Mutimage UCA : Facilitating the management of life sciences imaging data

S.Ben Aïcha - F. Bekkouche - R. Arkowitz - F. Brau

MICA MICROSCOPIE IMAGERIE CÔTE D'AZUR

UNIVERSITÉ CÔTE D'AZUR

Project Goals

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Facilitate the management, sharing and analysis of biological images on the life sciences community

Organize, coordinate, structure and share resources and expertise to promote and stimulate quantitative image analysis in biology

The real goal

Building the project

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UCA JEDI
INITIATIVE D'EXCELLENCE

Opening the database for all teams

2019

Pilots teams & omero referents

Relocation of the Cloud IFB : Online speed tests
Migration of the LBDV database to IFB
Form of tags
Tests of image analysis scripts
Database update
Omero public account

MAI-OCT 2018

Validation of all options

Omero, IFB, Support staff

OMERO
ifb

AVRIL 2018

Database Administrator

Support documents - Recruitment of pilots team
Training - Database tests - Website

S. Benaicha

FEV 2018

Identification of needs

Storage, Software and Hardware

NOV-DEC 2017

OMERO Technology

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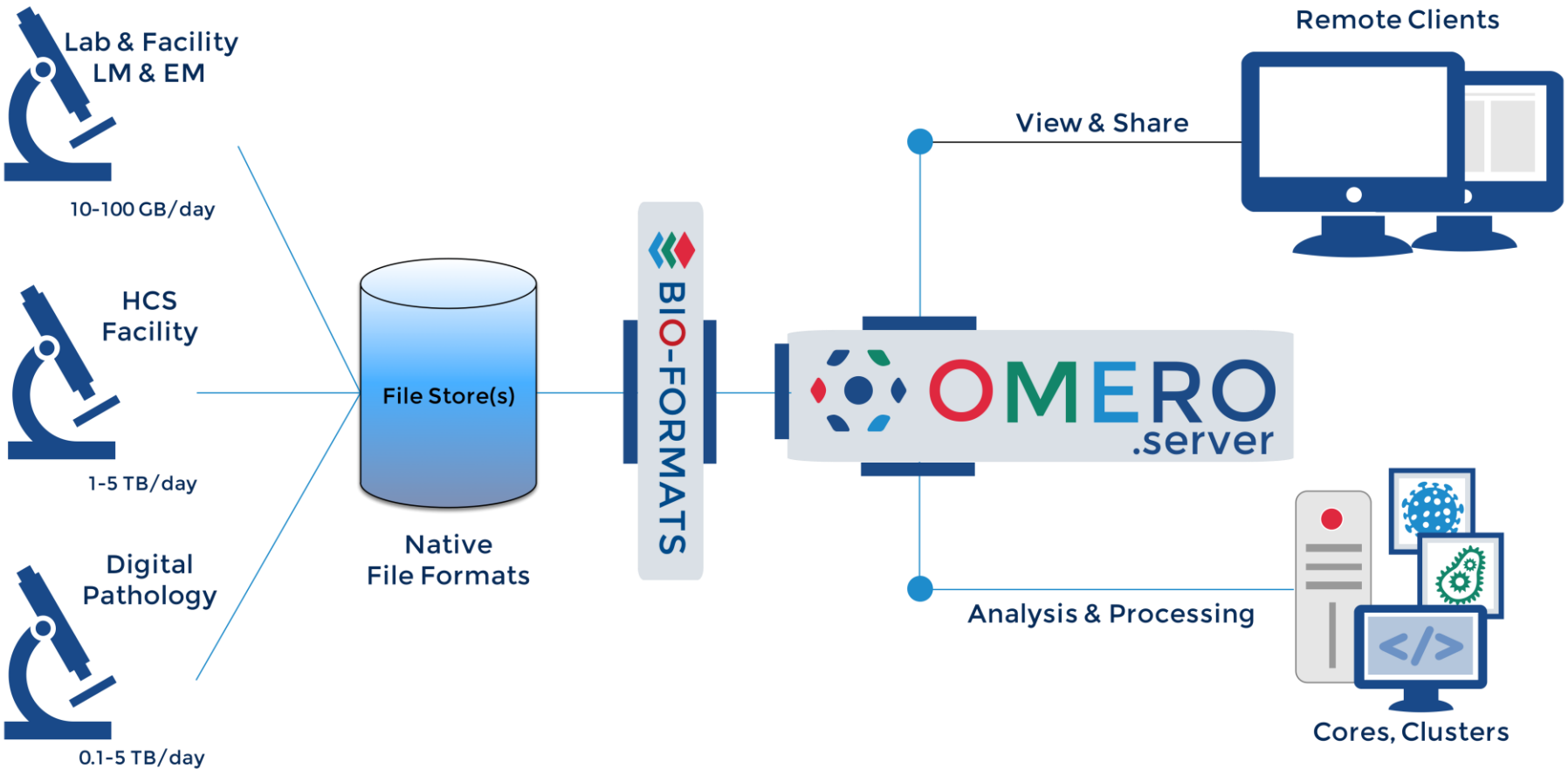

https://openmicroscopy.org/omero

Mutimage_UCA

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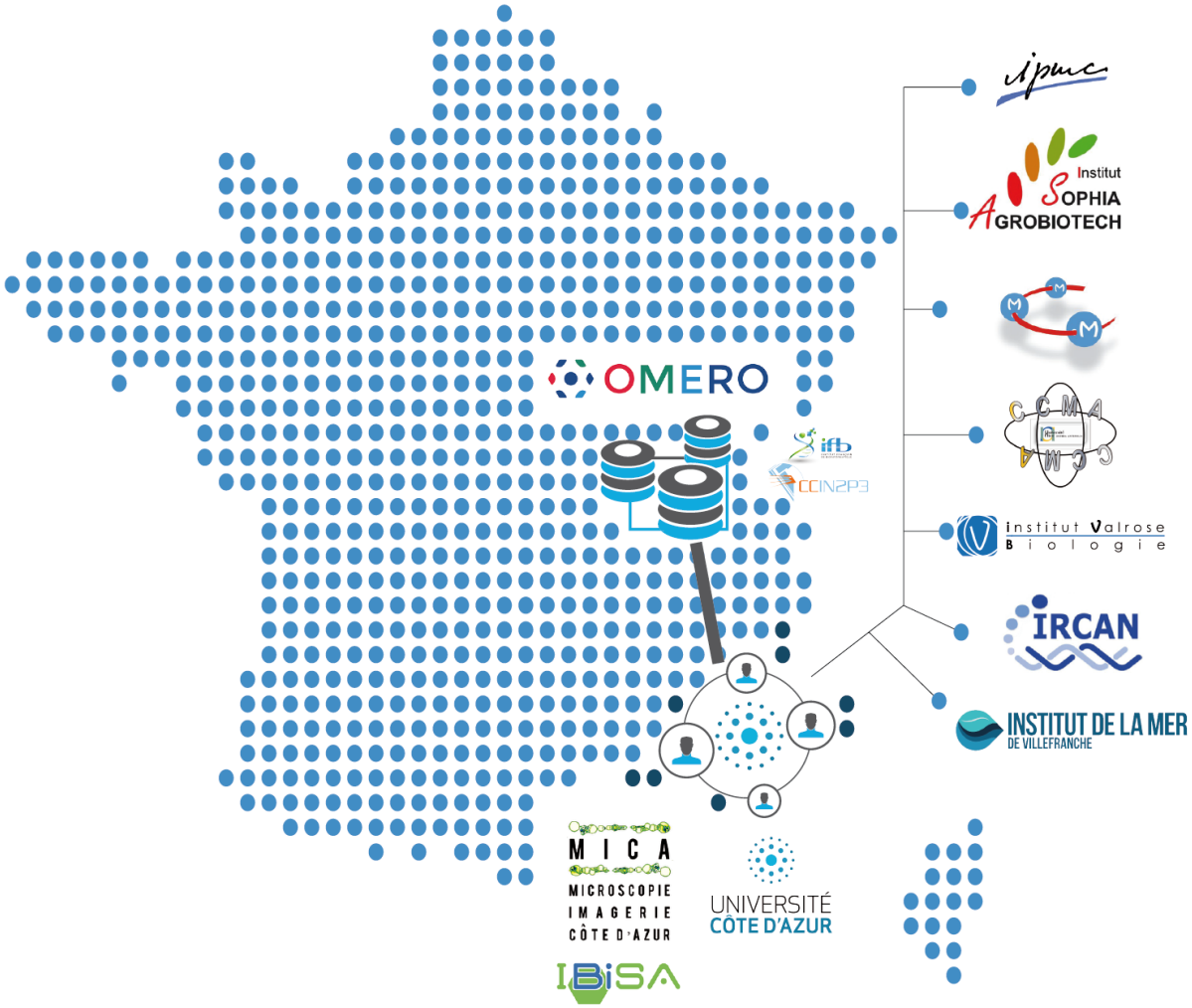

