

OMERO: Importing Images

Facility Manager Training day

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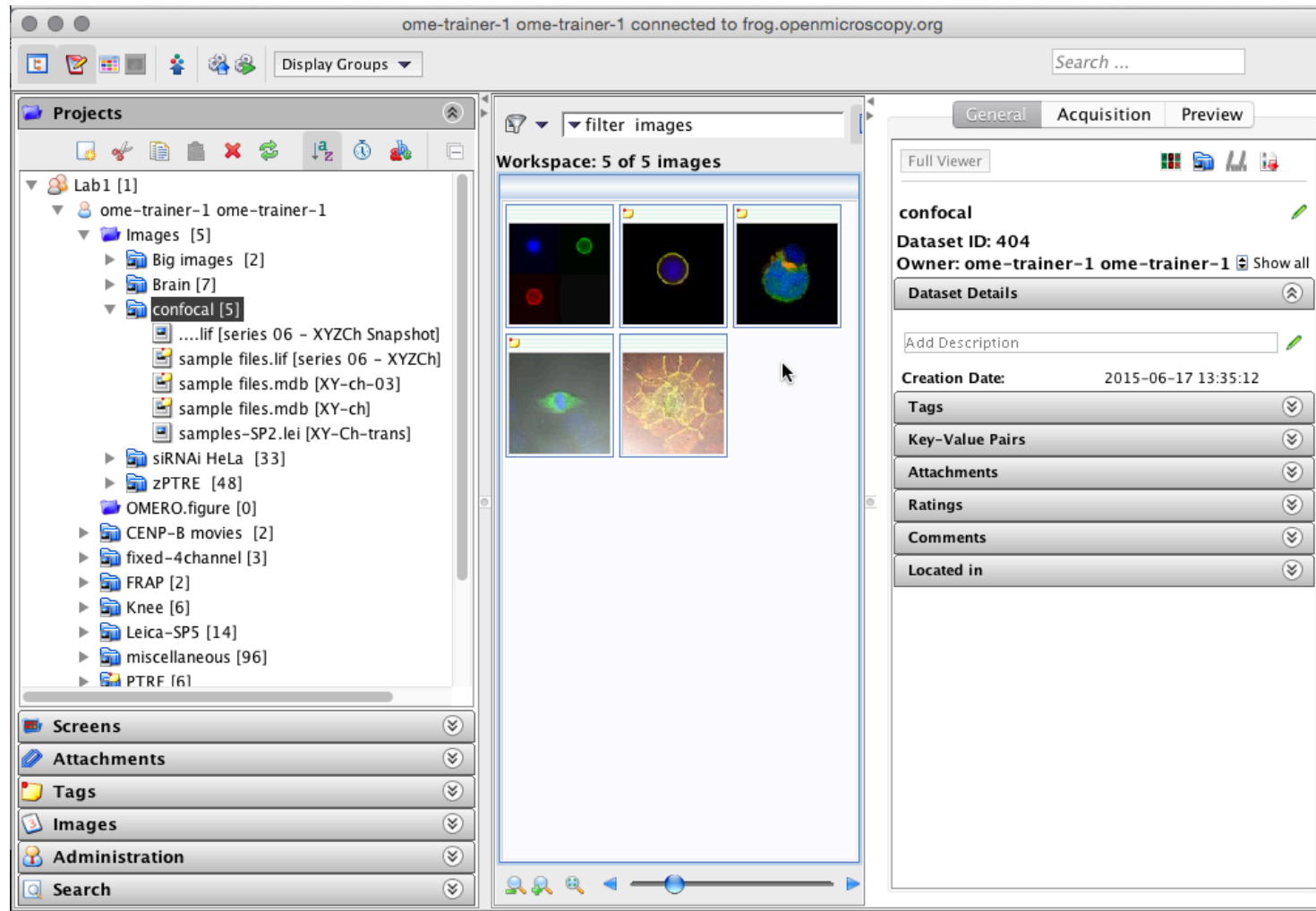
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Importing Images

- Organising images
- Importing images
- Tagging imported images
- Importing for other users
- Automatic import
- Advanced import
- Questions

