

Research Data Management for Bioimage Data at the HHU

How to connect to OMERO?

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Adapted from: Schmidt C., Bortolomeazzi M., Boissonnet T., Fortmann-Grote C. *et al.* (2023). I3D:bio's OMERO training material: Re-usable, adjustable, multi-purpose slides for local user training. Zenodo. DOI: 10.5281/zenodo.8323588
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Two ways of connecting to the OMERO server as a user

„OMERO.insight“ client

OR

„OMERO.web“ client

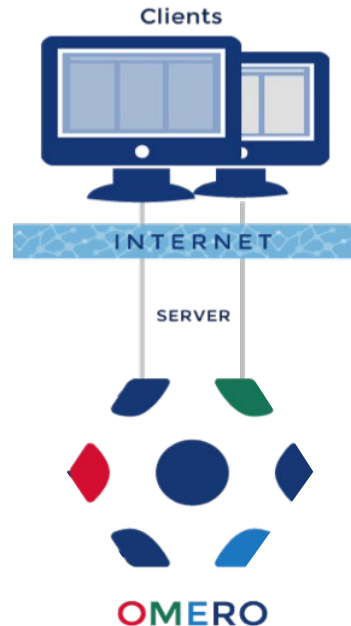


both clients offer similar functionalities



Desktop client

- Installed by the user on a local computer
- *Recommended for:*
 - Importing data into OMERO
 - Importing metadata



Browser-based web-client

- Installed by the IT department on the server, users access it with a browser
- *Recommended for:*
 - Visualizing data
 - Analyzing and managing data
 - Annotating data (e.g., with tags)
 - Running scripts
 - *It is not used to upload data!*


Connecting with OMERO.insight 1/3

1. Install the „OMERO.insight“ client:

<https://www.openmicroscopy.org/omero/downloads/>

2. Open „OMERO.insight“ on your computer



3. Click on the wrench icon  to open the server settings list



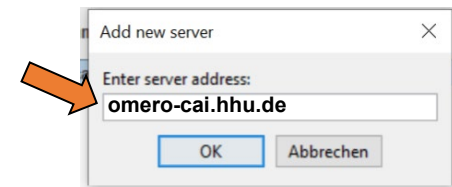
Connecting with OMERO.insight 2/3

4. Click the  symbol to add a new server to the list



5. Enter your OMERO-server address

At the HHU: **omero-cai.hhu.de**



Connecting with OMERO.insight 3/3

4. Check the server address in the list and click „Apply“

5. Enter your user name and password to login

omero-cai.hhu.de [High]  

Username: 

Password:

5.7.0

OMERO is distributed under the terms of the GNU GPL. For more information, visit openmicroscopy.org



Servers

Servers
Enter a new server or select an existing one.

Server Address Examples

```
my.server.name (default case)
my.server.name:port (for non-default ports)
127.0.0.1:1234 (if you have an IP address)
ws://my.server.name (connecting via websocket)
```

Connecting to

localhost
omero-cai.hhu.de

Connection Speed

High (LAN) Medium (Broadband) Low (Dial-up)

