Open Science and FAIR Data for Neuroscience

Department of Neuroscience, University of Torino
June 6-7-9-15, 2022

Open Science and FAIR data. Focus on Neuroscience and Neuroimaging, Computational Phenotyping ("phenomics"), Rare Diseases

June 06, 2022

AULA Mosso - Corso Massimo d'Azeglio 50, Turin

09:30   Registration & Welcome Address

Elena Giglia, Open Science Unit, Research Department, University of Turin

10:00 -12:30 Why Open Science is needed

We will start from an analysis of the current crisis in scientific communication to discuss the need for Open Science and the sharing of data and results as early and as openly as possible, in light of the lessons learned during the pandemic. We will look at Open Science practices and tools to open up every stage of research.

14:00 -16:30 Open Science in Horizon Europe

We will look specifically at the new Horizon Europe requirements on mandatory and recommended Open practices in the Methodology-Excellence section of the project proposal, the importance of FAIR data and the Data Management Plan for open and reproducible research.

June 07, 2022

AULA Mosso - Corso Massimo d'Azeglio 50, Turin

09:00 Registration & Welcome Address

Annamaria Vernone, Department of Neuroscience, University of Turin

09:15 -11:00 FAIR data: key components and procedures

Data is becoming more and more important every day. In this context, a correct management and sharing of the data and of the procedures adopted, for the purpose of reuse, interoperability and reproducibility of the experiment (FAIR), becomes central. We will look at the main key components and in particular: data, metadata, datasets, standards and procedures, together with some examples of use on online Repositories.

11:00 - 11:15 BREAK

Rossana Damiano, Department of Computer Science, University of Turin

11:15-12:00 Computational Ontologies, OWL/RDF and related technologies

The analysis of research data is one of the fundamental steps toward reproducibility and interoperability (FAIR), as it allows information to be structured through the definition of the semantic data model and related Ontologies.

The concepts of computational ontology (OWL) and coding through the RDF (Resource Description Framework) model, a tool that enables the definition of structured data and guarantees semantic interoperability, will be introduced.

Fabrizio Pizzagalli, Department of Neuroscience, University of Turin

12:00-12:30 Introduction to MRI formats for Neuroimaging

An overview of the most popular data formats in the field of MRI neuroimaging (Dicom, Nifti, BIDS) and the tools used for their handling will be presented.

Christian Valt, Department of Basic Medical Sciences, Neuroscience and Sense Organs, University of Bari Aldo Moro

12:30-13:00 EEG-BIDS and MEG-BIDS for sharing neurophysiological data

An overview of the similarities and differences of the BIDS structures for EEG and MEG conceptualized to reflect the peculiarities of the two methods, along with an introduction into the software that allows exporting and importing data in this format and the repositories for EEG/MEG data sharing.

Mauro Paschetta, Department of Oncology, University of Turin, Candiolo Cancer Institute - FPO, IRCCS

14:00 -15:30 The Data Management Plan: a tool for responsible data management:
- Theory

The Data Management Plan (DMP) is becoming a more and more central tool to think at 360° about the correct management of research data. We will see together the structure of a DMP and the information needed to compile it.

15:30 - 15:45 BREAK

15:45 - 16:30 The Data Management Plan: a tool for responsible data management - Use case

We will analyse the main tools available on the web for creating a DMP and apply them to a case study.

09:00   Registration & Welcome Address

Federico D'agata, Annamaria Vernone, Caterina Guiot

Tudor Groza Groza - EMBL-EBI Phenomics Team Lead Component of the International Mouse Phenotyping Consortium (IMPC; https://www.mousephenotype.org/)

09:30-13:30 Cross-species phenotype knowledge representation and processing

General presentation on computational phenotyping ("phenomics") and FAIR data - covering topics such as: identifiers, ontologies and associated tooling, standards for phenotype data, cross-species phenotype data integration and clinical applications.

14:30-17:00 Use Case: International Mouse Phenotype Consortium

A particular use case: the architecture and tooling used by the Core Data Archive component of the International Mouse Phenotyping Consortium (IMPC; https://www.mousephenotype.org/) - EBI, with concrete tooling used to manage FAIR data, including standardization process, data acquisition, ETL, handling imaging data and data releases.

09:00   Registration & Welcome Address

Claudio Carta - National Centre for Rare Diseases, Istituto Superiore di Sanità-Rome, Italy, ELIXIR Italy Local Technical Coordinator

09:15-13:30 and 14:30-17:00 FAIR Data to Boost Research and Diagnosis

Medical data and big data are becoming increasingly important in our society and in the scientific community and it is important to decrease data fragmentation and increase data quality by raising the level of capacities and help data sharing in a FAIR ecosystem. The day of the workshop titled "FAIR Data to Boost Research and Diagnosis", with the participation of national and international colleagues, will focus on FAIR guiding principles and the main steps of FAIRification that have aroused great interest in the scientific community. Participants will have the opportunity to view the potential and the importance of FAIR data within the Rare Disease Community. Moreover there is a time slot to discuss FAIR data management and FAIR project planning. International speakers from Elixir and the Department of Computer Science of the University of Turin will speak.

Marco Beccuti, Rossana Damiano - Computer Science Department, University of Turin

09:15-10:15 Platforms: from computation to reproducibility through data

The proper management and maintenance of the structures supporting FAIR data are a key element for the data to become linkable and machine readable, fitting into the already existing infrastructure at European level (Elixir).
The activities underway at the Computer Science Department for the realization of the infrastructure supporting FAIR data will be introduced: computing infrastructure (HPC4AI), tools supporting data reproducibility, experimentation with software repositories (Dataverse).