ORGANISING IMAGES

Organising Images using Projects & Datasets



<http://help.openmicroscopy.org/managing-data.html#create>

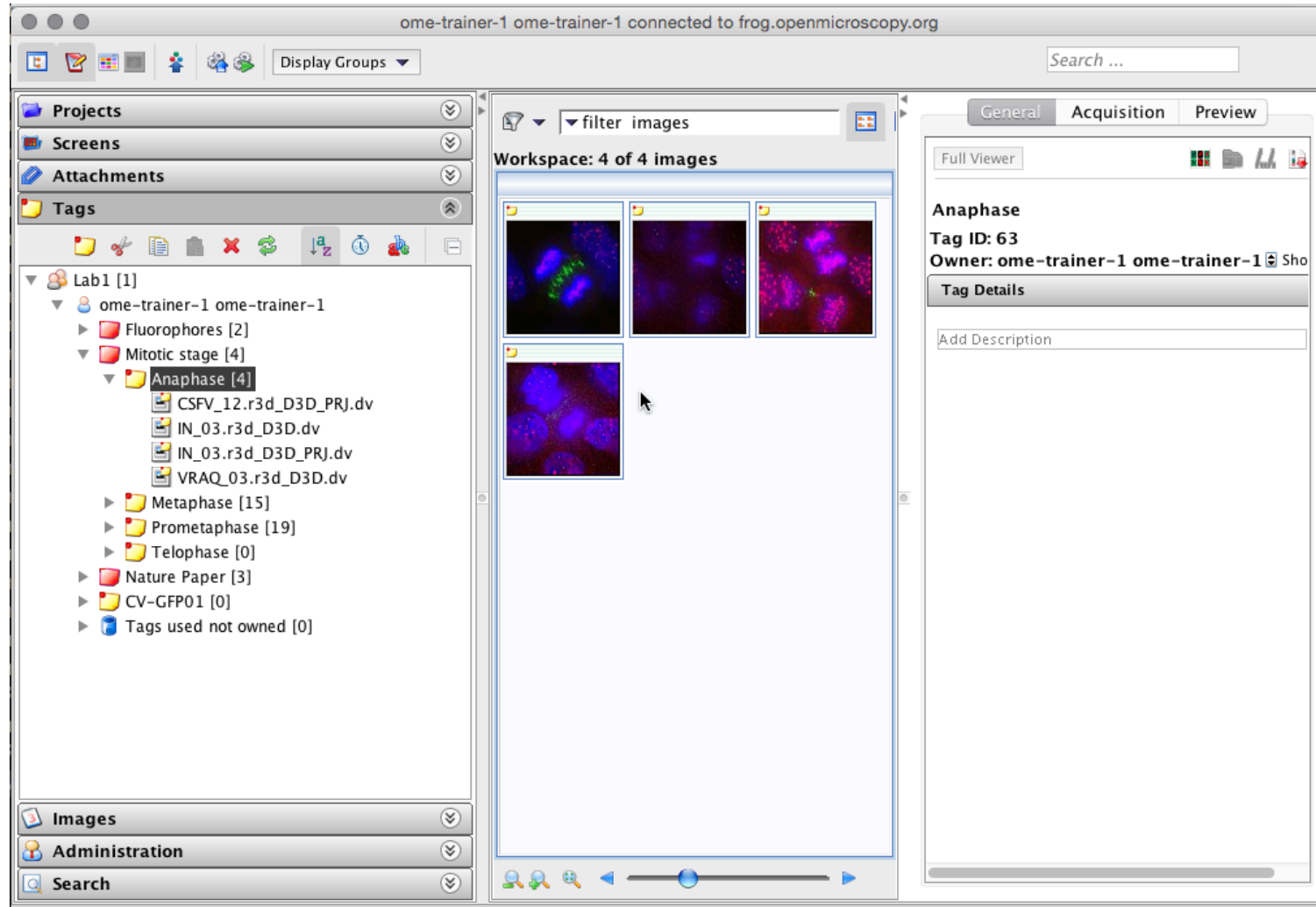
Organising Images using Projects & Datasets

The screenshot displays the OMERO web interface. The top navigation bar includes 'Data', 'History', 'Help', 'Figure', 'Tag Search', and 'Admin'. The main interface is divided into three panels:

- Left Panel (Explore):** Shows a hierarchical tree of projects and datasets. The selected project is 'ome-trainer-1 ome-trainer-1'. Under 'Images', there are sub-projects like 'Big images', 'Brain', and 'confocal'. The 'confocal' project contains a dataset named '...iles.tif [series 06 - XYZCh Snapshot]', which includes files like 'sample files.tif [series 06 - XYZCh]', 'sample files.mdb [XY-ch-03]', 'sample files.mdb [XY-ch]', and 'samples-SP2.lei [XY-Ch-trans]'. Other projects include 'siRNAi HeLa', 'zPTRE', 'OMERO.figure', 'CENP-B movies', 'fixed-4channel', 'FRAP', 'Knee', 'Leica-SP5', 'miscellaneous', 'PTRE', 'sample files.mdb', 'samples-SP2', 'Tiff-Stacks', 'WesternBlots', and 'INMAC384-DAPI-CM-eGFP_59223_1.xdce'.
- Middle Panel (Thumbnails):** Displays a grid of image thumbnails. A 'Filter Images' search bar is located above the thumbnails.
- Right Panel (Image Details):** Shows the details for the selected image. The title is 'sample files.tif [series 06 - XYZCh Snapshot]'. The 'Image ID' is 1849, and the 'Owner' is 'ome-trainer-1 ome-trainer-1'. The 'Image Details' section includes:
 - Import Date: 2015-06-17 12:22:21
 - Dimensions (XY): 930 x 930
 - Pixels Type: uint8
 - Pixels Size (XYZ) (µm): 1.00 x 1.00
 - Z-sections/Timepoints: 1 x 1
 - Channels: 0, 1, 2
 - ROI Count: 0Below the details are expandable sections for 'Tags', 'Key-Value Pairs', 'Attachments', 'Ratings', 'Comments', and 'Others'.

