

A FAIR Outlook for NL-Bioimaging

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Abstract

NL-Bioimaging is a National infrastructure to enable advanced microscopy. One of the central aims of this initiative is to develop common approaches, tools and resources for making Netherlands bioimaging data and analyses FAIR (Findable, Accessible, Interoperable and Reusable). The imaging technologies provided by the NL-Bioimaging centres generate high value, heterogeneous and multi-modal data, across multiple biological, size and time scales; so this is an ambitious challenge.

A sustainable FAIR research infrastructure for the Netherlands must build on existing community efforts and standards, to ensure that we capitalise on established activities and provide a national solution that is compatible with other national and international infrastructure (e.g. Euro-Bioimaging and ELIXIR). For data, we build on the Open Microscopy Environment (OME) data model and OMERO database, as well as on the metadata standards REMBI (Recommended Metadata for Biological Images) and ISA (Investigations, Studies and Assay). For image analysis, we build on the work of the scientific workflows community to provide reusable, reproducible image analysis pipelines. Although image analysis processes vary greatly across imaging modalities, there are common requirements that can be addressed by better annotation and structuring of imaging data.

From preliminary work in our pilot studies, we already see the benefits of the FAIR approach. Researchers can learn more from each other's work, integration with other types of multi-omics data is more feasible, and state-of-the art AI approaches to image analysis are more accessible to all.

In this presentation, I will describe the NL-Bioimaging approach and our roadmap for a FAIR future.