

Fiji-OMERO Workflows

Introduction

This is a step-by-step guide to the workflows used in OMERO training sessions and the videos produced to illustrate the basic Fiji-OMERO image analysis workflows. Links to the videos are in the **Other resources** section at the end of the document.

Instructions on downloading and installing the `OMERO.insight-ij` plugin for Fiji and ImageJ are in the [Using ImageJ with OMERO](http://help.openmicroscopy.org/imagej.html) section.
(<http://help.openmicroscopy.org/imagej.html>)

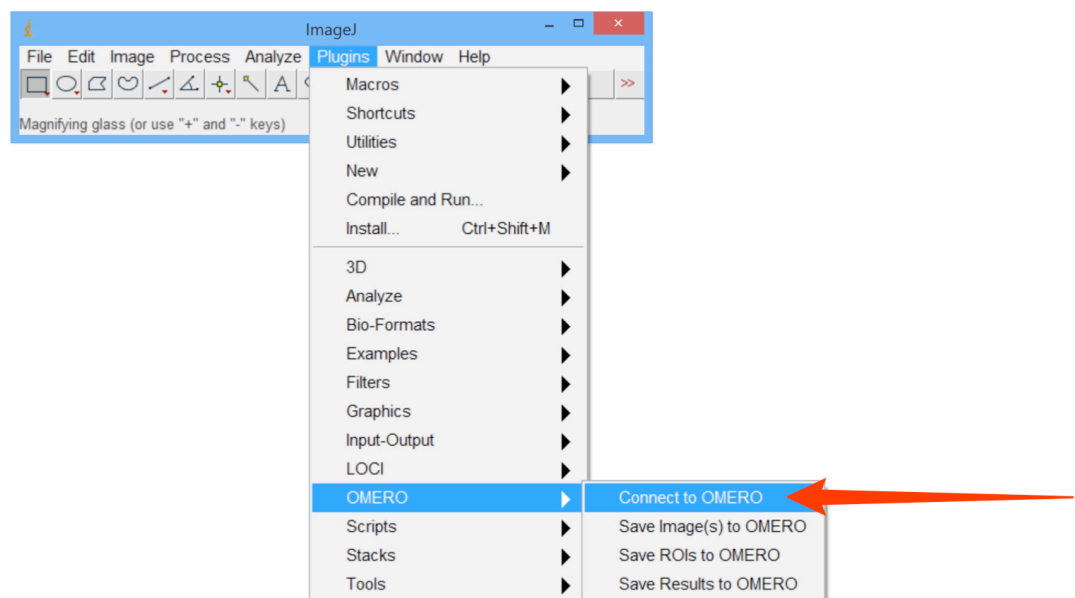
Manual workflow

1

Open the Fiji application.

Select **Plugins > OMERO > Connect to OMERO**.

A version of OMERO.insight will open and can be used as normal.



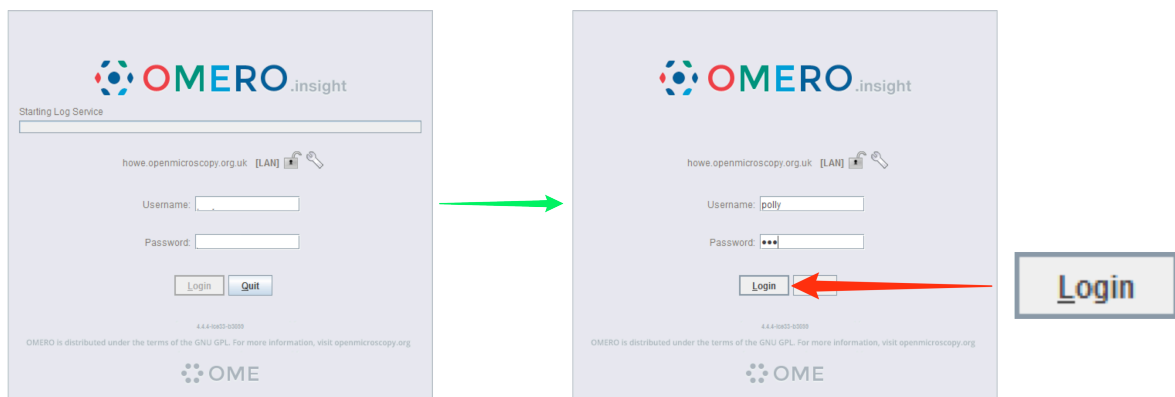
2

As ImageJ needs to load the plugin software, it can take a minute or two for the OMERO login screen to appear, and then another minute for the progress bar to start moving and complete.