<http://help.openmicroscopy.org/managing-data.html#create>

Organising Images using Tags



<http://help.openmicroscopy.org/managing-data.html#tags>

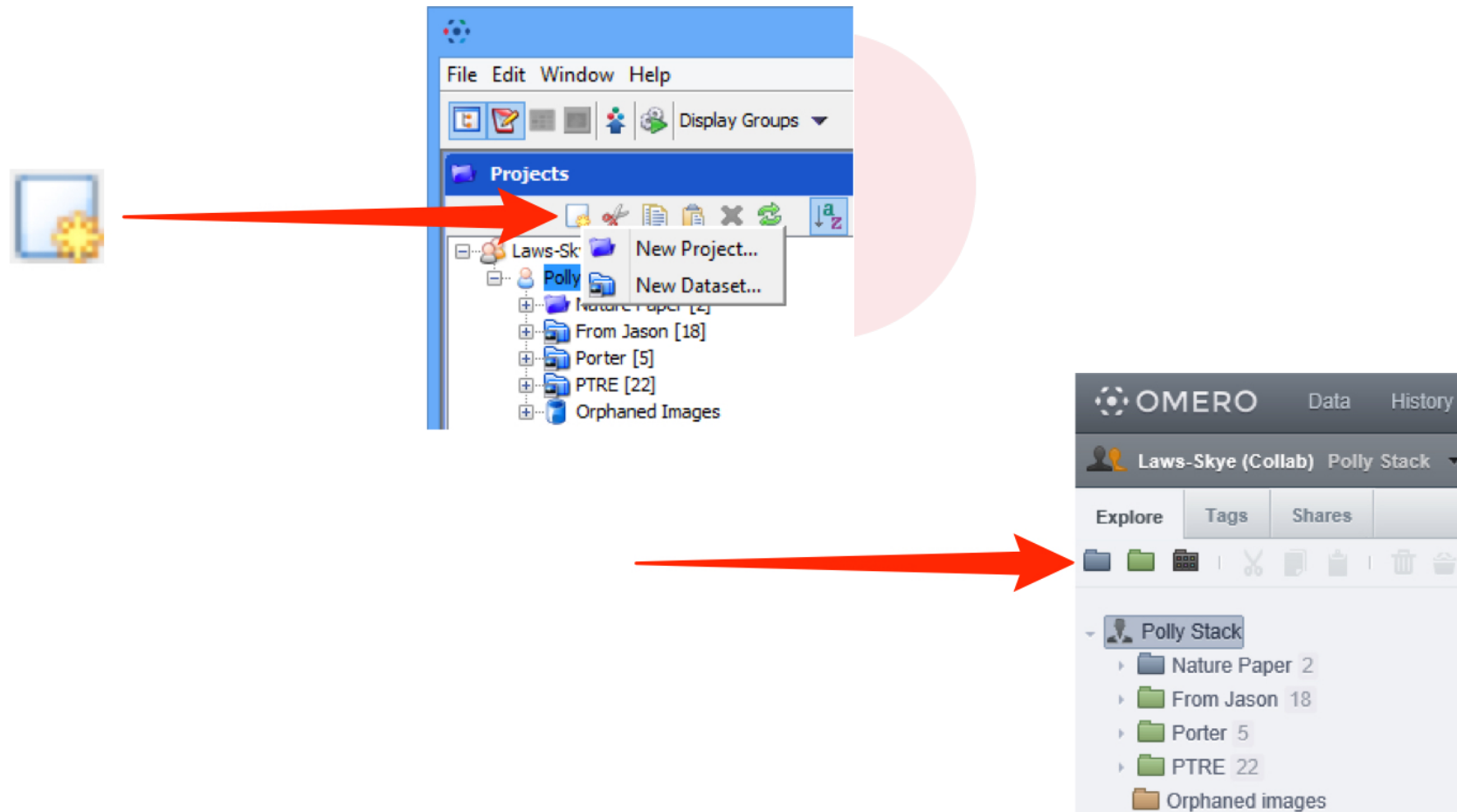
Organising Images using Tags

The screenshot displays the OMERO web interface. At the top, the navigation bar includes 'OMERO', 'Data', 'History', 'Help', 'Figure', 'Tag Search', and 'Admin'. A search bar is located on the right side of the top bar. Below the navigation bar, the user is logged in as 'ome-trainer-1 ome-trainer-1'. The main interface is divided into three sections:

- Left Panel (Tree View):** Shows a hierarchical structure of data. The 'Metaphase' tag is selected and highlighted. Underneath, a list of image files is shown, including 'P-TRE_14_R3D_D3D.dv', 'P-TRE_15_R3D_D3D.dv', 'scram_01.r3d', 'scram_01.r3d_D3D_PRJ.dv', 'scram_02.r3d', 'scram_05.r3d', 'VRAQ_01.r3d', 'VRAQ_01.r3d_D3D.dv', 'VRAQ_01.r3d_D3D_PRJ.dv', 'VRAQ_02.r3d', 'VRAQ_02.r3d_D3D_PRJ.dv', 'VRAQ_04.r3d', 'VRAQ_04.r3d_D3D_PRJ.dv', 'VRAQ_07.r3d', and 'VRAQ_07.r3d_D3D.dv'. Other tags like 'Fluorophores 2', 'Mitotic stage 4', 'Prometaphase', 'Telophase', 'Nature Paper 3', and 'CV-GFP01' are also visible.
- Center Panel (Image Grid):** Displays a grid of 16 thumbnail images of cells in metaphase, showing chromosomes and spindle fibers. A 'Filter Images' search bar is positioned above the grid.
- Right Panel (Metadata):** Shows the 'General' tab for the selected 'Metaphase' tag. It displays 'Tag ID: 51', 'Owner: ome-trainer-1 ome-trainer-1', and an 'Add Description' field. Below this, it lists 'Owner: ome-trainer-1 ome-trainer-1', 'Creation Date: 2015-06-17 09:55:27', and 'Image Count:'.

