NFDI4BioImage
TA3 Hackathon @ UzK

TA3: Multimodal data linking and integration

Goal

- Modern research projects rely on combination and analysis of multimodal datasets
- Organize and link data of different acquisition modalities
- Integrate multimodal data with ELNs and OMERO

Measures

- Review and report on current state

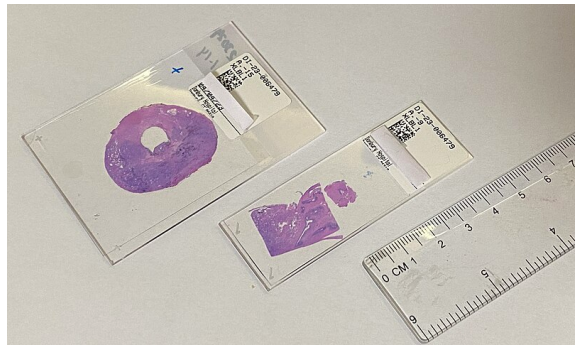
What's next?

- This hackathon
- de.NBI BioHackathon in two weeks

M1: Automatic sample tracking

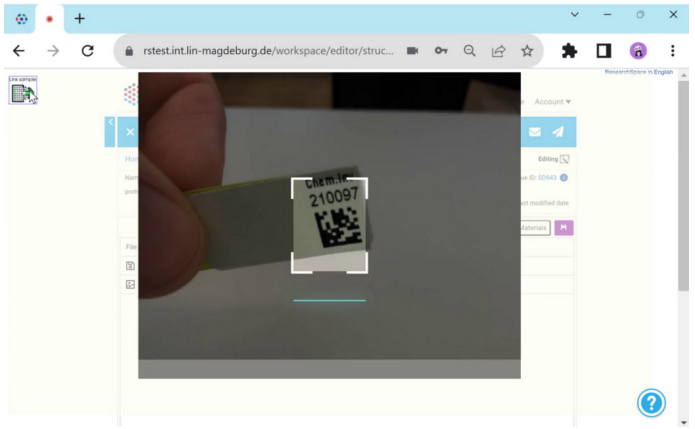
Goal

- Uniquely identify samples using tagged 2D matrix codes
- Track and link sample for every step, from preparation to data file
- Support tracking with ELNs, OMERO, data storage and metadata



Where are we now?

- Browser plugin for scanning codes and integration with RSpace ELN



What's next?

- More testing and improvements
- More documentation, setup instructions, and user guides
- Introduction at LIN next year, establish SOPs
- Support for more ELNs, e.g. eLabFTW

M2: Multimodal data structure

Goal

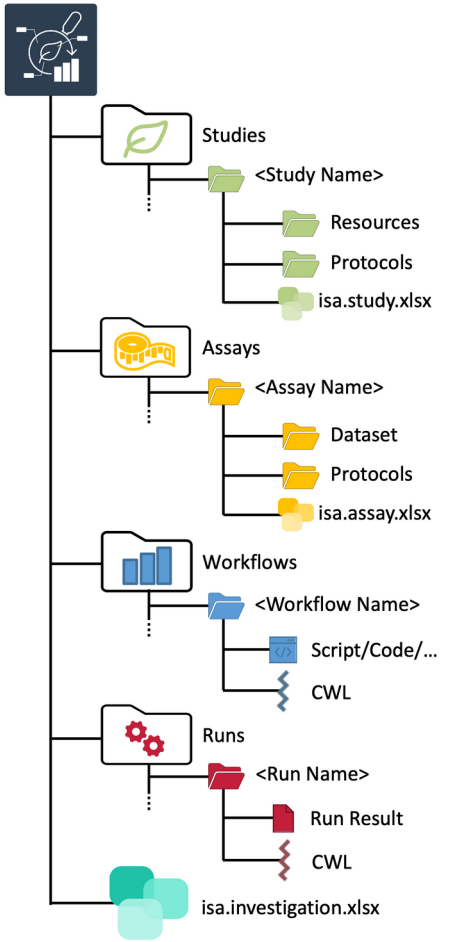
- File system level directory structure for multimodal research data
- Linking of multimodal data via consistent naming scheme and sidecar metadata
- Use established standards ARC + BIDS

Where are we now?

- CoRDI poster comparing a multimodal dataset in ARC + BIDS
- Preparing more sample data in ARC + BIDS Microscopy

What's next?

