



HEALTHY BRAINS FOR **HEALTHY LIVES**

Prof. Anne McKinney D.Phil

***Associate Vice-Principal, Research &
Innovation (Health Affairs)***

McGill University

Email: anne.mckinney@mcgill.ca



The HBHL Initiative

- \$84 million over seven years from the **Canada First Research Excellence Fund (CFREF)**
- \$18 million in additional funding from the **Fonds de Recherche du Québec (FRQ)** and the **Ministère de l'Économie, Science et Innovation (MESI)**



**CANADA
FIRST**

RESEARCH
EXCELLENCE
FUND

**APOGÉE
CANADA**

FONDS
D'EXCELLENCE
EN RECHERCHE



HBHL Vision and Goals

- **Transform many brain disorders from terminal or life-long afflictions to treatable, or even curable, conditions**
- **Reduce the human and socio-economic burden of psychiatric and neurological illnesses**
- **Improve the mental health, quality of life, and productivity of people around the world**



HBHL Approach & Deliverables

- **Understand the individual brain**
- **Use cutting-edge neuroinformatics to integrate diverse data**
- **NeuroHub: an advanced analytical platform for brain data**
- **Canadian Framework for Brain Health: translating research into clinical best practices, guidelines and policies for health care funders, providers, and users**



HBHL

Scientific Director



Associate Scientific Director



Four Domains of Focus

- 1. Research:** *Encourage interdisciplinary and novel approaches to research across fields linked by neuroinformatics*
- 2. Talent:** *Train and support young researchers in neuroscience and interdisciplinary approaches to the brain in health and illness*
- 3. Innovation:** *Foster international collaboration and support early stage commercialization and knowledge mobilization of HBHL supported discoveries*
- 1. Infrastructure:** *Develop novel technologies and support core facilities that are key to achieving HBHL's goals*



Brain Research @ McGill

- **Major Priority of the University**
- **McGill as World Leader in Neuroscience**
 - Top 5 in term of impact
 - 1st in Canada
- **More than 210 Professors**
- **Over 500 Graduate Students and Fellows (IPN)**



Theme 1

Neuroinformatics & Computational

Leader: Dr. Alan Evans



In the top 1% of highly cited researchers worldwide

Research Priorities

- Development of new analytical methods and software platforms for curation, integration and analysis of multimodal data
- Development of prediction-based analytic frameworks to understand individual differences in learning and performance, as well as disease vulnerability



Theme 2

Mechanistic Models of Neurodegenerative Disorders

Leader: Dr. Guy Rouleau



Research Priorities

- Study of rare disease, genetically unique individuals, or commonalities across disease categories
- Brain imaging; therapeutics; neuroengineering
- Gene-environment interactions as causes of neurodegenerative disease



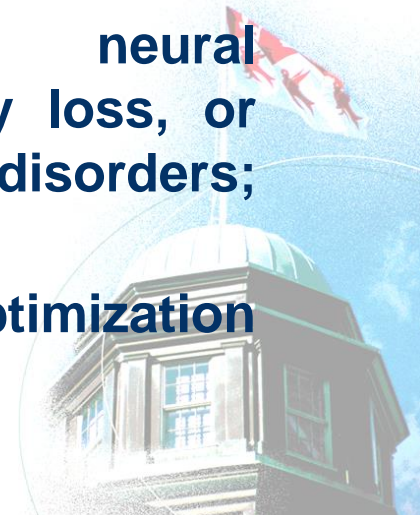
Theme 3

Applied Cognitive Neuroscience of Brain Plasticity

Leader: Dr. Robert Zatorre

Research Priorities

- Characterize the neural changes associated with plasticity using multi-modal and interdisciplinary approaches
- Improve cognitive, perceptual or motor performance in healthy individuals
- Promote recovery from neural dysfunction, damage, sensory loss, or from behavioral/mental health disorders; promote resilience
- Develop tools that enable optimization of plasticity



Theme 4

Population Neuroscience and Brain Health

Leader: Dr. Michael Meaney

Top 1% of highly cited

Research Priorities

- Brain health in a multicultural and Canadian context, including Indigenous peoples
- Socio-economic determinants of brain health, productivity and treatment outcomes
- ‘Big Data’ approaches to the study of determinants of resilience / susceptibility and capacity
- Web-based approaches to research and intervention in brain health