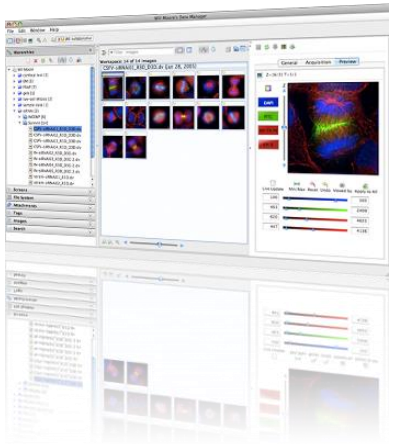

UCA JEDI
INITIATIVE D'EXCELLENCE

Mutualisation UCA EMBRC-Fr

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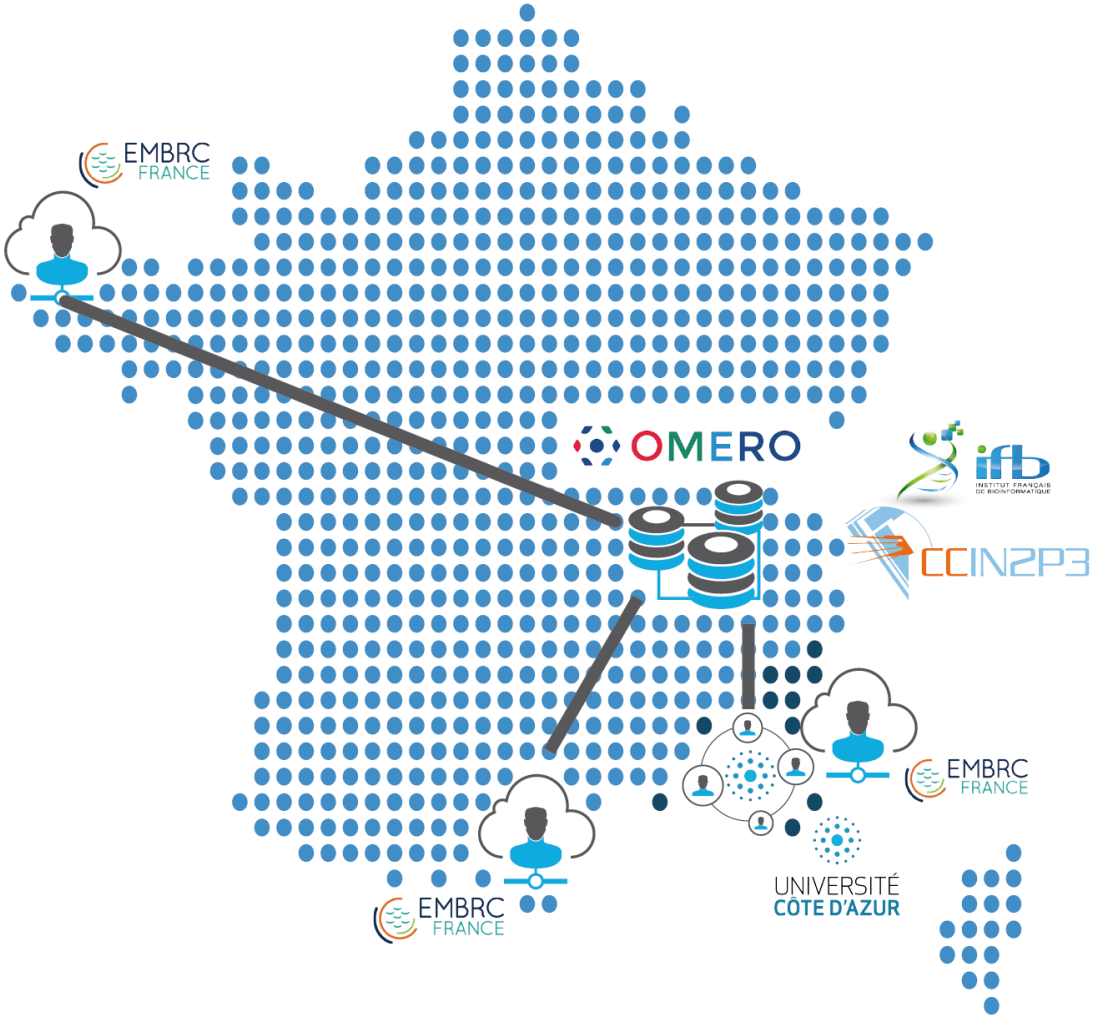

EMBRC FRANCE

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Functional organization

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C. Blanchet
Data base – Storage – Data Security

ifb INSTITUT FRANÇAIS DE BIOINFORMATIQUE

F. Bekkouche
Technical referent Omero

INSTITUT DE LA MER DE VILLEFRANCHE

S. Pisano IRCAN | M. Irondelle C3M | O. Pierre ISA | S.Lachambre iBV | G. Carles TIRO-MATOS | F. Brau/S. Abelanet IPMC | Sameh.Ben Aicha LBDV | E. Debreuve Morpheme

Manage groups and users access
Training & Support

IRCAN

Institut SOPHIA AGROBIOTECH

TIRO UMR E4320

ipmc

MORPHEME
MORPHOLOGIE ET IMAGES

L2M

institut Valrose Biologie

INSTITUT DE LA MER DE VILLEFRANCHE

User accounts management

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IMEV

- Team 1
- Team 2
- Team 3
- ...

