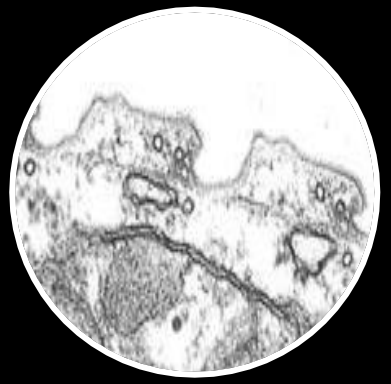
OME, IDR and Glencoe - Innovating with Imaging Data

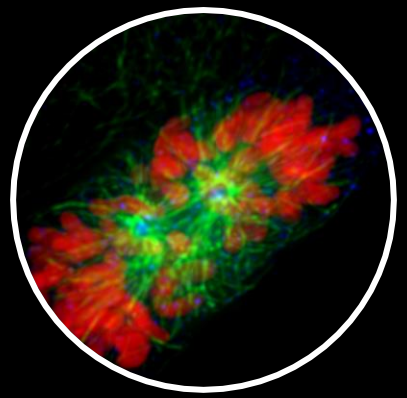
Jason Swedlow

Professor of Quantitative Cell Biology | School of Life Sciences, University of Dundee | CEO, Glencoe Software

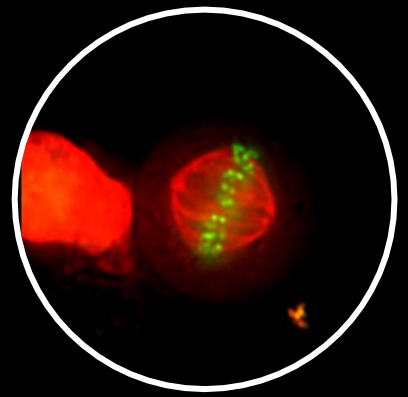
The Image Problem is Ubiquitous



Organelles

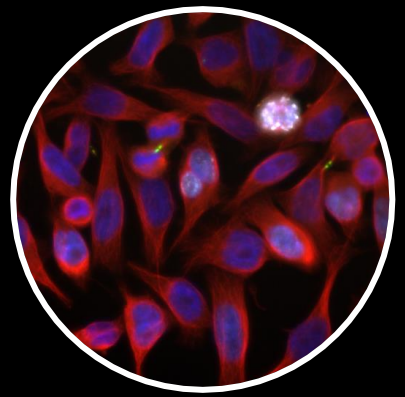


Cells

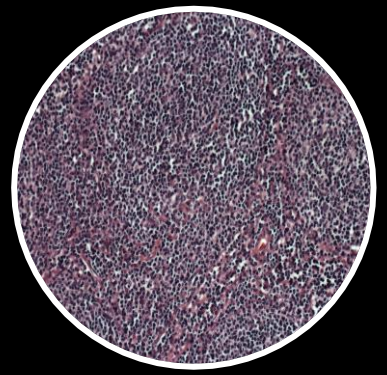


Dynamics

Physiology



Lead Discovery
Target Validation



Pathology

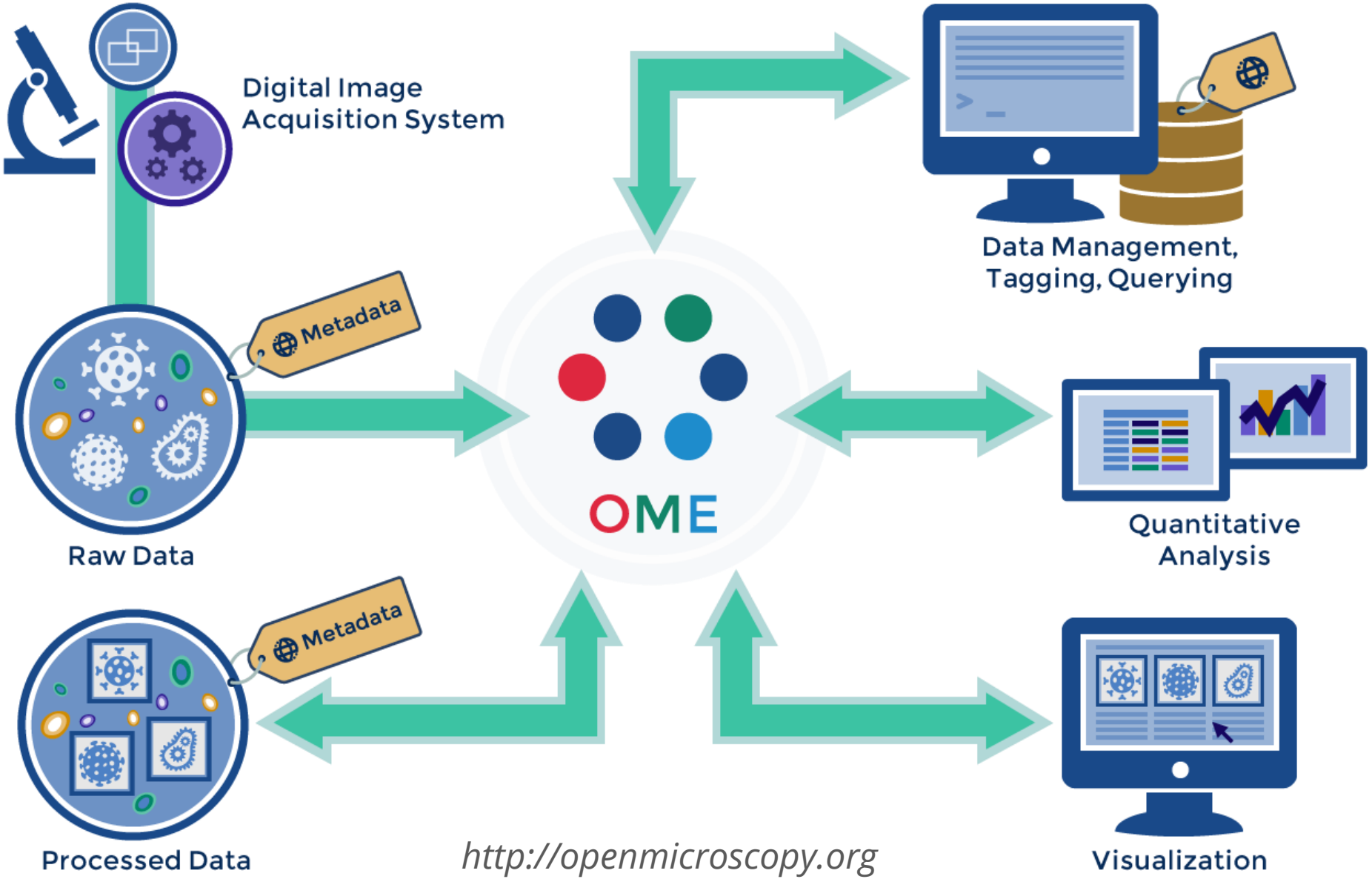
In Vivo

A picture?

A measurement?

A resource?

