



Canadian Brain Research Strategy

Transforming the future through brain science

canadianbrain.ca

International Brain Initiative: An Innovative Framework for Coordinated Global Brain Research Efforts (2020) *Neuron*. 105:212-216.

Canadian Brain
Research Strategy

US BRAIN Initiative

EU Human Brain Project

Japan Brain/MINDS

Working groups

- Global Neuroethics
- Data Standards & Sharing
- Inventory of Global Brain Projects
- Education & Training
- Communication & Outreach
- Tool & Technology Dissemination

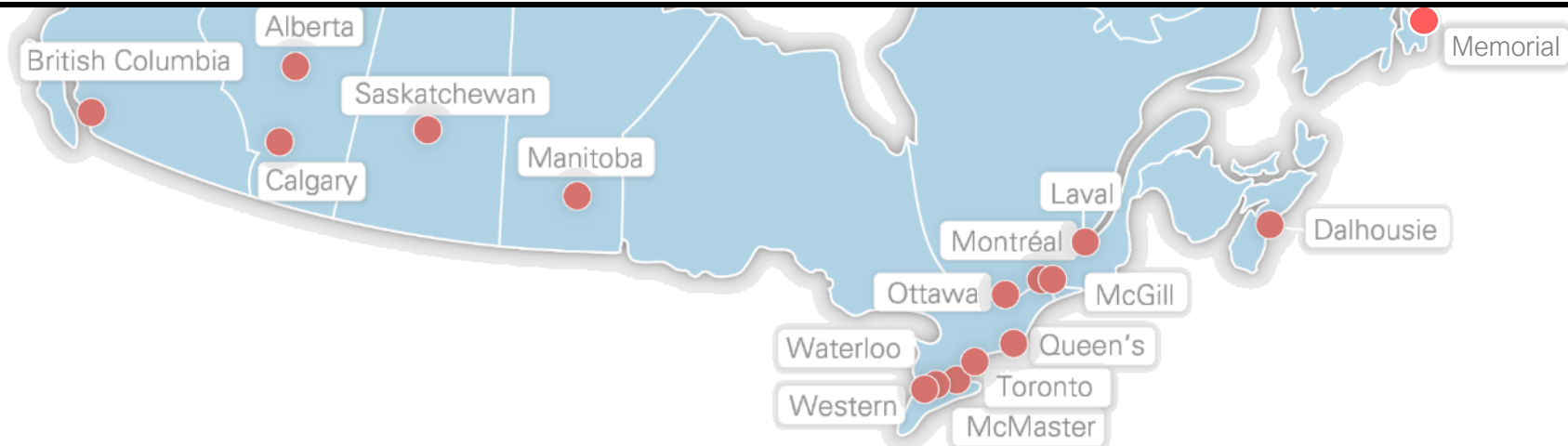
"The global brain initiatives recognize that they are **and complex** that even with the **unprecedented** public and private sectors, **no single initiative** can meet the **challenge** to measure, map, image, model, simulate, understand, imitate, diagnose and heal the brain."

Neuroscience Research in Canada

State-of-the-art and cutting-edge knowledge and infrastructure across
>30 Canadian research-intensive universities and research hospitals

Legacy in brain science

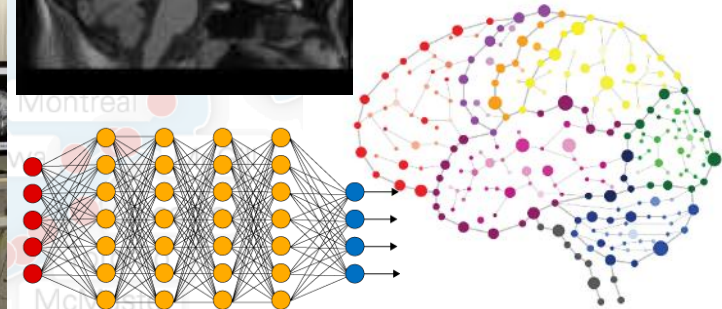
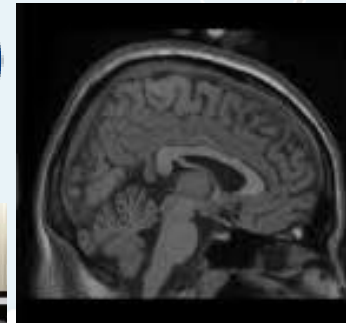
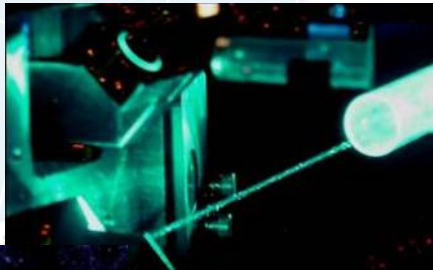
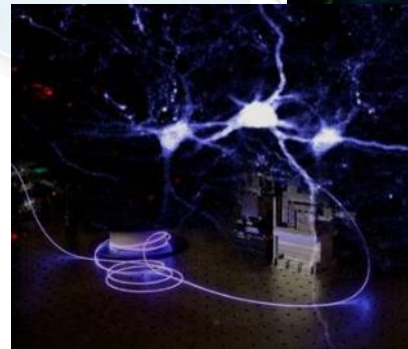
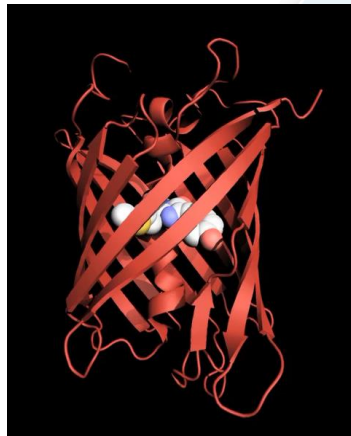
Artificial intelligence, cognition, traumatic brain injury, stress and anxiety, chronic pain, neurodevelopment, neurodegeneration, and neurotechnology