MICA MICROSCOPIE IMAGERIE CÔTE D'AZUR

Website

- OMERO TEAM 1 GROUP
- OMERO TEAM 1 COLLABORATIONS
- OMERO TEAM 2 GROUP
- OMERO TEAM 2 COLLABORATIONS

https://omero.france-bioinformatique.fr/omero/webclient/login/

Galleries

Training

Teaching

Bio-Formats: support for >150 file formats

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BIO-RAD

OXFORD INSTRUMENTS ANDOR

OME

HAMAMATSU PHOTON IS OUR BUSINESS

PerkinElmer

Leica MICROSYSTEMS

Nikon

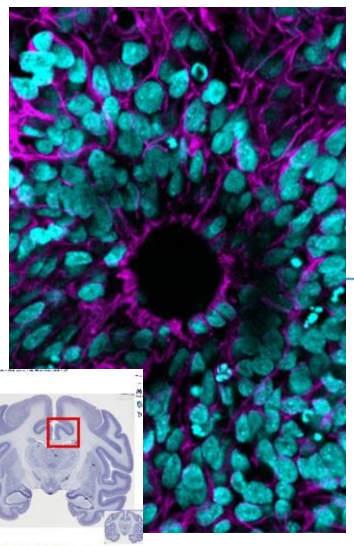
ZEISS

OLYMPUS

BD BD Biosciences

MetaMorph BRUKER

ThermoFisher SCIENTIFIC



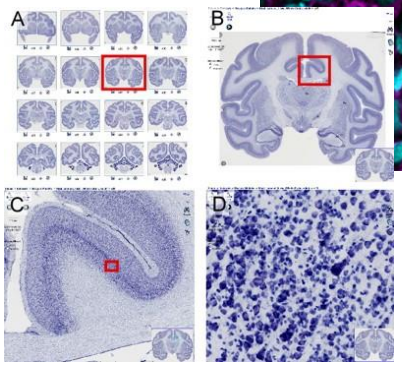


Image pyramids

BIO-FORMATS

ImageJ
FiJi
CellProfiler
OMERO
MATLAB
Octave
R
Orbit
…

https://www.openmicroscopy.org/bio-formats

Image management

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BIO-FORMATS

Search engine

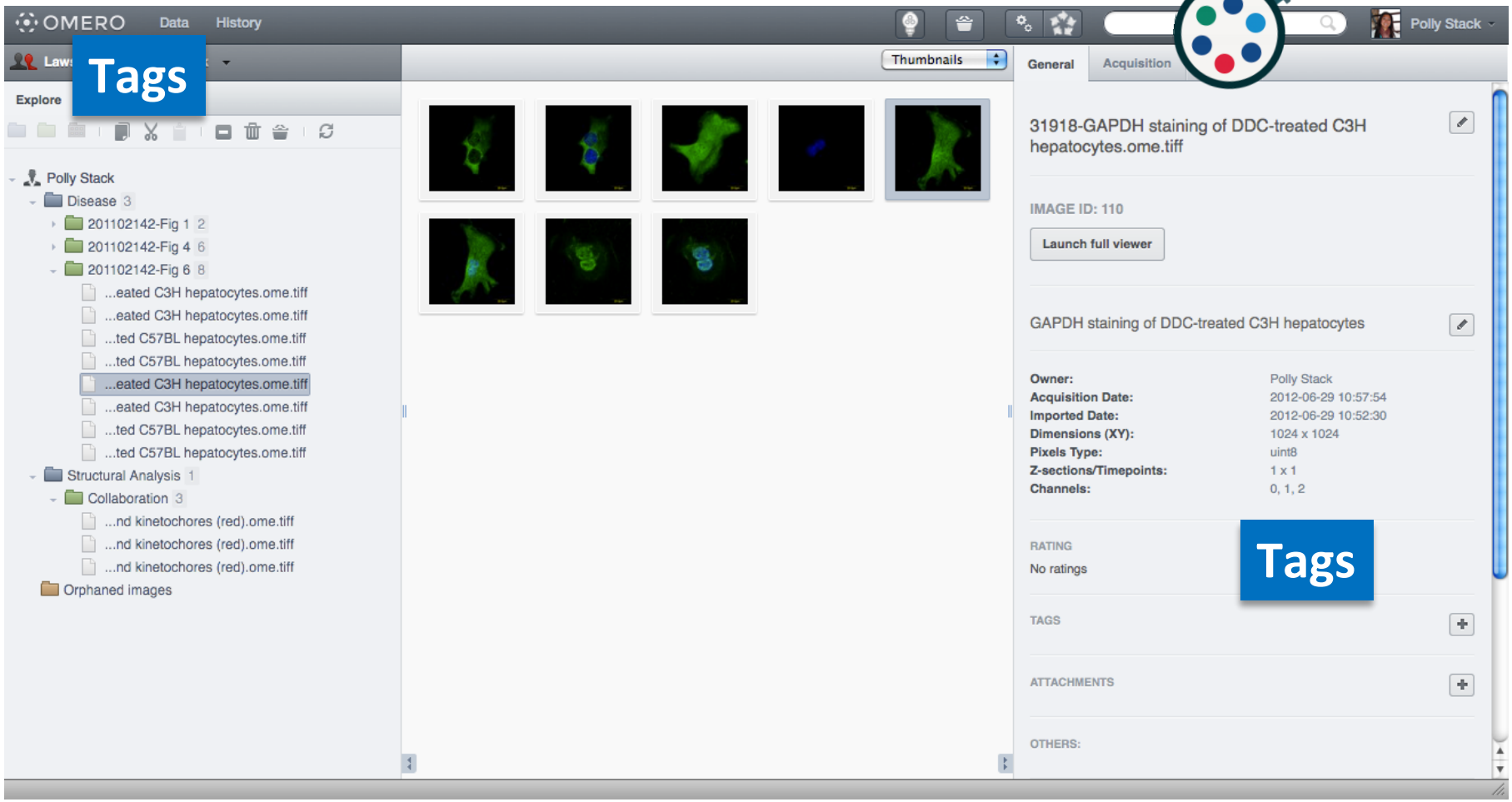


Image management

UNIVERSITÉ CÔTE D'AZUR

BIO-FORMATS

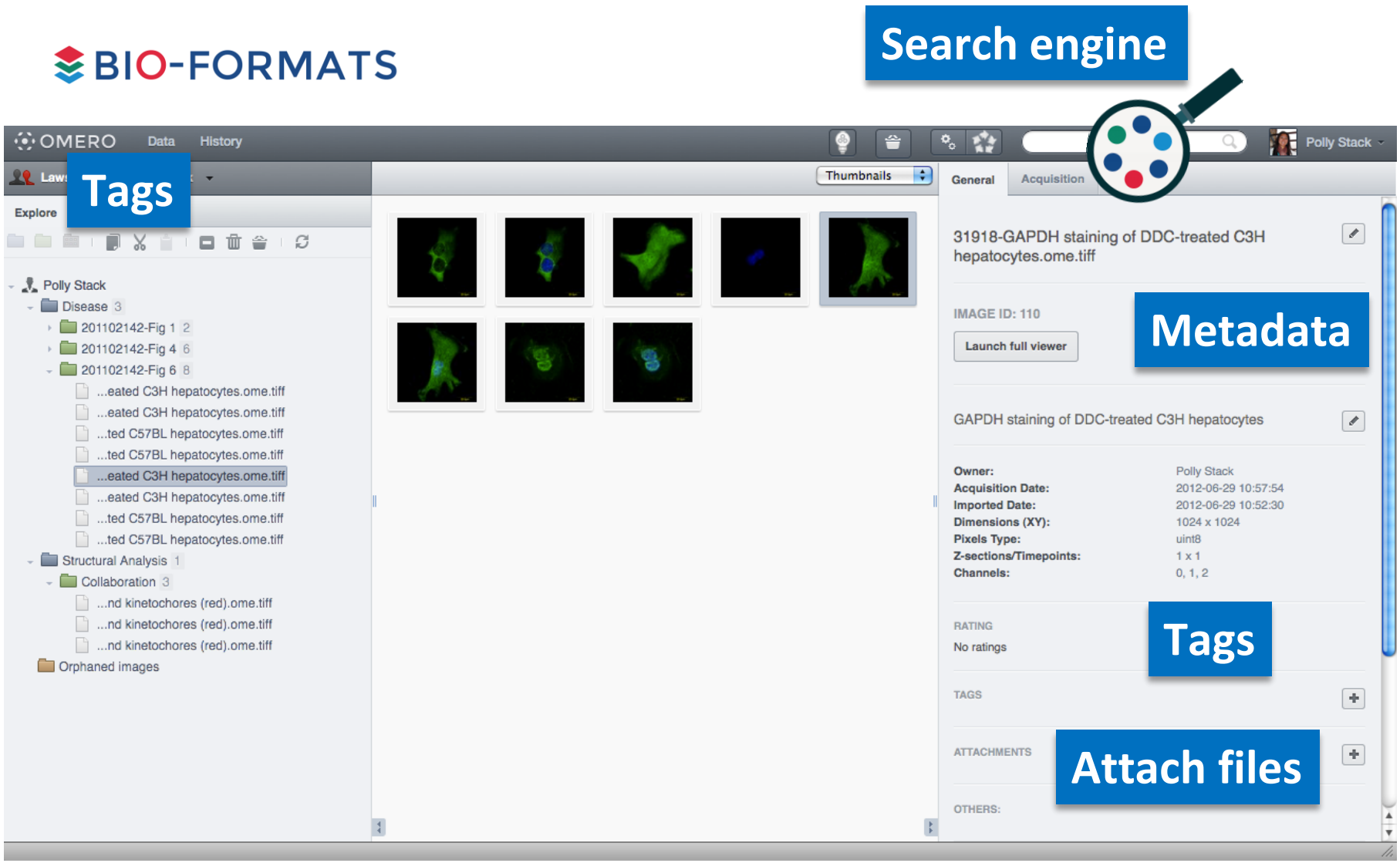
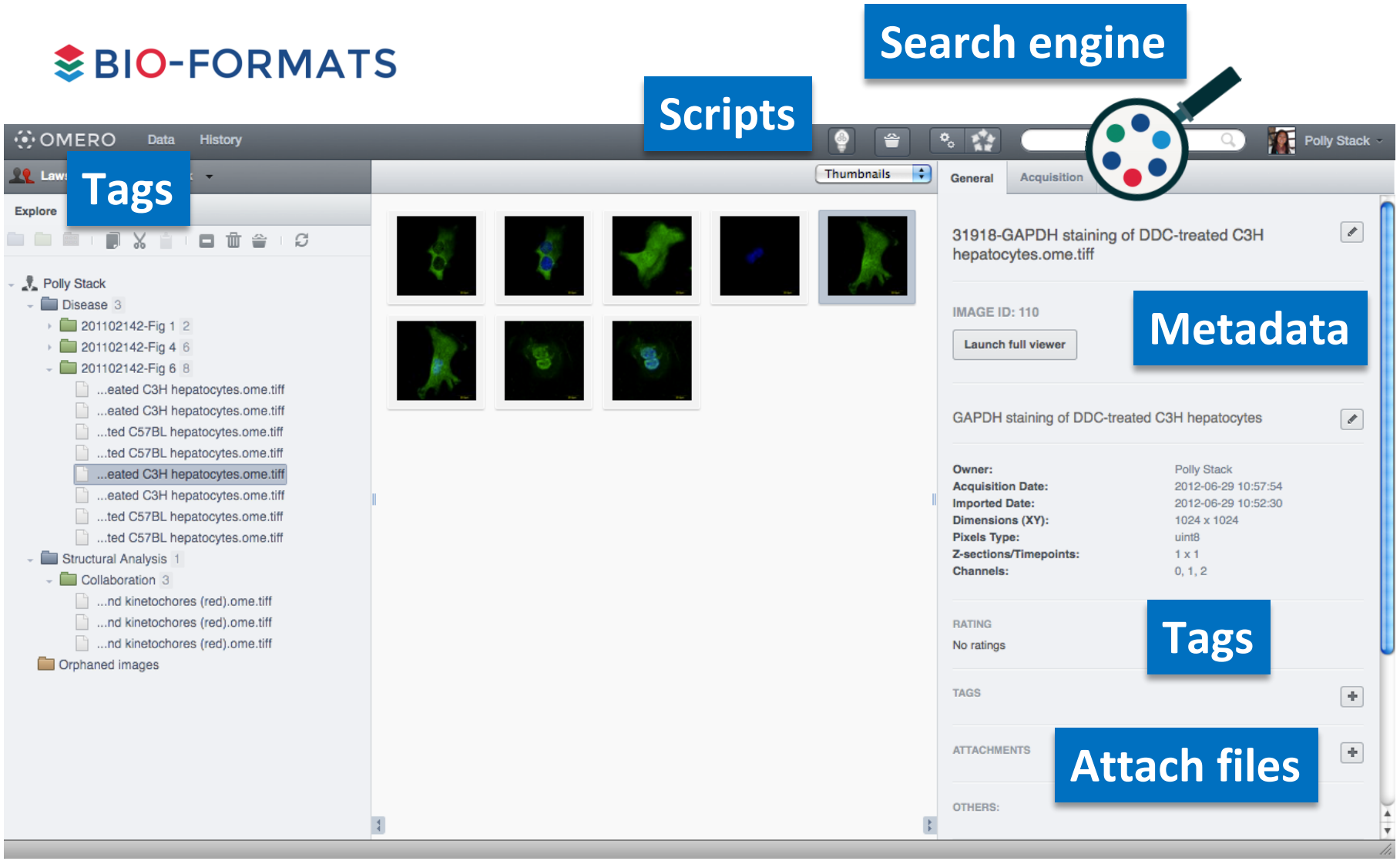