...Towards Image Informatics



http://openmicroscopy.org

What We Do

OME DATA MODEL

OME-TIFF

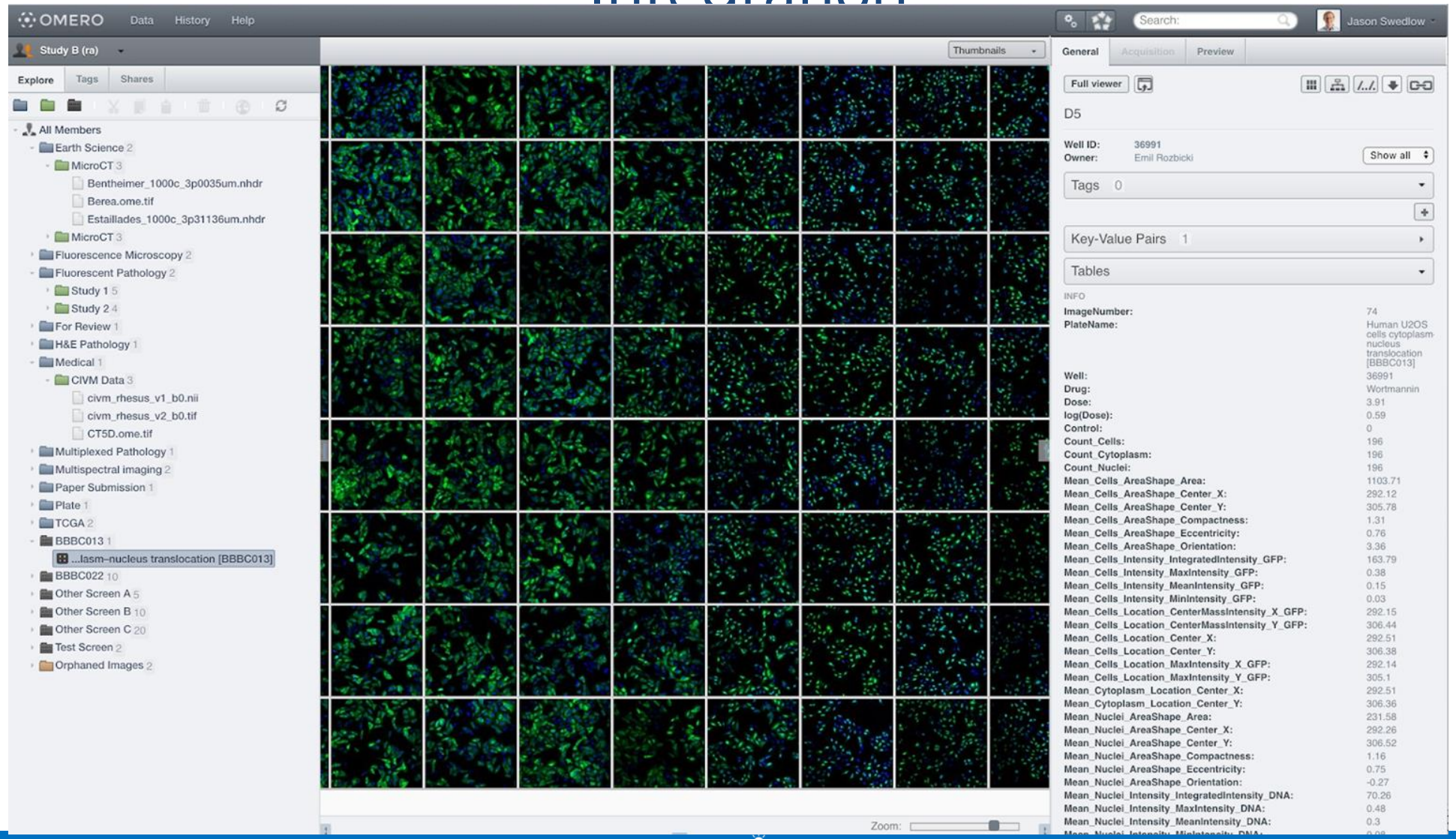
OME FILES

BIO-FORMATS

