

# University of Arizona OMERO Workshop

## Summary

### Day 1

Import into OMERO

- Cover the various import options

OMERO core concepts

- Data management - Metadata

- Search

- Viewer -3D Viewer

Image Export

- Client export

OMERO parade (part 1)

OMERO figure

- How to use figure

End of Day 1

### Day 2

Analysis with 3rd party tools

- Analysis with Fiji: manual

- Analysis with Fiji: scripting

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

- Introducing the analysis environment & OMERO concepts

- Analysis in OMERO or IDR using Cellpose

- Analysis in OMERO or IDR using Cell Profiler

- Analysis in OMERO or IDR using StarDist

Server side analysis

- How to write script

- How to manage script

Data mining using OMERO.parade

Look into future: OME-NGFF (optional)

## 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>

### **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](https://omero-guides.readthedocs.io/en/latest/parade/docs/omero_parade.html)

## OMERO figure

### Fast creation of publication figures using OME 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)

## 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)

### Analysis with CellPose, StarDist, CellProfiler setup - analysis environments

For the basic setup for Cellpose, StarDist and CellProfiler OME bindings, 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 CellProfiler - further reading: <https://omero-guides.readthedocs.io/en/latest/cellprofiler/docs/index.html>

### Analysis in R

See for R analysis

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

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### **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>