been finalized, and for which we

**May 19, 2023**  
 “Fighting Anti-Asian Racism in Health Care”  
 Presenter: Teresa Woo-Paw

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**Sept. 29, 2023**  
 “Applying a Trauma Informed Lens to the Clinical Neurosciences”  
 Presenters: Dr. Nicole Johnson,  
 Dr. Shyanne Weigers

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**Feb. 9, 2024**  
 “Healthcare in the Anthropocene era”  
 Presenter: Dr. Bhavini Gohel

have invited applicants from across DCNS. We are seeking to have at least one trainee and one staff member from each of our sections. We are also working closely with the DCNS Wellness Committee to address issues of shared importance. One example is examining how we can better support staff and trainees who are pregnant or considering pregnancy or paternity leave. We are currently seeking to adopt evidence-based recommendations for workplaces in this regard.

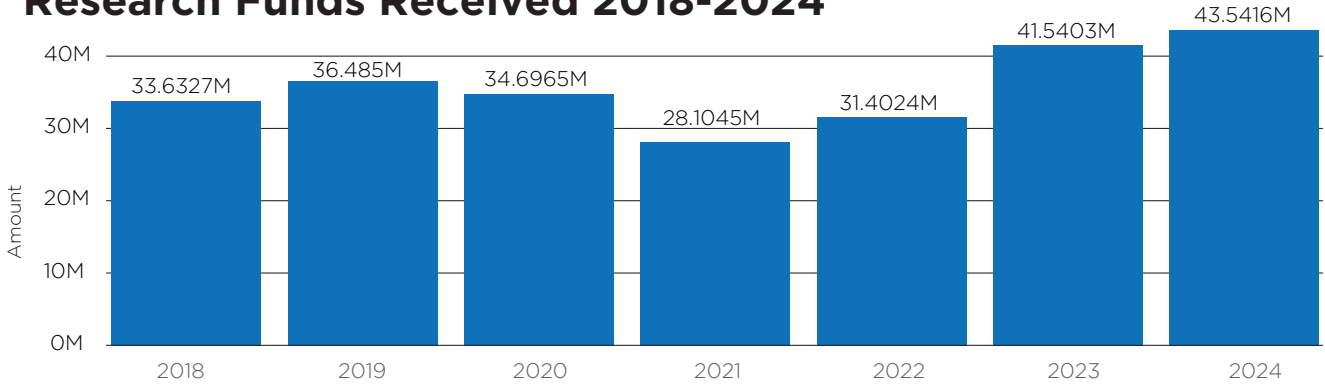
We will also be working to develop specific activities relate to EDIA in DCNS as part of our department’s strategic planning.

The infographics provide details for the following sessions:

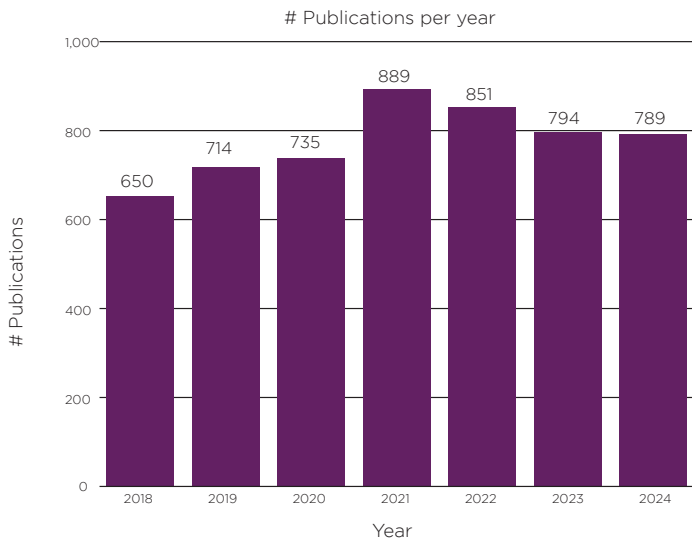
- Friday, May 19th, 2023:** Health Equity Rounds: “Fighting Anti-Asian Racism in Health Care”. Presenter: The Hon. Teresa Woo-Paw BA. Meeting ID: 993 5471 7491.
- Friday, September 29th, 2023:** Health Equity Rounds: “Applying a Trauma Informed Lens to the Clinical Neurosciences”. Presenters: Nicole Johnson MD and Shyanne Weigers MD. Meeting ID: 993 5471 7491.
- Friday, February 9th, 2024:** Health Equity Rounds: “Healthcare in the Anthropocene era”. Presenter: Bhavini Gohel BSc, MBSB, MD, CCFP (COE), PhD, Dip. GP. Meeting ID: 993 5471 7491.

# ACADEMIC METRICS

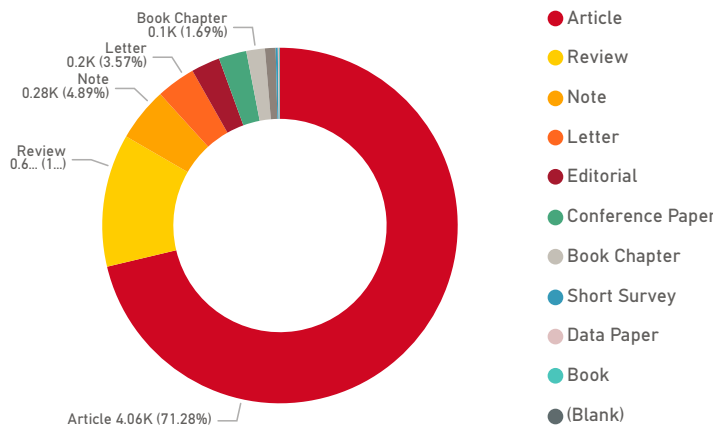
## Research Funds Received 2018-2024



## Publications 2018-2024



## 2024 Publications by Type



## 2024 Top Funding Sources

SPONSOR	AMOUNT
Canadian Institutes of Health Research	\$7,176,249.83
Alberta Cancer Foundation	\$6,118,357.95
Multiple Sources	\$5,558,049.22
Alberta Innovates	\$2,883,500.71
Brain Canada Foundation	\$2,026,977.90
Alberta Children's Hospital Foundation	\$1,875,956.02
Terry Fox Research Institute	\$1,490,246.48
Anonymous Donor	\$1,151,119.65
Calgary Foundation	\$1,130,000.00
Natural Sciences and Engineering Research Council of Canada	\$1,062,448.78
Cal Wenzel Family Foundation	\$800,000.00
Government of Canada	\$693,847.47
Multiple Sclerosis Society of Canada	\$614,678.88
Alberta Health Services	\$527,712.10
Canada Foundation for Innovation	\$487,454.39
Regents of the University of California	\$463,339.22
Heart and Stroke Foundation of Canada	\$449,072.33
Sanders Lee	\$411,000.00
Government of The United States / NIH	\$390,062.32
Hoffmann-La Roche Limited	\$377,895.25
Weston Brain Institute	\$365,125.00
Krembil Foundation	\$329,286.25
Cytokinetics, Inc.	\$326,906.29
Fluid Biotech, Inc.	\$318,213.41

Top 24 funding sources from 2024

# RESEARCH IN CLINICAL NEUROSCIENCES

## Overview

The Department of Clinical Neurosciences was founded in 1981 on the premise that excellence in patient care and excellence in research go hand in hand. We see them not only as inseparable, but synergistic.

Many of our members in Clinical Neurosciences are actively engaged in research. Members lead a variety of research programs—facilitated by strong partnerships with the Hotchkiss Brain Institute, clinical departments within Alberta Health Services, as well as other Cumming School of Medicine institutes and departments. Our members' research efforts focus on the following areas:

- **Basic Research:** The study of biology and mechanisms of disease.
- **Translational Research:** Involves taking findings from basic research and moving them quickly and efficiently into medical practice to improve disease treatment or other health outcomes.
- **Clinical Trials Research:** The comparative testing of new treatment ideas against current standards of care to determine which is superior.

- **Health Services Research:**

The study of health care access and health care delivery to detect deficiencies and design improvements. Health services research often involves careful analysis of databases.

- **Population Health Research:** The study of disease in populations to find risk factors and design prevention methods.

- **Medical Education Research:** The systematic study of methods, outcomes, and innovations in teaching and learning to improve the training of health professionals and enhance patient care.

Our research-focused doctors and scientists are members of the Cumming School of Medicine (CSM), CSM institutes and Alberta Health Services, from which they receive invaluable assistance, mentorship and support. Indeed, much of our success in research as a clinical group can be traced to these very strong linkages. Our members publish the results of their studies in the top medical and scientific journals and they play leading roles in local, national, and international academic and professional organizations. Their efforts are supported by grants from a wide range of external agencies as well as philanthropy.

## HIGHLIGHTS



## Robots helps kids overcome physical and social barriers

Dr. Elizabeth Condliffe, an Assistant Professor in the Section of Physical Medicine & Rehabilitation and a neuroscientist with ACHRI and the Hotchkiss Brain Institute, is a driving force behind Trexo—a robotic exoskeleton that allows children with disability to walk.

Dr. Condliffe, who leads the PONI-lab (Pediatric Onset of Neuromotor Impairments), has received a SickKids Foundation and CIHR New Investigator Research Grant (\$299,439) as well as a Mitacs award to support her cutting-edge robotics research.

The innovative Canadian technology works by supporting a child within an adjustable frame while gently moving their legs in a preset custom gait pattern.

She is studying how using Trexo affects rehabilitation, helps patients overcome physical and social barriers, and potentially prevents the onset of chronic medical conditions.

Her lab was recently awarded the HBI Open Science Award and Dr. Condliffe was named a Patient and Family Centred Care Champion.

## HIGHLIGHTS



## TEMPO-2 addresses tenecteplase use in minor strokes

**Dr. Shelagh Coutts**, a stroke neurologist, continued her leadership in stroke research with the TEMPO-2 trial.



Dr. Coutts and her team asked the question: could intravenous tenecteplase—a clot-busting drug—improve outcomes for patients with minor ischemic strokes and intracranial occlusions?

The trial spanned nine years, enrolling 886 patients across

48 hospitals in 10 countries. Participants all had experienced minor strokes but were at heightened risk of poor outcomes due to specific brain vessel blockages. They were randomized to receive either tenecteplase or standard non-thrombolytic care, with outcomes measured at 90 days.

The results, though unexpected, were pivotal. The primary finding showed no significant benefit of

Articles

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**Tenecteplase versus standard of care for minor ischaemic stroke with proven occlusion (TEMPO-2): a randomised, open label, phase 3 superiority trial**

Shelagh B Coutts, Sandeep Anandkumar, Ramona Appireddy, Juan F Arenillas, Zanina Assis, Peter Bailey, Philip A Barber, Rodrigo Bazon, Brian H Buck, Ken S Butcher, Marie-Christine Camden, Bruce Campbell, Laetitia K Casaubon, Luciano Catanese, Kousik Chatterjee, Philip M C Choi, Brian Clarke, Dar Douatzah, Julia Ferrari, Thalia S Field, Anand Ganesh, Danyan Ghis, Mayank Goyal, Stefan Greisenegger, David Heide, Mackenzie Horn, Gary Hunter, Oje Inoukhuude, Peter J Kelly, James Kennedy, Carol Kenney, Timothy J Kleinig, Kalish Krishnan, Fabrizio Lima, Jennifer L Mandala, Martha Marka, Sheila O Martin, George Medvedev, Bijoy K Menon, Sachin M Mishra, Carlos Molina, Aimen Moussaddy, Keith W Muir, Mark W Parsons, Andrew M W Pans, Arthur Pille, Octavio M Puentes-Neto, Christine Roffe, Joaquin Serena, Robert Simister, Nishita Singh, Neil Spurr, Daniel Stehler, Carol H Thom, M Ivan Wiggam, David J Williams, Mark R Wilmet, Teddy Wu, Amy YX Yu, George Zacheriah, Araf Zafar, Charlotte Zerna, Michael D Hill, on behalf of the TEMPO-2 investigators\*

**Summary**  
 Background Individuals with minor ischaemic stroke and intracranial occlusion are at increased risk of poor outcomes. Intravenous thrombolysis with tenecteplase might improve outcomes in this population. We aimed to test the superiority of intravenous tenecteplase over non-thrombolytic standard of care in patients with minor ischaemic stroke and intracranial occlusion or focal perfusion abnormality.

**Methods** In this multicentre, prospective, parallel group, open label with blinded outcome assessment, randomised controlled trial, patients aged 18 years were included at 48 hospitals in Australia, Austria, Brazil, Canada,

n-Abstract Online  
 Date 17 2024  
<https://doi.org/10.1016/j.2024.07.001>  
 S0143-9700(24)00512-8  
 See Online Comment  
<https://doi.org/10.1016/j.2024.07.001>  
 S0143-9700(24)00512-8

tenecteplase over standard care in helping patients return to their pre-stroke level of functioning. Moreover, the tenecteplase group experienced a higher incidence of adverse events.

While the trial concluded that tenecteplase should not be routinely used in this population, Dr. Coutts emphasizes the value of these findings. “Every trial, even one that doesn’t meet its hoped-for outcomes, teaches us something critical about how to better treat patients,” she said.



# HIGHLIGHTS

## Program expands research, services for PD patients

**Dr. Veronica Bruno**, an Assistant Professor in the Section of Neurology, is spearheading a transformative initiative in Parkinson’s care through the Advanced Care Team for Parkinson’s Disease (ACT-PD) program.

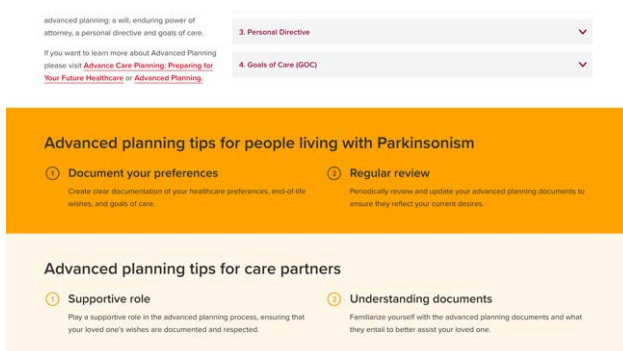
This groundbreaking, multidisciplinary program was launched in October 2022, thanks to initial funding of \$500,000 from Alberta Health. It addresses the unique needs of individuals with advanced Parkinson’s disease and their care partners, focusing on improving quality of life while reducing healthcare burdens.

