



AuBi training



Sophie Desset (iGReD – CLIC)

From the microscope to publication, OMERO handles all your images in a secure central repository. You can view, organize, analyze and share your data from anywhere you have internet access. Work with your images from a desktop app (Windows, Mac or Linux), from the web or from 3rd party software. Over 150 image file formats supported, including all major microscope formats.

[Download Version 5.6](#)

[Read the Docs](#)

[Start with OMERO at your Institution](#)



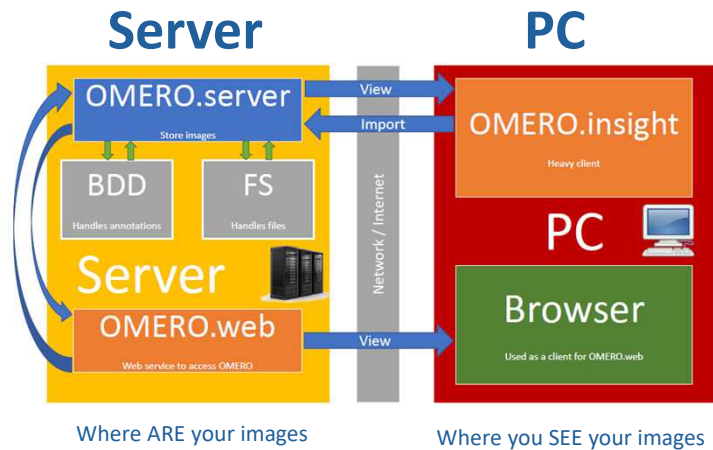
What is OMERO?

From the microscope to publication, OMERO handles all your images in a secure central repository



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Scientific image manager



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Image de mmacrovector / Freepikmicroscope: https://fr.freepik.com/vecteurs-libre/illustration-realiste-microscope_3796440.htm sur Freepik

What is OMERO for?

You can view, organize, analyze and share your data from anywhere you have internet access.



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The Power of OMERO

A complete platform for managing your images, OMERO has many features and expansion points to integrate with your existing tools.



NEW

The recent releases of OMERO are packed full of new features and functionality.

[Learn More](#)



IMPORT

Import over 150 image formats from microscope, graphics and other imaging formats. Use the Insight client, command line interface or transfer files directly to OMERO.

[Learn More](#)



ORGANIZE

Annotate your data with Tags, Comments, Files and more. Browse or Search your images and share with collaborators.

[Learn More](#)



VIEW

Use OMERO clients to work with image data over the internet from anywhere. Browse thumbnails, image previews and view in full multi-dimensional viewer. High Content Screening data is also supported.

[Learn More](#)



ANALYZE

Use ImageJ, MATLAB, R, scripts and other tools to run analysis on data in OMERO and save results on the server.

[Learn More](#)



PUBLISH

Publish your raw data straight from the server using URLs to link directly to the web-based image viewer in a manuscript or embed images into your website.

[Learn More](#)

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Image de macrovector / Freepik microscope: https://fr.freepik.com/vecteurs-libre/illustration-realiste-microscope_3796440.htm sur Freepik

How OMERO works?

Work with your images from a desktop app or from the web.

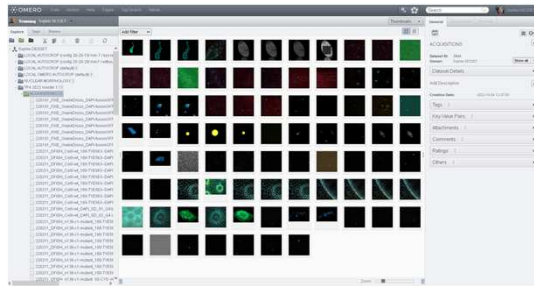


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What we're going to see in practice

Rich client installation



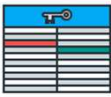

- Required for import
- Download the appropriate version .exe here: <https://www.openmicroscopy.org/omero/downloads/>