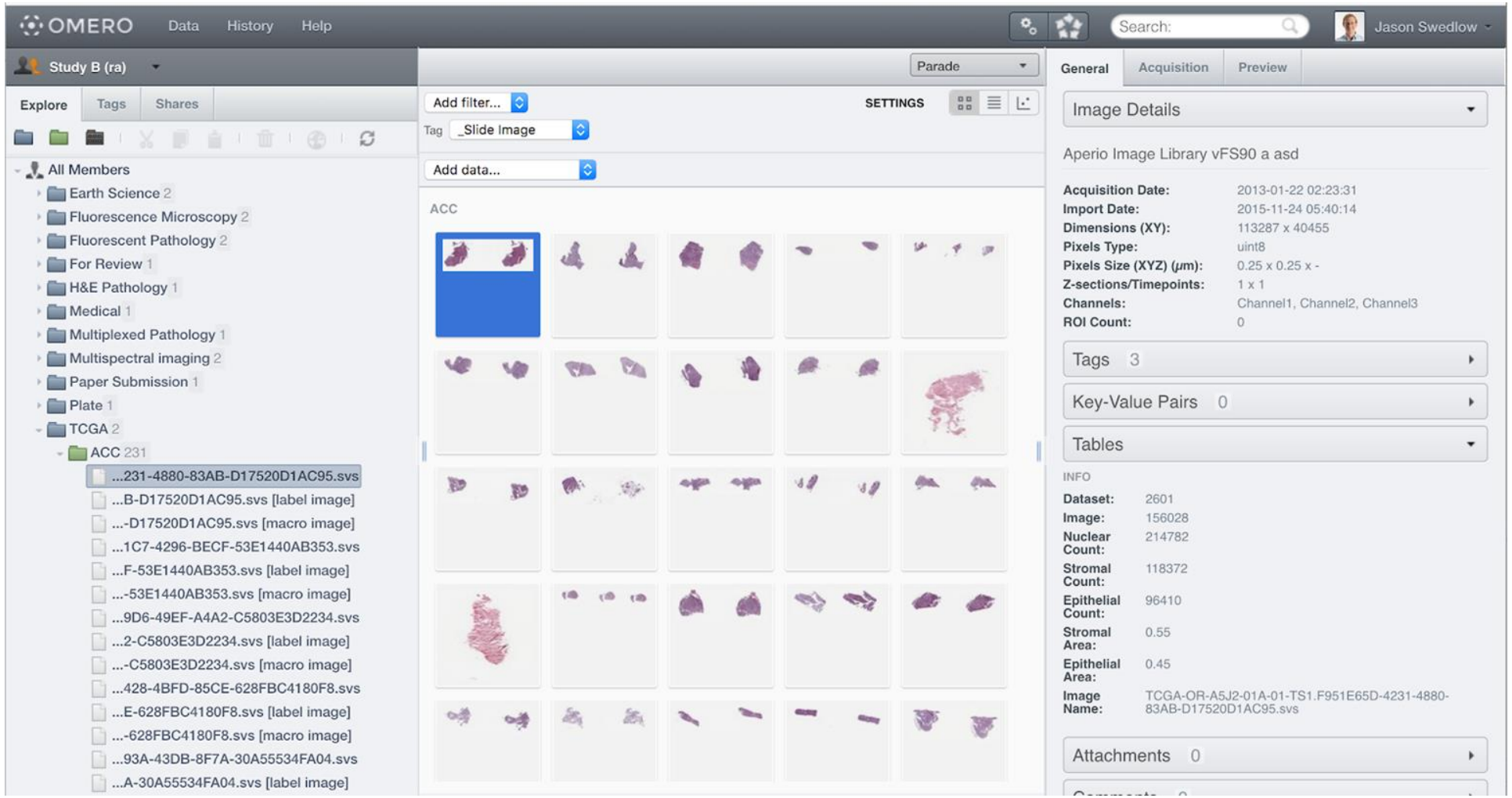
OMERO

IDR

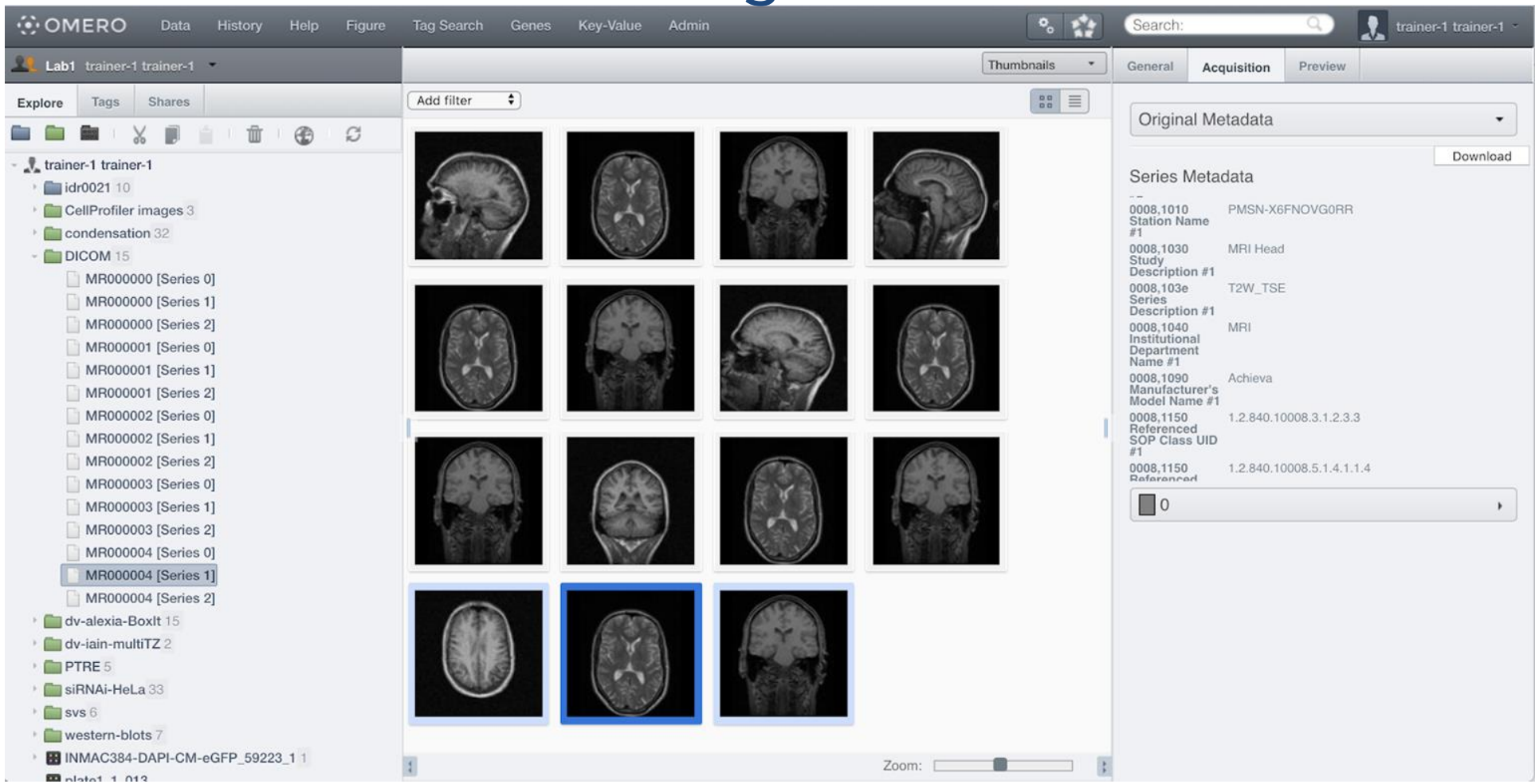
OME, Bio-Formats, OMERO, IDR: Data Access and Integration