In just two years, the ACT-PD program has enrolled 113 patients and 78 care partners. The outcomes have been remarkable: participants report improved emotional wellbeing, reduced caregiver stress, and better access to community resources. Additionally, the program has significantly decreased hospital and ICU admissions, reflecting its efficiency and patient-centric approach.

One of ACT-PD’s major accomplishments is its cost-effectiveness. Preliminary analysis shows healthcare savings of at least \$2.66 million. Building on this success, the program recently received \$666,000 in bridge funding from the Calgary Health Foundation to sustain its operations and gather more robust data for integration into Alberta Health Services.

Dr. Bruno emphasizes that ACT-PD is not just about addressing immediate care needs but also creating a model for sustainable, community-integrated healthcare for chronic neurological conditions. “This program represents a shift toward holistic, proactive care that supports both patients and families,” she says.

Looking ahead, ACT-PD aims to refine its data collection and expand its integration, ensuring that the program becomes a cornerstone of advanced Parkinson’s care in Alberta. Dr. Bruno’s leadership is redefining how we approach complex neurological diseases, delivering compassionate and cost-effective



care that meets the needs of patients and their loved ones.

Congratulations, Dr. Bruno!

## Regulatory T cells use heparanase to access IL-2 bound to extracellular matrix in inflamed tissue

Hunter A Martinez<sup>1</sup>, Ievgen Koliesnik<sup>1</sup>, Gernot Kaber<sup>1</sup>, Jacqueline K Reid<sup>2,3,4</sup>, Nadine Nagy<sup>1</sup>, Graham Barlow<sup>1</sup>, Ben A Falk<sup>5</sup>, Carlos O Medina<sup>1</sup>, Aviv Hargil<sup>1</sup>, Svenja Zihlsler<sup>1</sup>, Israel Vlodyavsky<sup>6</sup>, Jin-Ping Li<sup>7</sup>, Magdiel Pérez-Cruz<sup>1</sup>, Sai-Wen Tang<sup>1</sup>, Everett H Meyer<sup>1</sup>, Lucile E Wrenshall<sup>8</sup>, James D Lord<sup>9</sup>, K Christopher Garcia<sup>10</sup>, Theo D Palmer<sup>11</sup>, Lawrence Steinman<sup>12</sup>, Gerald T Nepom<sup>13</sup>, Thomas N Wight<sup>5</sup>, Paul L Bollyky<sup>#1</sup>, Hedwich F Kuipers<sup>#14,15,16,17</sup>

Affiliations + expand

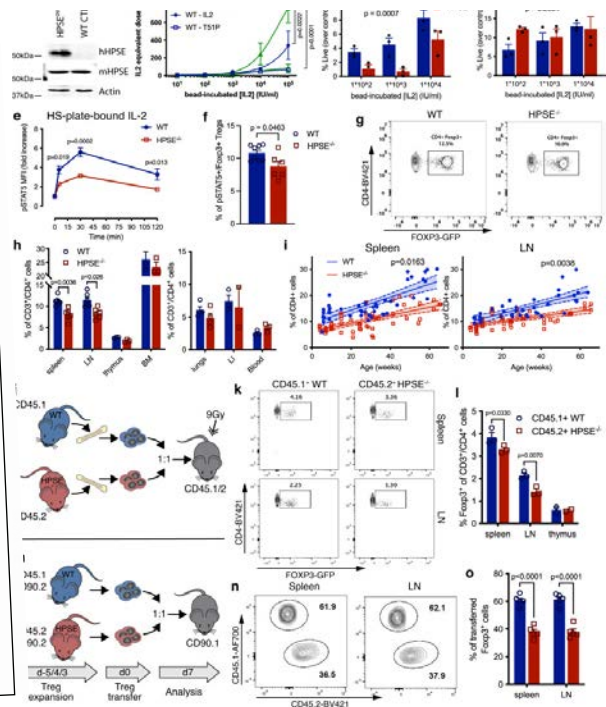
PMID: 38378682 PMCID: PMC10879116 DOI: 10.1038/s41467-024-45012-9

### Abstract

Although FOXP3<sup>+</sup> regulatory T cells (Treg) depend on IL-2 produced by other cells for their survival and function, the levels of IL-2 in inflamed tissue are low, making it unclear how Treg access this critical resource. Here, we show that Treg use heparanase (HPSE) to access IL-2 sequestered by heparan sulfate (HS) within the extracellular matrix (ECM) of inflamed central nervous system tissue. HPSE expression distinguishes human and murine Treg from conventional T cells and is regulated by the availability of IL-2. HPSE<sup>-/-</sup> Treg have impaired stability and function in vivo, including in the experimental autoimmune encephalomyelitis (EAE) mouse model of multiple sclerosis. Conversely, endowing monoclonal antibody-directed chimeric antigen receptor (mAbCAR) Treg with HPSE enhances their ability to access HS-sequestered IL-2 and their ability to suppress neuroinflammation in vivo. Together, these data identify a role for HPSE and the ECM in immune tolerance, providing new avenues for improving Treg-based therapy of autoimmunity.

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PubMed Disclaimer



## CIHR grant funds study of T cells and autoimmune diseases

**Dr. Hedwich Kuipers**, an Assistant Professor in the Section of Translational Neuroscience, achieved significant milestones in neuroimmunology in the past year. Her research focuses on neuroinflammatory diseases like multiple sclerosis (MS), particularly the interactions between immune cells and central nervous system (CNS) resident cells, with an emphasis on astrocytes.



In February, Dr. Kuipers was the senior author of a paper published in Nature Communications titled “Regulatory T cells use heparanase to access IL-2 bound to heparan sulfate on antigen-presenting cells.” This study provides insights into the mechanisms by which regulatory T cells obtain factors essential to their function, deepening our understanding of immune regulation and offering avenues for therapeutic interventions in autoimmune conditions.

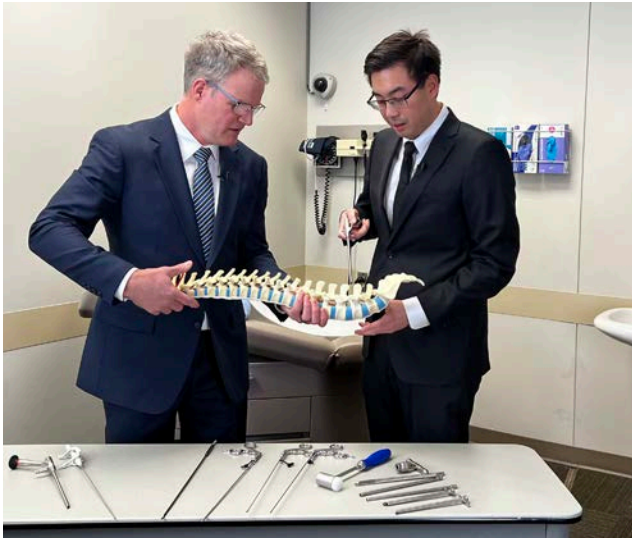
“We usually think of cytokines acting as letters or postcards, being sent by certain cells and then received and read by other cells, but it turns out they’re more like Post-it notes, stuck to the extracellular matrix and read by cells as they move through the tissue,” she says.

Based on this work, Dr. Kuipers was awarded a CIHR Project Grant for her study titled “Heparan sulfate as a platform to boost regulatory T cell suppression of autoimmunity.” This research aims to further determine how heparan sulfate can enhance the function of regulatory T cells in suppressing autoimmune responses, potentially leading to innovative treatments for autoimmune diseases.

Congratulations, Dr. Kuipers!

## HIGHLIGHTS

### Endoscopic program to cut surgery access and recovery times



Dr. Ken Thomas (left) and Dr. Michael Yang.



Dr. Yang is interviewed by CTV following the funding announcement.

**Dr. Michael Yang**, a neurosurgeon in the Department of Clinical Neurosciences, is revolutionizing spine surgery through the new Calgary Endoscopic Spine Surgery Research and Advancement Program (CESSRA). Alongside co-lead **Dr. Ken Thomas**, an orthopedic surgeon cross-appointed in DCNS, Dr. Yang spearheads this innovative initiative, supported by \$8.1 million in funding from the Calgary Health Foundation.

The CESSRA program addresses longstanding challenges in spine surgery, including lengthy wait times and invasive procedures that require extended recovery. Dr. Yang explains, “Traditional surgeries involve large incisions, significant muscle disruption, and longer hospital stays. Patients endure prolonged pain, rely on narcotics, and face delayed returns to daily life.”

In contrast, the CESSRA program emphasizes endoscopic spine surgery—a minimally invasive approach using an incision as small as eight millimeters. This technique targets specific spinal pathologies, such as disc herniations and spinal stenosis, with minimal disruption to surrounding tissue. “We’re able to perform more surgeries in a single day—up to 33 per cent more—while patients recover faster and often go home the same day,” Dr. Yang notes.

Adding to this innovation is the introduction of awake spine surgery, which eliminates the need for general anesthesia. This reduces surgical stress, complications like nausea, and recovery times.

Beyond transforming patient care, the CESSRA program positions Calgary as a national hub for training future endoscopic spine surgeons. “The Calgary Health Foundation’s support allows us to acquire advanced equipment and train the next generation,” says Dr. Yang.

“ We’re able to perform more surgeries in a single day—up to 33 per cent more—while patients recover faster and often go home the same day ”



## HIGHLIGHTS



**Dr. Alim Mitha and Dr. John Wong.**

## Fluid Biomed continues work on breakthrough polymer stent

Fluid Biomed, the startup founded by DCNS neurosurgeons **Dr. John Wong** and **Dr. Alim Mitha** that was BioAlberta's Company of the year in 2023, continues to amass recognition and excitement.

The company's product, ReSolv™, is the world's first bioabsorbable polymer-metal stent that heals blood vessels by diverting blood flow away from a weak brain aneurysm, a leading cause of stroke and disability.

This year, the company completed its first-in-human clinical trial, with a demonstration of technical feasibility and safety without side effects.

They are planning expanded patient studies in the New Year.

## Dr. Becker promoting the next generation of researchers

**Dr. Werner Becker**, Professor Emeritus, is a long-time supporter of aspiring scientists.

His Dr. Werner J. Becker Clinical Neuroscience Award is presented annually at the Calgary Youth Science Fair and he was in attendance in February to present the prize.

This year it was won by Andi Liu, a Grade 9 student from Louis Riel School, for a project titled "Alzheimer's Speaks: Linguistic Impairment and Vocabulary Richness."

Andi expertly compared the vocabulary of patients with Alzheimer's with controls while they described a picture.

Organizers of the fair are grateful for Dr. Becker's commitment and the encouragement he provides to the next generation of young researchers.



**Dr. Becker with winner Andi Liu.**

# RESIDENT RESEARCH DAY

**RESIDENT RESEARCH DAY**, which was held on Nov. 10, 2023, is celebrated within the Department of Clinical Neurosciences and is a highlight of our Grand Rounds calendar.

Residents from Neurology, Neurosurgery, Physical Medicine & Rehabilitation and Pediatric Neurology have their abstracts and presentations judged by a panel of faculty members and the strongest are chosen for two prestigious awards.

Abstracts from 15 residents were presented in front of their peers, faculty and the judges – Dr. Carlos Camara-Lamarroy, Dr. Vince Gabriel, Dr. Nathalie Jetté, Dr. Hedwich Kuipers, Dr. David Langelier and Dr. Michael Yang.



**Dr. Matt Eagles with DCNS Department Head Dr. Nathalie Jetté.**



**Dr. Michael Poscente with DCNS Department Head Dr. Nathalie Jetté.**

For 2023, the J. Gregory Cairncross Award for Excellence in Clinical Research was awarded to Dr. Matt Eagles for his presentation “Neighbourhood Deprivation, Distance to the Nearest Comprehensive Stroke Centre, and Access to Endovascular Thrombectomy for Ischemic Stroke: a Population Based Study.”

The Doug W. Zochodne Award for Excellence in Basic Science Research was won by Dr. Michael Poscente for his abstract “Design and Validation of a wearable shank-mounted inertial measurement recording device to assess temporal gait parameters in unilateral transtibial amputees.”

Congratulations to all who participated!



# THE SECTION OF NEUROLOGY

Report by Dr. Bijoy Menon, Section Head  
Deputy Section Head: Dr. Steven Peters

**THE SECTION OF NEUROLOGY** comprises approximately 75 neurologists dedicated to providing exceptional, patient-centered care, spearheading groundbreaking medical research, and training future generations of neurologists. Our emphasis on innovation and collaboration ensures we remain at the forefront of neurological advancements in clinical practice, education, and research.

## EXCEPTIONAL CARE

In 2023-2024, our neurologists managed over 66,253 outpatient visits across Alberta Health Services (AHS) facilities. Our services extend across all Calgary hospitals—South Health Campus, Foothills Medical Centre, Rockyview General Hospital and Peter Lougheed Centre—as well as multiple outpatient clinics. With 16 specialized clinical programs covering the full spectrum of neurological subspecialties, we ensure each patient receives expert, individualized care.

## EXCEPTIONAL RESEARCH

Our neurologists are leading the way in clinical trials, big data research, and data analytics, driving advancements in the understanding and treatment of neurological diseases. Through collaborations within our multidisciplinary programs—such as epilepsy, multiple sclerosis, neuroimmunology, neuromuscular, headache, cognitive neurology, and stroke—we work alongside experts in neuropsychiatry, geriatrics, and allied health fields to develop cutting-edge solutions. Notable initiatives include leveraging artificial intelligence (AI) tools and data-driven approaches in stroke care, allowing us to fine-tune treatments and optimize outcomes. Our clinical trials span the full breadth of neurology, fostering rapid translation of research discoveries into clinical applications that benefit patients worldwide.

