

OMERO Workshop

The presentation and a PDF version of the workshop are available at
<https://downloads.openmicroscopy.org/presentations/2025/Brno>

Summary

Imaging workflows in OMERO:

Import into OMERO

- Cover the various import options

OMERO core concepts

- Data management - Metadata, Users and groups
- Viewers: OMERO.iviewer
- Import of metadata - CSV import scripts,

OMERO figure

- How to use figure
- Using OMERO with QuPath

Analysis of Images in OMERO

Analysis with 3rd party tools - principles

- Analysis with Fiji: manual
- Analysis with Fiji: scripting
- Data mining using OMERO.parade (Project/Dataset/Image)

Image data resource (IDR) - source of image data using OMERO API

Analysis environments & OMERO - case of Machine Learning tools:

- CellPose
- StarDist

Content

Import

In this section we will cover the various import options such as the import with or without data transfer and synchronous vs. asynchronous.

Desktop client install and import

For these 2 workflows shown in the workshop, see

<https://omero-guides.readthedocs.io/en/latest/upload/docs/import-desktop-client.html> and <https://omero-guides.readthedocs.io/en/latest/upload/docs/import-desktop-client.html#import-for-another-user>

Command line import, bulk import, in-place import

These import sections not covered in the workshop can be found at

<https://omero-guides.readthedocs.io/en/latest/upload/docs/import.html>

OMERO core concepts

Data management and cooperation

See <https://omero-guides.readthedocs.io/en/latest/introduction/docs/data-management.html>

Viewing images (OMERO.iviewer)

<https://omero-guides.readthedocs.io/en/latest/iviewer/docs/iviewer.html>

Annotate data and filter using annotations

<https://omero-guides.readthedocs.io/en/latest/introduction/docs/annotate.html>

Search

<https://omero-guides.readthedocs.io/en/latest/introduction/docs/search-omero.html>

OMERO figure

Fast creation of publication figures using OMERO.figure

See https://omero-guides.readthedocs.io/en/latest/figure/docs/omero_figure.html

Publication with OMERO

Publication in OMERO is tantamount to moving data into a “Public” group.

See <https://omero-guides.readthedocs.io/en/latest/introduction/docs/data-publication.html>

See

<https://omero-guides.readthedocs.io/en/latest/introduction/docs/data-management.html#move-data-between-groups-owners-of-data>

To create a link to a Project/Dataset/Image in OMERO.web, click on the Project/Dataset/Image in the left-hand side tree. Then, in the right-hand pane, General tab, click on the “chain” icon



and copy the link from there.

Analysis

This part constitutes the core of the training and we will explore the different means OMERO provides to interact with image and non-image data and how to best integrate these into your workflows.

Analysis with Fiji

- Analysis with Fiji: Java
 - Fiji client side: manual Analysis via UI
 - Fiji client side: scripting: Groovy and Macro
 - Fiji: Analysis in the cloud: Java and Macro

For setup of the Fiji plugin see

<https://omero-guides.readthedocs.io/en/latest/fiji/docs/installation.html>

For the walkthrough in this workshop, see Fiji chapters

<https://omero-guides.readthedocs.io/en/latest/fiji/docs/installation.html>

https://omero-guides.readthedocs.io/en/latest/fiji/docs/threshold_manual.html

https://omero-guides.readthedocs.io/en/latest/fiji/docs/threshold_scripting_macro_language.html

OMERO parade

Data mining using OMERO.parade on Projects and Plates

See https://omero-guides.readthedocs.io/en/latest/parade/docs/omero_parade.html

Analysis with CellPose

For the basic setup for CellPose, either

- (easier, environment will be set up on the cloud) Click on the Google Colab badge in https://github.com/ome/EMBL-EBI-imaging-course-05-2023/blob/main/Day_4/setup.md or
- (more rewarding, local setup) Follow the instructions in https://github.com/ome/EMBL-EBI-imaging-course-05-2023/blob/main/Day_4/setup.md

Analysis with ilastik

- Analysis with ilastik: Python
 - Manual Analysis via UI
 - Analysis in the cloud: Python

See for both setup and workflows

<https://omero-guides.readthedocs.io/en/latest/ilastik/docs/index.html>

Analysis with StarDist

For the basic setup for StarDist, either

- (more rewarding, local setup) Follow the instructions in https://github.com/ome/EMBL-EBI-imaging-course-05-2023/blob/main/Day_4/setup.md