Neuroscience Research in Canada

Cross-cutting contemporary strengths

Neuroimaging, neuroethics, neurostimulation, neurophotonics,
neurocomputation, genomics, neuroinformatics



CANADIAN
BRAIN
RESEARCH
STRATEGY

Who we are

CRN
Centre de recherche en neurosciences
Centre for Research in Neuroscience



CAN-ACN
CANADIAN ASSOCIATION FOR NEUROSCIENCE
ASSOCIATION CANADIENNE DES NEUROSCIENCES



NHCC
NEUROLOGICAL HEALTH
CHARITIES CANADA

CENTRE DE RECHERCHE
CERVO
BRAIN RESEARCH CENTRE



UNIVERSITÉ
LAVAL

Sentinel
North



CTRN
CENTRE THÉMATIQUE DE RECHERCHE
EN NEUROSCIENCES



NEUROETHICS
CANADA
BRAIN HEALTH HUMAN VALUES

HOW I GOT INTO
MEMORIAL
UNIVERSITY

Neuroscience
Program



Djavad Mowafaghian
CENTRE FOR BRAIN HEALTH



Western
Brains**CAN**
Transforming brain research.

SickKids[®]



UNIVERSITY OF ALBERTA
NEUROSCIENCE AND
MENTAL HEALTH INSTITUTE

UHN Krembil
Brain Institute



uOttawa

Institut de recherche
sur le cerveau

Brain and Mind
Research Institute

Douglas

Centre de recherche | Research Centre



HOTCHKISS
BRAIN INSTITUTE

Baycrest

YORK
UNIVERSITÉ
UNIVERSITY

VISTA: Vision, Science
to Applications



centre for
neuroscience
studies
AT QUEEN'S UNIVERSITY



**UNIVERSITY OF
SASKATCHEWAN**

Neuroscience Research Cluster



CENTRE FOR AGING
+ BRAIN HEALTH
INNOVATION
Powered by Baycrest



McMaster
University

Graduate
program in
Neuroscience

Mila
IVADO

camh | Campbell Family Mental
Health Research Institute



McGill

Healthy Brains, Healthy Lives



**UNIVERSITY
OF MANITOBA**

Neuroscience Program



MISSION: *build on Canada's strengths and current investments in neuroscience to transform neurological and mental health for Canadians.*

VISION: *innovative and collaborative brain science driving policy, social, health and economic advancement for Canada and the world.*

...towards a neuroscience-driven nation

Enabling Principles

✓ **Collaborative**

strengthen Canada's scientific culture of collaboration

✓ **Transdisciplinary**

build a common language across disciplines; train a new generation of transdisciplinary researchers

✓ **Open**

build on Canada's existing open science initiatives

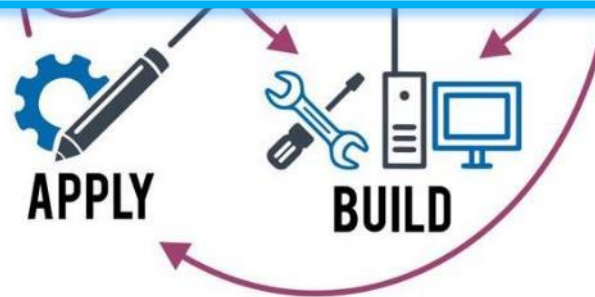
Pillars of the Strategy

ADDRESS health challenges
through pre
✓ Optimizir

UNDERSTAND normal brain
development and functioning
✓ Neuroplasticity across the lifespan