## EXCEPTIONAL EDUCATION

Our commitment to education ensures that the neurologists of tomorrow are trained in a state-of-the-art environment. Under the leadership of our Residency Program Director, Dr. Karnik, we prioritize hands-on experience, mentorship, and



exposure to the latest technological advancements. Our educational programs are designed to foster innovation, leadership, and excellence, equipping the next generation with the tools they need to meet future neurological challenges.

## VISION FOR THE FUTURE

The Section of Neurology is leading the transformation of neurological care by integrating technological innovations and leveraging the potential of AI and patient-oriented care. Our vision focuses on utilizing big data and data analytics to provide more precise, personalized care, and developing new tools for faster diagnoses and treatment delivery. We aim to expand telemedicine and enhance accessibility to ensure equitable neurological care for all patients. This forward-looking approach, combined with our patient-first philosophy, positions us to address the growing demands of neurology in the years ahead.

## PROGRAM UPDATES

### 1. Neuromuscular Program

The Neuromuscular Program experienced significant changes in 2024 with the retirement of Dr. Stephanie Plamondon, a beloved founding member of the Neuromuscular Rehabilitation Clinic. Dr. Plamondon's contributions to establishing a multidisciplinary clinic model for chronic neuromuscular diseases have set national standards for patient care. Her holistic approach will continue to inspire our clinic physicians, staff, and trainees.

Dr. Geoff Frost and Dr. Dan McGowan have assumed leadership of the Neuromuscular Rehabilitation Clinic, bringing fresh perspectives and experience to an ever-growing patient population.

Additionally, 2024 saw the launch of the Neuromuscular Therapeutics Clinic, led by Dr. Theo Mobach and supported by our skilled team, including nurse practitioner Ellen Chan. This unique clinic provides intrathecal therapeutics for genetic neuromuscular diseases, positioning Calgary as a leader in patient-centered care by minimizing travel and appointment frequency for patients.

### 2. Multiple Sclerosis (MS) Program

The MS program is very pleased to have Dr. Sarah Morrow as its new leader. Dr. Morrow joined DCNS in October 2023.

The program witnessed substantial growth and innovation in 2024. Notable initiatives included the creation of a dedicated NMOSD/MOGAD clinic under the MS Clinic and a proposal for an MS Cognitive Clinic to address cognitive impairment in MS patients.

The program implemented new Standard Operating Procedures (SOPs) for the clinic and revamped both the fellowship and resident rotation programs, with a focus on International Medical Graduates. Dr. Roberts joined the staff in August 2024, further strengthening the team.

### 3. Neuro-Immunology Program

The Neuro-Immunology Program has been providing multidisciplinary outpatient clinical care for patients with complex autoimmune and inflammatory neurological disorders for more than a decade. Beginning in November 2024, the neuro-immunology clinic team will expand to provide consistent and scheduled inpatient consult support citywide. This new initiative will enhance inpatient clinical care for patients with complex neuro-immunological diseases, offer opportunities for future acute treatment research initiatives, and improve patient transitions to outpatient neuro-immunology services.

A notable contribution this year includes a Canada-wide initiative led by Dr. Chris Hahn, culminating in the publication of the "Canadian Consensus Guidelines for the Diagnosis and Treatment of Autoimmune Encephalitis in Adults" in the Canadian Journal of Neurological Sciences—an essential read for neurologists aiming to optimize care for patients with autoimmune encephalitis.

### 4. Functional Movement Disorders (FMD) Program

The Functional Movement Disorders Clinic, launched in November 2023, has had a successful inaugural year, treating 92 patients from across southern Alberta. As only the second clinic of its kind in Canada, it provides integrated assessments through collaboration between movement disorders neurology, led by Dr. Gabriela Gilmour, and neuropsychiatry. The clinic emphasizes patient-centered rehabilitation plans and has expanded educational resources for both patients and learners.

Supported by a Hotchkiss Brain Institute Pilot Research Fund, the team has created the Calgary Functional Movement Disorder Registry to explore gender differences, neuropsychiatric phenotypes, and patient outcomes. Dr. Gilmour and her team have shared their expertise at numerous national and international conferences, including the Functional Neurological Disorder Society Meeting and the Movement Disorders Society Meeting.



## 5. The Stys Lab

The Stys Lab continues its groundbreaking work in progressive multiple sclerosis and Alzheimer's disease biomarkers. The team, comprising students, postdocs, and technicians, is funded by prestigious institutions including the NIH, MS Society of Canada, Brain Canada, and the Alzheimer's Society. In 2024, the lab spun off Amira Medical Technologies, a company focused on commercializing Alzheimer's diagnostic technologies, marking a major milestone in translational research.

## 6. SPARK Alberta

SPARK Alberta, founded and directed by Dr. Scott Kraft, continues to support digital health innovation across the province. Funded by a three-year Alberta Innovates Ecosystem Development Grant, SPARK has expanded its reach across five Alberta post-secondary institutions, reducing barriers to commercialization and fostering a vibrant network of health innovation. To date, SPARK has supported 23 projects, empowering researchers to bridge the gap from academic discoveries to real-world applications.

## 7. Tourette and Pediatric Movement Disorders Program

In January 2024, the Tourette and Pediatric Movement Disorders Clinic relocated to the Pediatric Clinic at South Health Campus. Led by Drs. Tamara Pringsheim, Justyna Sarna, and Davide Martino, the clinic is supported by a multidisciplinary team providing comprehensive care to patients with Tourette syndrome and other movement disorders. The addition of neuropsychiatrist Dr. Megan Howlett strengthens the clinic's ability to offer psychiatric care.

The program continues to train the next generation of specialists, with one pediatric movement disorders fellow and two developmental pediatric fellows currently in training. The Tourette OCD Alberta Network, led by Drs. Pringsheim and Martino, successfully secured funding to continue its valuable work

in patient support and education, including peer support and professional development for clinicians.

## 8. General Neurology Program

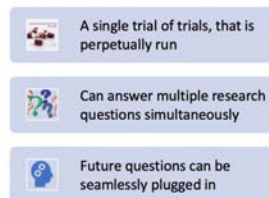
In 2024, the General Neurology Program, led by Dr. Megan Yaraskavitch and incoming lead Dr. Laura Baxter in November, provided vital consultation and followup services across all four hospital sites. The program also processed over 120 telephone consults per month via Specialist Link and over 40 e-consults per quarter through eReferral.

To address growing patient wait times, particularly for migraine care, the Enhanced Migraine Clinical Pathway was updated, and the program collaborated with the Calgary Family Medicine Migraine Team to improve access to timely care. Additionally, the General Neurology Program led quality improvement initiatives focused on optimizing clinic time and expanding virtual care options.

## 9. Calgary Stroke Program

Dr. Shelagh Coutts served as the principal investigator of the TEMPO-2 trial coordinated by the Calgary Stroke Program. This CIHR-funded, investigator-initiated, international randomized controlled trial assessed the use of Tenecteplase in minor stroke patients with intracranial occlusion. Conducted across 48 sites in Canada, Europe, Brazil, and Australasia, the results were presented at the European Stroke Conference in Basel and simultaneously published in *The Lancet*. The trial showed no benefit and potential harm from treatment with Tenecteplase in minor stroke patients with intracranial occlusion compared to non-thrombolytic standard care. This work has changed practice worldwide, as many institutions were treating these patients with thrombolysis.

The ACT GLOBAL trial (PI: Dr. Menon; co-PIs Drs. Hill and Demchuk) marks a transformative milestone for the Calgary Stroke Program. As one of the first adaptive platform trials in vascular medicine with a truly global footprint,



ACT GLOBAL is designed to revolutionize stroke treatment by simultaneously testing multiple interventions and adjusting based on real-time data. Funded by the Canadian Institutes of Health Research (CIHR), the Australian National Health and Medical Research Council (NHMRC), and other stakeholders, the trial explores multiple therapeutic areas including thrombolysis risk-benefit in various patient populations, neuroprotective effects of NoNO42, optimal blood pressure management following endovascular treatment (EVT), with other areas of exploration being planned. The trial began enrolling patients in September 2024.

Data from the AcT trial (PI: Dr Menon) was foundational in obtaining regulatory approval for Tenecteplase in Europe and is going through similar processes across the world, laying an exemplar for academic industry collaboration.

The ESCAPE-MeVO trial, led by Dr. Mayank Goyal and Dr. Michael Hill, was completed this year. This pivotal trial evaluated mechanical thrombectomy for medium vessel occlusions (MeVOs) and is expected to significantly reduce disability in patients with these types of strokes.

In innovation, Dr. Mohammed Almekhlafi and Craig Doram achieved significant success with their startup, Stroke.AI, which has developed a cutting-edge tool for early stroke detection. Imaging solutions developed by Circle CVI on the stroke side, led by Drs. Menon, Hill, Goyal and Demchuk, continue to be used commercially by Industry.

## 10. Calgary Epilepsy Program

The Calgary Epilepsy Program has continued to make significant strides in both clinical care and research over the past year, focusing on enhancing the quality of care in several key areas:

**Big Data, AI, and Multimodal Data Pipelines:** Led by Drs. Colin Josephson and Samuel Wiebe, the development of a multimodal big data pipeline includes MRI, EEG, health records, clinical phenotypes, and genetic data. Additionally, data linkage and the creation of a Common Data Model using the OHDSI platform are being implemented. There is an emphasis on developing instruments to assess satisfaction for epilepsy surgery and applying Patient-Reported Outcome Measures at the point of care. Collaborations include a multicentre Canadian consortium on epilepsy clinical data and robust partnerships with University College London and the International League Against Epilepsy. These efforts have resulted in landmark publications on the risk of antiseizure medications and osteoporosis, published in *JAMA Neurology*. With the arrival of Dr. Nathalie Jetté, a world-renowned health services researcher in epilepsy, there will be an increased focus in this area.

**Clinical Trials:** A collaborative trial led by Dr. Paolo Federico is exploring the use of ibuprofen and nifedipine to prevent postictal hypoperfusion, which could be a game-changer in seizure management. Dr. Federico also leads a successful program of advanced imaging in epilepsy, one of the few in the world capable of performing simultaneous analyses of fMRI and intracranial EEG, leading to predictions of surgical outcomes published in *Brain*.

**Genomics Analysis:** Dr. Karl Martin Klein is performing large-scale genomics analysis in a significant cohort of patients with epilepsy. He is also developing novel methods to detect somatic mutations in the brains of patients undergoing epilepsy surgery, a technique that will revolutionize our ability to understand and treat these disorders. He collaborates with major epilepsy genetic



**Calgary Cognitive Neurosciences Program members.**

initiatives, such as Epi-25, a global collaboration committed to aggregating, sequencing, and deep-phenotyping up to 25,000 epilepsy patients.

**Epilepsy Surgery:** Significant advancements have been made in epilepsy surgery, with the successful implementation of MRg-guided laser interstitial thermal therapy (MRg-LITT) for intractable epilepsy, led by Dr. Walter Hader. This marks a first in Calgary and a major step forward in minimally invasive surgical techniques.

#### **11. Calgary Cognitive Neurosciences Program:**

The Cognitive Neurosciences Program, led by Dr. Eric Smith, provides clinical care, research, and education related to neurodegenerative and vascular causes of cognitive decline. Patients are seen in clinics at the Foothills Medical Centre and South Health Campus, staffed by 6 neurologists and 6 psychiatrists. Dr. Aaron Switzer (Neurology) is the newest member, having joined in 2023 after completing his Fellowship at the Mayo Clinic. There is one trainee in our PGME-approved fellowship program.

Research highlights include completing the Trial

of Remote Ischemic Conditioning in Vascular Cognitive Impairment (TRIC-VCI), led by Dr. Eric Smith and Dr. Aravind Ganesh, which showed that the trial intervention is feasible in patients with vascular mild cognitive impairment. Dr. Zahinoor Ismail's completely online CAN-PROTECT study ([can-protect.ca](http://can-protect.ca)) of dementia risk factors has enrolled thousands of participants. Dr. Dallas Seitz has created a Dementia Advisory Committee of persons with lived experience with dementia, to advise the Program and the Hotchkiss Brain Institute on patient-centered research. Dr. Aaron Switzer is leading a registry of patients with iatrogenic cerebral amyloid angiopathy. Dr. Philip Barber is using MRI-based diagnostics and fluid biomarkers to explore interactions between brain ischemia and Alzheimer's disease in the PREVENT study.

#### **ADDITIONAL UPDATES**

##### **Funding Achievements**

Dr. Veronica Bruno's Project: "The Calgary Advanced Care Team (ACT) for Parkinson's: Leading Sustained Dignity in Care and Health



Systems Transformation” received a two-year grant from the Calgary Health Foundation. This funding will enhance care for Parkinson’s patients and drive health systems transformation.

Dr. Aravind Ganesh was awarded a CIHR grant for work on the Advanced Brain Frailty and Cognitive Sequelae of Stroke project. He also received the Alberta Innovates Enabling Better Health Through Artificial Intelligence (AI-Better Health) Grant in March 2024 (\$800,000) for “AISA: AI-guided Identification and Auditing of Treatment-Eligible Ischemic Strokes in Alberta.” Additionally, Dr. Ganesh secured the Alzheimer Society of Alberta and Northwest Territories & Campus Alberta Neuroscience Hope for Tomorrow Research Competition in July 2023 (\$500,000, including a 1:1 match from the Hotchkiss Brain Institute) for “Patient-Centred Refinement and Testing of a System for Remote Ischemic Conditioning to Protect Cognition and Quality of Life in Vascular and Mixed Dementia.” Dr. Ganesh and his team were also recognized as finalists at the ASTech Awards, highlighting their groundbreaking contributions to stroke care and technology. Dr. Ganesh himself was named among Avenue Magazine’s Top 40 Under 40 this year.