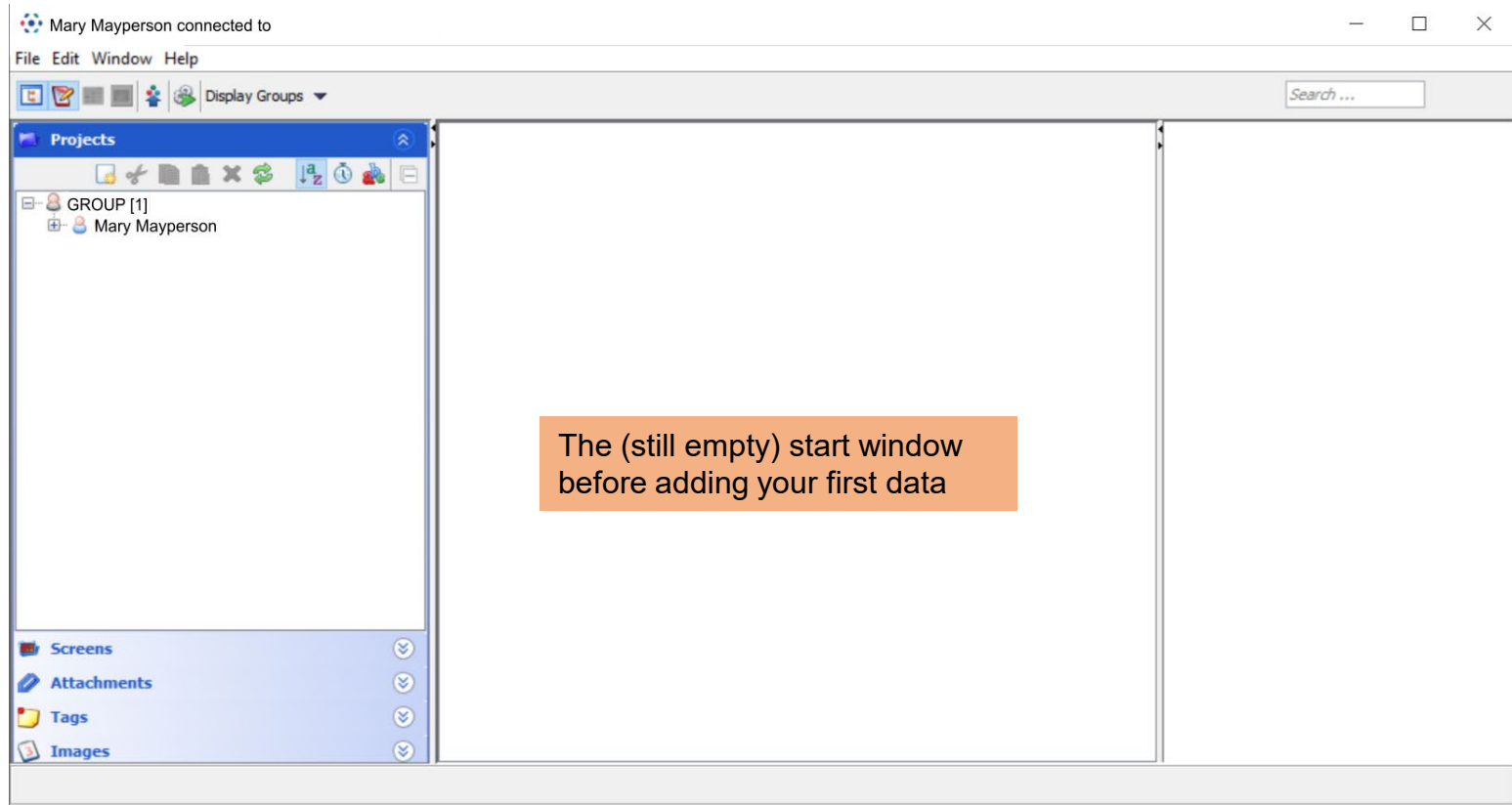
Note:

Username and password can be

- identical to your institute login
- separate for OMERO

Depending on your OMERO instance

OMERO.insight client: first log-in



OMERO.insight client: overview

The screenshot shows the OMERO.insight client interface. At the top, it indicates 'Mary Mayperson connected to'. The menu bar includes 'File', 'Edit', 'Window', and 'Help'. A toolbar contains various icons, including a 'Display Groups' dropdown menu. On the left, a 'Projects' sidebar shows a hierarchical tree of data. The main workspace displays a grid of 30 image thumbnails. On the right, a 'General' panel provides details for the selected dataset, including its ID, owner, creation date, and various metadata fields.

Annotations with arrows point to specific features:

- An arrow points to the 'Display Groups' dropdown menu with the text: "Display settings and image import using the integrated OMERO.importer".
- An arrow points to the 'Projects' sidebar with the text: "Data tree".
- A box on the left contains the text: "Hierarchy: -user/group --project(s) ---dataset(s) ----image(s)".
- An arrow points to the grid of image thumbnails with the text: "Thumbnail preview of images in the dataset".
- An arrow points to the 'General' panel with the text: "Information on your data(set) and metadata".

