we the grassroots

Sylvain Baillet

on behalf of the open-science *grassroots* initiatives committee

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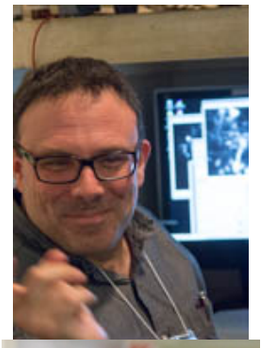
who?

Sylvain Baillet (Chair)
Professor
(neuroimaging & neuroinformatics)
Tier I Canada Research Chair
Associate Dean, Research
Faculty of Medicine



Ed Ruthazer
Professor (neural circuits)
Associate Director: Integrated Program in Neuroscience (grad school)

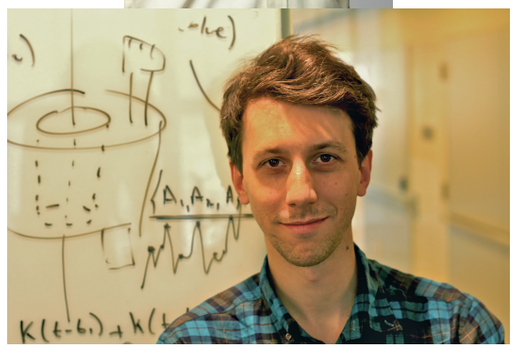
Birgit Frauscher
Neurologist (epilepsy)
Assistant Professor

Madeline Sharp
Neurologist (movement disorders)
Assistant Professor

Peter McPherson
James McGill Professor
(neurodegenerative diseases)

Christine Tardif
Assistant Professor (MRI physics)

Adrien Peyrache
Assistant Professor
(neural circuits)
Tier II Canada Research Chair



Stuart Trenholme
Assistant Professor
(neural circuits)
Tier II Canada Research Chair

why a *grassroots* committee?

Encourage the adoption of open-science practices by MNI researchers

Provide **pragmatic** and **strategic** insights

Collect researchers' needs for **concrete outcomes** in research & education

Define **top priorities** for implementation

Report to TOSI's Executives and Leaders Council.

how we interpreted our mandate

- Don’t leave *science* (and *scientists*) behind when talking about *open science*.

- We are present/future practitioners of OS, not activists
  - pragmatic: research & education for discovery is our first,
  - OS to simplify and strengthen science practices, not complicate them (science is complicated enough).

- Focus on concrete aspects, big and small ideas, connect the dots later with other initiatives.

- The blue sky's the limit: we did not consider funding and space as limitations.

Top priorities

Logistics

Education & Knowledge Transfer

Careers & Incentives

Logistics

Institutional data management plan

Infrastructure

Human resources

Logistics I

Institutional data management plan

Infrastructure

Human resources

Harmonize the collection & curation of data across research groups and disciplines

- Standard consent forms
- Go paperless, unified intake procedure as part of the data management tool.
- Unified procedure for participant and sample (de)identification
- Unique digital identifiers for research objects (DOI/RRID): protocols, reagents, mouse lines, equipment & procedures, etc.
- DMP:
  - from how-to videos to good-practice guidelines to SOPs,
  - will accelerate ethics & scientific review and encourage rigor.
- Most elements already exist: need a unifying platform (*wrapper*).

Logistics II

Institutional data management plan

Infrastructure

Human resources

We need **a solid informatics infrastructure** at the level of our ambitions:

- Start small but start now
  - Institutional GitHub **repository**: host & promote all open-source developments @ MNI
  - Provide **centralized**, safe **storage resources** to every MNI researcher: larger allocation if open + respects DMP (incl. ethics protocols & data)
  - Simple UI: **build on existing** Dropbox-like cloud solution (box.BIC), add another 200TB ($100K)
  - **Data curation**: use BIDS data structure (developed in part at MNI), machine/human readable.

Logistics III

Institutional data management plan

Infrastructure

Human resources

We need **a solid informatics infrastructure** <u>at the level of our ambitions</u>:

- Then grow sophisticated yet pragmatic
  - Need a **product** of *industrial* grade
  - **Interoperable** with existing tools
  - **Bridge** with current efforts elsewhere on campus (Faculty of Medicine) and hospital partners (clinical & research data warehouses)
  - **Engage** software+data economy in a creative, win-win partnership, philanthropy.