Dr. Philip Barber’s Lab: Received the 2024–2026 Alberta Innovates AICE Concept Grant (\$350,000) for “Role of the Simple Perfusion Reconstruction Algorithm (SPIRAL) on Streamlining Acute Stroke Diagnosis and Treatment.” Dr. Barber was also awarded a Mitacs Grant (\$270,000) for “The SPIRAL Decision Support Tool (DST): Streamlined and Accessible Stroke Prediction Tool,” and the 2024–2027 Heart & Stroke Foundation of Canada Grant-in-Aid (\$175,000) for “The Streamlined and Efficient Core and OcclusionN Diagnosis of Stroke (SECONDS) Study.”

Dr. Andrew Demchuk garnered significant recognition for his contributions to stroke care and healthcare innovation. In December 2023, he was honored with the Smith Distinguished Achievement Award by the Cumming School of Medicine at the University of Calgary, celebrating his remarkable research and clinical advancements. In May 2024, he received the Dr. William Cochrane Health

System Innovation Award from Alberta Health Services, acknowledging his pioneering efforts in transforming health systems and stroke treatment. These accolades underscore Dr. Demchuk’s leadership and impact in revolutionizing stroke care both locally and internationally.

Dr. Carlos Camara-Lemarroy was awarded a \$50,000 MS Canada Catalyst Grant for his research on the small intestinal mucosa in multiple sclerosis, advancing the program’s research efforts.

Dr. Menon, as PI, along with the stroke team, including Drs. Hill, Almekhlafi and Demchuk as co-PIs secured multiple large clinical trial grants from the CIHR, the Australian NHMRC and from other stakeholders for domains within the ACT GLOBAL platform, with funding support exceeding CAD 20 million overall. This substantial funding will propel forward multiple facets of stroke research and treatment. Dr. Menon was awarded the University of Calgary Research Excellence Chair in May 2023.

Dr. Almekhlafi and Mr. Doram won the prestigious Alberta Innovates Accelerating Innovations into Care (AICE) Concepts Program grant for Stroke.AI.

## **EDUCATIONAL MILESTONE**

Under the leadership of Dr. Camila Aquino, the Movement Disorders Fundamentals series was launched. This comprehensive set of interactive, accredited modules was crafted by international experts, including Dr. Tamara Pringsheim, Dr. Aquino, Dr. Bruno, and former fellows such as Dr. Amorelli and Dr. Nilles. The series enhances education for trainees and professionals alike, reinforcing our commitment to exceptional education.

## **WELLNESS INITIATIVES**

Dr. Alicja Cieslak is leading wellness initiatives at the departmental level alongside Dr. Claire Gallagher. To provide more impetus and support these initiatives from a section perspective, Dr. Sarah Furtado is participating in the Stanford Physician Wellbeing Director course this year. These efforts underscore our dedication to the wellbeing of our staff and the cultivation of a supportive work environment.



## LOOKING AHEAD

As we stand on the cusp of a new era in neurology, we are reminded of Mahatma Gandhi's profound words: "The future depends on what we do in the present." Our section embraces this wisdom, understanding that today's actions shape tomorrow's breakthroughs. We are committed to being proactive, innovative, and compassionate in all aspects of our work.

Artificial intelligence (AI) is rapidly transforming the landscape of medicine, and we are at the forefront of integrating these technologies into neurological care. By harnessing AI for early diagnosis, personalized treatment plans, and predictive analytics, we aim to revolutionize patient outcomes and set new standards in healthcare. As Albert Einstein insightfully remarked, "We cannot solve our problems with the same thinking we used when we created them." We recognize the necessity of innovative thinking and the power of data in enhancing our clinical decision-making processes.

Collaboration and collegiality remain the cornerstone of our success. Echoing the sentiments of Helen Keller, "Alone we can do so little; together we can do so much," we continue to foster interdisciplinary partnerships and a culture of mutual support. Our collective efforts enable us to tackle complex neurological challenges and develop comprehensive solutions that benefit patients locally and globally.

We are a forward-looking section with patient care at our core. Our dedication to finding innovative solutions is unwavering, and we are inspired by Nelson Mandela's belief that "It always seems impossible until it's done." This drives us to push boundaries, challenge conventions, and strive for excellence in all we do.

As we integrate cutting-edge technology and AI into our practice, we remain guided by our core values of compassion, integrity, and excellence. We are preparing the next generation of neurologists to be leaders in a rapidly evolving field, equipped with the skills and knowledge to embrace future challenges.

In the spirit of continuous improvement and inspired by the wisdom of those who came before us, we look ahead with optimism and determination. Together, we will advance the frontiers of neurology, improve patient lives, and uphold our commitment to exceptional care.





Photo by Kalen Emsley on Unsplash



# THE SECTION OF NEUROSURGERY

Report by Dr. Steve Casha, Section Head

**THE SECTION OF NEUROSURGERY** at the University of Calgary and Alberta Health Services is fully integrated with its partner sections of Neurology, Physical Medicine and Rehabilitation (PM&R) and Translational Neurosciences within the Department of Clinical Neurosciences.

With a highly integrated and programmatic approach, sub-specialized care is provided to the patient population. This population includes the geographic region of Southern Alberta as well as Eastern British Columbia in the Kootenay Region and Western Saskatchewan, encompassing an approximate catchment population of 2.5 million. Care is provided by 18 neurosurgeons, (currently 16 Geographic Full Time (GFT) and two major clinical Participating Physicians), all of whom are sub-specialists and also provide general and emergency neurosurgical services. The Division of Neurosurgery provides five specialist call services: general neurosurgery, pediatric neurosurgery, spine surgery, vascular neurosurgery, and interventional neuro radiology. There are no fee-for-service physicians in the group; All members of the Division of Neurosurgery participate in the Neurosurgery AMHSP.

Specialized programs include cerebrovascular and endovascular neurosurgery, epilepsy neurosurgery, adult hydrocephalus, neuro-oncology, skull base surgery, pediatric neurosurgery, peripheral nerve surgery, functional neurosurgery, stereotactic radiosurgery and spine surgery. In partnership with neurology, rehabilitation medicine, orthopedic surgery, neuroradiology, and radiation oncology, section participating physicians provide the highest quality of sub-specialized care for this patient population.

## RECRUITMENT

Recent additions to our group include Dr. Michael Yang (2022) who has an interest in spine surgery, post operative optimization of recovery and pain management, and Dr. Candice Poon (2023) who has an interest in hydrocephalus and neuro-oncology.

Dr Yang has worked to develop a program in endoscopic spine surgery in Calgary as well as



developing an ERAS protocol in spine surgery.

Dr. Poon has established a neuro-oncology preclinical research laboratory with work also addressing aspects of CSF dynamics in neuro-oncology.

## INNOVATIONS AND IMPROVEMENTS

### Multidisciplinary Adult Hydrocephalus Program University of Calgary

The Adult Hydrocephalus Program encompasses neurosurgery, general surgery, anesthesiology, neurology, neuroradiology, neuro-ophthalmology and physiatry disciplines. Allied health involvement includes physiotherapy, occupational therapy and neuropsychology.

The clinic services a unique population that suffers from a chronic disease that can cause significant neurological disability (including but not limited to dementia), but that is also associated



**Dr. Mark Hamilton, right, in the OR supervising a shunt surgery for hydrocephalus.**

with a risk of acute clinical deterioration. These patients benefit from long-term care that is more substantial than many other neurosurgical patients and that is generally beyond the scope of family physicians and many Neurologists and Neurosurgeons. In addition, the clinic provides new and established patients with urgent clinical issues urgent assessment avoiding unnecessary Emergency Room utilization and fragmented care. Furthermore, many patients have other significant medical and not uncommonly, social co-morbidities that increase the complexity and challenges associated with patient care.

Patient assessment is done according to defined process maps which include the use of clinic-based objective cognitive and gait testing, and selective neuroradiology investigations including some which are not available at other centers. At weekly Hydrocephalus rounds all patients undergoing assessment for a new diagnosis or potential candidates for surgery are reviewed and management strategies are developed. Certain complex patients are further reviewed with neurology, neuro-ophthalmology and

neuroradiology.

The surgical treatment of hydrocephalus by the Calgary Hydrocephalus program provides quantifiable positive patient outcomes and has resulted in a significant reduction of peri-operative complications. The surgical approach for surgical treatment has evolved past the basic levels offered in most other centers and now incorporates general surgery for ventriculo-peritoneal shunt insertion and anesthesiology for ventriculo-atrial shunt insertion. Endoscopic treatment of hydrocephalus is also very well developed in Calgary and provides successful treatment for a large number of patients without the need for shunt insertion. In addition, the endoscopic resection of colloid cysts causing hydrocephalus is not otherwise available in Western Canada.

#### **Robotic Surgical Assistant for Epilepsy and Functional Neurosurgery**

The Calgary Epilepsy Surgical Program is a multi-disciplinary comprehensive adult and pediatric group of clinicians and researchers tasked with



treating and investigating patients with epilepsy refractory to medical management. One third of epilepsy patients are refractory and of these almost 50% may be candidates for seizure surgery capable of reducing early death from epilepsy, improving quality of life and reducing health care utilization.

Minimally invasive stereotactic techniques for intracranial depth electrode electroencephalography (sEEG) have replaced traditional means performed through large craniotomies and the implantation of subdural electrodes. Robotic Assistants have become the preferred means of performing sEEG in both pediatric and adult epilepsy patients. The recently launched Laser interstitial thermal therapy (LITT) program for MRI-guided laser ablation is currently being used to treat epileptic foci but also has applications in other areas including movement disorders and neurooncology. It too is made possible by the precise stereotactic placement with robotic assistance.

The adoption of more minimally invasive surgical techniques as with Robotic Assisted SEEG and LITT therapy reduce post-operative discomfort and complications, as well as shorten hospital stays and are expected to lead to better health outcomes, improved patient and family experience of care, better clinician and staff satisfaction, and wiser allocation of resources.

### **MR Guided Focused Ultrasound Program**

The MR guided Focused Ultrasound (MRgFUS) platform, was launched in the spring of 2017. While the program started with philanthropic support for the acquisition of a human MRgFUS system for neurosurgery, a CFI infrastructure grant enabled a significant expansion of the program, which now has three major themes: neurosurgery, drug delivery, and neuromodulation. Infrastructure spans the range from basic FUS technology development, to preclinical MRgFUS, to neuronavigated human FUS equipment, to human MRgFUS. Experiments are ongoing in all three research themes and >30 human neurosurgical procedures for movement disorders have been completed.

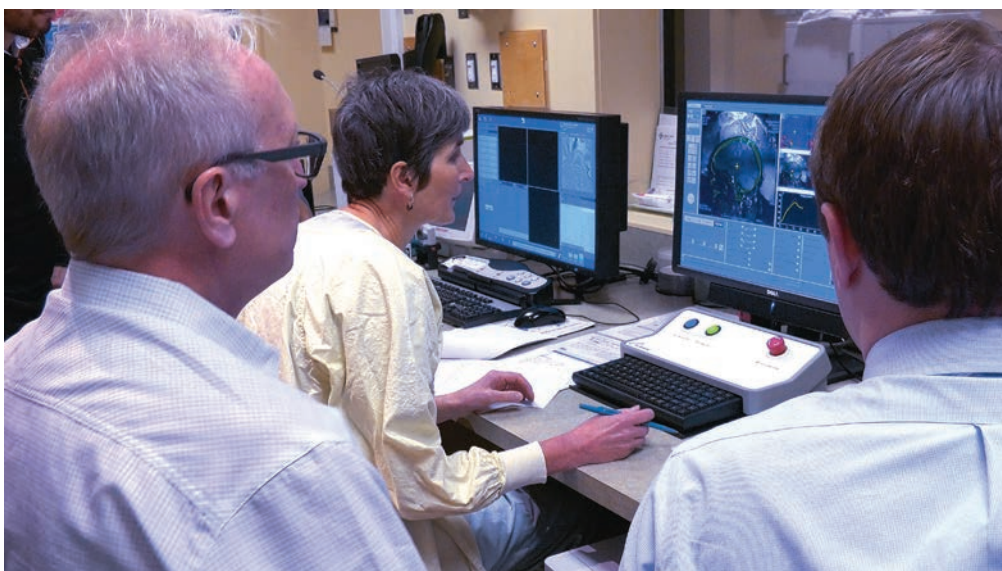
Clinical outcomes have been comparable to prior published data, and new important methods to avoid complications, and to apply this therapy for completely different indications have been identified. For example, through collaboration with other centers as well as UofC psychiatry, to treat patients with severe Obsessive Compulsive Disorder with MRgFUS anterior capsulotomy. Four patients have been treated thus far with early significant improvements as measured by the Yale-Brown Obsessive Compulsive Scale.

Expected benefits of the program include more patients willing to undergo brain lesioning procedures using this less-invasive technology, cost savings for ongoing health care of patients with these chronic conditions, and development of new therapies (such as for specific kinds of pain, epilepsy, brain tumors and treatment for radiation necrosis).

### **The Pituitary Inter-Disciplinary Team-based Endocrine Treatment Program (PITNET)**

The Pituitary Inter-disciplinary Team-based Endocrine Treatment Program (PITNET) brings together neurosurgery, neuro-ophthalmology, otolaryngology and endocrinology to facilitate the care of patients with pituitary and sellar tumors.

The benefits of the PITNET program have included streamlining of patient care, fostering research initiatives, and enhanced teaching to both local and distant learners. Combined multidisciplinary clinics address the needs of both new and follow-up patients and have reduced clinic visits for many patients by providing up to three specialist assessments in one visit. Current research directions are focused on cost-effectiveness, the role of optical coherence tomography in patient management, comparisons of surgical approaches, and the utility of fMRI in optic compressive neuropathy. With a high concentration of surgical patients, the program has facilitated focused training on the diagnosis and management of these lesions to residents in the Section of Neurosurgery and to visiting neurosurgical fellows including international fellows from Australia and the Philippines.