Image management

UNIVERSITÉ CÔTE D'AZUR

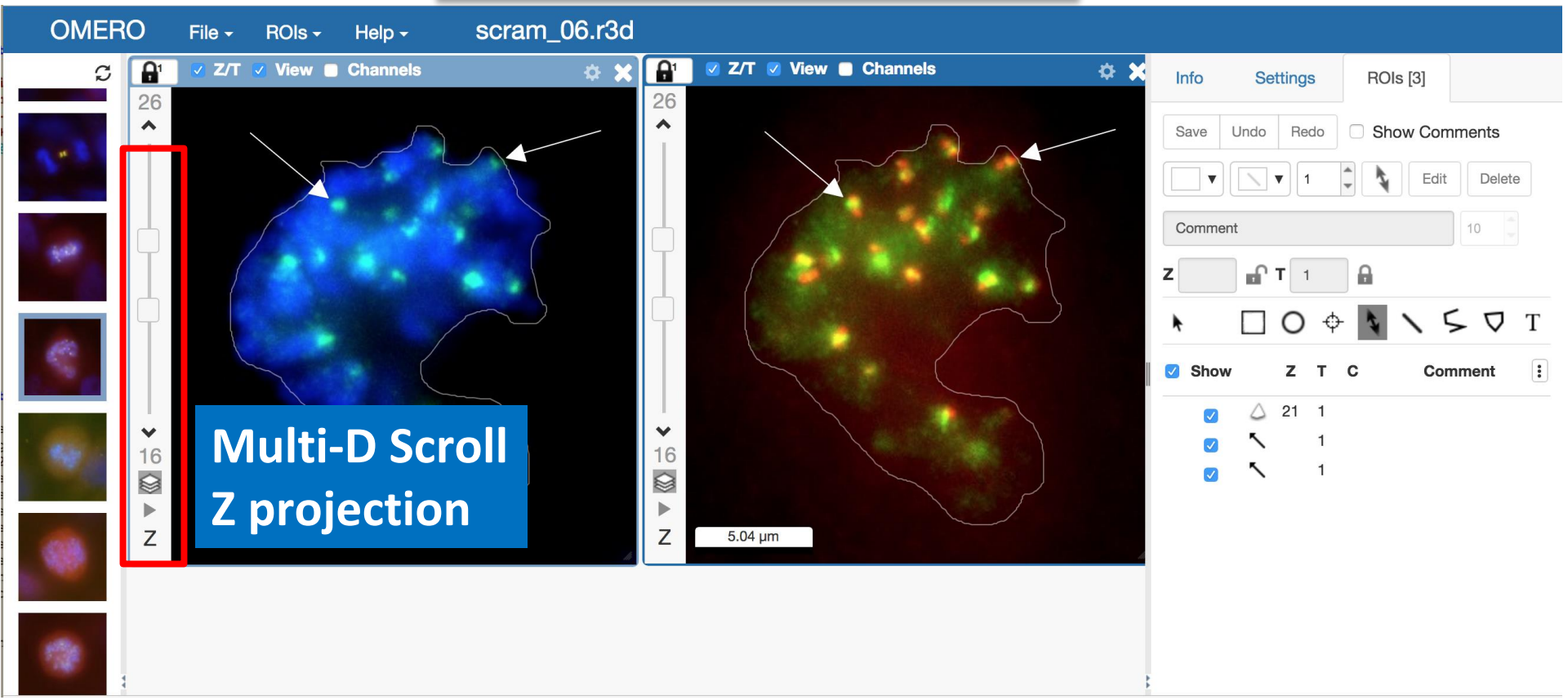
BIO-FORMATS



OMERO iViewer

UNIVERSITÉ CÔTE D'AZUR

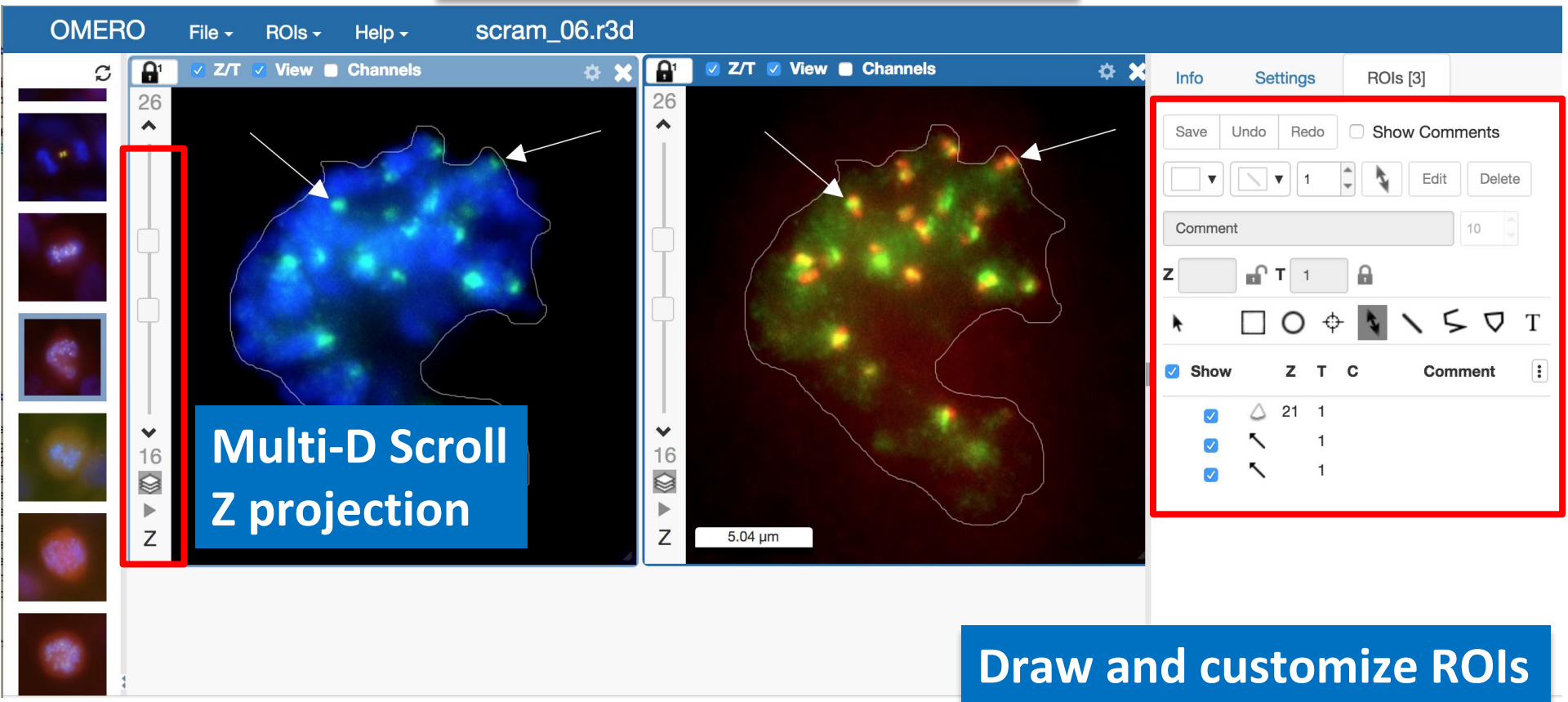
Open multi-selected images



OMERO iViewer

UNIVERSITÉ CÔTE D'AZUR

Open multi-selected images

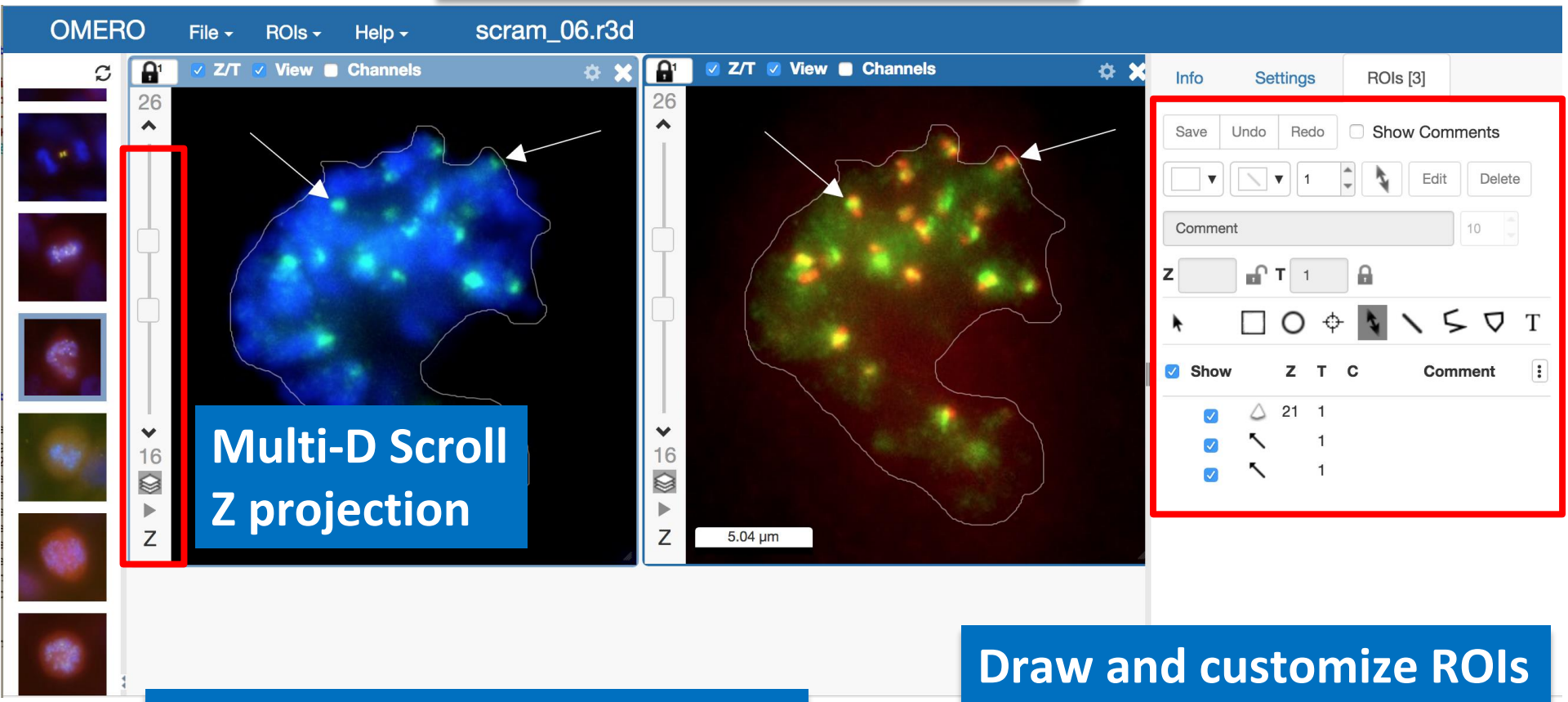


Draw and customize ROIs
Measure
Extract new images

OMERO iViewer

UNIVERSITÉ CÔTE D'AZUR