<http://help.openmicroscopy.org/managing-data.html#tags>

Creating Projects & Datasets before Importing



<http://help.openmicroscopy.org/managing-data.html#create>

IMPORTING IMAGES

Basic import

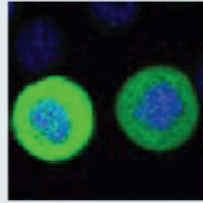
- How images are stored in OMERO
- Importing images
- Viewing and exporting images

Filesets

Images

Import

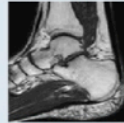
Files




**DeltaVision
Fileset**



HeLaCell.dv
HeLaCell.dv.log






**DICOM
Fileset**



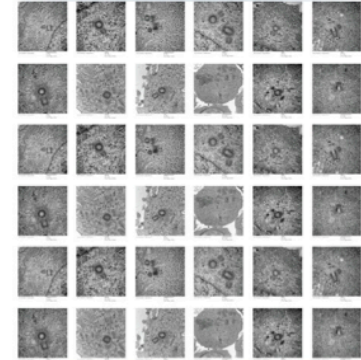
ankle.dcm






**Aperio SVS
Fileset**



UMD001_ORO.svs

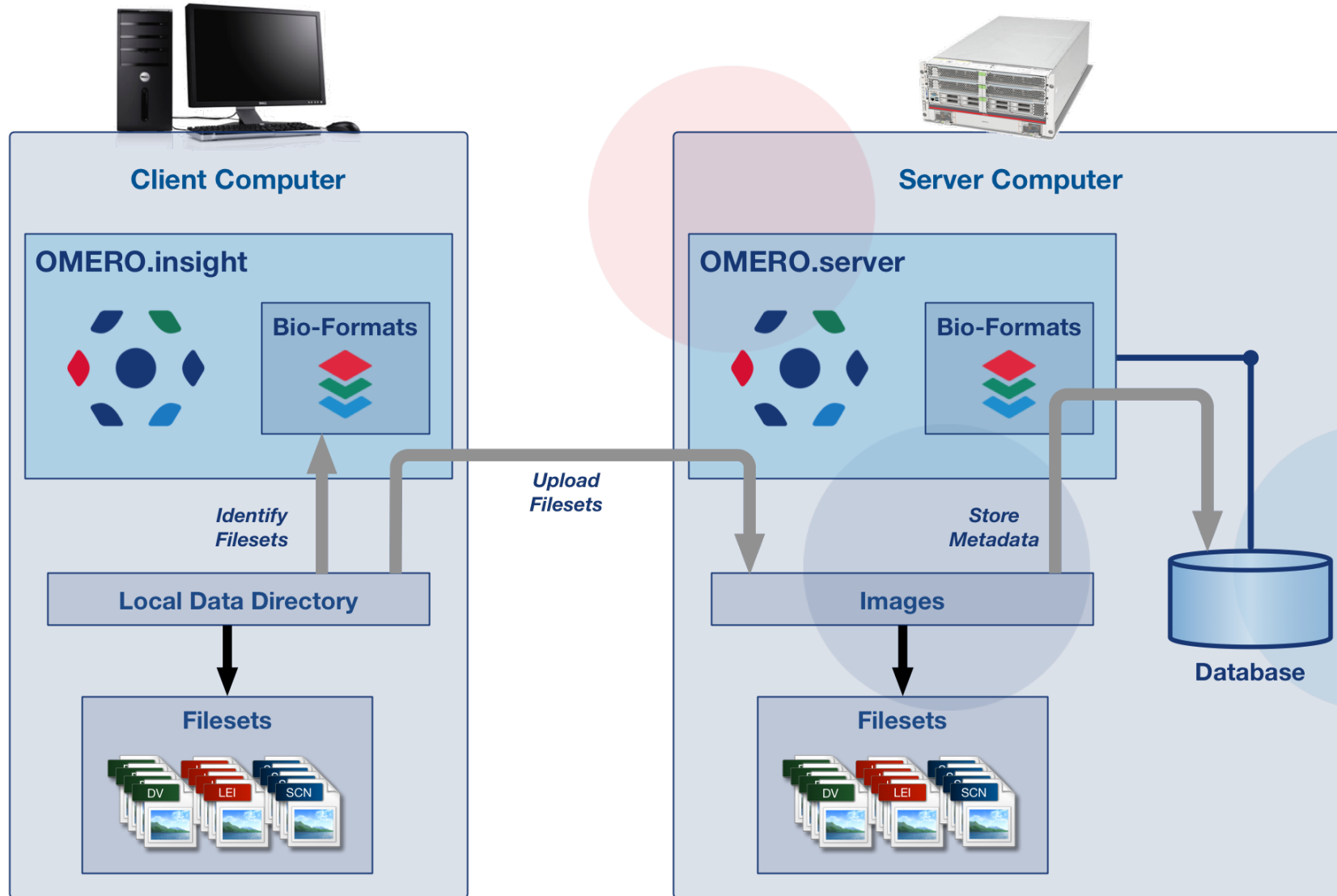



**InCell 2000
Fileset**

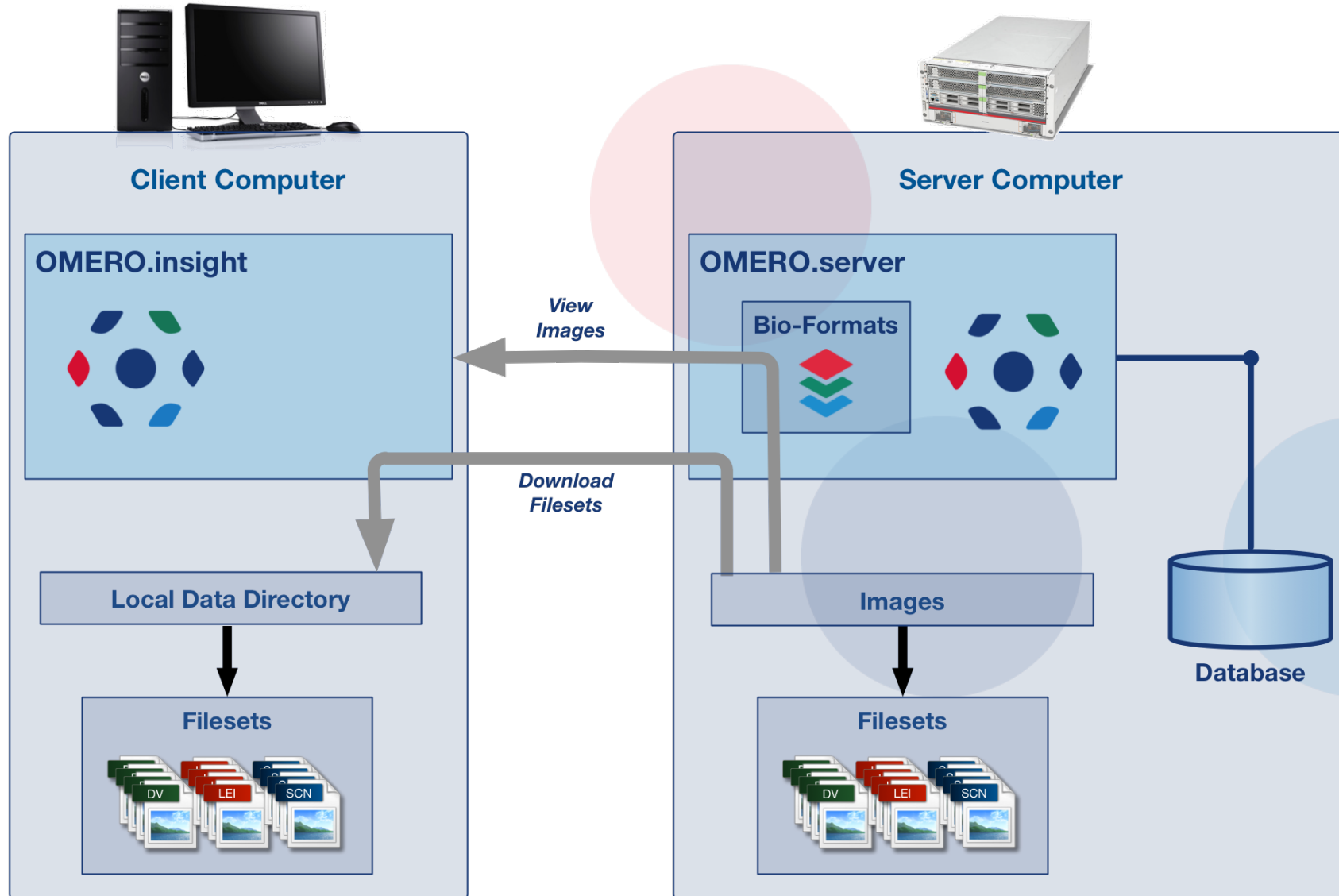


```
INMAC384-DAPI-CM-eGFP_59223_1.xdce  
A - 1(fld 1 wv Cy5 - Cy5).tif  
A - 1(fld 1 wv DAPI - DAPI).tif  
A - 1(fld 1 wv FITC - FITC).tif  
A - 2(fld 1 wv Cy5 - Cy5).tif  
A - 2(fld 1 wv DAPI - DAPI).tif  
A - 2(fld 1 wv FITC - FITC).tif  
A - 3(fld 1 wv Cy5 - Cy5).tif  
A - 3(fld 1 wv DAPI - DAPI).tif  
A - 3(fld 1 wv FITC - FITC).tif  
A - 4(fld 1 wv Cy5 - Cy5).tif  
...
```

