



Djavad Mowafaghian  
CENTRE FOR BRAIN HEALTH

# DMCBH RESEARCH FACILITIES AND CONTEXT

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## QUICK FACTS, CANADIAN CONTEXT:

- 1 in 3 Canadians (about 9.1 million people) will be affected by a mental illness during their lifetime. (Statistics Canada)
- Every year, 1 in 7 Canadians use health services for a mental illness. (Public Health Agency of Canada)
- The impact on the Canadian economy is significant; when the direct and indirect costs of neurological disorders and mental health are tallied, these account for \$61B per year. (CIHR)
- By 2031, an estimated one in four Canadians will be aged 65 or older. (CIHR)

- The risk of being diagnosed with dementia roughly doubles every 5 years after age 65. (Public Health Agency of Canada)

## ABOUT THE DJAVAD MOWAFAGHIAN CENTRE FOR BRAIN HEALTH

The Djavad Mowafaghian Centre for Brain Health (DMCBH) is the most comprehensive brain care and research centre in Canada. It has transformed the University of British Columbia (UBC) into an international leader in neuroscience research since its opening in February 2014.

This 13,708 m<sup>2</sup> building (with 3160m<sup>2</sup> research space located on the first floor of UBC Hospital's Koerner Pavilion) promotes translational collaborations among basic scientists and clinicians in fields spanning Alzheimer's disease, Parkinson's disease, Amyotrophic Lateral Sclerosis, Huntington's disease, mood disorders, mental health, aging, addiction, stroke and neurotrauma.

### DMCBH MEMBERS AND HQP

More than 160 investigators from UBC, Simon Fraser University (SFU) and the University of Victoria (UVic) are affiliated with DMCBH, including 24 Canada Research Chairs, one Canada Excellence Research Chair, 14 donor-funded research chairs, and 7 donor-funded professorships.

The impact of DMCBH research is substantial, with a field-weighted citation impact in neuroscience of 1.53, which is second in Canada to McGill University (1.61).

Over 165 UBC and Vancouver Coastal Health staff members are employed at DMCBH.

Six Vancouver Coastal Health clinics operate from DMCBH, which hosted over 19,000 clinic visits from patients and families from 2017 to 2018.

### BIOBANK

The Borgland Family Brain Tissue and DNA Bank opened in 2015 as a centralized resource for collection, storage, and distribution of the highest quality of pre- and post-mortem tissue at the Djavad Mowafaghian Centre for Brain Health. It currently stores more than 6000 human DNA samples.

The Biobank's mission is to provide a comprehensive service for the collection, processing, storage, and rapid retrieval of biospecimens and medical information for approved research projects using a professional and compassionate approach to patient consenting that adheres to the highest standards of research ethics and patient privacy.

## MULTIMODAL IMAGING SUITE

The Charles E. Fipke Integrated Neuroimaging Suite opened in 2019 as a first-of-its kind imaging facility specifically focused on brain research.

The General Electric (GE) Healthcare SIGNA™ PET-MRI scanner now housed in the Charles E. Fipke Integrated Neuroimaging Suite is Canada's only simultaneous PET-MRI machine dedicated solely to brain-related research, and the first GE Healthcare PET-MRI in Canada.

In addition, a new Philips Elition 3T-MRI was installed in the facility. The Philips Elition 3T-MRI is part of a new line of advanced research MRI scanners, the first of its kind in Canada and one of only 10 in the world.

## SHARED EQUIPMENT AND FACILITIES

### Djavad Mowafaghian Centre for Brain Health (2215 Wesbrook Mall)

- Autoclave
- Leica CM 3050 S Cryostat
- SpectraMax 190 Plate reader
- Plate reader that can be used for absorbance (wavelength range 190-850 nm) with 96-well plates
- Beckman Coulter LS6500 liquid scintillation counter

### DMCBH Koerner Labs (2211 Wesbrook mall)

- Autoclave
- Leica CM 3050 S Cryostat
- Bio Rad Chemidoc MP Imager
  - Imaging system for use with Western blots, using chemiluminescent or fluorescent labels; DNA gels with most commonly used labels (SYBR Green, GelRed, etc.); and protein gels
- Beckman Coulter Avanti J-E centrifuge
  - Available rotor – JLA 16.250
- Beckman Coulter L90K Ultracentrifuge
  - Available rotors:
    - 70.1 Ti fixed angle
    - 90 Ti fixed angle
    - SW 32 Ti swinging bucket
    - SW 41 Ti swinging bucket
- Lonza Nucleofector

- For use in transfecting primary cells, stem cells, or cell lines
- QuantStudio 6 qPCR
  - Quantitative real time PCR system. Has a 96-well standard and a 96-well fast block that are available for use and easily interchangeable.
- SpectraMax M2 plate reader
  - Plate reader that can be used for absorbance (wavelength range 200-1000 nm) and fluorescence (wavelength range 250-850 nm excitation, 360-850 nm emission) with plate sizes from 6-384 wells.
- Jess
  - Automated capillary-based Western blotting system that can be used with chemiluminescent or fluorescent labels
- MPBio FastPrep 24 tissue homogenizer
  - Bead based tissue homogenizer for lysis of cell lines, soft tissues, yeast or bacteria
- Liquid nitrogen cryostorage for cell lines
- Two shaking incubators (Thermo Max-Q and New Brunswick Innova 40) for growing bacterial cultures

## DMCBH Koerner Labs Level 2

### Virus room

- Level 2+ facility (exceeds biohazard level 2 physical requirements with level 3 procedures). Equipment includes two BSCs, 4 tissue culture incubators, a Beckman Coulter L90K ultracentrifuge (list of available rotors as above), one shaking incubator, and a benchtop centrifuge.

## CFI AND BCKDF COMMITMENTS TO RESEARCHERS AFFILIATED WITH THE DJAVAD MOWAFAGHIAN CENTRE FOR BRAIN HEALTH

CFI and British Columbia Knowledge Development Fund (BCKDF) commitments include the former Brain Research Centre (CFI 499, \$3,408,663), which was absorbed by DMCBH in 2014, and DMCBH (CFI 11507, \$5,450,092), together with several laboratories (CFI 400, 2396, 5034, 10079, 203318, 33522, total >\$17M).

Our members have been successful in attracting \$30M in funding from CFI which has been leveraged through Provincial Government and philanthropic support resulting in a direct investment of \$90M for new infrastructure and equipment.

Investigators affiliated with DMCBH were awarded over \$44M in research funding in 2017-2018, and over \$166M since 2014.

## GRADUATE PROGRAM IN NEUROSCIENCE

The Graduate Program in Neuroscience, housed in the Djavad Mowafaghian Centre for Brain Health, includes 114 students, including those funded by CIHR Vanier, CIHR, NSERC and many other agencies; current students in the Graduate Program in Neuroscience have been awarded a total of \$2,238,562.89.