Image from idr0100, Capar et al.

Training on OMERO

OME 2024

OME Team

Presentations available @

https://downloads.openmicroscopy.org/presentations/2024/Dundee

OME Team trainings

July 2023: GBI ABiS course, Okazaki & Kobe

- **Organizers: Shuichi Onami, Naoto Ueno, Gleb Grebnev**
- **Participants from Cameroon, India, Sri Lanka, Mexico**
- **Asia & South America – data management interest**

▶ 🔆 **Community Partners**

Configuration of the OMERO server ✏️

🟦 Data Management omero

😊 It's been a while since we've seen SANTOSH PODDER — their last post was 3 years ago.

SANTOSH PODDER santosh.p   Nov 2023

We are in the process of installing a 200TB storage server for the microscopy facility. We would like to host an OMERO server for better data management. What will the workstation configuration (OMERO.server) which can be worth for the next 5 years?

image.sc

Participant:

Adan Guerrero
National Laboratory for Advanced Microscopy (Mexico)

Using IDR and Zarr data for imaging projects
https://chanzuckerberg.com/imaging/conne
cting-the-mexican-bioimaging-community/

Training workflows - basic

- **Basic: Data management, visualization&analysis by scientists using imaging**
- **Public data only, main source: IDR**

https://www.openmicroscopy.org/events/
https://www.openmicroscopy.org/training/
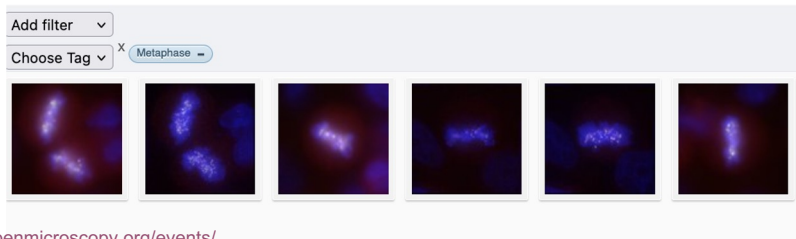
Training workflows - advanced

- **Python, R APIs**
- **Jupyter Notebooks and IDR data**
- **OME-NGFF**
- **coding**

OMERO at your institution

Canada BioImaging, Montreal

University of Arizona

July/August 2023

- Organizers: Claire Brown, Douglas Cromey
- Supporting national OMERO Image Data Resource (Canada) and groups at McGill University, Montreal
- Joint North American tour with University of Arizona

November 2023: CRG Barcelona

- **Organizers: Nadia Halidi**
- **Open workshop for participants from all over the world**
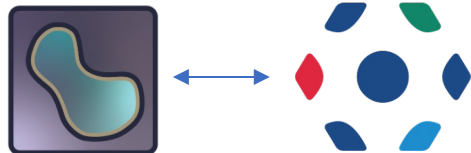
June 2024: Smithsonian Institute, Panama

- **Organizer: Carlos Jaramillo**
- **Large images**
- **Palynological slides (plant pollens, spores, microorganisms), both living and fossil**
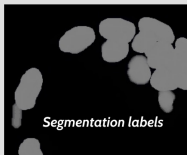- **Emphasis on QuPath**

https://stri.si.edu/
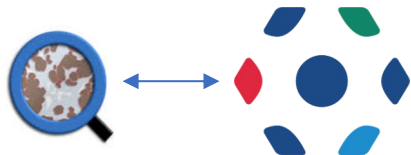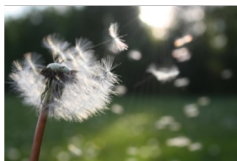
April 2024: EMBL-EBI imaging course

Image analysis and public repositories course
Organizers: Team from EMBL-EBI (Craig Russel, Matthew Hartley, Patricia Carvajal) and external tutors

EMBL-EBI course

Images stored in IDR with labels as OMERO ROIs

Binary image

Segmentation labels

Python-based analysis environment

Notebook with StarDist

Load Image with labels from IDR, analyze using StarDist and compare results

The notebook shows how to load an IDR image with labels.