**Dr. Zelma Kiss (top right), who started the MR guided Focused Ultrasound program in 2017, treats a patient with essential tremor.**

# THE SECTION OF PHYSICAL MEDICINE & REHABILITATION

Report by Dr. Sean Dukelow, Section Head

## ACCOMPLISHMENTS AND HIGHLIGHTS

### Advocating for Improved Responsiveness in Mass

**Casualty Events:** Dr. Vincent Gabriel, Director of the Calgary Burns program, was involved in evaluating responses to a recent mass casualty event as part of his academic program. After a series of interviews and analyses his team produced a manuscript titled "Burn mass casualty incident planning in Alberta" which was published in the journal Burns. The manuscript makes recommendations around health systems changes necessary to better deal with future mass casualty events.

**Helping children with disability walk:** Dr. Elizabeth Condliffe leads a program that uses robotic exoskeletons to help children with paralysis walk again. She recently hosted a CIHR Café Scientifique at Telus Spark for the public to discuss her work. She has received a SickKids Foundation and CIHR New Investigator Research Grant (\$299,439) as well as a Mitacs award to support her cutting-edge robotics research. Dr. Condliffe's work has attracted considerable attention from the media including articles like the following: <https://calgaryherald.com/news/local-news/mom-raises-funds-robotic-legs-rare-disease>

**Leading nationally and internationally for Stroke Recovery:** Dr. Sean Dukelow leads the CanStroke Recovery Trials platform ([www.canadianstroke.ca](http://www.canadianstroke.ca)), a group of 37 researchers who are conducting multiple clinical trials examining new treatments for stroke rehabilitation which have the potential to improve post-stroke outcomes. This includes the CAMAROS trial, for which Dr. Dukelow is the Principal Investigator. CAMAROS is evaluating a novel pharmacologic treatment for post-stroke motor recovery in 12 centres across Canada. Dr. Dukelow is also a member of the executive committee of the International Stroke Recovery and Rehabilitation Alliance (ISRRA, [www.strokerecoveryalliance.com](http://www.strokerecoveryalliance.com)) which sets the agenda for stroke rehabilitation research worldwide.



## CHALLENGES

Workforce Planning: David Langelier (Oncology Rehabilitation), Sarah Frehlich (Stroke Rehabilitation) joined the Division as faculty in Sept. 2023. Future needs centre around recruitment for amputee rehabilitation and spinal cord rehabilitation. The Division engaged around substantial planning for fellowship programs in Brain Injury Rehabilitation, Cancer Rehabilitation and Stroke Rehabilitation with fellows beginning in the summer of 2024.

## CLINICAL SERVICE

Clinical service during 2022 continued to be busy. Clinical services at Foothills Medical Centre transitioned to Connect Care in November of 2022. This meant the outpatient PMR clinics, which take place in the SSB, transitioned from paper charts to the fully electronic system. This was a



**Dr. Vince Gabriel was involved in producing a mass casualty evaluation manuscript.**

massive undertaking by clinic staff and physicians to transition and required substantial effort and planning by clinic staff and support of management and physicians.

Notably, in 2022, Dr. Vincent Gabriel, took over as Medical Director for the Calgary Firefighters Burn Treatment Centre.

### **EDUCATION**

The PMR program has 10 residents who were actively rotating through service areas during 2022. In addition to the core residents, 18 off-service residents participated in PMR inpatient services and clinics as well as two out-of-province residents. Our two graduating residents both successfully completed the Royal College Examination in PMR in June 2022.

### **RESEARCH**

As a section, the group published 35 peer-reviewed journal articles. Members obtained over \$2.5 million in new research in 2022.

Dr. Gabriel worked with a collaborative team from UCalgary on a manuscript published in the prestigious journal, Cell.

Dr. Dukelow's team initiated the CAMAROS trial, a 12-centre study examining the impact of the drug, Maraviroc, on motor recovery after stroke.

### **RECRUITMENT**

- Cancer Physiatrist - Dr. David Langelier
- Stroke Physiatrist - Dr. Sarah Frehlich
- Brain Injury Physiatrist - Dr. Ricky Kwok

### **FUTURE NEEDS**

- Amputee/MSK Physiatrist
- Cancer Rehab Physiatrist
- Stroke Physiatrist
- Musculoskeletal Physiatrist





# THE SECTION OF TRANSLATIONAL NEUROSCIENCE

Report by Dr. Shalina Ousman, Section Head

**THE SECTION OF TRANSLATIONAL NEUROSCIENCES** welcomes Dr. Gerald Zamponi and Dr. Ray Turner who switched into our department in order to increase their opportunities for translational neuroscience. Overall, section members are performing highly in the basic neurosciences, and several have intentions of translational medicine or are actively doing so.

Dr. Hedwich Kuipers is an Assistant Professor of neuroimmunology and has been a member of the Hotchkiss Brain Institute (HBI) Multiple Sclerosis (MS) NeuroTeam since April 2018, holding a membership at the Snyder Institute for Chronic Diseases as well. She currently is the Director of the HBI's Equity, Diversity, Inclusion and Accessibility program. Dr. Kuipers's research is aimed at understanding the interaction between immune cells entering the central nervous system (CNS) and its resident cells. Her main focus is on astrocytes, whose role in neuroinflammation is often overlooked. She has shown before that these cells, which are highly abundant in the brain, can release factors that help T lymphocytes infiltrate into CNS tissue. She currently investigates how astrocyte functions change over the course of (experimental) MS pathogenesis, how they affect T cell function, and how they are affected by their microenvironment, using molecular and cell biology approaches, as well as animal models. Dr. Kuipers's research is supported by MS Canada, the Canadian Institutes of Health Research, the Natural Sciences and Engineering Research Council of Canada, the Canadian Foundation for Innovation and the HBI.

**Dr. Bin Hu** is an endowed professor in Parkinson's Disease (PD) research, whose scholarly work is focused on digital health, artificial intelligence (AI), and wearable technology. In the evolving landscape of health research, the intersection of artificial intelligence and education is redefining our approach towards research and student training, particularly in addressing challenges related to opportunity, accessibility, and EDI (equity, diversity, and inclusion). In 2022, Professor Hu founded the Open Digital Health (OpenDH) program, which is an AI literacy, training, and research initiative with the aim of facilitating translational neuroscience



research and innovations by implementing large language models as a foundational platform for students and faculty. The platform has undergone significant expansion and now enrolls over 150 students and faculty around the world. OpenDH participants gain free access to the most advanced foundational AI models that are retrained for specific research areas and topics. Members are given unlimited access to AI tools intended to facilitate the entire process, from proposal conceptualization to data collection, analysis, and publication. Given the nature of the AI-based educational platform, OpenDH substantially diminishes barriers to access in research and education and reduces unintended biases embedded in traditional research training environments. OpenDH students most of whom are undergraduates have published 16 research articles

since its inception. The core group of OpenDH trainees at the University of Calgary has also launched two transformational projects dubbed “Ava” and “Nova,” which are high-functioning AI agents capable of assuming multiple roles as critical reviewers, meeting organizers, data scientists, debate moderators, and health coaches in chronic disease management for people living with PD. The OpenDH program has attracted participants and collaborators from diverse groups in academia, governments, and non-profit organizations, including those in Indonesia and Saudi Arabia.

**Dr. Minh Dang Nguyen** successfully transitioned from Associate to Full Professor during this reporting period. He is studying brain-body interactions in the context of neurodegenerative disorders. His lab received a the Canadian Institutes of Health Research (CIHR) operating grant to study the gut microbiome in the pathogenesis and sexual dimorphism of amyotrophic lateral sclerosis. The translational aspect of the work performed in collaboration with Dr. Gerald Pfeffer is being funded by a CIHR Canada-Israel-Turkey international team grant, the Barry Barrett Foundation and the Rose Family Foundation. His other research program focuses on cerebrovascular dysfunction in Alzheimer’s disease, with funding from CIHR, the Krembil Foundation, the Alzheimer Association USA and Brain Canada. Dr. Nguyen is finishing a three year-term as co-Director of the Graduate Program of Neuroscience.

**Dr. Shalina Ousman** is an Associate Professor in the Departments of Clinical Neurosciences and Cell Biology & Anatomy. She is also a member of the Multiple Sclerosis (MS) and, Spinal Cord/Nerve Injury and Pain (SCNIP) Brain and Mental Health Teams at the Hotchkiss Brain Institute (HBI). She serves as Director of HBI’s International Strategy and co-Leads the SCNIP Neuroteam. Dr. Ousman’s research is focused on investigating endogenous protective mechanisms in MS and peripheral nerve regeneration. She is also identifying the mechanisms that contribute to progression of MS such as the gut microbiome and autophagy. Her peripheral nerve injury studies are focused on understanding why Schwann cells and macrophages become

dysfunctional in the uninjured and damaged, aging peripheral nervous system. Her research is currently funded by the Canadian Institutes of Health Research and MS Canada. In terms of highlights for the last academic cycle, Dr. Ousman sat on the Professional Development Committee (Inclusion and Diversity Programs Subcommittee) at the Society for Neuroscience, served as Scientific Officer for the Michael Smith Foundation for Health Research Post-Doctoral Fellowships Committee, served as a speaker for the Evren Neurological Association and the 2022 Jayman BUILT MS Walk, and is a member of MS Canada’s Medical Advisory Council.

**Dr. David Park** is Professor and Director of the Hotchkiss Brain Institute (HBI). His research program focuses on the mechanism of neural injury in stroke and Parkinson’s disease (PD). He leads the Brain and Mental Health Strategy for the University of Calgary and he chairs Campus Alberta Neuroscience, which knits together the three major sites of brain research in Alberta (Calgary, Edmonton and Lethbridge). His current interests seek to understand how genes associated with PD function or dysfunction to lead to disease progression. In this regard, he has recently shown that the LRRK2 gene may play a critical role in immune function and regulation, and he is currently screening drugs for potential candidates for human trials. His lab is also interested in mechanisms of Pink1 function in Parkinson’s disease.

**Dr. Scott Ryan** joined DCNS in May 2023. In his first year, he established a cutting-edge research laboratory that is now fully staffed and operational. Moreover, he has already made great strides toward the major research and academic goals that he set upon arrival. He now co-leads both the Calgary Parkinson Research Initiative (CaPRI) team and the HBI Movement Disorders team – bringing a critical understanding of the most influential research findings in the field of Parkinson’s Disease that are on the cusp of clinical translation. Dr. Ryan’s research specifically focuses on understanding of how the protein synuclein contributes to the degenerative process in Parkinson’s Disease. His research goals encompass three major areas:

1. Achieving a better understanding of Parkinson's cause, with a focus on the role the protein alpha-synuclein plays in the onset and progression of Parkinson's disease. 2. Developing biomarkers for more accurate diagnosis and tracking of Parkinson's disease trajectory, and 3. Finding new therapeutics that protect the brain in those already living with Parkinson's. Recent publications include: Parmasad et al., *Cell Death and Disease*, 2024; Stykel and Ryan *Biochim Biophys Acta Mol Cell Res*, 2024. Dr. Ryan also recently received a Calgary Parkinson Research Initiative grant.

**Dr. Ray Turner** is a Full Professor and new member of the DCNS Translational Section. He is also a member of the Hotchkiss Brain Institute (HBI) & Alberta Children's Hospital Research Institute (ACHRI). Dr. Turner joined the faculty in 1991 and has made long-standing contributions to the HBI and ACHRI research Institutes, and the Cumming School of Medicine as a past Associate Dean Research Grants. His work focuses on neuronal membrane excitability through studies at the molecular to physiological levels in animal models, and on a new potential therapeutic treatment for Fragile X Syndrome (FXS). In the last year, one CIHR-based project used super-resolution imaging to identify how ion channels that can promote epileptic discharge exhibit a highly organized distribution in relation to the spectrin cytoskeleton. Much of the work now is focused on the potential to reverse symptoms of the genetic repeat disorder of FXS. This is based on their findings in 2020 that fragments of the missing protein FMRP can be reintroduced by attaching a cell permeable peptide (tat) thereby allowing for rapid transport of the molecule across the blood brain barrier (BBB). Remarkably, ion channel function is restored in the cerebellum and circuit level output (EEG) in the neocortex. The success of this work has attracted a motivated donor that has allowed the company Admare to rapidly push these fragments towards initial clinical trials to achieve a translational outcome. To complement this work Dr. Turner established collaborative interactions with Drs. David Schriemer and Sorana Morrissy to apply proteomics and spatial transcriptomics to measure the effects of FMRP-tat fragments at the molecular level. Importantly, this work was funded in part by a Pilot Grant co-sponsored by the DCNS and HBI, providing valuable preliminary data towards grant applications submitted to the SFARI Foundation

and CIHR. Dr. Turner's research is funded by CIHR, NSERC, DCNS/HBI, and FRAXA.

**Dr. Wee Yong** is a Professor who co-directs the Multiple Sclerosis (MS) Brain and Mental Health Team at the Hotchkiss Brain Institute (HBI). He also directs the Alberta MS Network and the Americas and Global Schools of Neuroimmunology for the International Society of Neuroimmunology. These activities underscore Dr. Yong's passion for mentoring the next generation. Indeed, 35 of his past trainees have gone on to professorships worldwide, 7 of them in the past seven years. Dr. Yong's research interests have been guided by MS, intracerebral hemorrhage and glioblastoma, and his findings have been translated into 8 clinical trials. During this reporting period, Dr. Yong was named one of Clarivate Web of Science's Highly Cited Researcher; he co-authored two Nature papers; senior-authored 25 manuscripts; and he co-authored expert opinion papers by international MS federations to redefine multiple sclerosis (*Lancet Neurology* 2023) and chart the Pathways to Cures in MS (*Multiple Sclerosis J* 2024). Dr. Yong's research activities are supported by CIHR (Foundation grant), MS Canada, and the USA Department of Defense. He is a fellow of both the Royal Society of Canada and the Canadian Academy of Health Sciences.