- Improve support for bioimage data in ARC (BIDS certified ARC): Templates, Ontologie
- How to bring REMBI to ARC + BIDS?
- Metadata mapping using LLMs as external project



M3: OMERO interoperability

Goal

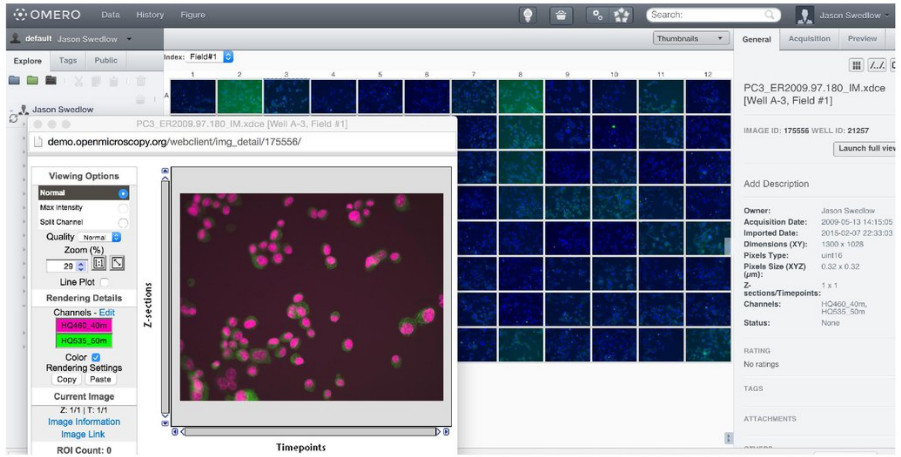
- Maintain OMEROs features and existing data
- Import/export ARC + BIDS to/from OMERO => synchronization
- Reference non-image data in OMERO

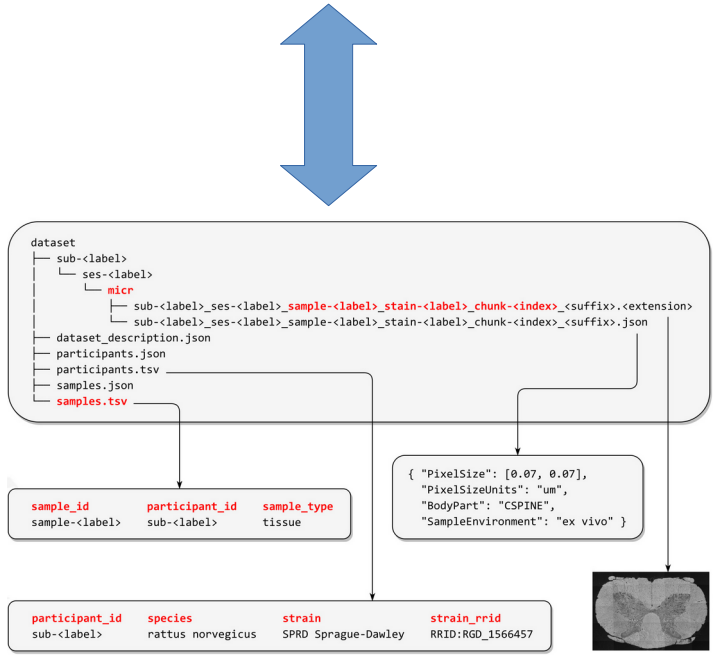
Where are we now?

- OMERO is in operation / being established at many sites
- 3D Slicer / Neuroglancer integration for 3D visualization started
- OMERO-ARC export started externally

What's next?

- Move forward during this hackathon
- Prepare for de.NBI BioHackathon in two weeks





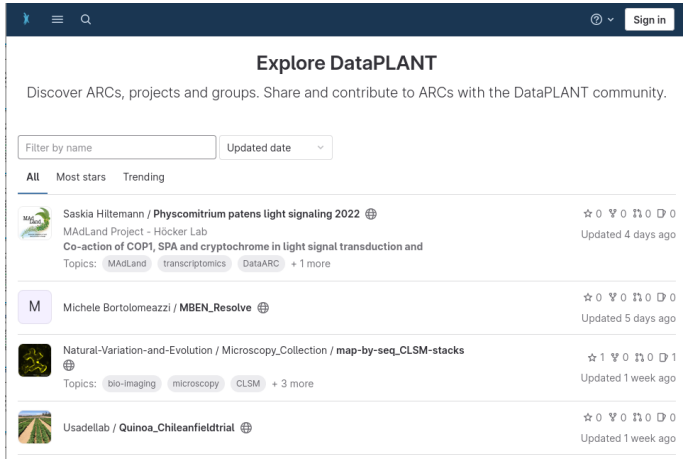
M4+5: Multimodal graph database + Data publishing

Goal

- Build graph DB across multimodal data structure
- Enable more global search and graph queries
- Easily publish multimodal data structure to public repositories

Where are we now?

- Data publishing of ARCs at DataPLANT DataHUB



What's next?

- (Y3+) Build graph DB using RDF/JSON-LD and SPARQL
- (Y4+) Support publishing on more repositories, e.g. EBRAINS, INTPDAT

Hackathon topics + tasks

- Interoperability **OMERO-ARC** (OMERO-BIDS, ARC-BIDS)
- REMBI / Mapping
- OMERO / zarr
- 3D Slicer, Neuroglancer

- Documentation of steps and results