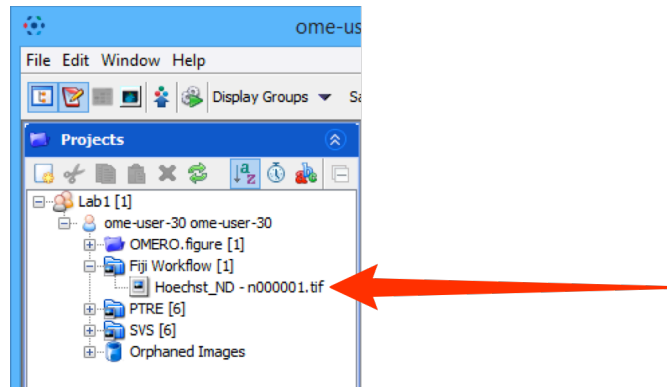
If you have not previously connected to OMERO, enter the server address.

Enter your OMERO **Username** and **Password**.

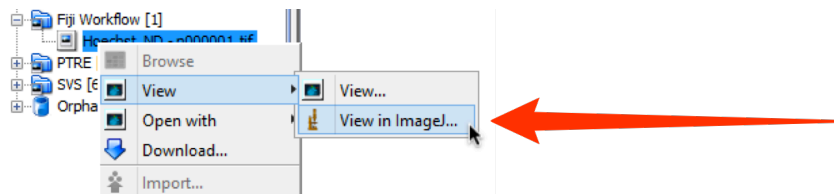
Click **Login**.



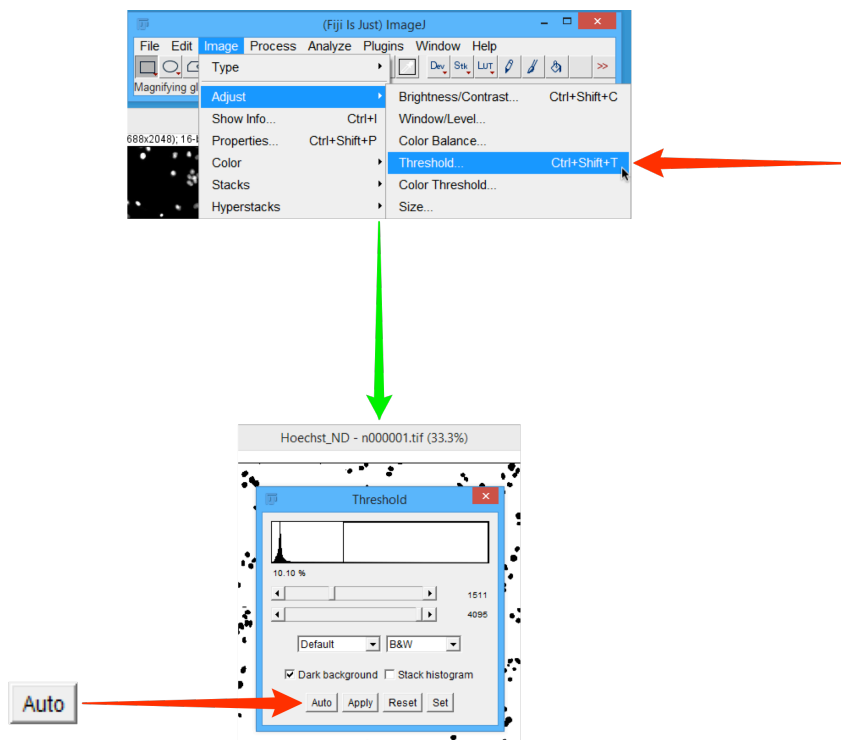
- 3 In the OMERO.insight window, select the image you wish to work with.



- 4 Right-click on the image and select **View in ImageJ...**.
In the Bio-Formats Import Options dialog, click **OK**.