Central Organizing Question
*How does the brain
learn, remember, and adapt?*

APPLY brain research to improve
individual brain health, education,
and societal and cultural well-being
✓ Maximize potential of every individual



BUILD better artificial
intelligences via brain-inspired
computational approaches

Publications

January 2020

International Brain Initiative: An Innovative Framework for Coordinated Global Brain Research Efforts

February 2019

Neuroethics to form foundation of multi-pillar Canadian Brain Research Strategy (CBRS)

January 2019

The Canadian Brain Research Strategy – A roadmap to a neuroscience-driven nation

February 2018

Globe and Mail Opinion – We need a national brain-research strategy
by Lynn Raymond and Joyce Gordon

April 2016

G Science Academies Statement on Brain Research – Understanding, Protecting, and Developing Global Brain Resources

+ CBRS timeline

Major Initiatives

➤ National Transdisciplinary Training Platform

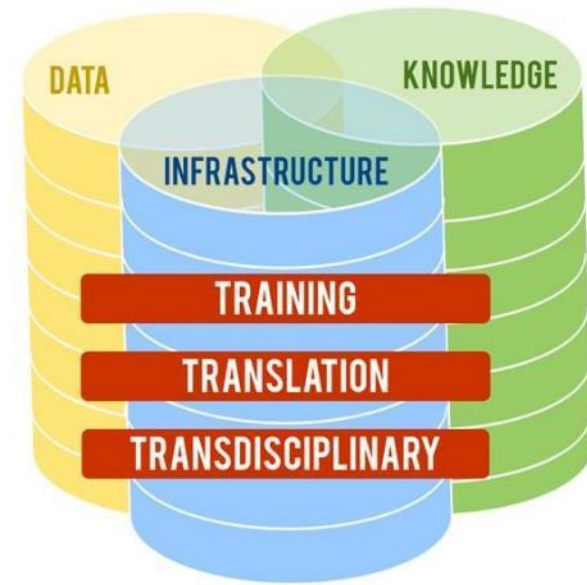
- ✓ A new generation of scientists to conduct transdisciplinary research.
- ✓ break language barriers between disciplines
- ✓ Build capacity in neuroscience-related areas of ethics, law and policy

➤ Distributed Technology Development & Dissemination Platforms

- ✓ Distributed national infrastructure to break geographic and institutional barriers
- ✓ Develop and disseminate tools, technologies and methods
- ✓ Collaborative hubs connecting technology developers, testers and users

➤ International Neuroscience Open Data Platform

- ✓ New approaches to data analysis and sharing, and workforce
- ✓ Bring dynamic interactions between theoretical and experimental scientists



Major investments in Brain and Artificial Intelligence...

CIFAR
CANADIAN
INSTITUTE
FOR
ADVANCED
RESEARCH

- ✓ Child & Brain Development
- ✓ Brain, Mind & Consciousness



**Networks of Centres of Excellence
(>100M\$)**



- ✓ AGE-WELL

Canada

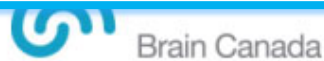


New Frontiers in Research Fund
Fonds **Nouvelles frontières** en recherche

275M\$ over 5 years

- ✓ Upcoming: **Transformation stream** (international teams
→ open to funding foreign members)

**Canada Brain
Research Fund (220M\$)**



- ✓ Canadian Open
Neuroscience Platform



- ✓ Canadian Neurophotonics Platform

- ✓ Healthy Brains for Healthy Lives (McGill)
- ✓ Data Serving Canadians (IVADO) (Univ. Montréal)
- ✓ BrainsCAN: Brain Health for Life (Western)
- ✓ Vision: Science to Applications (VISTA) (York)
- ✓ Sentinel North (Laval)



Building CBRS...