OME, Bio-Formats, OMERO, IDR: Data Access and Integration



OME, Bio-Formats, OMERO, IDR: Data Access and Integration



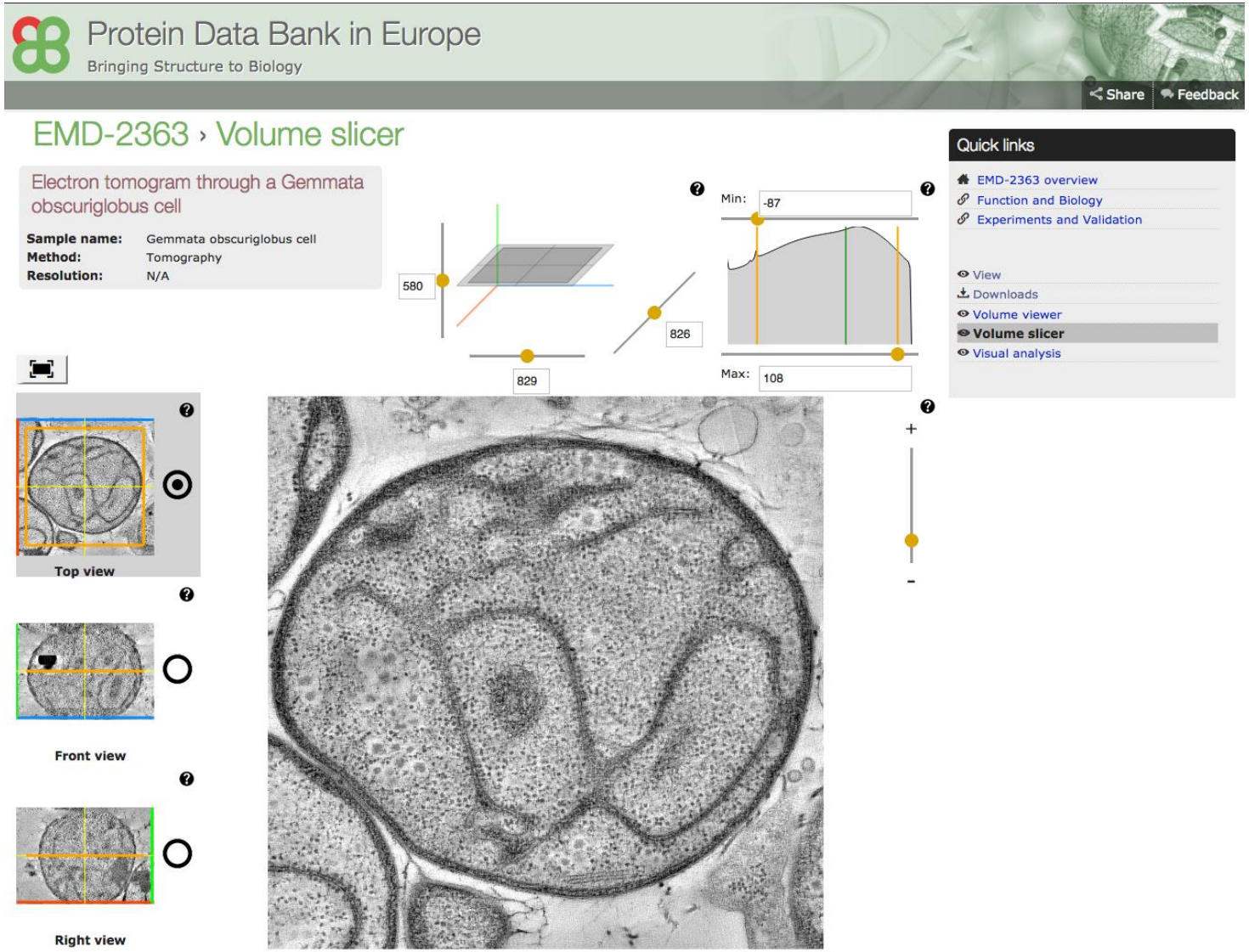
Lionheart, W. R. B. (2015). http://doi.org/10.5281/zenodo.16956