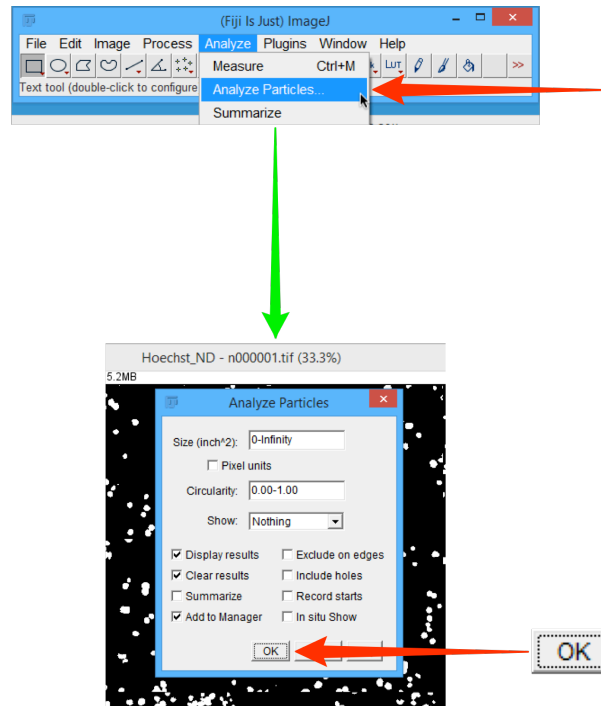
- 5 In Fiji, select **Image > Adjust > Threshold**.
Click on the **Auto** button, which should bring up the default for the image.
If necessary use the sliders to adjust the threshold values to obtain the desired thresholding.
Select the **Dark Background** checkbox.
Click **Apply** and close the dialog.



6

Select **Analyze > Analyze Particles**.

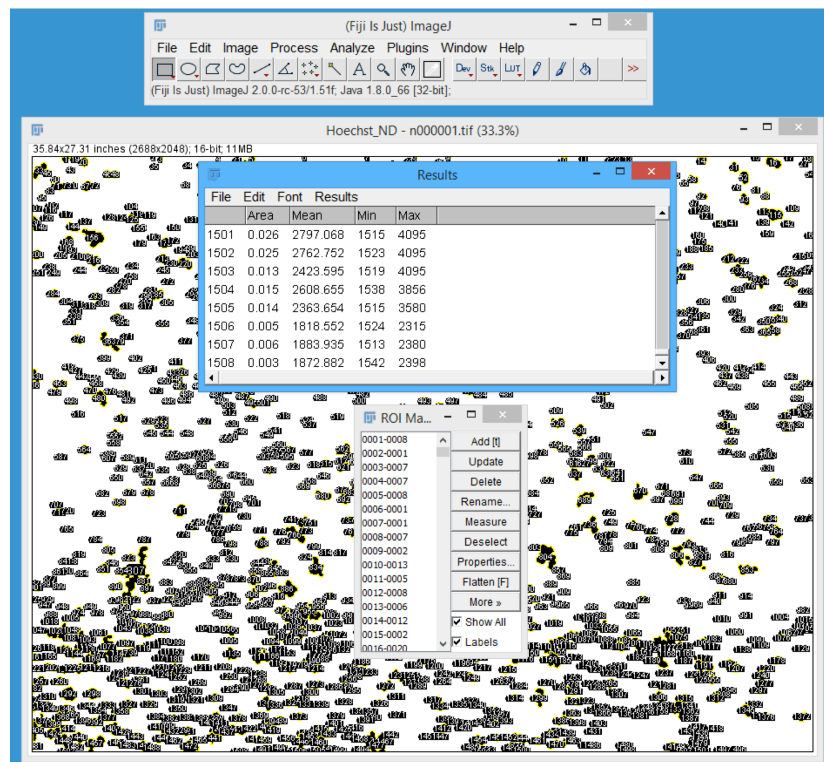
In the Analyze Particles dialog, check the values are as shown below, ensuring the **Display Results**, **Clear Results** and **Add to Manager** checkboxes are selected. Click **OK**.