Brain Canada



NHCC

NEUROLOGICAL HEALTH CHARITIES CANADA

Statement
+ leaders

amental

Budget 2018:
reinvestment in

research +

us meeting of
science institutes



CANADA'S FUNDAMENTAL SCIENCE REVIEW

Final Report



**INVESTING IN
CANADA'S FUTURE**

Strengthening the Foundations of Canadian Research

First meeting of
Canada's lead
brain scientist

G7 Nat'l
C

Fall
2015

Spring
2016

Building the C

document

New Frontiers
in Research Fund

Funding for CBRS secretariat
as coordinating body and IBI
representation

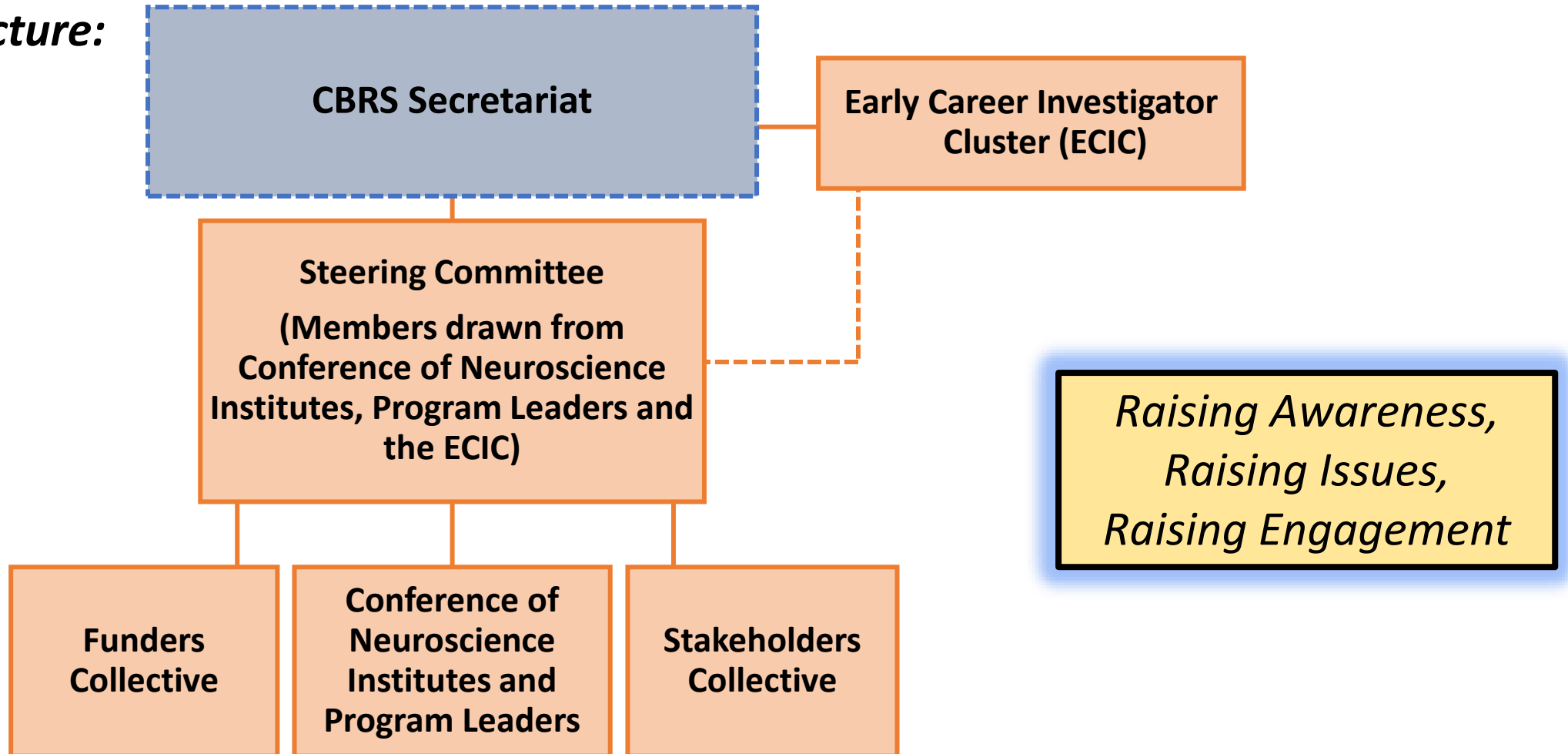
Summer
2019

Fall
2019

Network Catalyst Grant from CIHR : 1.5M\$/5 years

*To support a secretariat, our presence on the IBI council
and build the coalition*

CBRS Structure:



Network Catalyst Grant from CIHR : 1.5M\$/5 years

Short term agenda:

- Engaging Early Career Researchers;
they will shape the future of Brain Science in Canada
- Engaging stakeholders;
patients and patient organizations, communities
- Continue shaping the vision and priorities
upcoming CBRS retreat
- Engaging decision makers and funders
build a broad-base coalition

Questions for you

- What issues for people living with brain conditions, for caregivers, for families that CBRS can help address?
- What does brain research mean for NHCC organizations/members?
- What kind of engagement do you want to have?

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***Merci !
Thank you !***

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