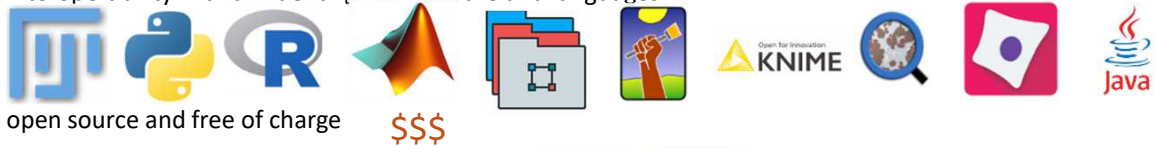


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Image de macrovector / Freepik microscope: https://fr.freepik.com/vecteurs-libre/illustration-realiste-microscope_3796440.htm sur Freepik

Advantages of OMERO

- ~exhaustiveness of microscope manufacturer formats (bioformat) 
- support for acquisition metadata 
- metadata enrichment capability (sample, treatment)  
- interoperability with a wide range of software and languages






- open source and free of charge 
- default enhancement and measurement tools  

Image de mmacrovector / Freepikmicroscope: https://fr.freepik.com/vecteurs-libre/illustration-realiste-microscope_3796440.htm Image de macrovector sur Freepik

Limitations of OMERO

- Old architecture

Swedlow JR, Goldberg I, Brauner E, Sorger PK (2003) Informatics and quantitative analysis in biological imaging. Science 300(5616), 100-2. **Published 4 April 2003** DOI: [10.1126/science.1082602](https://doi.org/10.1126/science.1082602) PMID: [12677061](https://pubmed.ncbi.nlm.nih.gov/12677061/) PMCID: [PMC3522889](https://pubmed.ncbi.nlm.nih.gov/PMC3522889/)

- not really FAIR : ID is unique on the instance where it is located, but not on the web

- slow for heavy images



- no 3D display



- deployment and maintenance for specialists



- lack of communication scripts:

Image de macrovector / Freepik microscope: https://fr.freepik.com/vecteurs-libre/illustration-realiste-microscope_3796440.htm sur Freepik

write/annotate/delete rights

Action on others' data	Private			Read-Only			Read-Annotate			Read-Write		
	M	O	A	M	O	A	M	O	A	M	O	A
View data, draw ROIs	X	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Annotate, save ROIs & render settings	X	X	X	X	✓	✓	✓	✓	✓	✓	✓	✓
Remove annotations or ROIs	X	✓	✓	X	✓	✓	X	✓	✓	✓	✓	✓
Edit names and descriptions	X	✓	✓	X	✓	✓	X	✓	✓	✓	✓	✓
Delete data	X	✓	✓	X	✓	✓	X	✓	✓	✓	✓	✓
Move data between groups	X	X	✓	X	X	✓	X	X	✓	X	X	✓

M = Member

P = Owner

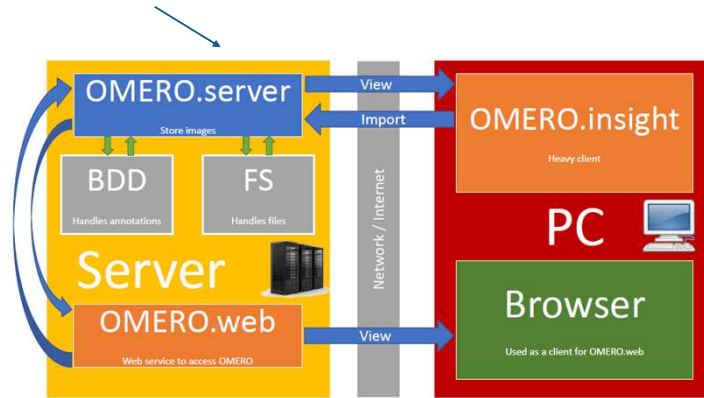
A = Admin

This table lists the rights of each person to the images of others within a group

Group PI choose how to collaborate before creating the group.
In GReD lab, default configuration is PI owner and other Member.

The server hosting the OMERO instance of the mesocenter was purchased by UCA's Science Ouverte service and biology laboratories: PIAF, GReD, UNH, GDEC.