7

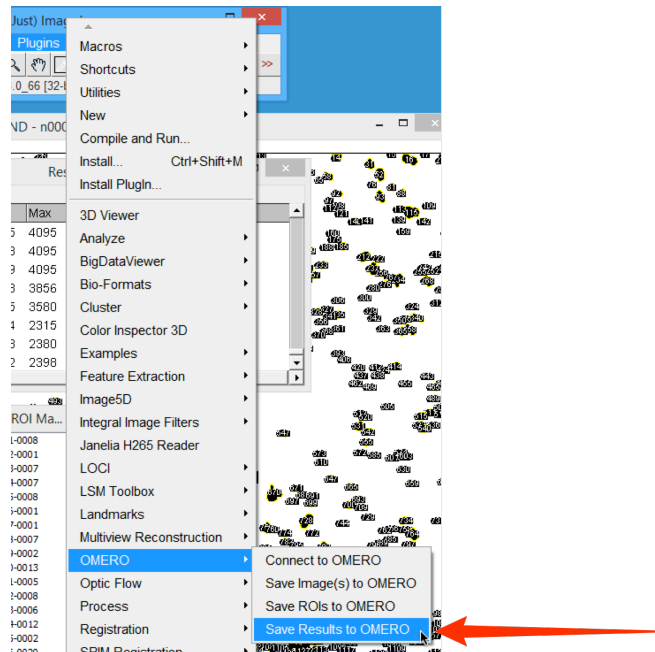
The following dialogs should be visible:

- the image with ROIs highlighted
- Results table
- ROI Manager

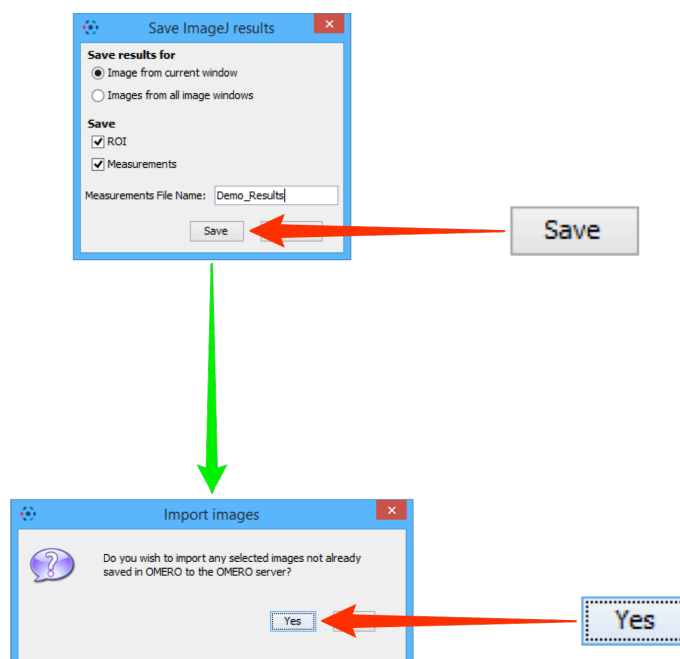


8 In Fiji, select **Plugins > OMERO > Save Results to OMERO**.

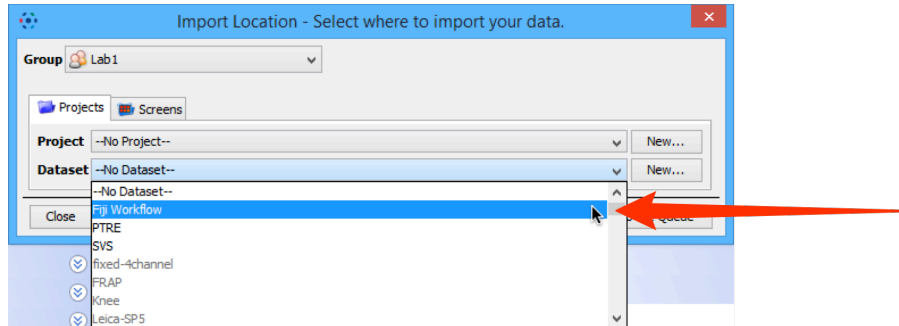
Note: If you are not logged into the OMERO server you will be prompted to log in.



