

# RIKEN OMERO Workshops 2, 3

## Summary

### Workshop 2

OMERO Imaging workflows

Import into OMERO

- Cover the various import options

OMERO core concepts

- Analysis with OMERO using QuPath and Fiji connections,
  - Learn how OMERO connects with tools like ImageJ/Fiji, QuPath for image analysis
- Making figures with OMERO.figure
  - A deep dive into the OMERO.figure tool for creating publication-ready figures directly from OMERO.
- Publication with OMERO,
- General “best practices” on running OMERO in the facility described in plain English on examples from actual OMERO instances:

### Workshop 3

Advanced Analysis with OMERO

- Depending on the interest of attendees, go through the topics in Workshop 2
- Python API
  - Explore leveraging the OMERO API to automate custom image management or analysis workflow.
- Analysis: CellProfiler, Cellpose, Stardust using Jupyter notebooks
  - Learn how OMERO connects with tools like CellProfiler, Cellpose, and StarDist for seamless image analysis workflows.

## 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](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 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 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_manual.html)

[https://omero-guides.readthedocs.io/en/latest/fiji/docs/threshold\\_scripting\\_macro\\_language.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](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](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](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: PythonSee 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](https://github.com/ome/EMBL-EBI-imaging-course-05-2023/blob/main/Day_4/setup.md)