Data is triplicated on 100 TB



For the moment, use is shared free of charge for all AuBi users, but you'll need to renew the server at some point -> plan to finance storage resources for your projects.

Two levels of training

Today: Getting Started:

Practical Slides in blue

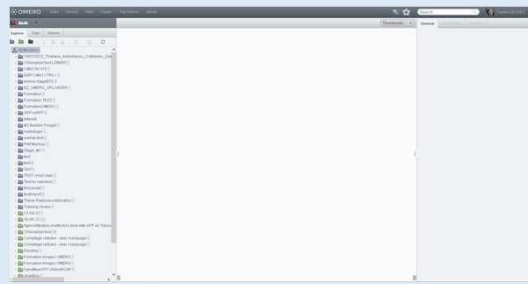
- Interfaces
- Download/ Upload
- Metadata and annotations / Sort
- Some analysis tools in omero insight
- Figure tool in web

On request: Advanced Training

- Scripts and Workflow from omero
- Omero FIJI
- Omero Simple Client

How to connect OMERO?

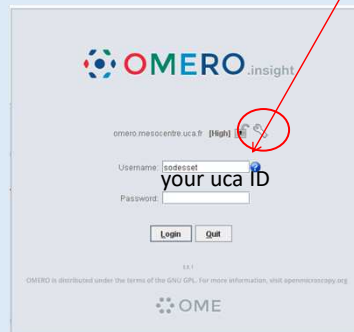
- Web



<https://omero.mesocentre.uca.fr>

Mesocentre ID/ password
(omero.igred.fr/ GReD intranet ID)

- OMERO Insight



omero.mesocentre.uca.fr
(omero.igred.fr/ GReD intranet ID)

Enter the server address with this tool



Add, remove or modify an OMERO server address

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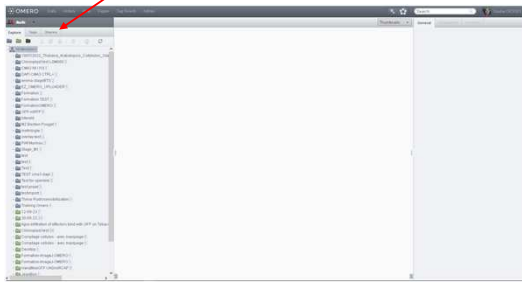
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2 tools with very similar interfaces, in both cases you need to know the address of the hosting instance

SIMILAR INTERFACES

- Web

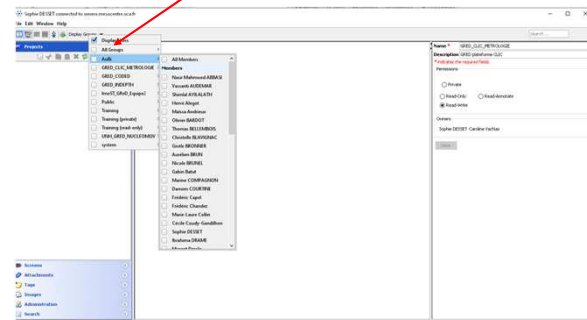
Display group



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- OMERO Insight

Display group



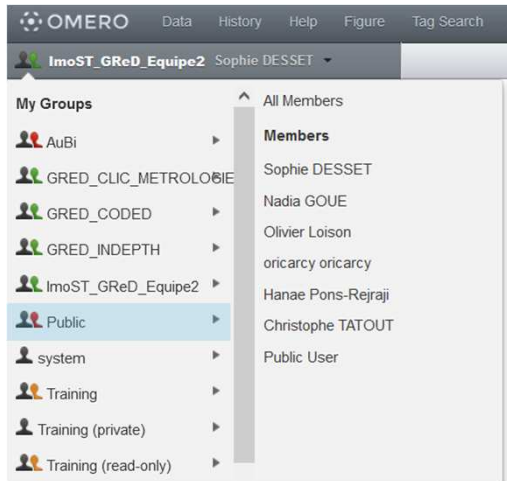
The unic tool to import your images from a PC (generally, Microscope PC)

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The consortium is no longer developing the insight tool, which offers some unique features (such as the upload function).