Logistics IV

Institutional data management plan

Infrastructure

Human resources

We need **professionals** <u>on staff</u>:

- **TOSI CTO / Manager, Data Resources**
  - who understands researchers, and can speak to IT folks

- **Developers on-demand**
  - Shared coders for specialized data analytics, software, apps, all open source
  - Start with 1 coder interested in the academic endeavor
  - Embark with MedIT @ Faculty of Medicine, current overhaul.

Flying Blue

Institutional data management plan

Infrastructure

Human resources

Once this is all in place, think **bigger:**

- **A bigger CBIGR**: Collect data from patient volunteers at every visit, follow their trajectories, ready for AI agents.
  - Clinical tests + peripheral data: voice, posture, eye movements
  - Standardized cognitive tests data collected from smartphones & tablets, while they wait, or at home (sleep, diet, exercice, etc. as key factors of neuropathpphysiology)

- **QC screening/procedures** for OS data, methods, commercial research products (e.g., reagents)
  - a TOSI scoring system for research products?

Education, Knowledge Transfer

TOSI open-scientist in residence

Communication

Open Neuroscience textbook

Education, Knowledge Transfer I

TOSI open-scientist in residence

Communication

Open Neuroscience textbook

- **host external scientists** over a semester to share OS experience:
  - deliver lectures & courses, training, outreach to patient communities…

- make it attractive and prestigious.

Education, Knowledge Transfer II

TOSI open-scientist in residence

Communication

Open Neuroscience textbook

- Systematically video-capture, broadcast and archive seminars and Killam lectures on an **MNI/ TOSI YouTube Channel**.

- **Educational YouTube videos** on neuroscience techniques and tools

- An (Open-)Neuroscience **TEDx-like or NAMED series**, podcasts

- BTW: use 21st-century tools for institutional communication, exchanges:
  - forums & channels, with e.g., Discourse, Slack.

Education, Knowledge Transfer III

TOSI open-scientist in residence

Communication

Open Neuroscience textbook

- Edit an ***Open Multimedia Textbook for Neuroscience*** education
  - with 2-3 lead editors and contributions from MNI/TOSI and other scientists worldwide
  - includes interactive figures, YouTube links (MNI/TOSI channel), specialized PPT, tests and quizzes, etc.
  - a ~$750K price tag
  - creative partnership with publishers, Wikipedia.

Careers & Incentives

Careers

Incentives

- **Evaluate**, **validate** and **recognize** open-science contributions <u>in career evaluation and promotions:</u>
  - at the Departmental level, for recruitment and tenure
  - for QC, Canada and international salary awards and prizes
  - in the evaluation of research grants, as a token of PI productivity.

Careers & Incentives

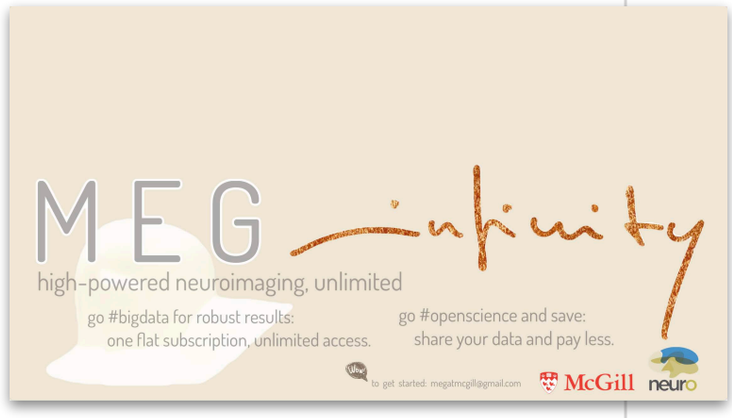
Careers

Incentives

For adoption of open-science tools and resources:

- **Discounted access** to infrastructure, with commitment to data sharing

- **Special prizes and awards**:
  - TOSI/MNI open-science awards
    - an Open-Neuroscience Champion
    - awarded at SfN annual meeting?
  - TOSI Fellowships for students/PDFs engaged in OS



- Annual **MNI/TOSI Grand Challenge on CBIGR data reuse** and original research methods.

we’re ready for action.

Logistics

Education & Knowledge Transfer

Careers & Incentives