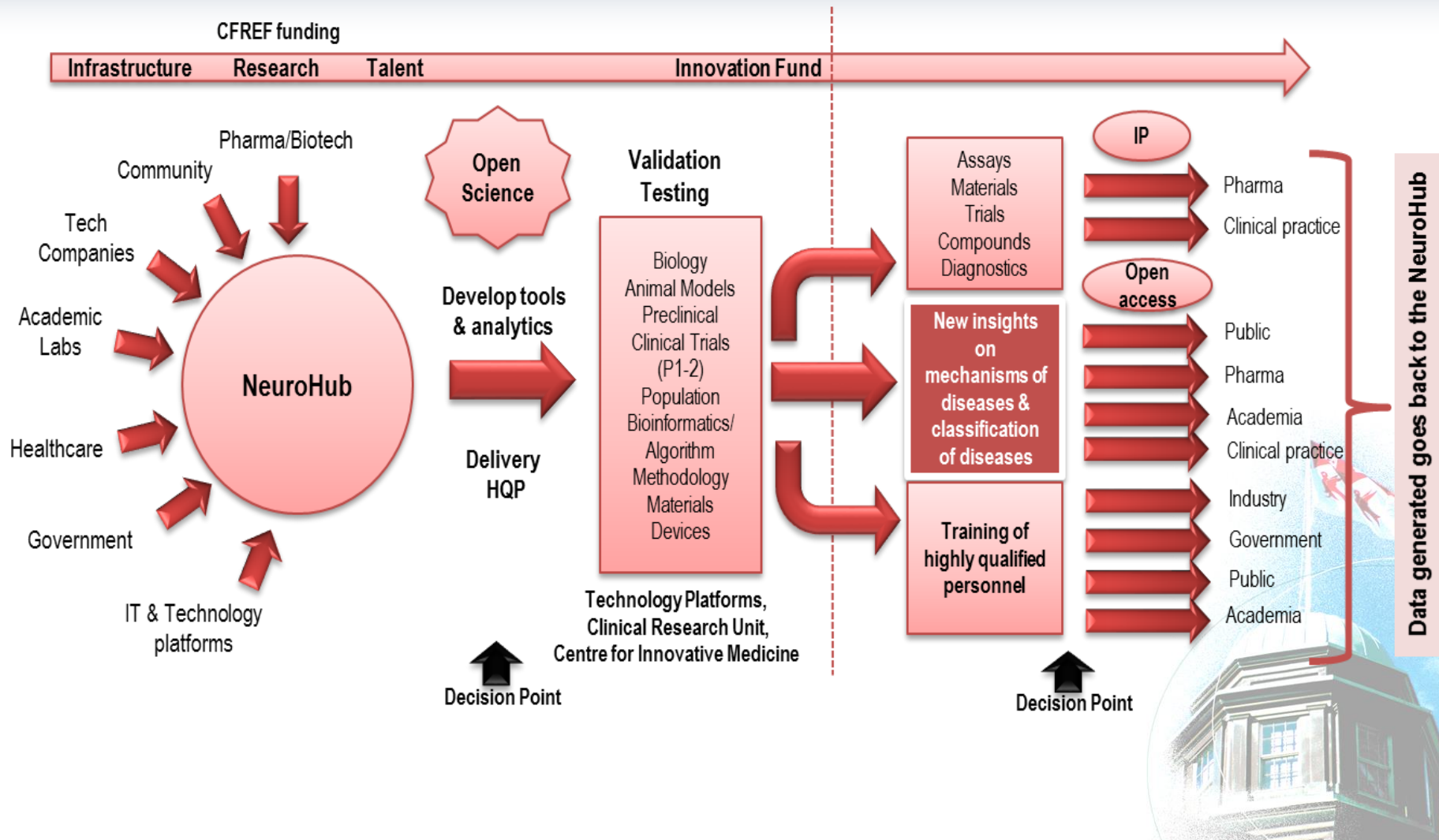
CBRAIN Canada-China-Cuba Network



- China internal
- - - China-Canada-Cuba



HBHL Innovation Chain



Innovation Program (\$12.2M)

- **Leverage funding from government and other sectors**
- **Promote neuro-innovation and knowledge translation**
- **Training ground for a new generation of innovative and skilled interdisciplinary leaders**



Innovation Program

**Innovation Program
Committee**

Evaluations Panels

**International
Collaborations**

**Strengthen existing
and develop new
collaborations**

**Neuro-
Innovation**

**Venture Capital
partners
Matching funds for
research &
development projects
in start-ups**

**Neuro-
Partnerships**

**CQDM
MEDTEQ
Others**

**Innovation
Training**

**Mitacs
FRQ**



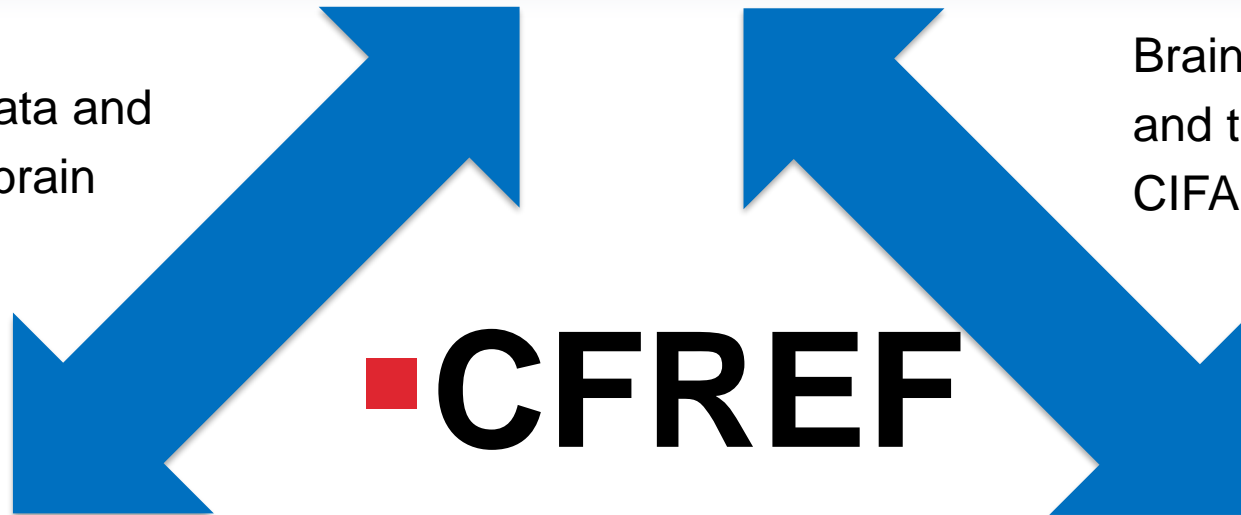
Healthy Brains for Healthy Lives

■ \$84M



Big data and
the brain

Brain research
and training
CIFAR



■ IVADO: Big Data and
Artificial Intelligence

Université 
de Montréal

■ \$93M

■ TransMedTech
Institute



POLYTECHNIQUE
MONTRÉAL

WORLD-CLASS
ENGINEERING

■ \$36M

■ BrainsCAN



Western

■ \$66M