The image is referenced in the paper "NesSys: a novel method for accurate nuclear segmentation in 3D" published August 2019 in PLOS Biology: https://doi.org/10.1371/journal.pbio.3000388 and can be viewed online in the Image Data Resource.

In this notebook, the image is loaded together with the labels and analyzed using StarDist. The StarDist analysis produces a segmentation, which is then viewed side-by-side with the original segmentations produced by the authors of the paper obtained via the loaded labels.

Labels have been saved as mask.

```
In [9]: from omero_zarr import masks
```

```
In [10]: roi_service = conn.getRoi
        result = roi_service.find

        dims = (image.getSizeT(),
        shapes = []
        for roi in result.rois:
            shapes.append(roi.cop

        saver = masks.MaskSaver(N
        labels, fillColors, prope
```
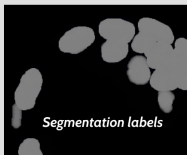
Select Z ____●____ 89

Notebook segments images using StarDist and produces new segmentation labels

Notebook compares the labels
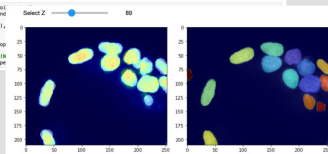
Segmentation labels from original

Segmented by StarDist in the Notebook

https://doi.org/10.48546/WORKFLOWHUB.WORKFLOW.493.1

EMBL-EBI course

*Images stored in IDR
with labels as OMERO ROIs*

Binary image

Segmentation labels

*Python-based analysis
environment*

Notebook with Cellpose

*Notebook
segments images
using Cellpose
and produces new
segmentation
labels*

*Notebook
compares the
labels*

*Segmentation
labels from
original*

*Segmented by
Cellpose in the
Notebook*

https://doi.org/10.48546/WORKFLOWHUB.WORKFLOW.489.1

OMERO as part of teaching platform
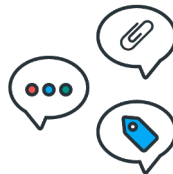
Student course assessment
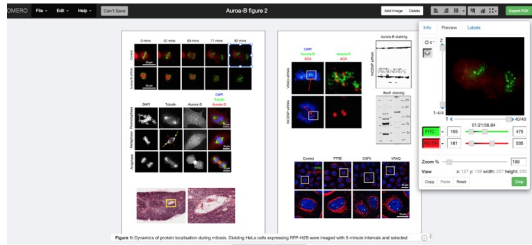
Acquire images

Import to OMERO

Annotate

Create OMERO.figure

February 2024: Student course assessment
Karolinska Institutet, Stockholm

- **Organizer: Sylvie Le Guyader**

LCI microscopy course

From sample preparation to image analysis 2024/01/29–2024/02/16

https://ki.se/en/bionut/lci-microscopy-course

February 2024 OMERO and OMERO.figure workshop

The OME Team gave a public workshop on OMERO and OMERO.figure as part of a three-week course organized by LCI at Karolinska Institutet.

https://www.openmicroscopy.org/events/workshops-lci-karolinska-february-2024.html

Images in OMERO as a Teaching tool

"Portal" – ease of access
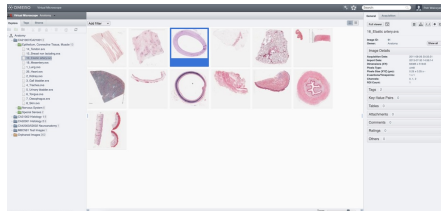
OMERO.iviewer

Highlight features: ROIs

Images in OMERO as a Teaching tool

- Harvard Medical School (Glencoe Software)
- University of Dundee (Dentistry, Pathology, Anatomy…)
- **See talk about usage @ Universitas Gadjah-Mada Indonesia later today**

OME Team tooling

- OMERO.guides – including community workflow contributions

OME Team tooling

- YouTube Channel

Open Microscopy Environment

@OpenMicroscopyEnvironment · 424 subscribers · 68 videos

OME develops open-source software and data format standards for the storage and manip...