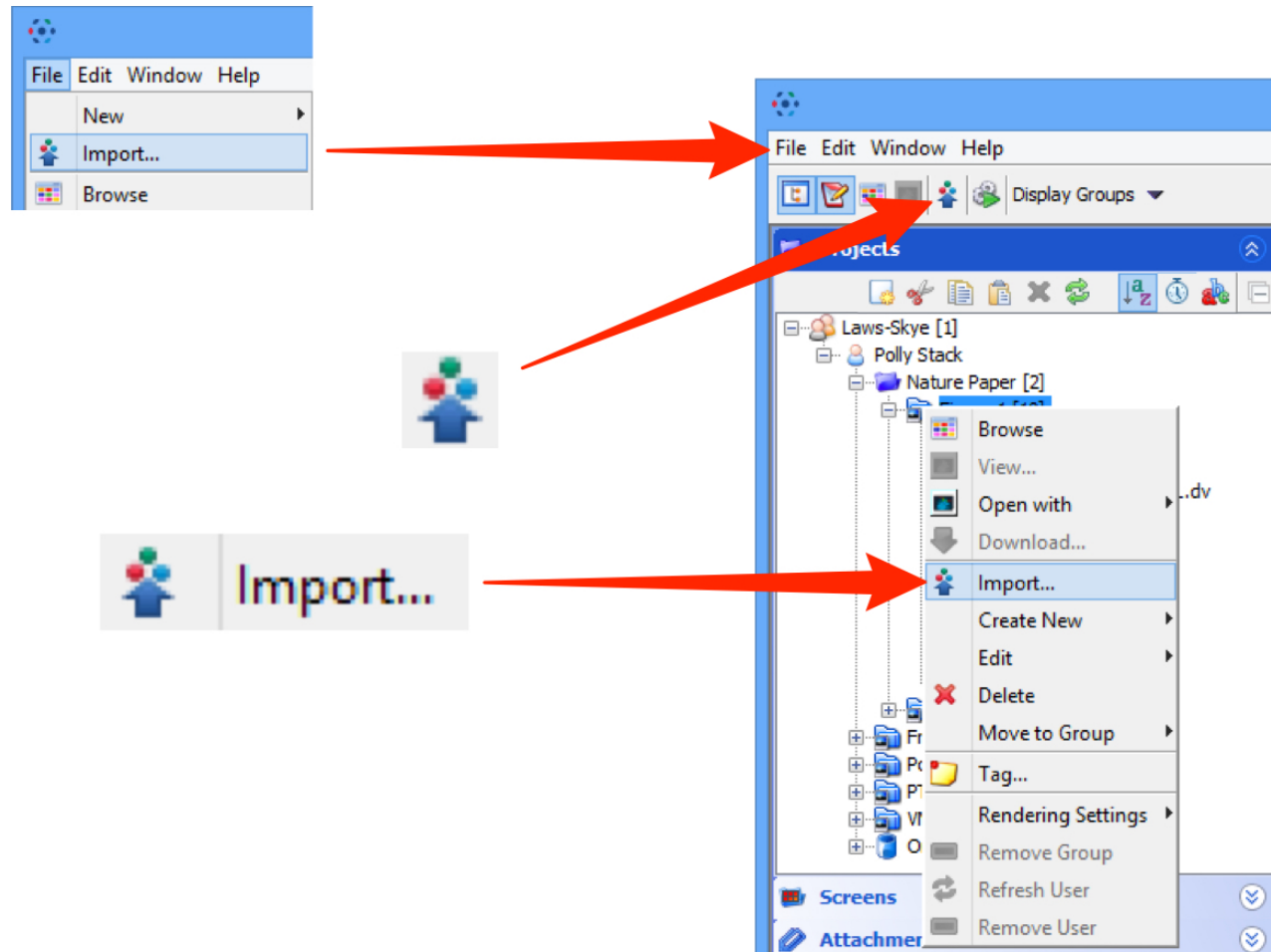
Getting images into OMERO



Viewing and exporting images in OMERO



Importing images using OMERO.insight



<http://help.openmicroscopy.org/importing-data-5.html>

Importing images using OMERO.insight

The screenshot displays the OMERO.insight 'Import Data' interface. At the top, the title 'Import Data' is visible, along with the instruction 'Select data to import and monitor imports.' and a user icon. A button labeled 'Select Data to Import' is highlighted. Below this, a file browser shows a directory named 'dv' containing a list of files such as 'CFP.ome.tif', 'CFPNEAT01_R3D.dv', and 'IAG.ome.tif'. A modal dialog titled 'Import Location - Select where to import your data.' is open, showing options for 'Group' (Lab1), 'Import For' (ome-trainer-1), 'Project' (---No Project---), and 'Dataset' (---New From Folder---). The dialog also features 'Close', 'Refresh', and 'Add to the Queue' buttons. The background interface includes a 'File Format' dropdown set to 'All supported file types' and 'Cancel All' and 'Import' buttons at the bottom.

<http://help.openmicroscopy.org/importing-data-5.html>

Command line import

- Offers the same functionality as Insight
- Able to support scripted solutions
 - for instance timed jobs for importing
- Provides advanced import scenarios
 - inplace – avoid uploading large files
 - targets – create Datasets & Screens upon import
 - excludes – avoid duplicate imports

<http://www.openmicroscopy.org/site/support/omero/users/cli/import.html>

TAGGING IMAGES

Tagging images

The diagram illustrates the process of tagging images in OpenMicroscopy. It shows a sidebar menu on the left with the 'Tags' option selected. A red arrow points from the 'Tags' menu to the 'Tags Selection' dialog box. A green arrow points from the 'Tags' menu to the 'Tags Selection' dialog box. The 'Tags Selection' dialog box is titled 'Tags Selection' and contains the following elements:

- Available tags:** A list of tags with a filter input field. The tag 'Nature - Figure 1' is visible.
- Selected tags:** A list of tags that have been selected.
- Filter by:** A dropdown menu set to 'anywhere in tag name'.
- Filter by owner:** A dropdown menu set to 'All'.
- Add a new tag and select it immediately:** A section with input fields for 'New Tag' and 'Description', and an 'Add' button.
- Buttons:** 'Save', 'Cancel', and 'Reset' buttons at the bottom.