Select your group

- By default, on first login, all users have access to a public account that is shared with all other users.
 - > Which group(s) do you have access to?
 - > what rights does the public group have?
- To create a group, contact admin at Aubi (Nadia Goué, Sophie Desset) with your choices:
 - team group
 - project group
 - Rights needed (rwaw)



- Please note that the AuBi account is visible to all users. This is the public account for the mesocenter instance.
- There is also a public account for publishing data. The OMERO instance can be used as an image repository, while AuBi can provide doi. Images in the public account can be viewed without authentication. If needed please contact: francis.ogereau@uca.fr

Getting to know the interfaces: 1) omero.insight

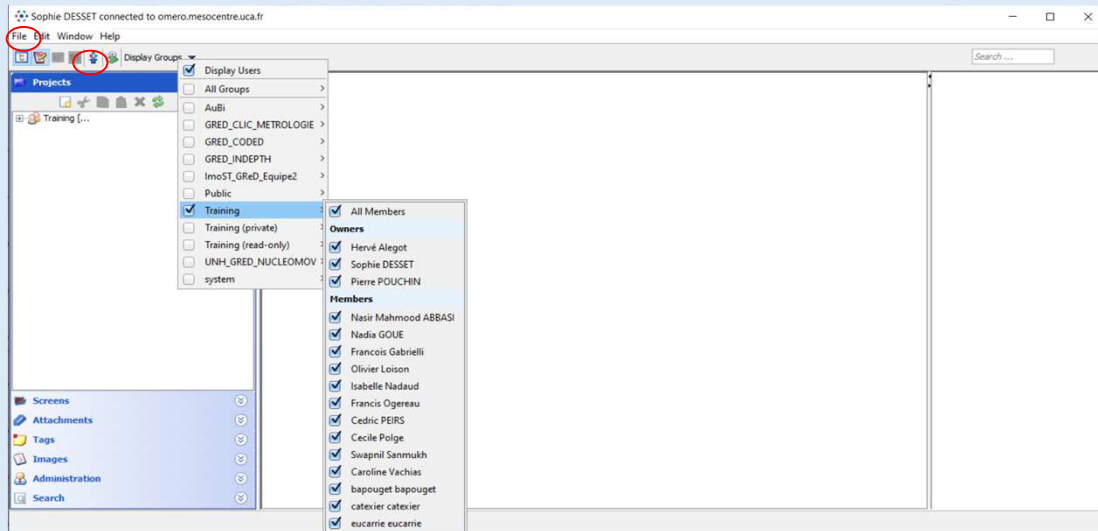
- Choose the training group
- Select images in TP4 2022 master 1 project and acquisition dataset
- Download them on your PC.
- Import them into your own space.
- Change the file name of a small image
- Download it on your PC.
- **What is the name of the image?**

- Organize two datasets by dividing up the images in your omero space.
- Copy an image and paste it into the other dataset.
- **What is the ID of each?**

- Remove one of the two images.
- **What does the other one look like?**
- Cut out an image.
- Viewing the Orphaned dataset

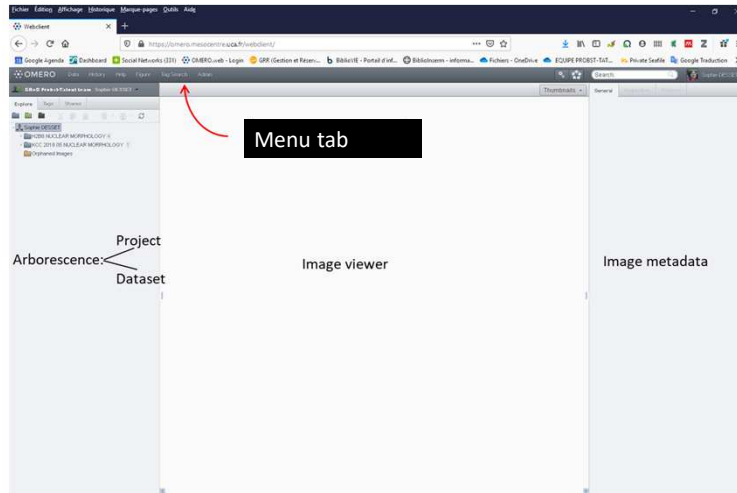
You can do all these steps on the web interface EXCEPT for importing

