SLS 2022 Workshops

The presentation and a PDF version of the workshop are available at
https://downloads.openmicroscopy.org/presentations/2020/SLS

Software versions used for this workshop:

- OMERO: 5.6.4
- OMERO.web: 5.14.1
- OMERO.insight: 5.7.1
- OMERO.insight-ij: 5.7.1
- OMERO.iviewer: 0.11.3
- OMERO.figure: 4.4.3
- OMERO.parade: 0.2.1
- OMERO.duplicate: 0.4.0
- OMERO training scripts: 0.7.3
- OMERO training notebooks: 0.7.2
- omero-guides: 2020.05.27
- Bio-Formats: 6.5.1
- Fiji/ImageJ: 2.0.0-rc-69/1.52p

Summary

Workshop 1 (Intro to OMERO):

OMERO core concepts
- Import using OMERO.insight
- Data management
- OMERO.iviewer
- Search

Data mining using OMERO.parade
OMERO figure

Workshop 2 (Sharing and publishing):

Sharing in OMERO - groups and users

- Data management: Cooperation
- Groups and Users setup
- Sharing of OMERO.figures
- Specifics of SLS OMERO server - “My Data” group
- Moving data between groups - publishing

Analysis with 3rd party tools
- Analysis with Fiji: manual
- Browser-based analysis using Deep Learning Segmentation tool
- Publish your segmentation ROIs in OMERO.figure

OMERO figure hands-on & publishing
- In depth practical: publish your own images and Figure

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

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 (for your information only)

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, for your info only)

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

Segmentation with Deep Learning app

The data in Project idr0062 will now be reanalyzed using a python environment and StarDist.

a. Find the omero-guide python
b. Follow the README instructions as indicated in the video to build the analysis environment.
c. Start your environment and select and run **idr0062_prediction_save.ipyb** notebook following the instructions in the video**.** You have to adjust the notebook name (video is talking about idr0062_prediction.ipyb, but you will use **idr0062_prediction_save.ipyb).** Also, unlike in the video, you will be able to save the results of segmentation back to the OMERO.server.

Moving images between groups

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

Moving figures between groups

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

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

Analysis with CellProfiler (shown depending on time)

- 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

Export (for your information only)

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

Analysis with Ilastik (for your information only)

- 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

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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