Subscribe

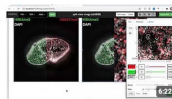Home   Videos   Playlists   Community
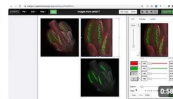
OMERO iviewer
176 views · 3 years ago

I2K 2020 OMERO workshop
279 views · 3 years ago

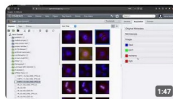OMERO.figure split image as seen on twitter
64 views · 3 years ago

OMERO figure crop
105 views · 3 years ago

Annotate, filter and search data in OMERO
118 views · 3 years ago

Manage Data in OMERO
150 views · 3 years ago

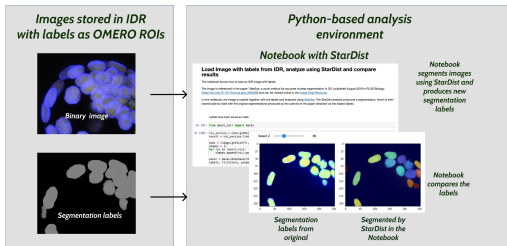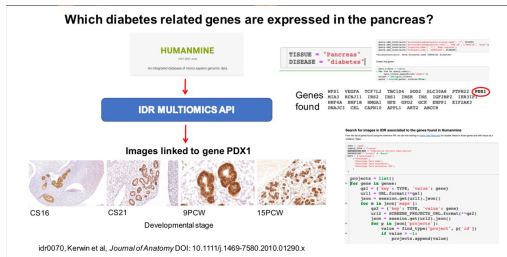Import Data using OMERO.insight
831 views · 3 years ago

iviewer 0 8 0
2.1K views · 4 years ago

https://www.youtube.com/@OpenMicroscopyEnvironment/videos

OME Team tooling

Jupyter notebooks, scripts, environment.yml files

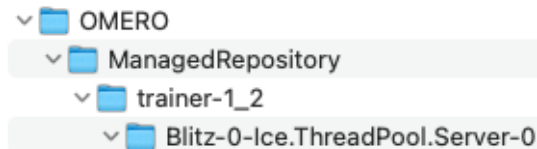https://github.com/ome/omero-guide-python

https://github.com/ome/EMBL-EBI-imaging-course-04-2024

OME Team tooling

New: Download of Database of the training server with Image data
(already used in TiM 2023, Arizona)

DataBase

+

```
∨ 📁 OMERO
   ∨ 📁 ManagedRepository
      ∨ 📁 trainer-1_2
         ∨ 📁 Blitz-0-Ice.ThreadPool.Server-0
```

https://downloads.openmicroscopy.org/images/OMERO.tar.gz

OME Team tooling

OMERO training server - available as collaboration

OME outreach feedback is valuable

- General suggestions about the feature design
- Testing: https://github.com/GReD-Clermont/simple-omero-client/pull/65 ....
- Evaluation of the tooling
- Software workflow improvements: https://github.com/ome/omero-iviewer/pull/465 ....

Cross-reference strategy for tooling and guides ?

Thanks to OME and IDR Teams

OME
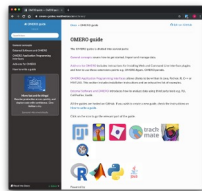
Jason Swedlow
Frances Wong
Dominik Lindner
Josh Moore
Jean-Marie Burel
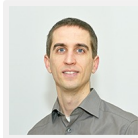
Petr Walczysko
Will Moore
David Gault
Khaled Mohamed

Glencoe SOFTWARE

EMBL-EBI

Past members

Simon Li
Mark Carroll
Riad Gozim
Eleanor Willams
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Gabry Rustici
Ola Tarkowska
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Rafael Carazo-Salas
Balint Antal
Anatole Chessel
Simon Jupp
Tony Burdett

Thank you