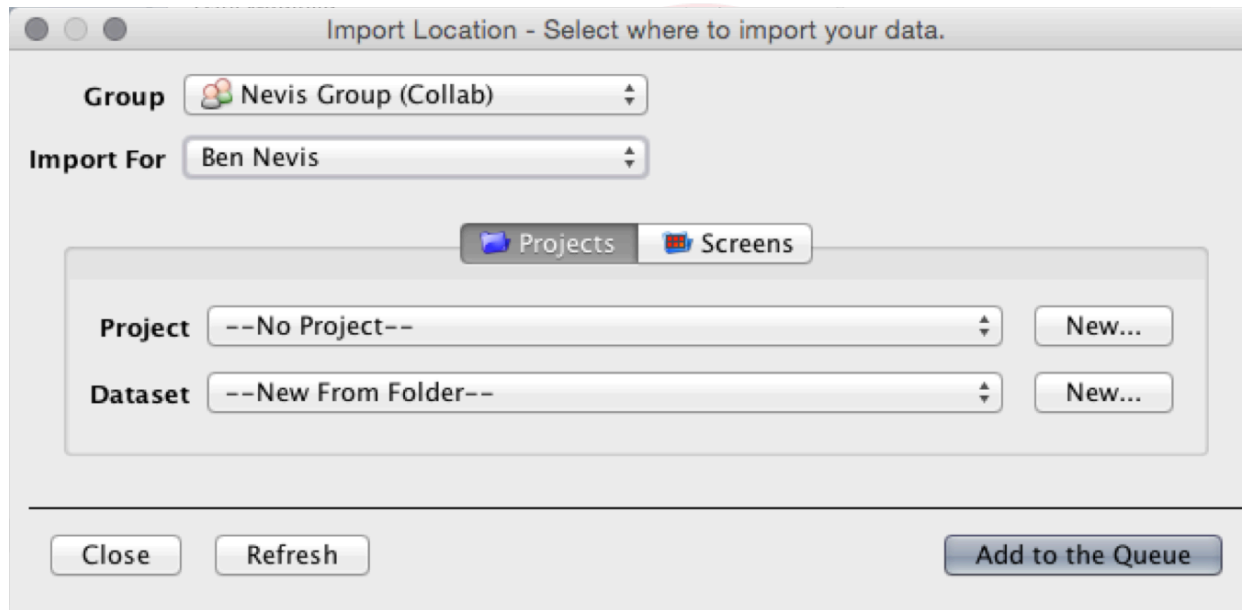
A red arrow points from the 'Add' button in the dialog box to the 'Add' button in the sidebar. A blue arrow points from the 'Add' button in the sidebar to the 'Add' button in the dialog box.

<http://help.openmicroscopy.org/managing-data.html#tags>



IMPORTING IMAGES FOR OTHER USERS

Importing for other users via Insight



- Also provided via Command Line Import

<http://help.openmicroscopy.org/facility-manager.html#import>

AUTOMATIC IMPORT

Automatic import

- Cron jobs
- Scripted solutions
- DropBox
 - per-user server-side directories in data directory
 - files copied in imported automatically after some time
 - configure with transfer, target and exclude

<http://help.openmicroscopy.org/dropbox.html>

ADVANCED IMPORT

Advanced import



- inplace import
 - upload
 - copy
 - hard link
 - soft link
- excluding imports
- import targets
- bulk imports

<http://www.openmicroscopy.org/site/support/omero/sysadmins/import-scenarios.html>

Typical import use cases

- Upload
 - data on separate system
 - remote import
- Copy
 - data on same system, lower network overhead
- Hard link
 - very large data on OMERO server
- Soft link
 - DropBox on OMERO server
- Can be extended by local developer
 - Local workflow

Advanced import from CLI

```
bin/omero import --advanced-help
```

```
--transfer=ARG          File transfer method
```

```
General options:
```

```
upload                 # Default
```

```
upload_rm              # Caution! Upload followed by source deletion.
```

```
some.class.Name       # Use a class on the CLASSPATH.
```

```
Server-side options:
```

```
cp                     # Use local copy command.
```

```
cp_rm                  # Caution! Copy followed by source deletion.
```

```
ln                     # Use hard-link.
```

```
ln_rm                  # Caution! Hard-link followed by source deletion.
```

```
ln_s                   # Use soft-link.
```

```
e.g. $ bin/omero import -- --transfer=ln_s foo.tiff
```

```
$ ./importer-cli --transfer=ln bar.tiff
```

Excluding duplicate imports

- Exclude by
 - file name (and checksum)
 - full client-side file path
 - `--exclude=ARG`
- Currently only available via CLI
- Can be extended by local developer

Specifying import target: Dataset or Screen

- Insight: target can be chosen or created
- CLI: target can be specified on import
 - `--target=ARG`
 - if not specified import will be “orphaned”
- Specify by:
 - ID
 - name - explicitly
 - name - using regular expression
- Create target on demand
- Resolve multiple matching targets
- Can be extended by local developer