OMERO.insight client: overview

The screenshot displays the OMERO.insight client interface. At the top, it shows 'Mary Mayperson connected to' and a menu bar with 'File', 'Edit', 'Window', and 'Help'. Below the menu is a toolbar with various icons. The main interface is divided into three main sections:

- Projects (Left):** A tree view showing a hierarchy of projects and datasets. The selected dataset is '20171213_M33_totalERK [30]'. A red vertical stamp 'example.org' is overlaid on this section.
- Workspace (Center):** A grid of 30 image thumbnails. An orange callout box labeled 'Attachments' points to the bottom row of images.
- Dataset Details (Right):** A panel for the selected dataset '20171213_M33_totalERK'. It shows 'Dataset ID: 122' and 'Owner: Mary Mayperson'. Below this, there are sections for 'Tags (0)', 'Key-Value Pairs (0)', 'Attachments (0)', 'Ratings (0)', and 'Comments (0)'. An orange callout box labeled 'Tags & Key-Value Pairs' points to the 'Tags (0)' section.

- Use *OMERO.importer* 
- Run scripts 
- Annotate with Tags & Key-Value Pairs
 - during import
 - after import
- Organize projects, datasets and images
- Download and export
- Attachments
- Visualization

Connecting with OMERO.web

1. Open an internet browser and enter the address of your OMERO server

At the HHU: omero-cai.hhu.de

2. Enter your username and password
(usually the student/employee credentials)

Be sure to connect

- from the institute's network
- via a VPN connection



OMERO.web overview

The screenshot displays the OMERO.web webclient interface. On the left, a 'Data tree' shows a hierarchical structure of user groups and datasets. The main area features a grid of 'Thumbnail preview of images in the dataset'. On the right, a 'General' tab provides 'Information on your data(set) and metadata', including image ID, owner, dimensions, and key-value pairs.

User settings (points to the user profile icon)

Information on your data(set) and metadata (points to the metadata panel)

Tags & key value pairs (points to the tags and key-value pairs sections)

Thumbnail preview of images in the dataset (points to the image grid)

Data tree (points to the left sidebar)

Hierarchy:
-user/group
--project
---dataset
----image(s)

example 1a (written vertically in red over the data tree)

Metadata:

Image ID:	58103
Owner:	Mary Mayperson
Import Date:	2022-04-08 13:50:20
Dimensions (XY):	1912 x 1912
Pixels Type:	uint16
Pixels Size (XYZ) (µm):	0.07 x 0.07 x -
Z-sections/Timepoints:	1 x 1
Channels:	Ch2-T1, Ch1-T2
ROI Count:	0

Key-Value Pairs:

Key	Value
CellType	CD4+ T cell
Organism	Mus musculus
Organ	Spleen
IsolationMethod	MACS negative sort
ActivationMethod	anti-CD3/anti-CD28

OMERO.web overview – The „Acquisition“ tab

Webclient

OMERO Data History Mapr Figure Help Tag Search Forms Designer

Search: Mary Mayperson

GROUP Mary Mayperson

Explore Tags Shares

Add filter

Mary Mayperson

- 20100617_HUVEC_Tranfections 1
- 2010_CMBE_ExpressionTest 2
- 2011_VTK_ZyxinConfocal 1
- 2012_MPIMolBio_CrossSec_Lymphangio 1
- 2017_Nuc-Intens_Tcells 6
- 20171115_M33_pERK 25
 - 20171115_0h_DMSO_pERK_01_D1.czi
 - 20171115_0h_DMSO_pERK_02_D1.czi
 - 20171115_0h_MG_pERK_01_D1.czi
 - 20171115_0h_MG_pERK_02_D1.czi
 - 20171115_0h_X_pERK_01_D1.czi
 - 20171115_0h_X_pERK_02_D1.czi
 - 20171115_3h_DMSO_pERK_01_D1.czi
 - 20171115_3h_DMSO_pERK_01_D2.czi
 - 20171115_3h_DMSO_pERK_02_D1.czi
 - 20171115_3h_DMSO_pERK_02_D2.czi
 - 20171115_3h_DMSO_pERK_03_D1.czi
 - 20171115_3h_DMSO_pERK_03_D2.czi
 - 20171115_3h_MG_pERK_01_D1.czi
 - 20171115_3h_MG_pERK_01_D2.czi
 - 20171115_3h_MG_pERK_02_D1.czi
 - 20171115_3h_MG_pERK_02_D2.czi
 - 20171115_3h_MG_pERK_03_D1.czi
 - 20171115_3h_MG_pERK_03_D2.czi
 - 20171115_3h_X_pERK_01_D1.czi
 - 20171115_3h_X_pERK_01_D2.czi

