

# In a nutshell

## Australian Brain Data Commons

A project by the Australian Brain Alliance that aims to develop a national strategy for brain research data sharing and curation

Create the ABDC Working Group with broad geographical and disciplinary representation, with the aims:

- To convene workshops for discussion and consensus building around identifying the infrastructure, technical and human resources required to develop a culture in Australia of neuroscience data standards and sharing that satisfies the FAIR principles.
- To educate the neuroscience community on how to re-use data for maximum benefit and to promote and support data sharing and standards implementation in the neuroscience sector in Australia.
- To provide a representative group for information sharing and international collaboration via the International Brain Initiative and other appropriate international organisations.
- Provide advice, via the Australian Brain Alliance, to the Australian Research Data Commons and Australian Government on issues related to neuroscience data standards and sharing.

# Key Issues

## **Broad spectrum of methods and data across neuroscience subdisciplines**

- Cognitive neuroscience & Psychology, functional imaging (fMRI, EEG, MEG)
- Animal behaviour/Neuroethology data
- MRI/PET/Molecular imaging (human and animal) & brain atlases
- Microscopy
- Molecular neuroscience
- Electrophysiology and calcium imaging
- Neurogenomics and clinical data
- Computational neuroscience, AI/Machine Learning

## **No clear standards within or across subdisciplines**

- Dependent on data acquisition equipment & software
- Sharing often ad hoc, using variety of means (from USB sticks to cloud storage)

## **Barriers (real and "perceived")**

- Lack of appropriate sharing solutions (varies by discipline)
- Too difficult/technical and no resources (varies by discipline)
- Legal & Ethical concerns, international data transfer, clinical data privacy
- Concerns about data ownership, "being scooped", assignment of credit, "parasites"
- Industry: lack of preparedness by academics & institutions.

# Lessons Learnt

**Open solutions exist overseas, vary in scope, can be adapted/extended**

- CONP: Canadian Open Neuroscience Platform
  - Training, international partnerships, ethics & data governance, communications, analysis, interoperability, scalability & CBRAIN (compute)
- GA4GH: Global Alliance for Genomics and Health
  - Governance, technical, legal, ethical, data privacy
- BIDS: Brain Imaging Data Structure
  - Simple structured file system for imaging data & metadata
  - Extendable with open community governance

**Software platforms largely exist but not always user friendly or adapted to different types of data. Resourcing needed to:**

- Make technology/informatics/platforms for sharing **EASY**
- Assemble data and meta data in standard formats & submit/upload

**Provide incentives for adoption**

- powerful & easy compute/analysis (e.g. CBRAIN, BIDS-Apps)
- Scientific Data publication: high quality dataset journals

**National level but open/distributed governance of standards development and maintenance needed, in collaboration with international initiatives**

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## **ABDC Working Group**

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Australian Research Data Commons  
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