Cultivating open science practices in academic research and culture

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Sunday, Jun 19: 8:00 AM - 12:00 PM
1119
Educational Course - Half Day (4 hours)
SEC Armadillo
Room: Forth

Due to the increased awareness that science will benefit from more “open” practices, from addressing the replication crisis to democratizing access to information across domains, funding bodies and journals have begun to enforce open-science practices at the point of grant and manuscript submission. When these practices are included as an afterthought, they often fail to live up to their potential to benefit the researcher and scientific community. Furthermore, neuroscience researchers are now more than ever creating and maintaining their own code without ever having received training in programming best practices. There is a growing appreciation that more open coding practices will not only save researchers time and effort during development and maintenance but also make their code more usable for others. Attendees will be able to identify aspects of their existing scientific workflows that could be made more open with simple, practical steps and leave feeling empowered to integrate open science practices into their research without having to compromise productivity. Many researchers agree with the general premise of open science but are unsure where to start, with the deluge of tools, services, and skills associated with open science. This issue is compounded by perceptions of the broader open science community, in part based on comments made by open science advocates. Some expect an “all-or-nothing” approach, suggesting that researchers must be open in all aspects in order for their science to be open. Others see an exclusionary culture, based on high technical skill requirements or consisting of a culturally homogeneous group of individuals to which they do not belong. We hope to dissuade these notions by lowering the barrier to entry to belonging in open science and providing researchers with tools to make their own spaces more scientifically and culturally open.

Objective

1. Participants will be able to evaluate their scientific workflow and identify practical steps they can easily take to make their science more open.
2. Participants will be able to identify longer-term open science goals for their research, and steps to achieve them.
3. Participants will leave with strategies for dealing with hesitancy or resistance from collaborators or supervisors in embarking on this open science journey.

Target Audience

This course will be useful for all researchers who are interested in open science but are unsure where to start. It is especially geared towards those in the earlier to intermediate stages of their open science journey, and earlier career researchers in particular. Furthermore, this course is designed for those feeling daunted by a high barrier to entry in open science or those who don't have the time, energy, or guidance to overhaul their existing research workflow.

Presentations

Working with large open datasets

Learning outcome: Understand how to contribute to and use existing neuroimaging data repositories.
Points to cover:
(1) A sneak peek behind creating & managing a large, open multi-center dataset (including language for data-sharing consent forms and data anonymization in funding proposals).
(2) How to incorporate data from repositories into your work (choosing a dataset, technical considerations, special considerations when using open datasets, etc.).
(3) How to share your own data.
Interactive components: Attendees will be polled as to whether they've used open datasets before. Attendees will be asked about their knowledge of current existing open datasets.

Presenter

Damien Fair, University of Minnesota Minneapolis, MN
United States

Reproducible Workflows A: Open data analysis

Learning outcome: Understand basic principles of transparent, reproducible data analysis and identify some long-term goals for more open data analysis.
Points to cover: (1) The benefits of version control and how to get started with git. (2) Good coding practices, for writing usable, readable, and readily shareable code. (3) How and why to share code on repositories and in publications. Interactive components: Attendees will be asked how comfortable they are with writing code, and what data analysis tools they're currently familiar with. Attendees will be asked what barriers they see to writing and sharing code for analyses.

Presenter

Elizabeth DuPre, McGill University Montreal, Quebec
Canada

Reproducible Workflows B: Open neuroimaging analysis tools & best practices

Learning outcome: Learn how to use and contribute to open tools for basic processing of neuroimaging data to promote better analytical practices.
Points to cover:
(1) The importance of standardized open-source neuroimaging software tools for increasing reproducibility of studies.
(2) Getting started with open-source neuroimaging software tools.
(3) Methodological issues and how you can use standardized pipelines to help address them.
(4) Tips for contributing to or building your own neuroimaging analytical toolbox/software.
Interactive components: Attendees will be asked about the knowledge of/experience with standardized pipelines for neuroimaging data analysis. Attendees will be asked what about their experience building data analysis pipelines, to gauge level of knowledge and audience opinions on the topic.

Presenter

Chao-Gan Yan, CAS Key Laboratory of Behavioral Science, Institute of Psychology Beijing, Beijing
China

Sharing research products FAIRly

Learning outcome: Understand the benefits of sharing research products at several stages throughout the research process, making sure products are FAIR.
Points to cover:
(1) Benefits to sharing more than just data and code (e.g., results, provenance).
(2) Principles of Findable, Accessible, Interoperable, Reusable (FAIR) data in neuroimaging.
(3) How to make data and results more FAIR with the Brain Imaging Data Structure (BIDS) and NeuroImaging Data Model (NIDM).
Interactive components:
Attendees will be asked to brainstorm other research products (i.e., beyond data and code) that would be useful to share. Attendees will be polled about their experience sharing research products (e.g., results, figures).

Presenter

Camille Maumet, Inria, Univ Rennes, CNRS, Inserm Rennes
France

Open publishing and peer review

Learning outcome: Understand benefits of open access (OA) publishing and options for sharing manuscripts and peer reviews.
Points to cover:
(1) Open publishing options in the neuroimaging field (and beyond), including Green OA, Gold OA and Platinum/Diamond OA.
(2) The benefits and options for sharing manuscripts as preprints, and the role of preprints in the publication process.
(3) Open peer review and the various options for making peer reviews publicly available.
Interactive components: Attendees will be asked how many of them have shared a preprint. Attendees will be polled about experience with and opinions on open access publishing.

Presenter

Cooper Smout, The University of Queensland Brisbane, Queensland
Australia

Challenges for Open Science as an Early Career Researcher

Learning outcome: Identify options for responding when collaborators or supervisors challenge your open science principles.
Points to cover:
(1) Objective merits of open science: practical benefits (e.g., higher citations for preprints) and misconceptions (e.g., if you share data you'll get scooped)
(2) Balancing your commitment to open science in the face of resistance from collaborators, supervisors, and institutions
(3) Open science is inclusive science: common pitfalls to inclusivity and what you can do about them
Interactive components: Attendees will be polled about how many of them have encountered resistance to being more open from supervisors and/or collaborators. Attendees will be asked to share the reasons they've heard for not being more "open", so that recurrent reasons can be addressed throughout the talk.

Presenter

Anibal Solon Heinsfeld, University of Texas Austin, TX
United States