

GBI 2022 OMERO Workshop

The presentation and a PDF version of the workshop are available at <https://downloads.openmicroscopy.org/presentations/2022/GBI>

Software versions used for this workshop:

- OMERO: 5.6.3
- OMERO.web: 5.12.0
- omero-guides: 2021.11.09
- OMERO.insight: 5.6.2
- OMERO.insight-ij: 5.6.2
- OMERO.iviewer: 0.11.1
- OMERO.figure: 4.4.2
- OMERO.parade: 0.2.1
- OMERO.duplicate: 0.4.0
- OMERO R gateway: 0.4.8
- Bio-Formats: 6.5.1
- Fiji/ImageJ: 2.0.0-rc-69/1.52p
- Matlab R2019a
- QuPath 0.3.0
- omero-metadata: 0.5.0
- Ilastik 1.3.3 (pipeline), 1.4.0b5 (inside the docker)

Summary

OMERO core concepts

- Import of images into OMERO
- Data management - Metadata
- Search
- Viewer -3D Viewer

OMERO figure

- How to use figure

Analysis with 3rd party tools

- Analysis with Fiji: manual
- Analysis with Fiji: scripting
- Analysis in OMERO using Ilastik (optional)
- Analysis in OMERO using Cell Profiler (optional)

Server side analysis

- How to write script
- How to manage script

Data mining using OMERO.parade

Programme

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, see

Video <https://www.youtube.com/watch?v=U5rH7ZmylAI&t=149s>

Guides:

<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:

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

Short video <https://www.youtube.com/watch?v=v85YD4cORk4>

Viewing images (OMERO.iviewer)

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

Annotate data and filter using annotations

See:

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

Short video <https://www.youtube.com/watch?v=kW9O1M1obKc>

Search

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

Viewing images (3D viewer: OMERO.FPBioimage)

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

Export

<https://omero-guides.readthedocs.io/en/latest/download/docs/index.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

OMERO figure

Fast creation of publication figures using OMERO.figure

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

Analysis

This part constitutes the core of the training and we will explore the different means OME 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 the four 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.html and

https://omero-guides.readthedocs.io/projects/fiji/en/latest/headless_notebook.html

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/ilastik.html>

Server side analysis

- Analysis server side
 - How to write a Python script
 - How to upload the script to the server

Server-side scripts (python)

https://omero-guides.readthedocs.io/en/latest/scripts/docs/execute_scripts.html

For further information about how to write and manage server-side scripts see

<https://omero-guides.readthedocs.io/en/latest/scripts/docs/index.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 CellProfiler (for your information only)

- Analysis with CellProfiler: Python
 - Analysis in the cloud: Python and using CellProfiler API

See for all CellProfiler workflows

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

Note that <https://mybinder.org/> will be used for CellProfiler setup as described in

<https://github.com/ome/omero-guide-cellprofiler>

Analysis in QuPath (for your information only)

See for QuPath analysis

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

Analysis in R (for your information only)

See for R analysis

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

Optional analysis (for you information only)

See for Python scripts (for your information only)

<https://omero-guides.readthedocs.io/en/latest/python/docs/simple-frap-example.html>

See for Java scripts (for your information only)

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