Thumbnails

General Acquisition Preview

Original Metadata

Global Metadata

BeamSplitterServoPosition #4	0
BeamSplitterServoPosition #5	0
BeamSplitterServoPosition #6	0
BeamSplitterServoPosition #7	0
BeamSplitterServoPosition #8	0
Filter #1	MBS 488/561/633
Filter #2	Plate
Filter #3	Mirror
Filter #4	Rear
Filter #5	Plate
Filter #6	MBS -405
Filter #7	Mirror
Filter #8	Rear
Identifier #1	MainBeamSplitterDe
Identifier #2	MainBeamSplitterDa

Microscope

Type: Unknown

Show unset fields

Objective:

Model: i Plan-Apochromat 63x/1.40 Oil Di

Nominal magnification: 63.0

Lens NA: 1.4000000000000004

Immersion: Oil

Correction: Unknown

Show unset fields

Detector:

Acquisition metadata

Information is extracted from the original file by the Bio-Formats reader library automatically

Essential information is transformed to a user-friendly, readable format

example data

OMERO.web overview – the „Preview“ tab

Take a preview at your images!

Switch to Full Viewer (iviewer) for more functions

Your rendering settings are shown live

Adjust rendering settings, and copy or save them to other images.

example data

OMERO.web – customization with extensions (admin side)

OMERO.web can look different between instances, depending on what your admin has installed.

Examples are OMERO.figure and OMERO.iviewer

Follow the link below to learn more about extensions
(See also Chapter 9)

The screenshot displays the OMERO.web interface. At the top, the navigation bar includes 'Data', 'History', 'Mapr', 'Figure', 'Help', and 'Tag Search'. The 'Figure' menu item is highlighted by an orange callout box labeled 'OMERO.figure'. The main content area shows a grid of microscopy images, with the top-left image selected and highlighted by a blue border. A red watermark 'examples.com' is overlaid on the grid. On the right side, the 'Full viewer' button is highlighted by an orange callout box labeled 'OMERO.iviewer'. Below the image grid, the 'Image Details' panel is visible, showing metadata for the selected image: '20171115_0h_DMSO_pERK_01_D1.czi', 'Image ID: 58103', 'Owner: Mary Mayperson', 'Import Date: 2022-04-08 13:50:20', 'Dimensions (XY): 1912 x 1912', 'Pixels Type: uint16', 'Pixels Size (XYZ) (µm): 0.07 x 0.07 x -', 'Z-sections/Timepoints: 1 x 1', 'Channels: Ch2-T1, Ch1-T2', 'ROI Count: 0', 'Tags: 0', and 'Key-Value Pairs: 2'. The 'Key-Value Pairs' section includes: CellType (CD4+ T cell), Organism (Mus musculus), Organ (Spleen), IsolationMethod (MACS negative sort), and ActivationMethod (anti-CD3/anti-CD28).

OMERO.web client: functions overview

The screenshot displays the OMERO.web client interface. On the left, a file browser shows a tree structure under the user 'Mary Mayperson', with a folder '20171115_M33_pERK25' selected. The main area shows a grid of 16 image thumbnails, with the top-left one highlighted. On the right, a metadata panel for the selected image '20171115_0h_DMSO_pERK_01_D1.czi' is visible, showing details like Image ID, Owner, Dimensions, and Channels. Below the metadata, there are sections for Tags and Key-Value Pairs.

Key	Value
CellType	CD4+ T cell
Organism	Mus musculus
Organ	Spleen
IsolationMethod	MACS negative sort
ActivationMethod	anti-CD3/anti-CD28

- *Manage data, i.e.:
Organize projects, datasets,
and images*
- *Annotate metadata with tags
and Key-Value Pairs*
- *Download and export*
- *Run scripts*
- *Add attachments*
- *Visualize Data*
- *Share for collaboration*
- *Use OMERO.web extensions
(e.g., OMERO.figure)*