Open multi-selected images



Zoom and rotate
Global contrast adjustments

Draw and customize ROIs
Measure
Extract new images

OMERO Figure : forget the other softwares

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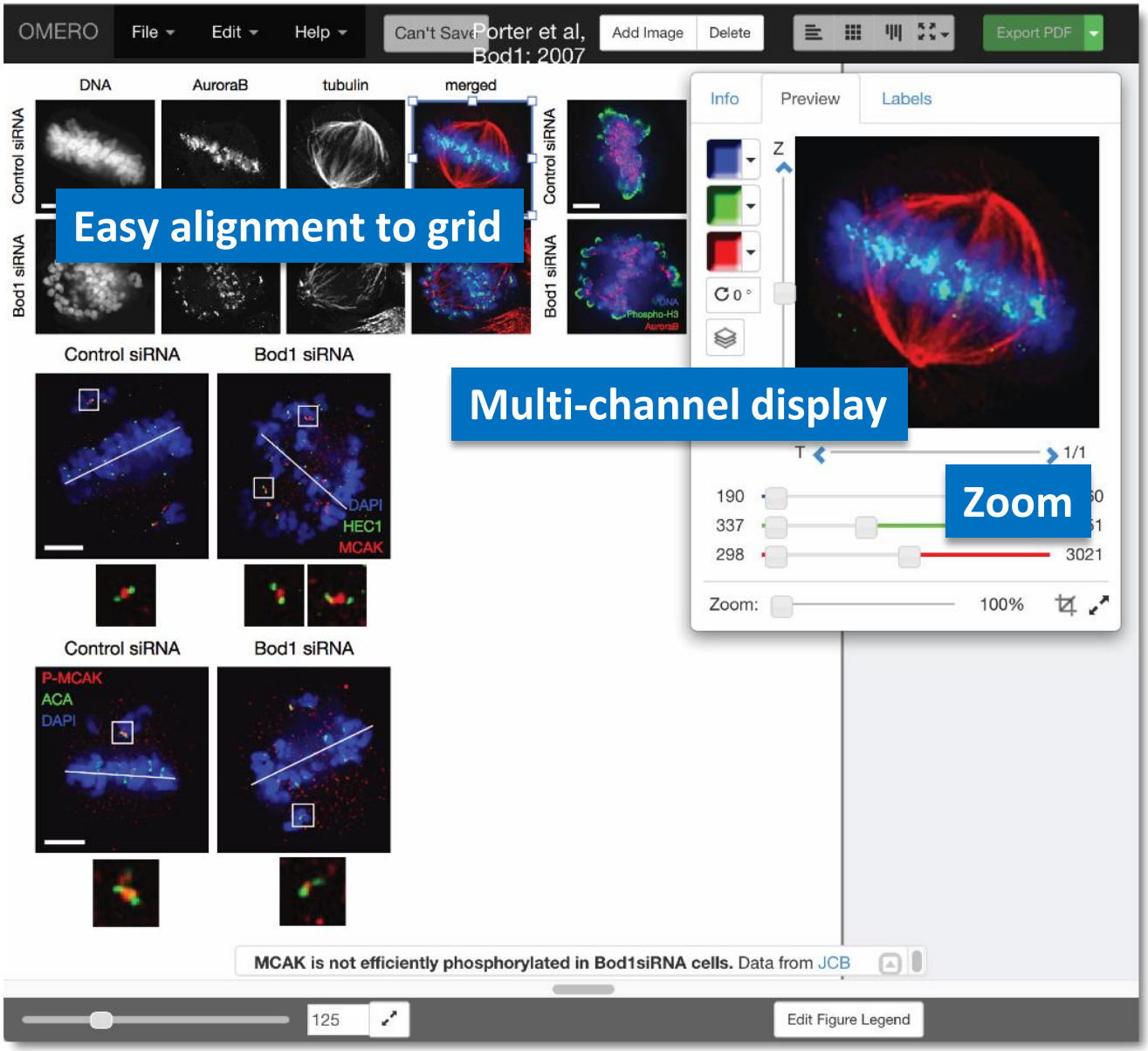
Legends



OMERO Figure : forget the other softwares

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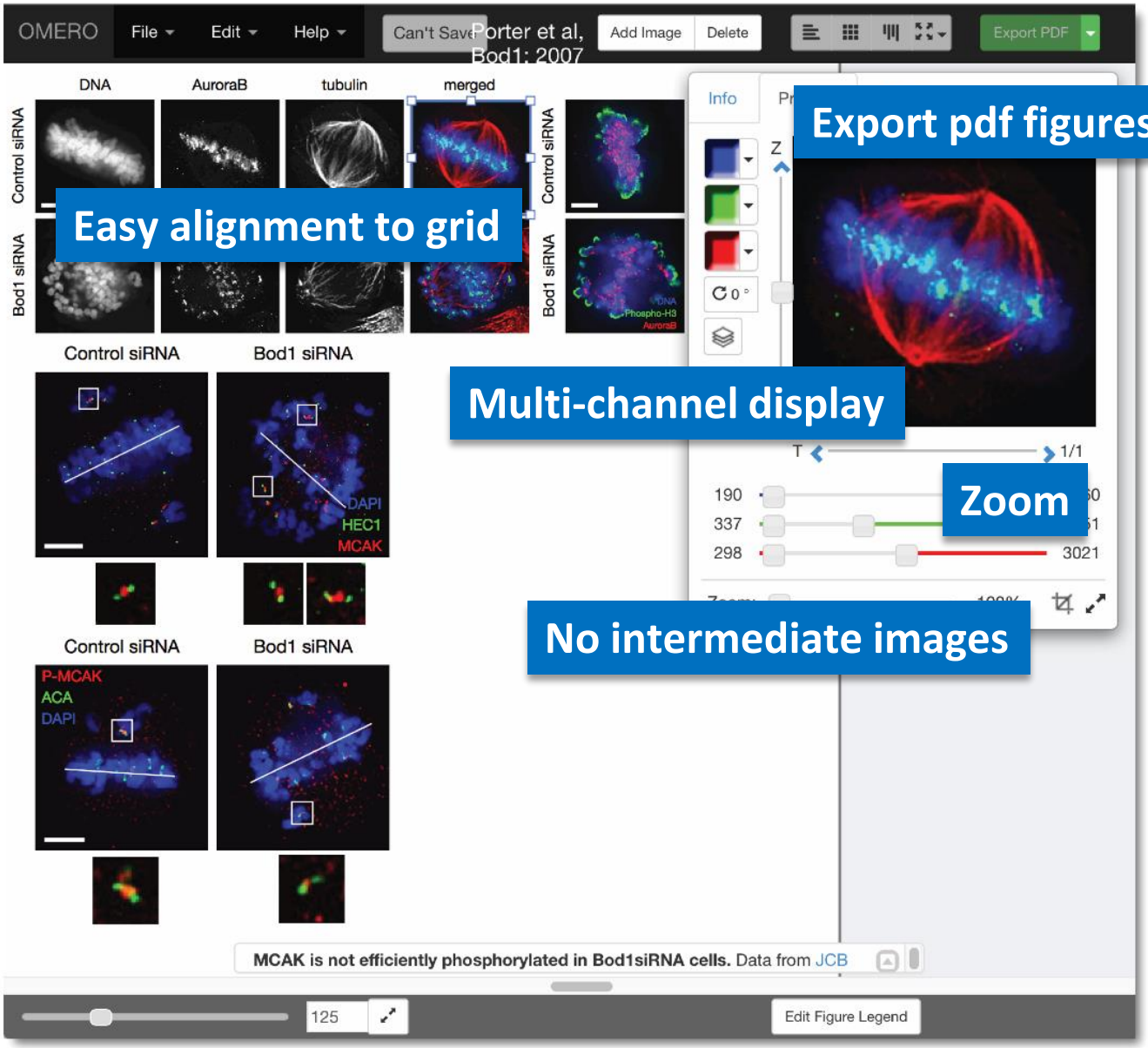