Use menu file or import symbol



Getting to know the interfaces: 2) omero web

<https://omero.mesocentre.uca.fr/webclient/>



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2-level tree structure, project/dataset. We strongly recommend that you adopt an organizational method for naming and annotating files

- Files imported into OMERO are NEVER modified.
- OMERO uses the unique identifier of each file as an address (link).
- Duplicating an image in OMERO does not double the space occupied.
- Duplication enables batch image processing or visualization of several images from different projects/datasets within the same window.
- Beware of the **delete** tool, prefer the **cut** tool

File explorer tab by folder tree/ tag tree or shares



↑ Refresh: use when you want to see recent importation
 ↑ Share: for omero.mesocentre.uca.fr users

Edition: Cut, copy and paste only concerns the links.

- Please note that display modifications such as annotations are visible in all projects or datasets where the duplicated image is located.

Deletion: Suppress concerns the file.

- Please note that all duplicated files are deleted too.

-> It's best to cut links when you want to delete an image: files that have been cut but not pasted, and not duplicated in another dataset, end up in the orphaned images dataset, where you can delete them with complete peace of mind.)

Viewer

- Several ways to open the viewer, depending on the interface. **Find them!**
- Play with settings, Roi, mesures
- Everyone goes into someone else's space, modifies settings and saves them.
- **Impact on the image owner?**



Metadata et annotations

1. Acquisition metadata read for 140 manufacturer image formats (bioformat)
2. Enrichment metadata:
 - Detail description
 - Tags
 - Ratings
 - Key values
 - Comments
 - attachments

Acquisition metadata tabs

Microscope

Type:

Show unset fields

Objective:

Model:

Nominal magnification:

Lens NA:

Immersion:

Correction:

Working distance (µm):

Show unset fields

Detector:

Type:

Offset:

Zoom:

Show unset fields

Detector:

Type:

Offset:

Zoom:

Show unset fields

Detector:

Type:

Offset:

Zoom:

Show unset fields

General Acquisition Preview

Full viewer

20190109_Ath_Col0-KCC-wt-3MS-wt-3NP-wt_Cot_D13_STD_DFISH_180-LNA-T563-H258-5s-dPCR@-CY5_A1.czi

Image ID: 204097
Owner: Sophie DESSET

Image Details

Add Description

Acquisition Date: 2019-01-09 14:14:20
Import Date: 2019-02-21 11:10:44
Dimensions (XY): 328 x 328
Pixels Type: uint16
Pixels Size (XYZ) (µm): 0.06 x 0.06 x 0.20
Z-sections/Timepoints: 57 x 1
Channels: Cy3-T1, H3258-T2, Cy5-T2
ROI Count: 0

Tags 12
Key-Value Pairs 0
Tables
Attachments 3
Comments 0
Ratings 0
Others 0

General Acquisition Preview

Original Metadata

Global Metadata

DisplaySetting(Channel)IlluminationType
DisplaySetting(Channel)Name
DisplaySetting(Channel)OriginalColor
DisplaySetting(Channel)PixelFormat
DisplaySetting(Channel)ShortName
Experiment(AcquisitionBlock(AcquisitionMode Setup)Ca
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Image

Objective:

Model:

Nominal magnification:

Lens NA:

Immersion:

Correction:

Working distance (µm):

Medium:

Refractive index:

Show unset fields

Cy3-T1
 H3258-T2
 Cy5-T2

Enrichment metadata: manual annotations

Tags 12

- CoID-SUN3-wt-SUN4-wt-SUN5-wt - STD -
- CoID-KAKU4-wt-CRWN1-wt-CRWN4-wt -
- CoID_NEAP1-wt-NEAP2-wt-NEAP3-wt - Cot -
- J13 - 180-LNA-TS63 - 5s-PCR-CYS -
- DFISH - sonde digérée - Ath -
- génotype sauvage -

Key-Value Pairs 0

Add Key Add Value

Tables

Attachments 3

- Figure_2020-5-31_17-22-38.pdf (431.01 KB) - x
- Figure_2020-5-31_17-33-16.pdf (634.04 KB) - x
- Figure_2020-5-31_17-33-35.tiff (33.17 MB) - x

Comments 0

ON SE CONCENTRE SVP

 **Sophie DESSET** at 2021-12-30 18:16:51
SPECIAL MARVEL

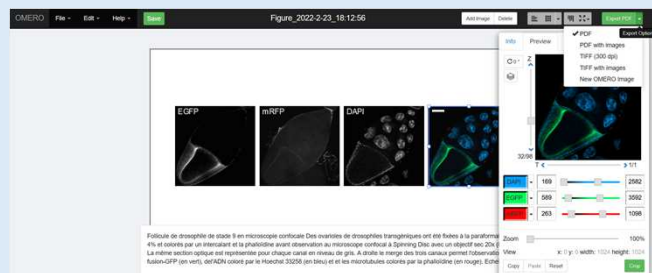
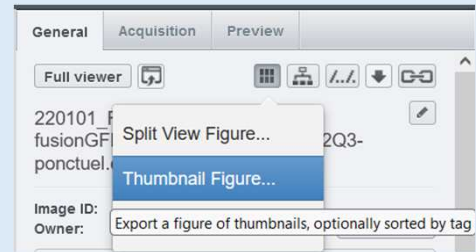
Ratings 0

★★★★★
(avq: 5 / 1 votes)

- Which metadata differ(s) between imported images and project images TP4 2022 master 1
- Enrichment: Add tags, ratings, key values in the web or insight
- Test sorting

Figure tool on the web interface

- Rapid tool in thumbnail Figure
- Choose a multidimensional image to use Figure Tab
- Several ways to save/ export

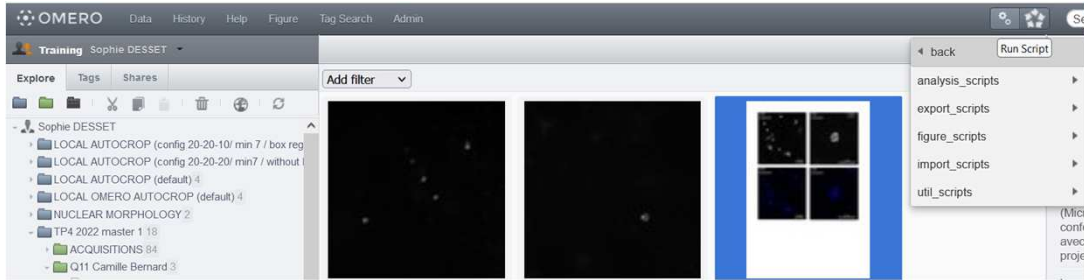


Documentation

- General: <https://omero-guides.readthedocs.io/en/latest/>
- Introduction: <https://omero-guides.readthedocs.io/en/latest/example.html>
- OMERO.figure: https://omero-guides.readthedocs.io/en/latest/figure/docs/omero_figure.html
- OME Youtube Channel: <https://www.youtube.com/channel/UCyysB9ZzNi8aBGYqcxSrauQ/videos>
- Rt-MFM tutorial: <https://youtu.be/39a3mfqY3A0>
- OMERO TIPS MICA: <https://univ-cotedazur.fr/mica/%EF%BB%BF%EF%BB%BF%EF%BB%BFomero/trucs-astuces>
- OMERO Simple Client, tuto du rt-MFM: cf : <https://www.youtube.com/live/RKdOAsddAAg>

Scripts

web



Insight viewer