OMERO IN USE

University of Dundee: Undergraduate Training

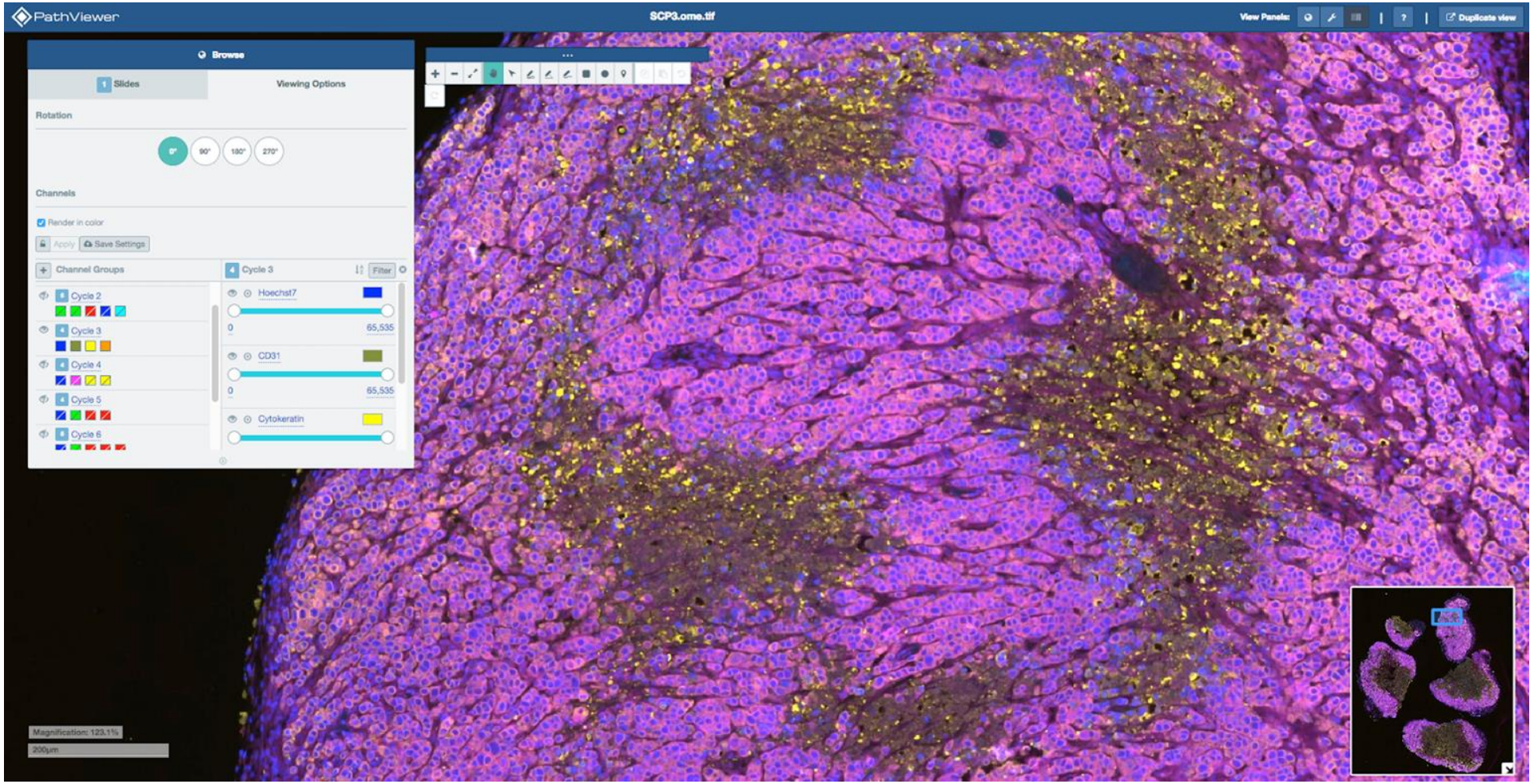
Paul Felts, University of Dundee, *learning.openmicroscopy.org*

EMPIAR/EMDataBank / PDBe



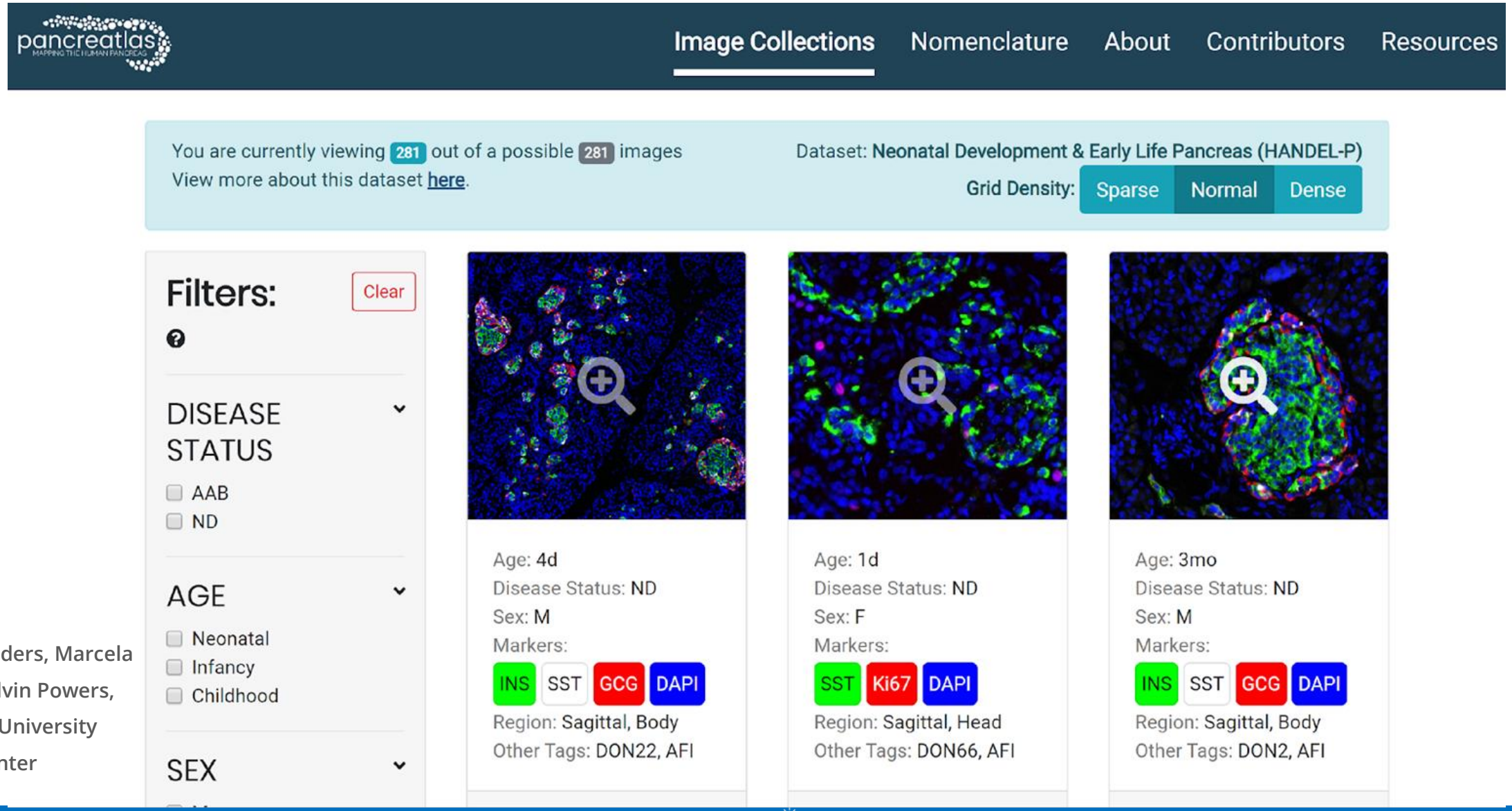
Ardan Patwardhan,
Ingvar Lagerstadt &
Gerard Kleywegt, EBI