**Dr. Gerald Zamponi** is a Professor and served as Senior Associate Dean for Research. His lab's research interest has focused on the roles of ion channels in controlling the electrical activities of neurons and how they are compromised in neurological disorders such as chronic pain. His work to date has resulted in >375 career publications that have been cited over 27,500 times, and he has given over 295 invited lectures across the globe. Dr. Zamponi has graduated 20 students and supervised 26 PhDs, with seventeen of his former trainees now holding academic appointments. These contributions were recognized with a Killam Award for Outstanding Graduate Supervision. Dr. Zamponi co-founded two spinoff companies, including University of Calgary spinoff Zymeddyne Therapeutics, which focuses on the development of new pain therapeutics. Dr. Zamponi continues to hold a Tier 1 Canada Research Chair, and is a fellow of the Royal Society of Canada, the Canadian Academy of Health Sciences, and the National Academy of Inventors (USA).



# AWARDS

DCNS faculty members were awarded 5 of the 7 Cumming School of Medicine Distinguished Achievement Awards for 2023! Congratulations to:



**Dr. Shelagh Coutts**  
Social Accountability  
Distinguished  
Achievement Award for  
outstanding contributions  
to social accountability



**Dr. Andrew Demchuk**  
Smith Distinguished  
Achievement Award for  
outstanding contributions  
by a senior faculty  
member



**Dr. Shalina S. Ousman**  
Van de Sande  
Distinguished  
Achievement Award for  
outstanding contribution  
to mentorship



**Dr. Aaron A. Phillips**  
Watanabe Distinguished  
Achievement Award for  
Overall Excellence



**Dr. Sam Wiebe**  
Guenter Distinguished  
Achievement Award for  
outstanding contribution  
to international Health

# AWARDS

## Neurology

- Farnaz Amoozegar • Associate Dean's letter of Excellence, University of Calgary  
• Silver Award for teaching, University of Calgary
- Veronica Bruno • Neurology Residency Training Program Mentorship Award 2022-2023, University of Calgary Cumming School of Medicine
- Kevin D. Busche • Jersey Award, Class of 2025, UME
- Prin Chitsantikul • Resident wellness, Neurology
- Lara J. Cooke • Associate Dean's Letter of Excellence for Clinical Core, Cumming School of Medicine UME  
• FMC Medical Staff Association Physician of the Year for 2023 (Awarded 2024), Foothills Medical Centre Medical Staff Association  
• Clerkship Teaching Award - Class of 2023, Cumming School of Medicine UME
- Fiona Costello • Bedside Teaching Award, Division of Neurology (Residents)  
• Outstanding Achievement Award, University of Calgary Cumming School of Medicine  
• Top Reviewer Award, Neurology Journal, American Academy of Neurology
- Shelagh B. Coutts • Cumming School of Medicine's Social Accountability Distinguished Achievement Award, University of Calgary Cumming School of Medicine
- Andrew M. Demchuk • Ramon J. Hnatyshyn Lecturer in Stroke, Heart and Stroke Foundation of Canada  
• Physician of the Year Award - Established Category, Foothills Medical Centre Medical Staff Association

**Dr. Veronica Bruno was recognized with a Neurology Residency Training Program Mentorship Award**



**Dr. Andrew Demchuk was named Physician of the Year by the FMC MSA**

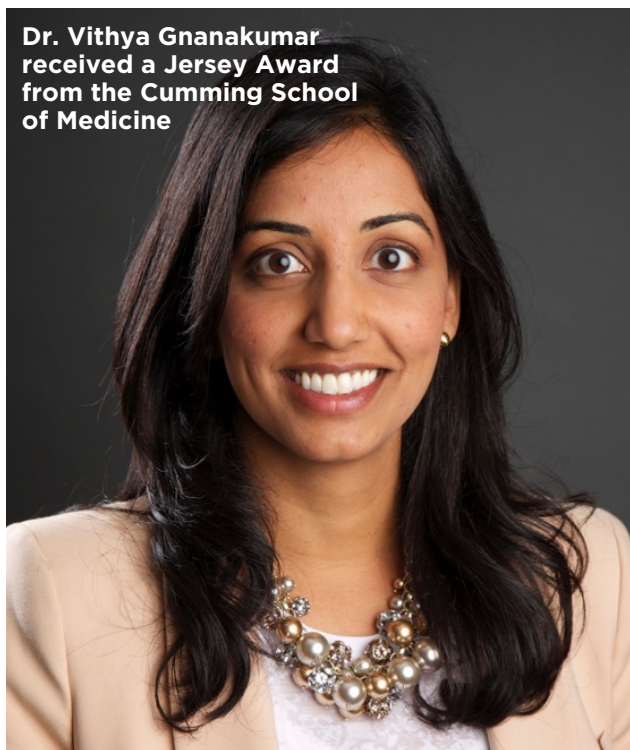


- Paula de Robles
- Associate Dean's letter of Excellence for clinical core, University of Calgary Cumming School of Medicine
  - Smith Distinguished Achievement Award, Cumming School of Medicine Internal Awards
- Paolo Federico
- Distinguished Service Award Letter, University of Calgary Cumming School of Medicine
- Aravind Ganesh
- Paul Dudley White International Scholar Award, International Stroke Conference
  - Community Star Award, Indian Society of Calgary
  - Outstanding Achievement Award, University of Calgary Cumming School of Medicine
  - Top 40 under 40, Avenue Magazine
  - Community Inspiration Award, Malayalee Cultural Association of Calgary
- Chris Hahn
- University of Calgary Post Graduate Medical Education Award for Excellence in Clinical Teaching, University of Calgary
  - Neurology Clinician of the Year Award, Department of Clinical Neurosciences
- Nathalie Jetté
- Highly Cited Researcher, Clarivate Web of Science top 1% in field
- Colin Josephson
- Bronze award for contributing 14.00 hours in direct teaching time, University of Calgary
- Vikram Karnik
- Keith W. Brownell Award for Teaching Residents, Department of Clinical Neurosciences
- Ronak Kapadia
- Gold Star Teaching Award, UME, Undergraduate Medical Education (UME)
- Lawrence Korngut
- The 2023 BioAlberta Vista Award, Province of Alberta
- Bijoy Menon
- Research Excellence Chair, University of Calgary
  - Outstanding Achievement Award, University of Calgary Cumming School of Medicine
  - COVID Outstanding Achievement Award, Cumming School of Medicine
- Tamara Pringsheim
- Research Article of the Year, Movement Disorders Clinical Practice
  - Best Platform Presentation 2nd Prize, European Society for the Study of Tourette syndrome meeting
  - Resident Mentorship Award, Professional Association of Residents of Alberta
- Steven Ray Peters
- Clinician of The Year, Division of Neurology
- Samuel Wiebe
- Wiley - Epilepsia Top Downloaded Article 2023, International League Against Epilepsy
  - Clarivate highly cited researcher, 2023, Clarivate worldwide in the field of Neurosciences and Cognition
  - Outstanding Achievement Award, University of Calgary Cumming School of Medicine
  - Guenter Distinguished Achievement Award - International Health, University of Calgary Cumming School of Medicine
  - Henry Dinsdale Lecture, Queens University
  - Recognition of Outstanding Contributions in Epilepsy, Colombian League Against Epilepsy





**Dr. Chris Hahn was awarded the Neurology Clinician of the Year Award**



**Dr. Vithya Gnanakumar received a Jersey Award from the Cumming School of Medicine**

## AWARDS

### Neurosurgery

David Cadotte

- Graduate Student Association, Graduate My GradSkills Support Award. Student: Abdul Al-Shawwa, University of Calgary
- Graduate Student Association, Graduate Citizenship Award. Student: Abdul Al-Shawwa, University of Calgary
- Brain CREATE Graduate Award - Master's Research award. Student: Abdul Al-Shawwa, University of Calgary
- Three minute thesis competition. University finalist, student: Abdul Al-Shawwa, Will I get worse after a diagnosis of mild degenerative Cervical Myelopathy?, University of Calgary
- Canadian Institutes of Health Research (CIHR) Canada Graduate Scholarships Master's Award. Student: Abdul Al-Shawwa, CIHR

Clare Gallagher

- PGME Clinical Teaching Award, University of Calgary Cumming School of Medicine

Fady Girgis

- Associate Dean's Letter of Excellence for Small Group Teaching, University of Calgary
- Associate Dean's Letter of Excellence for Clinical Core Teaching, University of Calgary
- Platinum award for teaching time, University of Calgary

Bradley Jacobs

- AO North America John France Educator of the Year Award, AO North America

Alim Mitha

- Company of the Year: Fluid Biomed Inc., 2023 BioAlberta Achievement Awards

Garnette Sutherland

- DSc (Hon), Western University

John Wong

- Company of the Year: Fluid Biomed Inc., 2023 BioAlberta Achievement Awards

# AWARDS

## Physical Medicine and Rehabilitation

- |                     |  |
|---------------------|--|
| Lee Burkholder      | <ul style="list-style-type: none"> <li>• Associate Dean's Letter of Excellence for Small Group Teaching, University of Calgary, Cumming School of Medicine</li> </ul>  |
| Rebecca Charbonneau | <ul style="list-style-type: none"> <li>• Award of excellence in clinical teaching, University of Calgary PGME</li> </ul>   |
| Elizabeth Condliffe | <ul style="list-style-type: none"> <li>• Patient and Family Centred Care Champion, Alberta Children's Hospital</li> </ul>  |
| Chantel Debert      | <ul style="list-style-type: none"> <li>• COVID Outstanding academic achievement award, University of Calgary</li> <li>• PGME Teaching Award. Department of Physical Medicine and Rehabilitation, University of Calgary</li> </ul>  |
| Sean Dukelow        | <ul style="list-style-type: none"> <li>• University of Calgary Research Excellence Chair Award, University of Calgary</li> </ul>   |
| George Francis      | <ul style="list-style-type: none"> <li>• Platinum Award for Medical School Teaching, University of Calgary Cumming School of Medicine</li> <li>• Associate Dean's Letter of Excellence for Small Group Teaching, University of Calgary Cumming School of Medicine</li> <li>• Associate Dean's Letter of Excellence for Clinical Core Teaching, University of Calgary Cumming School of Medicine</li> </ul>   |
| Vithya Gnanakumar   | <ul style="list-style-type: none"> <li>• Jersey Award Course 2, Cumming School of Medicine UME</li> </ul>  |
| David Langelier     | <ul style="list-style-type: none"> <li>• Paper of the Year, Canadian Association of Physical Medicine and Rehabilitation</li> <li>• 2024 Institute of Medical Science Faculty Recognition Award for Strong Teaching, Faculty of Medicine, University of Toronto</li> <li>• Mentor of the Year Award, Physical Medicine and Rehabilitation, Dept of Medicine, University of Toronto</li> <li>• Resident Advocate Award, Physical Medicine and Rehabilitation, Dept of Medicine, University of Toronto</li> </ul>  |
| Ranita Manocha      | <ul style="list-style-type: none"> <li>• Best Podium Presentation (Senior Author), Canadian Organization for Undergraduate Health Research National Symposium</li> <li>• Best Poster Presentation (Senior Author) Canadian, Canadian Organization for Undergraduate Health Research National Symposium</li> <li>• Nominee: Killam Undergraduate Research Mentorship Award, Cumming School of Medicine, University of Calgary</li> <li>• Winner (Senior Author), Mount Royal University Research &amp; Scholarship Days, Mount Royal University</li> <li>• Associate Dean's Letter of Excellence for Lecturing, Cumming School of Medicine UME</li> </ul> |
| Stephanie Plamondon | <ul style="list-style-type: none"> <li>• Paper of the Year, Canadian Association of Physical Medicine and Rehabilitation</li> </ul>  |

## Translational Neuroscience

- |                |  |
|----------------|--|
| Shalina Ousman | <ul style="list-style-type: none"> <li>• Cumming School of Medicine van de Sande Distinguished Achievement Award, University of Calgary</li> </ul> |
| Ray Turner     | <ul style="list-style-type: none"> <li>• CIHR Outstanding Reviewer Award</li> </ul>  |
| Wee Yong       | <ul style="list-style-type: none"> <li>• Highly Cited Researcher, Clarivate Web of Science top 1% in field</li> </ul>                              |

## NEUROLOGY RESIDENCY PROGRAM

Report by Program Director: Dr. Vikram Karnik

Assistant Program Director: Dr. Megan Yaraskavitch

Program Administrator: Christopher Smith

Number of positions per year: 4-6

Accreditation: Royal College of Physicians and Surgeons of Canada

Length of Training: 5 years

**THE UNIVERSITY OF CALGARY** Adult Neurology Residency Training Program has been dedicated to educating residents in neurologist for 40 years. The program has trained over 85 neurologists since its inception in 1981 and these specialists practice neurology in community and academic institutions throughout the world. The program currently has 20 residents, including both Canadian and international medical graduates. We emphasize the pursuit of excellence in clinical and academic neurology and instill intellectual curiosity of the discipline for the academic leaders of tomorrow.

Our residents have presented their research at national and international conferences and have been the recipients of grants and scholarships for their clinical and academic pursuits. Our residents also support the learning of medical students throughout their training, either on the inpatient units, the outpatient clinics, or through teaching at the medical school, and several have received awards for their teaching from the University of Calgary.

In June 2024, all four PGY5 residents were



**Dr. Vikram Karnik**



**Dr. Megan Yaraskavitch**

successful in the Royal College certification. These residents pursued fellowship programs in Movement Disorders (University of Toronto), Neuromuscular medicine (UCSF and Harvard University) and Stroke and Vascular Neurology (University of Calgary). Our current PGY5 residents were the first cohort to take the written portion of the Royal College examination at the end of their PGY4 year, and will be writing their oral certification examinations in the Spring 2025. They have obtained fellowships in Movement Disorders (University of Toronto), Epilepsy (Stanford University), and Women's Health and Neurology (University of Toronto).