Legends

Easy alignment to grid

Export pdf figures & images

Multi-channel display

Zoom

No intermediate images

OMERO Figure : forget the other softwares

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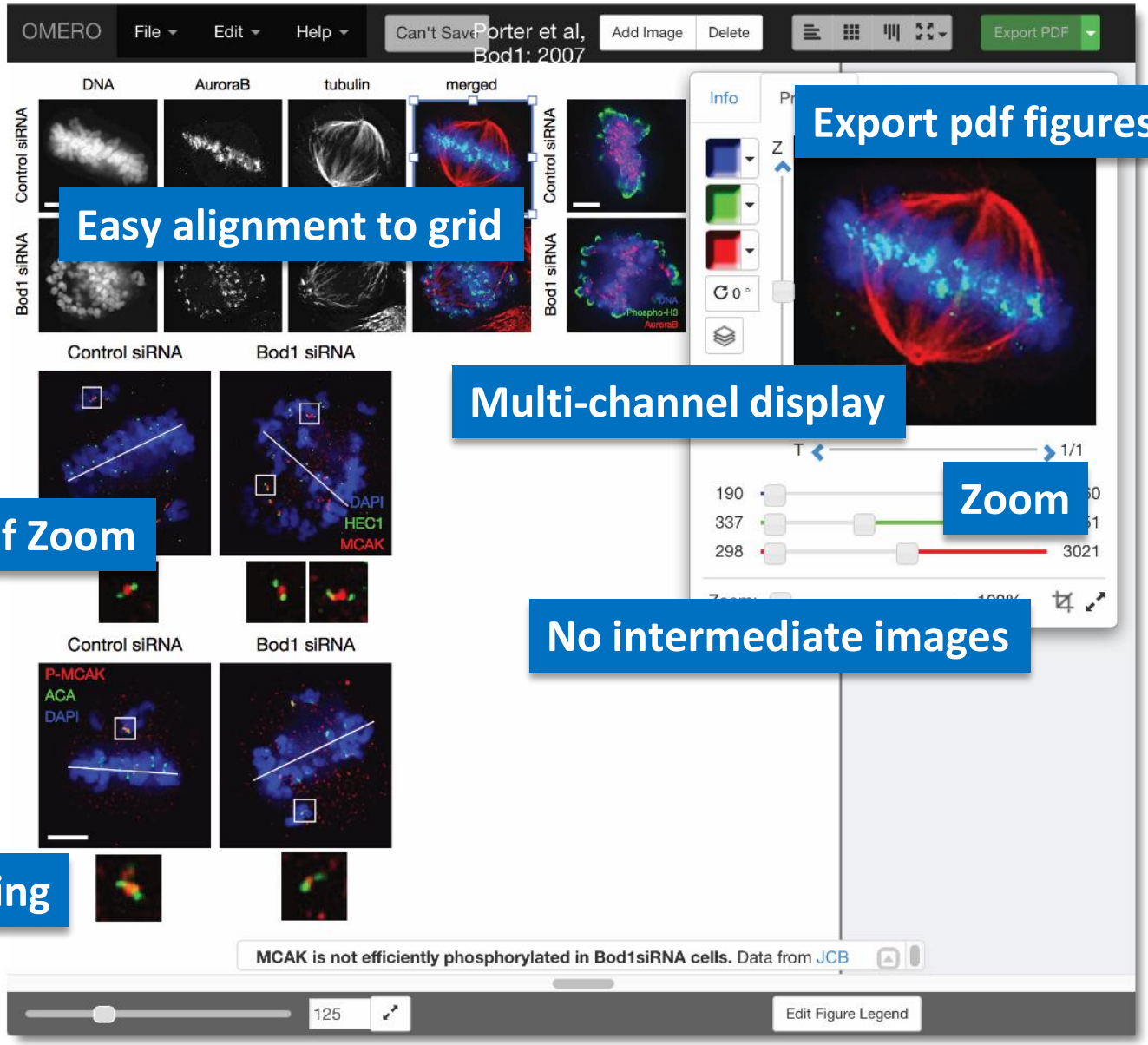