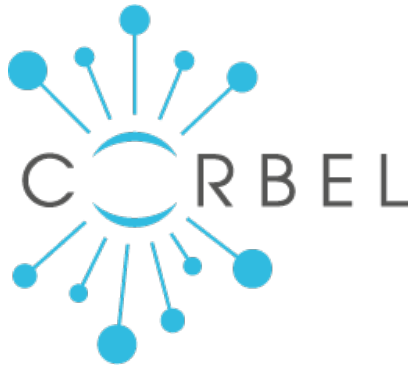
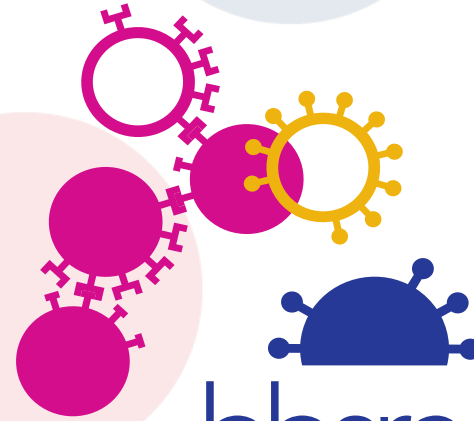
Bulk import

- Coming soon!
- Driven by IDR project
- Uses file to specify imports and other parameters

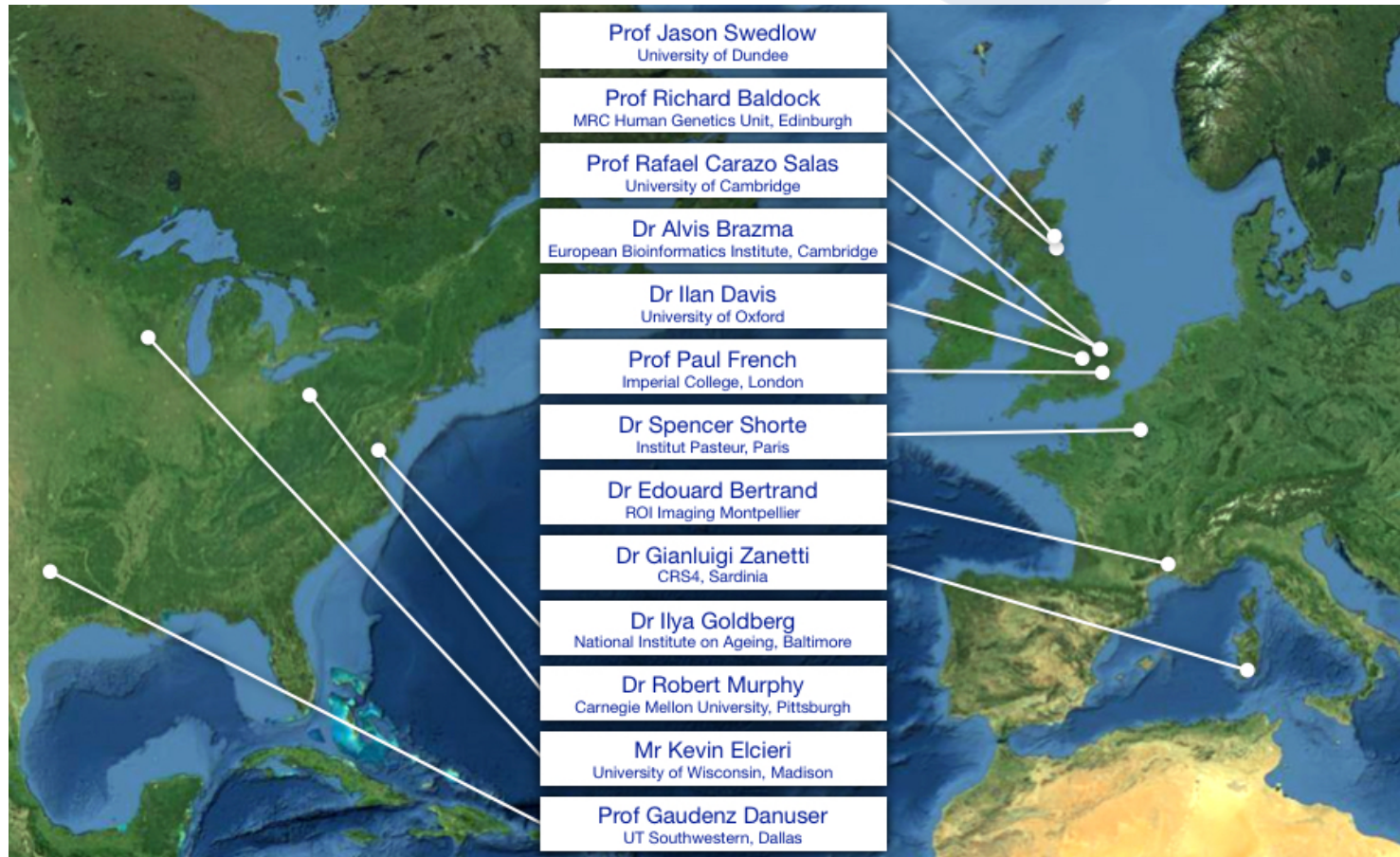
Some useful links

- OMERO Downloads:
 - <http://downloads.openmicroscopy.org/omero/>
- OMERO Help Pages:
 - <http://help.openmicroscopy.org/>
- OMERO Forums:
 - <https://www.openmicroscopy.org/community/>
- OMERO demo server:
 - <http://help.openmicroscopy.org/demo-server.html>

Thank to Funders



OME Consortium



Dundee, UW Madison, UT Southwestern, Oxford, CRS4, Montpellier, Edinburgh, CMU, Imperial, NIA, Institut Pasteur, EMBL-EBI, Glencoe Software