As our program grows, the Neurology Residency Training Program at the University of Calgary evolves and adapts as we prepare our residents to become specialists in neurology, whether their primary interest is clinical or academic in an ever-changing medical landscape.



**Neurology residents with Dr. Karnik and Dr. Yaraskavitch at the Rocky Mountain Basic Science Symposium in Canmore.**





# NEUROSURGERY RESIDENCY PROGRAM

Report by Program Director: Dr. Jay Riva-Cambrin

Program Administrator: Melissa Robertson

Number positions per year: 2.5

Accreditation: Royal College of Physicians and Surgeons of Canada

Length of Training: 6 years

Mandatory Research: 1 block in PGY1; entire PGY4 year or more

## Education of our postgraduate and undergraduate students

remains one of the highest priorities of Department of Clinical Neuroscience and the Section of Neurosurgery. The eighteen teaching faculty consists of a large complement of dynamic key opinion leaders representing all subspecialties of neurosurgery, including pediatric, open vascular, endovascular neurosurgery, neuro-oncology, skull base and pituitary surgery, adult/pediatric epilepsy, functional, adult hydrocephalus, pain surgery, and peripheral nerve. In addition, the University of Calgary boasts the largest comprehensive spinal surgery program in Canada with a total of 15 full-time spine surgeons coming from both neurosurgical (5) and orthopedic backgrounds (10).

From the moment residents enter the program, they are continuously involved in research and education initiatives. Considerable resources are dedicated each year to facilitating academic activities through faculty participation, existing peer-reviewed grants, project funding from sectional and department sources, and a minimum of 12 months of clinical or basic science research. The vast majority of residents within the Neurosurgery residency training program at the University of Calgary complete an advanced degree (Masters or PhD) in basic science, clinical epidemiology, medical education, business administration, engineering, or innovation science.

A significant number of our residents garner national awards and scholarships for their outstanding clinical and academic endeavors in addition to celebrating engagements, marriages, and births.



**Dr. Jay Riva-Cambrin**

Some of these include:

- **Dr. Catherine Veilleux** has secured two prestigious fellowships in vascular and endovascular neurosurgery at Harborview in Seattle and the second in Paris, France.
- **Dr. Branavan Manoranjan** was awarded the prestigious Banting Post-Doctoral fellowship award for his work on cerebral metastases.
- **Dr. Brij Karmur** was awarded the CIHR Canada Scholarship- Graduate Masters Program awards for his work in using AI to examine whether radiomics can predict genetic alterations in meningiomas.
- **Dr. Runze Yang** is pursuing a postdoctoral fellowship with Dr. Michael Taylor at Texas Children's Hospital/Baylor in examining medulloblastoma sub-type outcomes.
- **Dr. Rena Far** is pursuing a PhD with Dr. Taufik Valiente at the University of Toronto examining the origins of seizure disorders at the cellular level.
- We welcome our four new incoming PGY-1s: **Dr. Kramay Patel** (University of Toronto), **Dr. Arani Kulamurugan** (McMaster University), **Dr. Sara Bandah** (Jeddah, Saudi Arabia), and **Dr. Daffer Ghanim** (University of Colorado).

The program offers a well-rounded exposure to all aspects of neurosurgery within a close and collegial environment. Non work-related, team-building events held throughout the year provide a healthy balance against a busy lifestyle choice. Wellness is a major priority within the University of Calgary Neurosurgery Residency Program and we are pleased to update our three newest major endeavors.

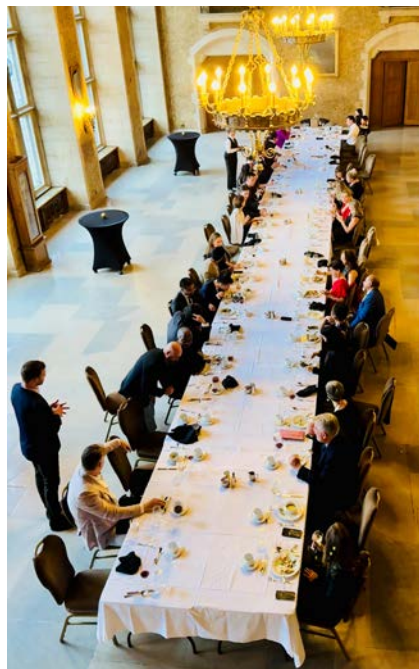
- 1) This last June we completed our second year along with the University of Toronto as the



**Residents and faculty return to New York City for the Annual NeuroCharity Softball tournament.**

only two Canadian programs invited to play in the prestigious Annual NeuroCharity Softball tournament in Central Park, Manhattan. Our Resident Retreat in NYC following the softball was the icing on the cake and was used to guide the rapid growth of our program.

- 2) The Hone Athletic app for wellbeing continues to be used weekly by our residents. This app has led to increased use of mental and wellness health seeking behaviors and has an overall positive affect on our residents. We are also about to analyze the study we are conducting to measure these effects quantitatively. This exciting partnership is the first of its kind in the neurosurgery landscape of Canada as well as for any discipline at the University of Calgary.
- 3) We have revamped our Academic Half Day in response to residents concerns about its previous effectiveness. The half day now included personal but directed dedicated study times This is followed one week later by a faculty lecture and review of pertinent case studies to drive learning in three domains. Thus far, it has been highly popular.



**Residents attend the annual Alberta Neurosurgery Research Symposium in Banff.**



# PHYSICAL MEDICINE AND REHABILITATION (PM&R) RESIDENCY PROGRAM

Report by Program Director: Dr. George Francis

Program Administrator: Daphne Bates

Number of positions per year: 3

Accreditation: Royal College of Physicians and Surgeons of Canada

Length of Training: 5 years

## **The University of Calgary Physical Medicine and Rehabilitation (PM&R) Residency Training Program**

strives to provide excellent educational experiences to both undergraduate and postgraduate learners. We recognize the unique privilege and responsibility of training the next generation of physiatrists, and are excited to continue to improve upon the training we provide.



**Dr. George Francis**

The PM&R residency program has been based on a Competence by Design (CBD) curriculum since July 2020. As a result of this major shift in medical education, residents are engaged in PM&R rotations earlier and there is timely and specific feedback to the trainees and faculty. We are constantly looking to improve in our curriculum planning, career development opportunities and tailored and individualized training experiences for our residents. Our residents are now fully in CBD training for the entirety of our program. We are undertaking great efforts to ensure they are well-supported for this, writing their royal college examinations in PGY-4, as well as with the development of the new Transition To Practice stage of CBD residency.

We are thrilled to continue many of our program's activities in-person and maintaining sectional wellbeing and morale. This includes on-site and interactive academic half days, journal club events, simulations, wellness retreats, our annual sectional retreat, and social events, including the year-end section event. We continue to facilitate province-wide monthly Alberta Physiatry Rounds and

Alberta Physiatry Association annual meetings in collaboration with the University of Alberta. Furthermore, we have recently increased the capacity of our residency program, and are now accepting three residents per year via the CaRMS application match system.

In addition to the training of psychiatry residents, the Section of PM&R continues to provide support to the University of Calgary medical school as they have embarked on a new RIME curriculum. In particular, Dr. Vithya Gnanakumar is heavily involved in new course content creation, and many of our staff teach in anatomy, clinical core and career coaching of medical students. Furthermore, we have had a plethora of new fellowship programs in cancer rehabilitation, brain injury rehabilitation, stroke rehabilitation, and ongoing collaboration to support neuromuscular fellowships. We are also working on a pediatric fellowship program. Dr. Gentson Leung is our fellowship director who plays a major part in establishing and maintaining these fellowship programs.

Our residents continue to demonstrate a balance of academic productivity in areas of clinical research and quality improvement projects. Our PGY-4 resident Dr. Scott Moorman (winner - best completed project) was recently awarded at the Alberta Physiatry Association Research Day for their work. The use of simulation as a teaching and educational tool is growing in medical education, and our program has been actively pursuing opportunities to implement its use in partnership with the Advanced Technical Skills Simulation Laboratory (ATSSL) at the University of Calgary. An important area of opportunity is Equity, Diversity & Inclusion (EDI) in medicine, and resident Dr. Nadia Popov contributes greatly to these as well as having been elected to the PARA Assembly.



**Residents and faculty, past and present (including founder Dr. John Latter, centre) celebrate the 20th anniversary of the Physical Medicine and Residency Training Program in September 2024.**

Our residency program's inception in 2004 and this year we celebrated the 20th anniversary of the residency program, and the program founder Dr. John Latter (Professor Emeritus). As well, all of our trainees who have challenged the licensing examinations for EMG (electromyography) and CASEM (Canadian Association of Sport Exercise Medicine) have been successful, which is a reflection of the strong partnership that Psychiatry has with our neuromuscular colleagues and the excellent neurologic and musculoskeletal training that our residents receive. Our leadership through section head Dr. Sean Dukelow has resulted in the ongoing evolution and growth of our residency program through all clinical and academic productivity.

When looking at our most recent graduates, Dr. Lauren Capozzi is currently a clinical/research fellow in the cancer rehabilitation fellowship program here in Calgary. Dr. Michael Poscente, was successful in being hired into a competitive position in our program as a hospital-based amputee rehabilitation physiatrist based at both Foothills Medical Centre & Peter Lougheed Centre.





**Dr. Sean Dukelow, lead of the Stroke Rehabilitation Fellowship Program**



# FELLOWSHIPS IN CLINICAL NEUROSCIENCES

## Overview

The Department of Clinical Neurosciences (DCNS) at the University of Calgary offers one and two year basic science, clinical and/or research fellowships designed to provide enhanced broad-based clinical training and responsibility beyond the certification level, as well as clinical research opportunities.

DCNS averages 30 fellows each year who work and study in the following specialties:

- Calgary Brain Injury Program
- Calgary Comprehensive Epilepsy Program
- Calgary Spine Program
- Calgary Stroke Program
- Cancer Physical Medicine & Rehabilitation (Physiatry) Program
- Cognitive Neurosciences Program
- The Calgary Headache Assessment and Management Program
- Functional Neurosurgery
- Multiple Sclerosis (MS) Program
- Neuromuscular Program
- Neurovascular Program

- Pediatric Neurosurgery Program
- Peripheral Nerve Program
- Skull Base and Endoscopic Surgery Program
- Stroke Rehabilitation Program
- Tourette Syndrome and Pediatric Movement Disorders Program

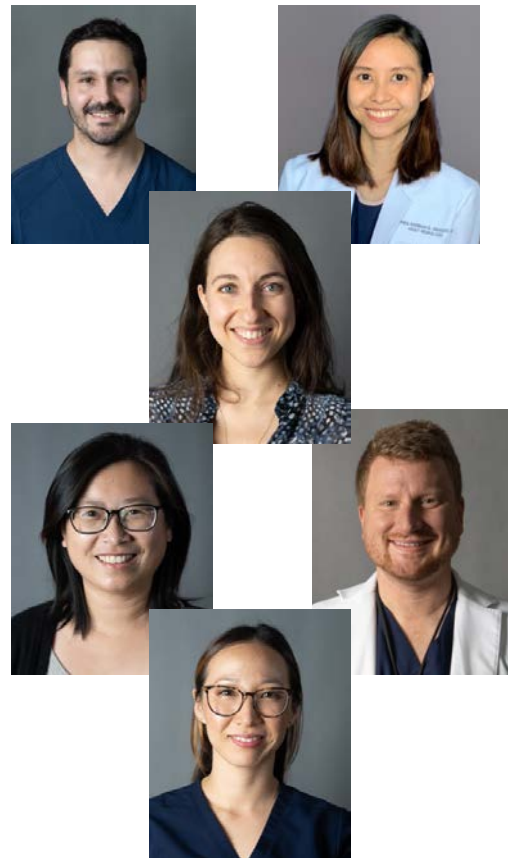
As a joint department in both the University of Calgary and Alberta Health Services, DCNS is uniquely positioned to advance research from the laboratory directly to the patient’s bedside. These opportunities have helped the department attract fellows from a wide variety of backgrounds seeking further subspecialty experience. Their presence has enriched the clinical and academic environment for all.

We are also pleased that many of our fellows have received international awards during their fellowship training and numerous have gone on to faculty positions worldwide.