Legends

Easy alignment to grid

Export pdf figures & images

Multi-channel display

Zoom

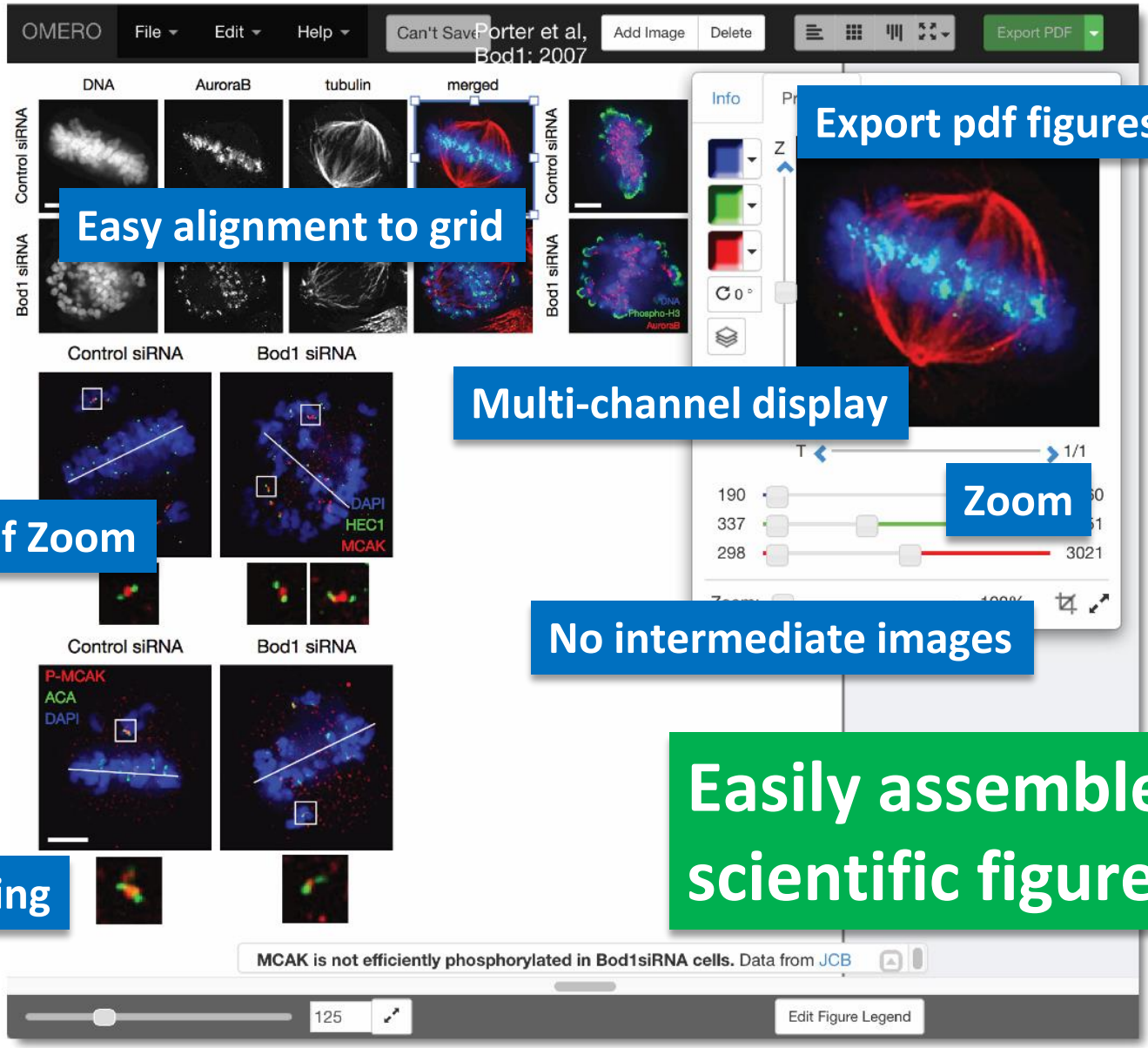
Get ROIs of Zoom

No intermediate images

Easy scaling

OMERO Figure : forget the other softwares

UNIVERSITÉ CÔTE D'AZUR



Legends

Easy alignment to grid

Export pdf figures & images

Multi-channel display

Zoom

Get ROIs of Zoom

No intermediate images

Easy scaling

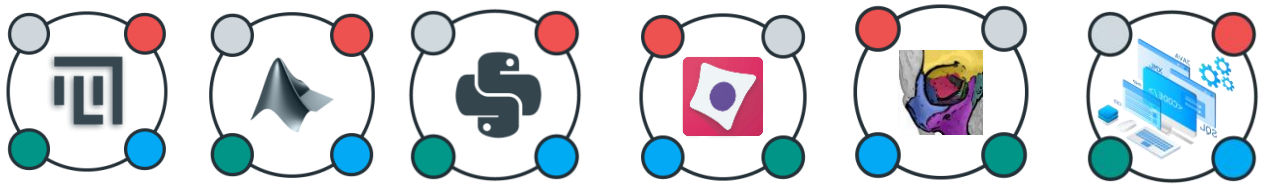
Easily assemble your scientific figures !

Image Analysis

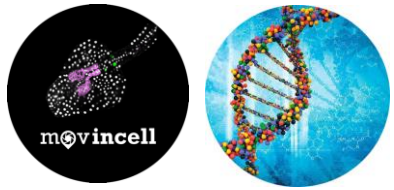
UNIVERSITÉ CÔTE D'AZUR

Local Desk

ImageJ/Fiji Matlab Python Cellprofiler Orbit WEB



Galleries &Data bases



Marimba

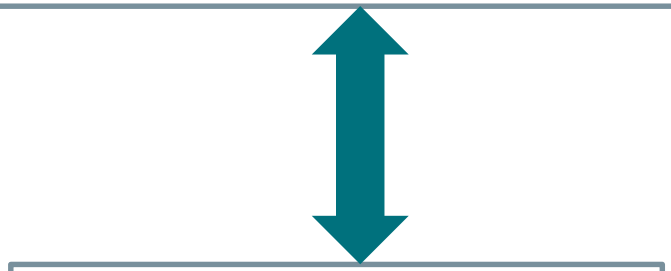


Image Analysis

UNIVERSITÉ CÔTE D'AZUR

Local Desk

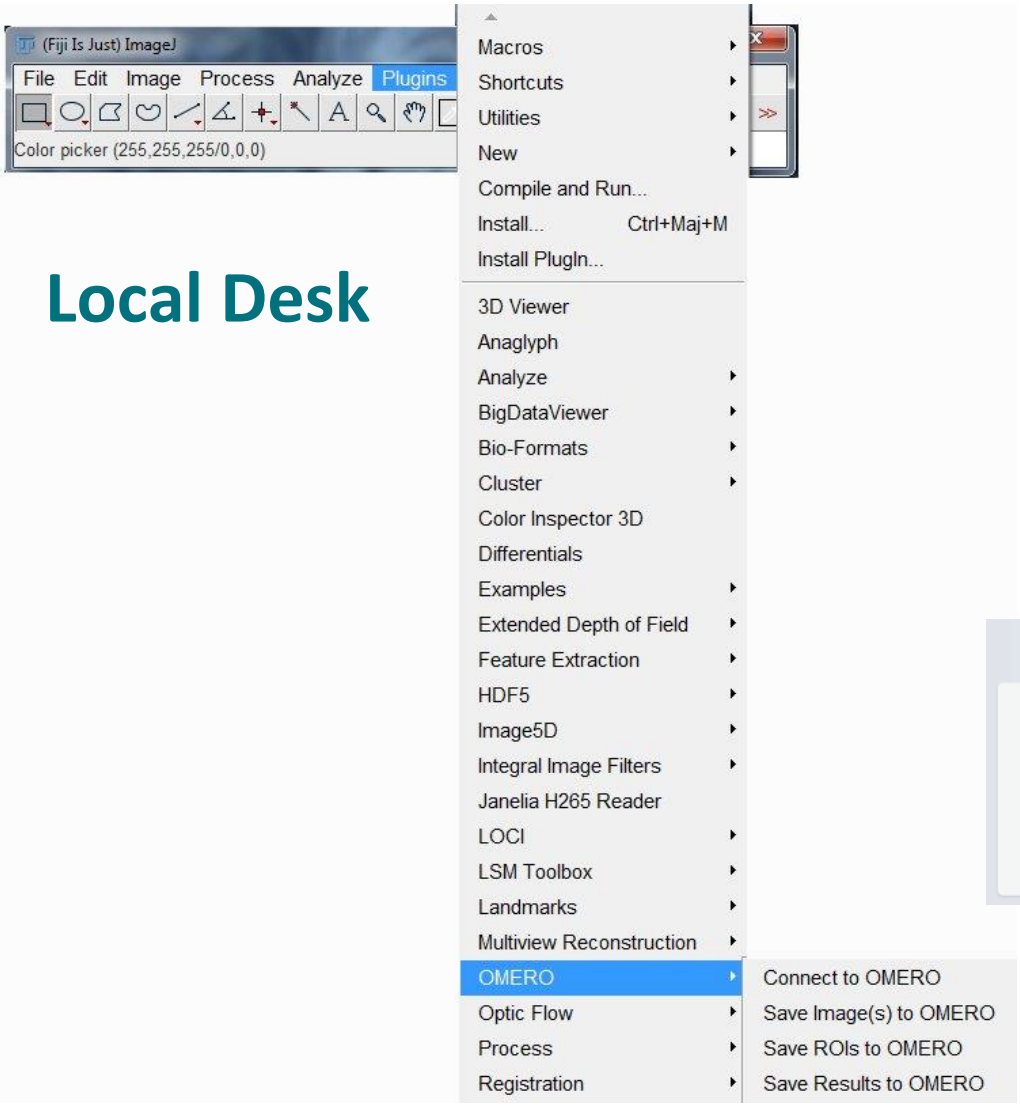
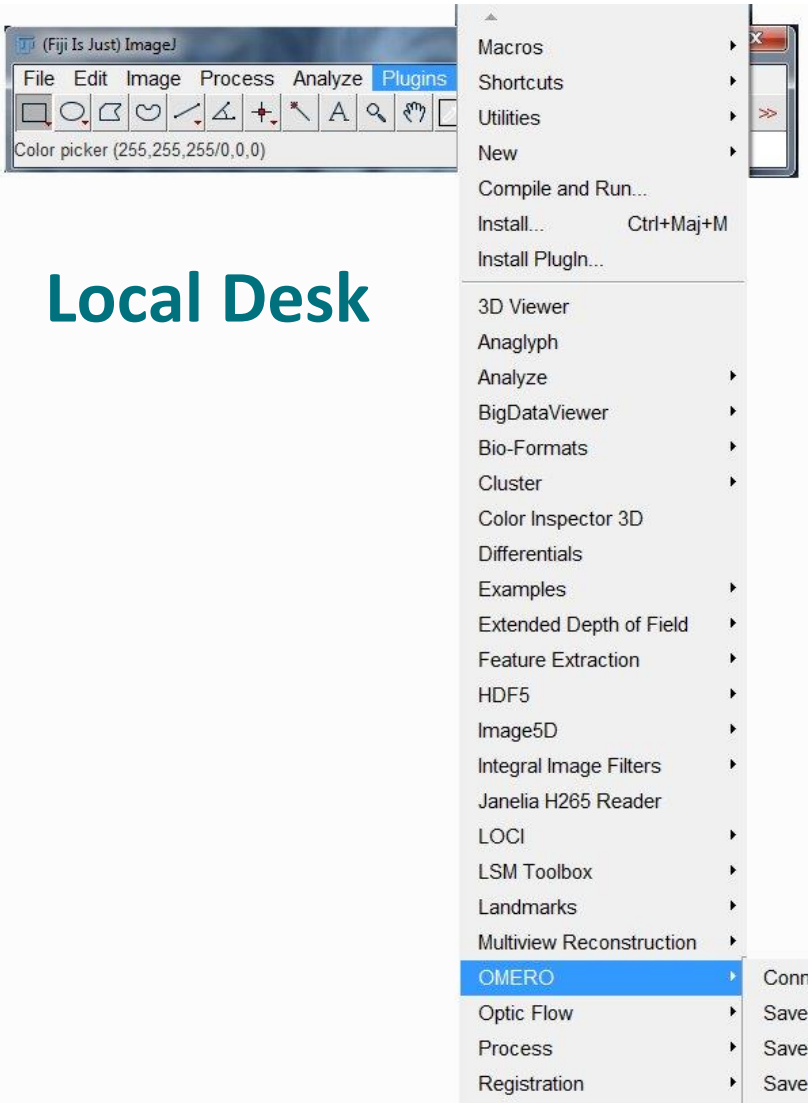