Multi-Channel Whole Slide Imaging
HMS Laboratory of Systems Pharmacology



Jia-Ren Lin, Zoltan Maliga, Douglas Russell, Peter Sorger, Harvard Med School

HIRN Tissue Atlas: *Pancreatlas.org*



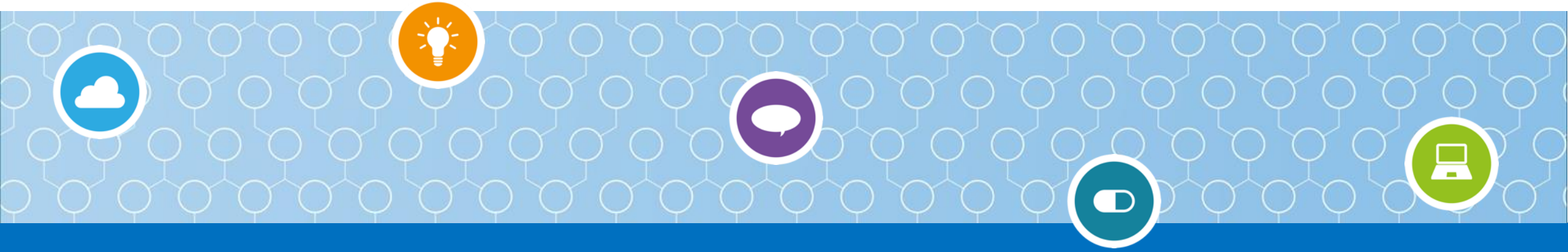
Diane Saunders, Marcela Brissova, Alvin Powers, Vanderbilt University Medical Center

What is OME?

- File Formats – open, validated, performant, scalable
- Bio-Formats – interoperability w/ metadata & binary data
- OMERO – image data management and integration
- IDR – image data publication and sharing
- Glencoe Software – commercial imaging data management solutions

A platform for FAIR data in bioimaging

Overview of Breakout Options | Short presentations



Glencoe Software

Chris Allan

VP Software Engineering

Glencoe SOFTWARE ⟷ OME

Open Source Synergy

A Powerful, Exclusive Partnership

OMERO Plus

BIO-FORMATS

PathViewer

COMMERCIAL LICENSES

Exclusive provider of robust commercial licenses for OMERO Plus and Bio-Formats

CUSTOMIZATION

Warrantied and indemnified software solutions not available in the open source environment

SERVICE & SUPPORT

Commercial and community development synergy as your support resource

Breakout Sessions Later! (Chris Allan, Erin Diel, Emil Rozbicki)

Image Data Resource (IDR)

Frances Wong

IDR Curator, University of Dundee

https://idr.openmicroscopy.org

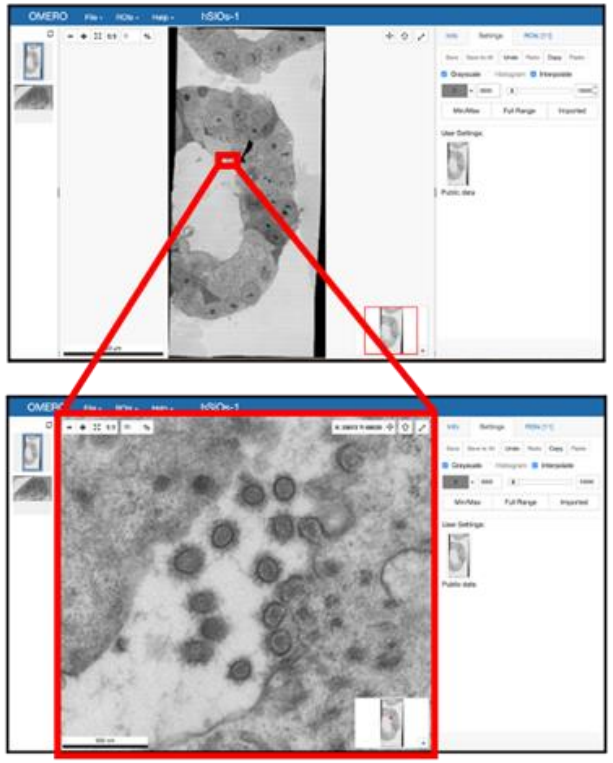
The Image Data Resource (IDR): a scalable resource for FAIR biological imaging data

- **Public access**
- **Reference datasets** - complete datasets containing molecular and functional annotations, associated with an existing or upcoming publication.
- **Study integration** - integrating studies or datasets with other datasets via **genes**, **compounds** or **phenotypes**.
- **Curated metadata**
- **Cloud re-analysis**

