

Workshop – Getting your hands-on data management

We are excited to announce that the Norwegian Research School in Neuroscience (NRSN) and the center for Digital Life Norway (DLN) offer a hands-on workshop on data standards and data management tools tailor-made for researchers in neuroscience and biotechnology. It will take place in Trondheim, 6-8 of November. Participants from NRSN, DLN projects and DLN research school will be prioritized.

Motivation

Managing your data and metadata well is an important research skill. Good data management enables the preparation, handling, storing, sharing, and reuse of data. These attributes of good data management equates to efficient research and saving of time and resources. Data management tools, utilizing data standards and best practices can help to make your research data and models FAIR (Findable, Accessible, Interoperable and Reusable).

About the workshop

The three-day workshop will combine both presentations and hands-on sessions. It will provide researchers with practical skills about the data standards and data management tools. Day 1 and 2 will have particular focus on neuroscience, whereas day 3 will focus on biotechnology and systems biology. However, most of the tools and resources presented have general applicability.

Day 1 (6. Nov; 9-16) – Focus on Neuroscience

Neurodata Without Borders - [NWB:N](#), is a standardized data format for cellular-based neurophysiology data. It accelerates brain research by providing a common standard to share, archive, use, and build analysis tools for neurophysiology data. NWB:N defines and uses the NWB:N specification language. To organize complex data, the specification language uses easy-to-use primitives, e.g.: Groups, Datasets, Attributes, and Links. The new release of NWB:N 2.0 has made significant advances towards creating a usable standard, software ecosystem, and vibrant community for standardizing neurophysiology data. NWB:N 2.0 overview and related hands-on will be covered.

[Spikeinterface](#), is a unified framework for spike sorting of extracellular neural recordings. The Spikeinterface toolbox will be demonstrated.

Human Brain Project (HBP), there is a broad consensus among researchers, publishers and funding bodies that open sharing of data is needed to address major reproducibility and transparency challenges that currently exist in all scientific disciplines. In addition to potentially increasing the utilization of shared data through re-analysis and integration with other data, data sharing is beneficial for the individual researchers through data citation and increased exposure of the research. The EU Human Brain Project (HBP) has developed a data sharing platform with associated tools, workflows, and data curation services tailored for sharing of heterogeneous, multimodal neuroscience data. In the scheduled workshop features of this infrastructure will be described.

Day 2 (7. Nov; 9-16) – Focus on Neuroscience

DataJoint, is an open-source toolbox designed for manipulating, programming and processing scientific data and computational data pipelines under the relational data model. It provides a principled and intuitive approach for science labs or multi-lab collaborations to organize, process, and share their data. The overview of DataJoint will be covered.

Exdir, is a novel, open specification for data storage in experimental pipelines. Exdir shares the same abstractions as HDF5 (a widely used data format in science) by organizing data in groups and datasets with associated metadata. However, Exdir improves on the drawbacks of HDF5's complex single-binary-file format by instead storing everything in a hierarchy in the file system. Exdir stores human-readable metadata in YAML files and binary data in plain NumPy files. This allows for manual modification of the hierarchy and metadata. A demonstration of the Exdir and its Python API will be shown.

Day 3 (8. Nov; 9-16) – Focus on Biotechnology and Systems Biology

SEEK, is a web-based (or locally installed) resource platform for managing and sharing scientific research datasets and models in your project and with the community after publication. It is based on the ISA format; Investigation, Study, Assay and is flexible in terms of the type of data stored. You can point to local data storage while keeping the metadata or smaller derived data sets in SEEK.

The session will cover general use of SEEK, RightField, an open-source tool for adding ontology to Excel spreadsheets and using the SEEK API.

NeLS (Norwegian e-infrastructure for Life Sciences), is an ELIXIR Norway run infrastructure to provide Norwegian life scientists and their collaborators access to storage, data sharing and analysis tools. NeLS connects to the national data storage platform NorStore, allowing long term storage. NeLS is integrated with **Galaxy**, an open, web-based platform for accessible, reproducible, and transparent computational biological research that allows computational workflows to be set up and used, without the need of programming skills.

The session will provide an introduction and overview of NeLS and overview of relevant resources and help provided by ELIXIR Norway.

We are collaborating with FAIRDOM and ELIXIR.no to improve the connection between SEEK and NeLS. The two resources have been linked to facilitate data management for Norwegian scientists and their collaborators. The use of this option in SEEK and NeLS will also be mentioned.

Trainers from the [NWB:N team](#), DataJoint, Centre for Integrative Neuroplasticity (University of Oslo), [FAIRDOM Hub](#) in Manchester and from [ELIXIR Norway](#), will guide you through the activities. The workshop is free to attend, including lunch and dinner on the 6th of Nov. We have set the limitation to 30 participants, so be quick!

If you have questions about the workshop, contact fatemeh.ghavidel@uib.no or rune.kleppe@uib.no.

Contact liv.falkenberg@ntnu.no and christin.berndtsson@ntnu.no for questions related to the DLN Research School and NRSN respectively.

[Link to registration](#) – the deadline is set to 28. Oct, but first-come, first-served apply.

[Link to application for travel grant](#) (DLN research school members only).

[Link to application for travel grant](#) (NRSN members only).