For more information on fellowship opportunities, please contact us at <https://cumming.ucalgary.ca/departments/dcns/education/fellowships>

## FELLOWS

Calgary Comprehensive Epilepsy Program	Dr. Ahmad Al-Matar
Calgary Comprehensive Epilepsy Program	Dr. Elaine Pang
Calgary Comprehensive Epilepsy Program	Dr. Farnaz Sinaei
Calgary Stroke Program	Dr. Diego Gutierrez
Calgary Stroke Program	Dr. Ivy Sebastian
Calgary Stroke Program	Dr. Katrina Ignacio
Calgary Stroke Program	Dr. Madawi Ismail
Calgary Stroke Program	Dr. Marie-Andree Panzini
Calgary Stroke Program	Dr. Ryan Muir
Calgary Stroke Program	Dr. Vivian Fu
Multiple Sclerosis (MS) Program	Dr. Sam Gutierrez
Neuromuscular Program	Dr. Amokrane Chebini
Neuromuscular Program	Dr. Beatrice Soucy
Neuromuscular Program	Dr. Shaza Almweisheer
Skull Base and Endoscopic Surgery Program	Dr. Lynn Schroeder
Tourette Syndrome and Pediatric Movement Disorders Program	Dr. Natalia Szejko



# GRAND ROUNDS SPEAKERS

Sept. 8	Alan C. Jackson	University of Calgary
Sept. 15	Rebecca Titman	University of Toronto
Sept. 22	<b>Sam Wiebe Lectureship:</b> Kristine Yaffe	University of California, San Francisco
Sept. 29	<b>Health Equity Rounds:</b> Nicole Johnson, Shyane Wiegiers	University of Calgary
Oct. 6	Gabriela Gilmour	University of Calgary
Oct. 13	Adam Bass	University of Calgary
Oct. 20	Aaron Mackie	University of Calgary
Oct. 27	Mayank Goyal, Michael Hill, Bijoy Menon	University of Calgary
Nov. 3	<b>Mary Anne Lee Lecture:</b> Andrew J. Cole	Harvard Medical School
Nov. 10	Resident Research Day	
Nov. 17	Charlie Chen	University of Calgary
Nov. 24	Ranita Manocha	University of Calgary
Dec. 1	<b>Robert G. Lee Lectureship:</b> Daniel Yoshor	University of Pennsylvania
Dec. 8	<b>Keith Brownell Lectureship:</b> Jennifer Chandler	University of Ottawa
Dec. 15	<b>Health Equity Rounds:</b> Kannin Osei-Tutu	University of Calgary
Jan. 12	Jacob Alant	Dalhousie University
Jan. 19	Leah Blank	Icahn School of Medicine
Jan. 26	Mohammed Almekhlafi	University of Calgary
Feb. 2	Lara Cooke	University of Calgary
Feb. 9	<b>Health Equity Rounds:</b> Bhavini Gohel	University of Calgary
Feb. 23	Harvey Sarnat	University of Calgary
March 1	William Diprose	University of Calgary
March 8	Jay Riva Cambrin	University of Calgary
March 15	Gerard H. Jansen	University of Ottawa
March 22	Vivian Fu	University of Calgary
April 5	Garnette Sutherland	University of Calgary
April 12	Alicja Cieslak	University of Calgary
April 19	Shalina Ousman	University of Calgary
April 26	Charles B. Agbi	University of Ottawa
May 3	Tamara Pringsheim	University of Calgary
May 10	Alicia Hilderley	University of Calgary
May 17	Daniel M. Prevedello	Ohio State University
May 31	Darren L. Clark	University of Calgary
June 7	<b>Health Equity Rounds:</b> Nadia Popov, Laura Baxter	University of Calgary
June 14	<b>Charles Taylor Lecture:</b> William T. Couldwell	University of Utah
June 21	Nicolas Dea	University of British Columbia
June 21	Leonid Churilov, Kate Hayward, Bruce Campbell	University of Melbourne
June 28	Juan Silvestre G. Pascual	University of Calgary

**Guest presenters at DCNS  
Grand Rounds included  
(clockwise from top right):  
Dr. Kristine Yaffe,  
Jennifer Chandler,  
Dr. Bhavini Gohel,  
Dr. Daniel Yoshor,  
Dr. Andrew J. Cole,  
Dr. Charles B. Agbi**





## NEUROLOGY



Katayoun Alikhani



Mohammed Almekhlafi



Farnaz Amoozegar



Camila Aquino



Simerpreet Bal



Philip Barber



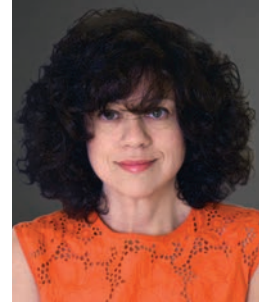
Laura Baxter



Veronica Bruno



Tyson Brust



Jodie Burton



Kevin Busche



Greg Cairncross



Carlos Camara-Lemarroy



Sameer Chhibber



Prin Chitsantikul



Alicja Cieslak



Lara Cooke



Fiona Costello



Shelagh Coutts



Jephtha Davenport



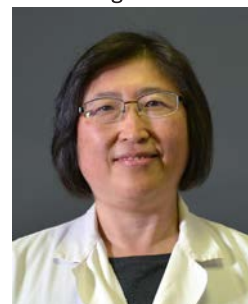
Guillermo Delgado Garcia



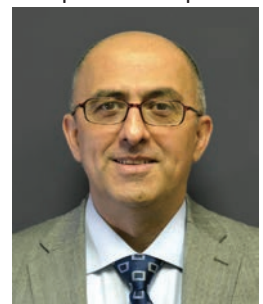
Andrew Demchuk



Paula de Robles



Yanjun Duan



Hamid Ebadi



# NEUROLOGY



Paolo Federico



Sarah Furtado



Aravind Ganesh



Gabriela Gilmour



Chris Hahn



Alexandra Hanson



Michael Hill



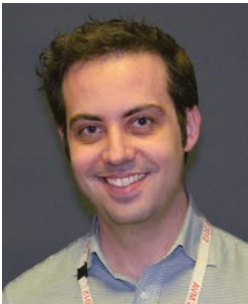
Scott Jarvis



Nathalie Jetté



Gordon Jewett



Colin Josephson



Ronak Kapadia



Vikram Karnik



Brian Klassen



Gary Klein



Karl Martin Klein



Marcus Koch



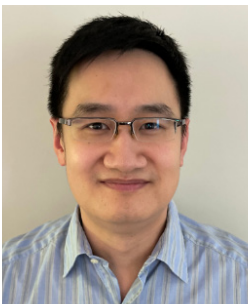
Lawrence Korngut



Scott Kraft



Wei-Qiao Liu



Colin Luk



Davide Martino



Erika McKenzie



Bijoy Menon



Theodore Mobach

## NEUROLOGY



Sarah Morrow



Steven Peters



Gerald Pfeffer



Tamara Pringsheim



Jodie Roberts



Lisa Rosenegger



Andrea Salmon



Justyna Sarna



Shaily Singh



Eric Smith



Peter Stys



Aaron Switzer



Suresh Subramaniam



Chris White



Samuel Wiebe



Scott Wilson



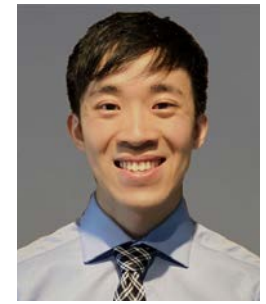
Katie Wiltshire



Megan Yaraskavitch



Michael Yeung



Jonathan Yeung Laiwah



# NEUROSURGERY



David Cadotte



Steven Casha



Stephan du Plessis



Clare Gallagher



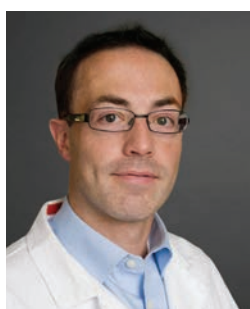
Fady Girgis



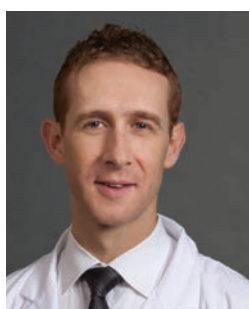
Walter Hader



Mark Hamilton



Bradley Jacobs



John Kelly



Zelma Kiss



Rajiv Midha



Alim Mitha



Candice Poon



Jay Riva-Cambrin



Yves Starreveld



Garnette Sutherland



John Wong



Michael Yang

# PHYSICAL MEDICINE & REHABILITATION



Lee Burkholder



Rebecca Charbonneau



Darren Chiu



Elizabeth Condliffe



Chantel Debert



George Deng



Nwamara Dike



Sean Dukelow



George Francis



Sarah Frehlich



Geoff Frost



Vincent Gabriel



Vithya Gnanakumar



Chris Grant



Arun Gupta



Denise Hill



Chris Huang



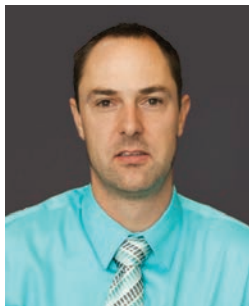
Ricky Kwok



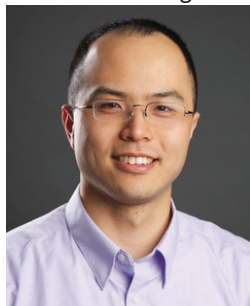
Kenneth Lam



David Langelier



Les LaPlante



Gentson Leung



Rodney Li Pi Shan



Jennifer Litzenberger



Ranita Manocha



# PHYSICAL MEDICINE & REHABILITATION



Christine McGovern



Dan McGowan



Stephen McNeil



Dave Nabeta



Marcin Partyka



Stephanie Plamondon



Daniela Porter



Jordan Raugust



Jacqui Stone



Janet Tapper



Vishal Tulsi



Noorshina Virani

## OTHER FACULTY

### Clinical Assistant Professors

Tony Giantomaso  
Serge Mrkobrada

### Clinical Associate Professors

Abdel Aly  
Daniel D. LeBlond

### Adjunct Faculty

Lenora N. Brown  
Taylor Chomiak  
Angela M. Haffenden  
Chester Ho  
Giuseppe Iaria  
Alan C. Jackson  
Geoffrey Melvill Jones  
Oury Monchi  
J.H. Warwick Pexman  
Brian S. Rambaransingh  
Boguslaw Tomanek  
Keith O. Yeates  
Kourosh Zareinia

### Clinical Lecturers

David M. Flaschner  
Andrew Malawski  
Rehana Murani  
Paul G. Reglin  
Nancy Scholz

### Research Faculty

Alastair M. Buchan  
Tak H. Chu  
Darren L. Clark  
Laura Flores-Dinorin  
Nicole A. Haugrud  
Alvin Joselin  
Kelly A. Larkin-Kaiser  
Ashley D. Smith  
Shigeki Tsutsui  
Stefan Wolfsberger



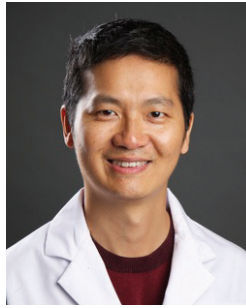
# TRANSLATIONAL NEUROSCIENCE



Bin Hu



Hedwich Kuipers



Minh Dang Nguyen



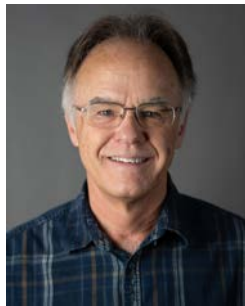
Shalina Ousman



David Park



Scott Ryan



Ray Tuner

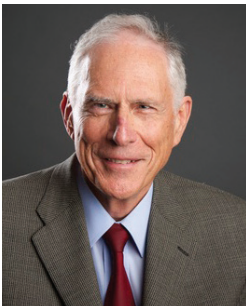


V. Wee Yong



Gerald Zamponi

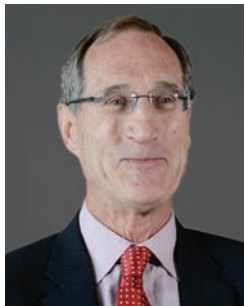
# EMERITUS



Werner Becker



Keith Brownell



Tom Feasby



William Fletcher



Manuel Hulliger



John Latter



Francis LeBlanc



Luanne Metz



Terry Myles

# NEUROLOGY RESIDENTS



**Graham McLeod**  
PGY 5



**Adriana Mititelu**  
PGY 5



**Hayley Thornton**  
PGY 5



**Tefani Perera**  
PGY 4



**Angela Russell**  
PGY 4



**Emma Woo**  
PGY 4



**Laura Ansell**  
PGY 3



**Vanessa Ha**  
PGY 3



**Ali Jalloul**  
PGY 3



**Faisal Yonbawi**  
PGY 3



**Heather Yong**  
PGY 3



**Lindsay Amatto**  
PGY 2



**Daniel Berger**  
PGY 2



**Ann Subota**  
PGY 2



**Alex Vu**  
PGY 2



**Osama Khojah**  
PGY 1



**Easton Munchrath**  
PGY 1



**Rudra Patel**  
PGY 1



**Kevin Perera**  
PGY 1



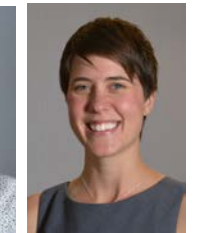
**Sophie Vaccarino**  
PGY 1



**Christopher Smith**  
Coordinator

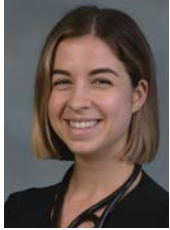


**Dr. Vikram Karnik**  
Director



**Dr. Megan Yaraskavitch**  
Assistant Director

# NEUROSURGERY RESIDENTS



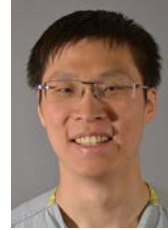
**Dr. Catherine Veilleux**  
Université de Sherbrooke  
R5



**Dr. Jenna Mann**  
University of Saskatchewan  
R4



**Dr. Branavan Manoranjan**  
McMaster University  
R4



**Dr. Richard Yu**  
University of BC  
R4



**Dr. Brij Karmur**  
University of Toronto  
R4



**Dr. Rena Far**  
University of Calgary  
R4



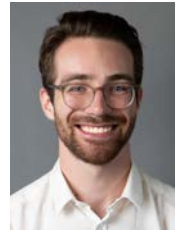
**Dr. Runze Yang**  
University of Calgary  
R4



**Dr. Heather Rossong**  
University of Manitoba  
R3



**Dr. Amy Chen**  
Queen's University  
R2



**Dr. Matthew Skarsgard**  
University of Calgary  
R2



**Dr. Sara Bandah**  
King AbdulAziz University  
R1



**Dr. Daffer Ghanim**  
James Cook University  
R1



**Dr. Arani Kulumurugan**  
McMaster University  
R1



**Dr. Kramay Patel**  
University of Toronto  
R1



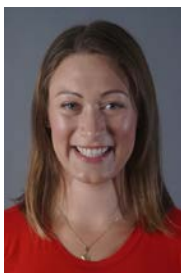
# PHYSICAL MEDICINE & REHABILITATION RESIDENTS



**Lisa Murphy**  
PGY 5



**Shyane Wieggers**  
PGY 5



**Hunter Loewen**  
PGY 4



**Scott Moorman**  
PGY 4



**Maddie Teitz**  
PGY 4



**Chloe Lee**  
PGY 3



**Nadia Popov**  
PGY 3



**Mattea Lee**  
PGY 2



**Tracy Mah**  
PGY 2



**Kara Sidhu**  
PGY 1/2



**Anthony Pokhoy**  
PGY 1



**David Yang**  
PGY 1



**Dr. George Francis**  
Program Director