Breakout Sessions – Sebastien Besson & Frances Wong

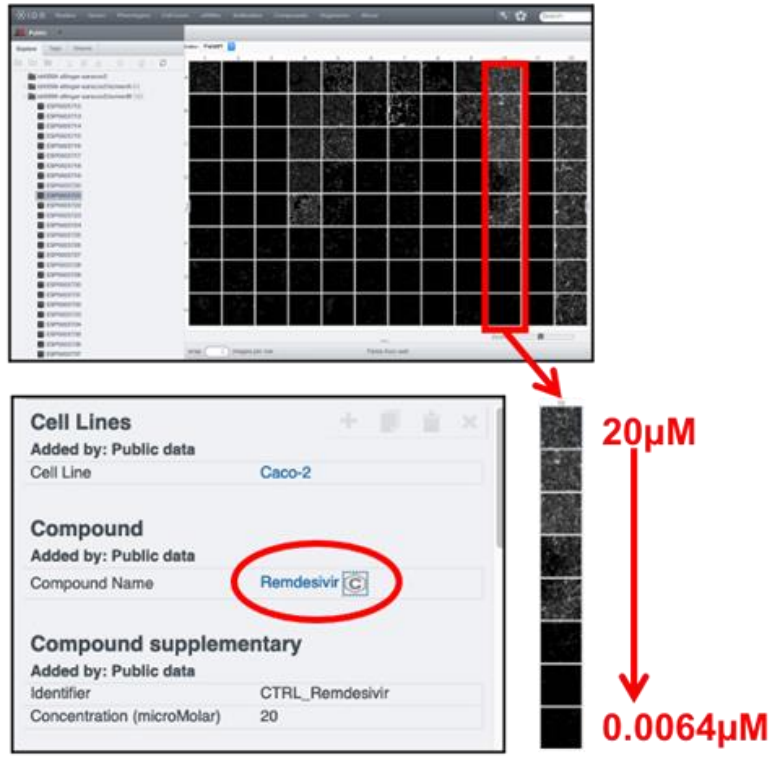
https://www.openmicroscopy.org/events

Tissue Data – idr0083



Lamers et al *Science* DOI:10.1126/science.abc1669

Cell Data – idr0094



Ellinger et al *Sci Data* DOI:10.1038/s41597-021-00848-4

IDR currently has:

- **260TB** of public imaging data.
- **super-resolution, high content screening, time-lapse and histological whole slide imaging data**.
- **metadata** related to experimental design, image acquisition, downstream analysis and interpretation.