Image Analysis

UNIVERSITÉ CÔTE D'AZUR

Local Desk



Macro / Python / Groovy

GUI to batch Macros

POLYTECH NICE-SOPHIA Département Génie Biologique

C. Belle, M. Carvalho, M. Delannoy

https://github.com/brau-frederic/mica_omero

Image Analysis

UNIVERSITÉ CÔTE D'AZUR

Virtual Desk

ImageJ/Fiji Matlab Python Cellprofiler Orbit WEB

Galleries &Data bases

movincell

Marimba

Cloud

ifb INSTITUT FRANÇAIS DE BIOINFORMATIQUE

OMERO

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FAIR Management

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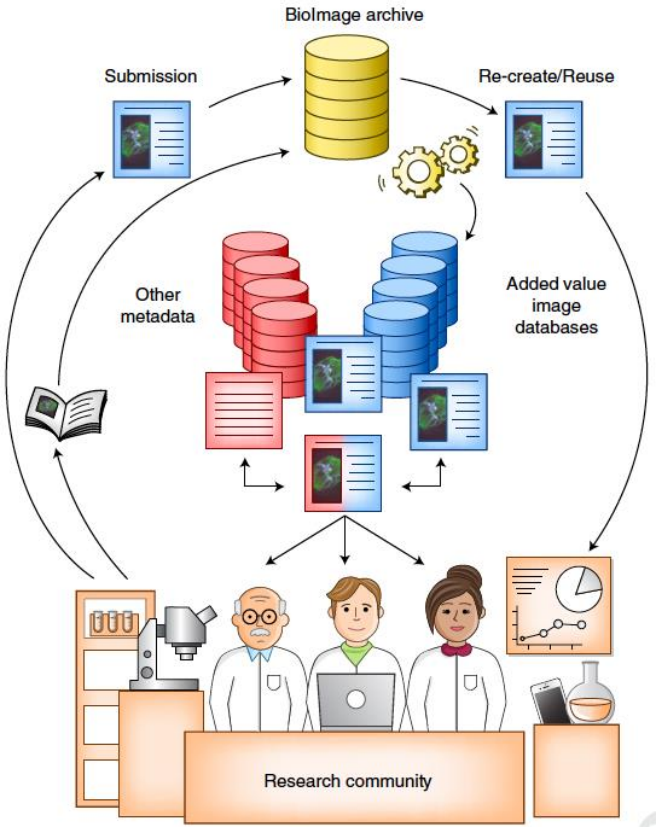
Metadata integration : format compatible IDR

- **Findable**– Original Image data linked to Paper by DOI
- **Accessible**– Metadata retrievable, open API
- **Interoperable**– Uses common defined vocabularies
- **Reusable**– Licensed (CC-BY 4.0), provenance included



IDR
The Image Data Resource

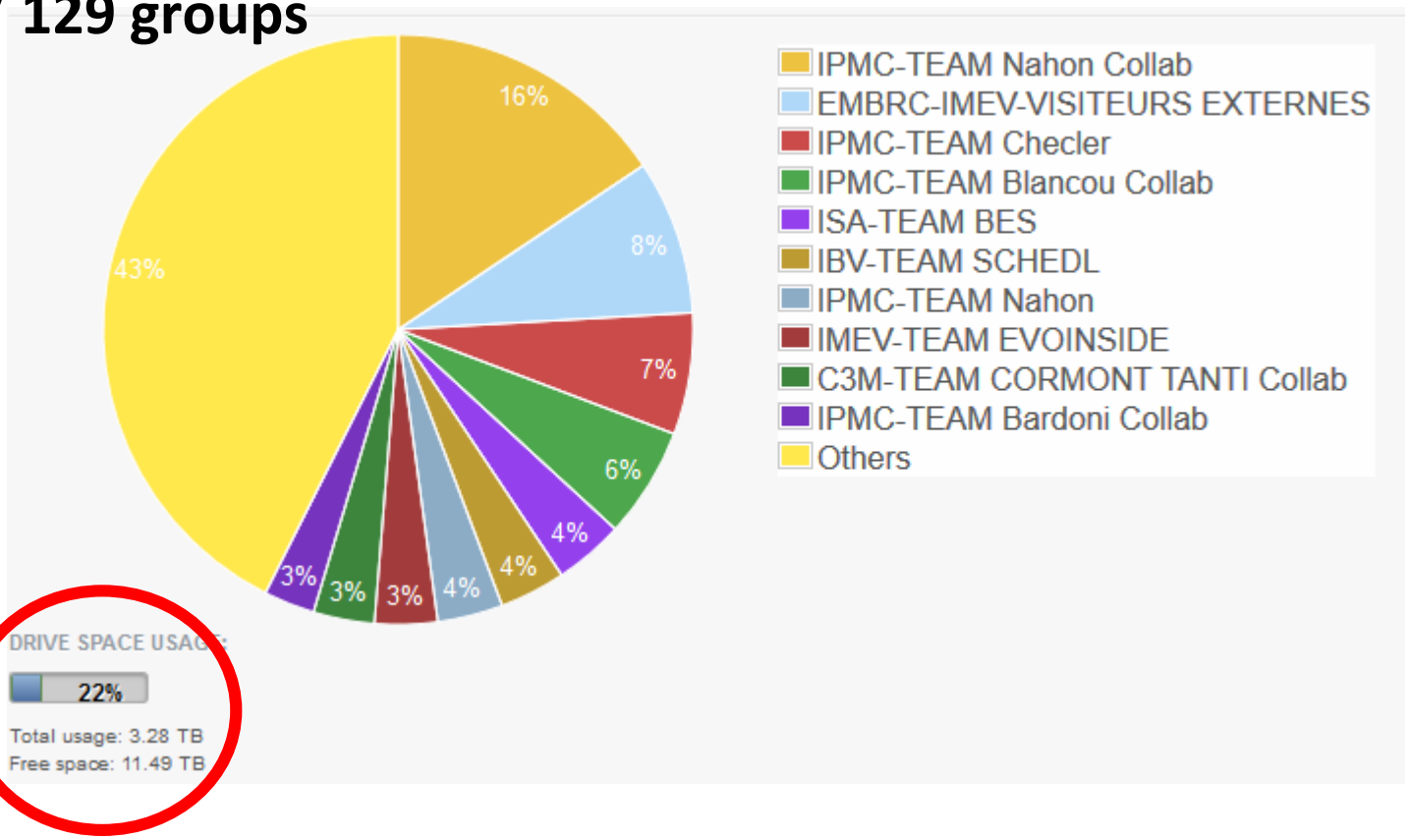
An online, public resource that stores, integrates and serves image datasets from published scientific studies

OMERO EURO-BIOIMAGING BBSRC bioscience for the future

Usage report

June 2019 / today
292 / 355 users
111 / 129 groups

⇨ 3,2To / 15 To ⇨ + de 21 000 images



Flexible storage volume according to needs

Communication & support

UNIVERSITÉ CÔTE D'AZUR

MICA
MICROSCOPIE IMAGERIE CÔTE D'AZUR

Website

Protocols
Links
FAQ
Data Management Plan (DMP)

Diffusion list

omero-users@univ-cotedazur.fr
Informations
Notifications
Maintenances

omero-support@univ-cotedazur.fr
Users questions

DMP OPIDoR

Politicy

DMP for Optimized Sharing and Interoperability of Research Data

Findable Accessible Interoperable Reusable

OMERO

Website

Guides
Tutorials
User Forum

Communication / trainings

UNIVERSITÉ CÔTE D'AZUR

Trainings 11 teams
+ > 50 people individualy
1 advanced session for referents
1 CNRS session – Next in April

Lauching seminars
6 institute meetings & 1 CdE
1 Scientific day

Users workshop/ Training Omero
Dundee 2019
Montpellier 2020

Thank you for your attention

OMERO

Académie 4

S. Benaicha

C. Baron

C. Blanchet

S.Ben Aïcha - F. Bekkouche - R. Arkowitz - F. Brau

MICA MICROSCOPIE IMAGERIE CÔTE D'AZUR

UNIVERSITÉ CÔTE D'AZUR

DEMOCRATISONS
LA SUPER-RESOLUTION

MICA
MICROSCOPIE
IMAGERIE
CÔTE D'AZUR

Seminaries and Workshops

L. Blanc-Feraud (Valbonne)
F. Bottanelli (Berlin)
J. Dufourt(Montpellier)
P. Guichard (Geneva)
R. Laine (London)

25-26 February 2020
Valbonne - Nice

Information and registration (mandatory) : mica.unice.fr

UNIVERSITÉ CÔTE D'AZUR ACADEMY OF EXCELLENCE COMPLEXITY AND DIVERSITY OF LIVING SYSTEMS
Inserm
cnrs
INRAE
UPMC SORBONNE UNIVERSITÉS
Leica MICROSYSTEMS
ANDOR an Oxford Instruments company
PHOTON LINES Optical solutions
Confocal nl
abberior beyond barriers