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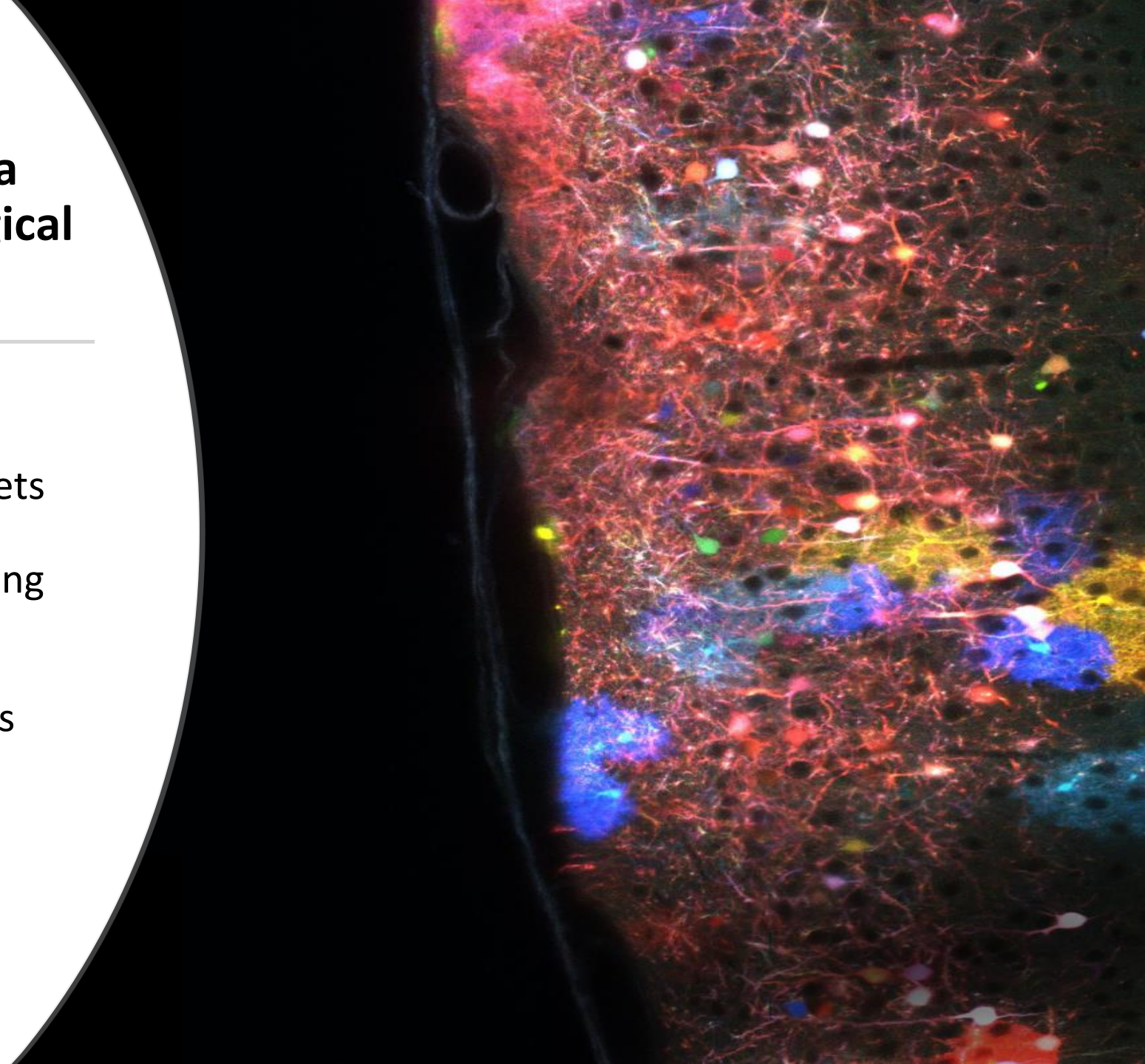
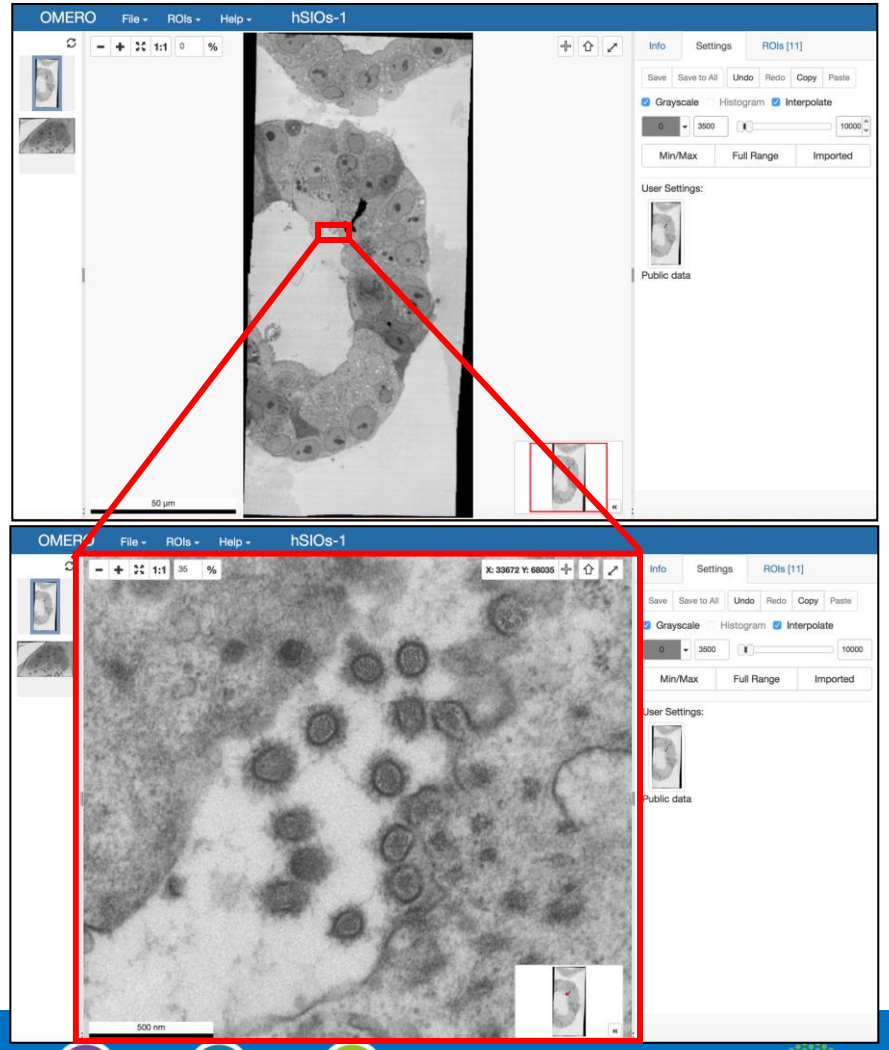
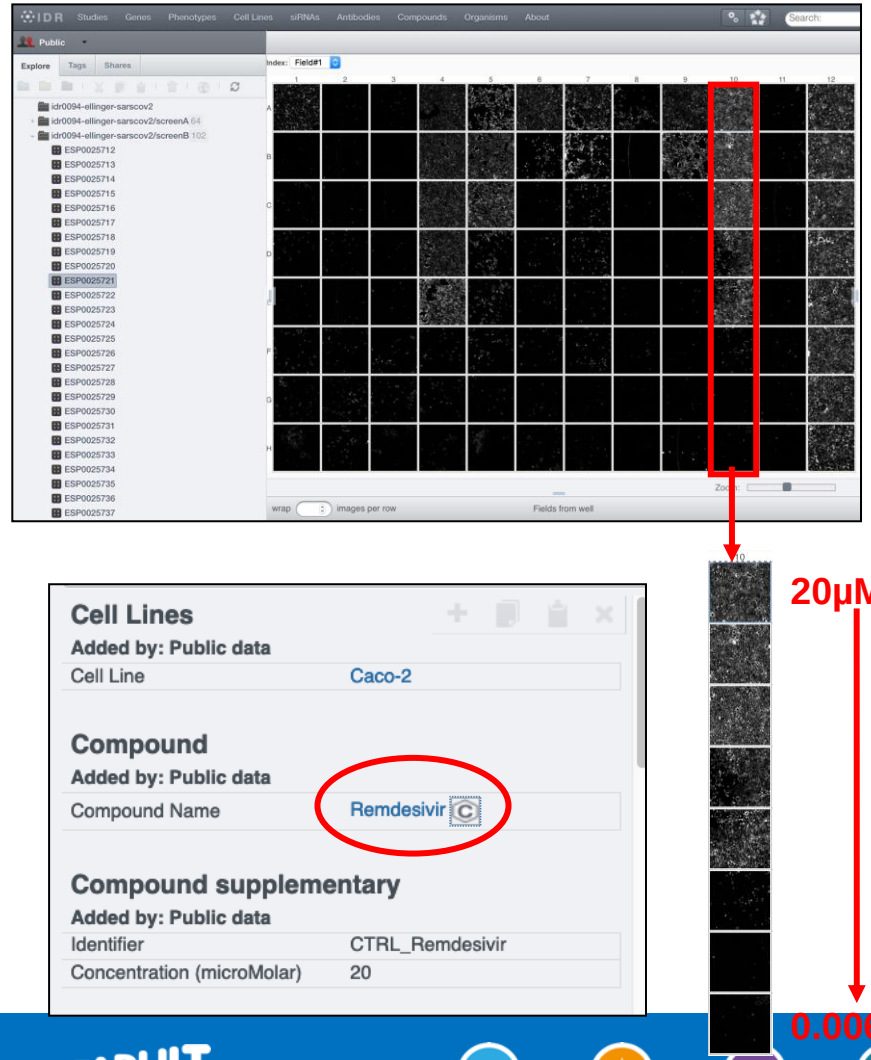


Tissue Data
idr0083



Cell Data
idr0094



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8-11 JUNE 2021

https://www.openmicroscopy.org/events/ome-community-meeting-2021/