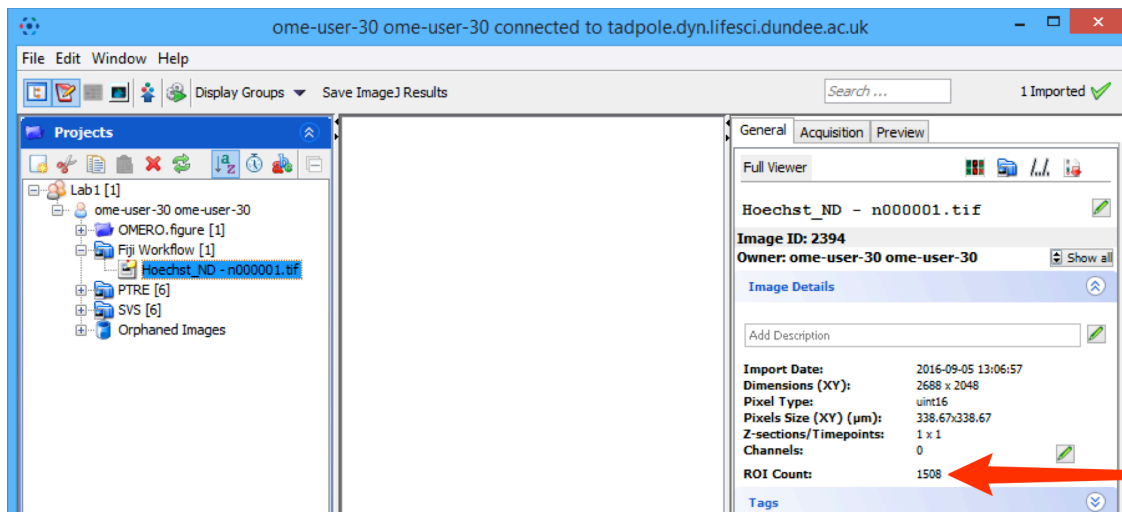
9 In the **Save ImageJ Results** dialog select the **Image from Current Window** radio button. Check the **ROI** and **Measurements** checkboxes. Enter a file name for the **Measurements File** in the text box. Click **Save**. Click **Yes** in the **Import Images** dialog.



- 10** In the **Import Location** dialog, select the **Project** and/or **Dataset** from the drop-downs to save the results to.
Click **Add to the Queue**.



- 11** Once the import is completed, the OMERO server takes a little time to generate the ROIs in OMERO form.
Once the ROI generation process is complete, select the imported image to show the ROIs attached.

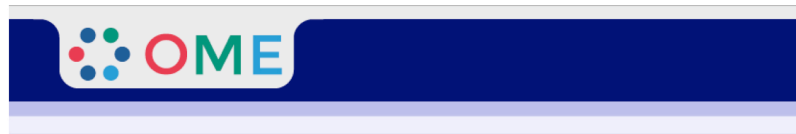


Scripting workflow

Additional setup

1 Download the OMERO.matlab plugin from:

<http://downloads.openmicroscopy.org/latest/omero5>






OMERO 5.2.5 Downloads

[Clients](#) | [Plugins](#) | [Additional](#) | [Servers](#) | [API](#) | [Python](#) | [Java](#) | [Code](#) | [Components](#) | [Previous versions](#)



- Information on this release of OMERO is in the [release announcement](#)
- Full documentation is available as [web documentation](#) or [PDF documentation](#) and there are user guides for the clients on our [Help website](#)
- A standard OMERO user just needs to download the client package with the same major version as their institutional server e.g., 5.0.0 clients will connect to 5.0.8 servers but not to 5.1.0 servers.
- If you do not have an institutional server, you can apply for an [account on our Demo server](#)

OMERO client downloads

Client	Size	File Name	Checksum
 Windows	83.48 MB	OMERO.insight-5.2.5-ice35-b28-win.zip	b4e00aa7 (SHA1)
 Mac OS X	83.26 MB	OMERO.insight-5.2.5-ice35-b28-mac.zip	26aaa275 (SHA1)
 Linux	83.13 MB	OMERO.insight-5.2.5-ice35-b28-linux.zip	8303e6eb (SHA1)

- OMERO.web is part of the server package, so individual users do not need to install it locally
- Full instructions for installing the client are on the Help website: [Getting Started with OMERO.insight Version 5.2.5](#)

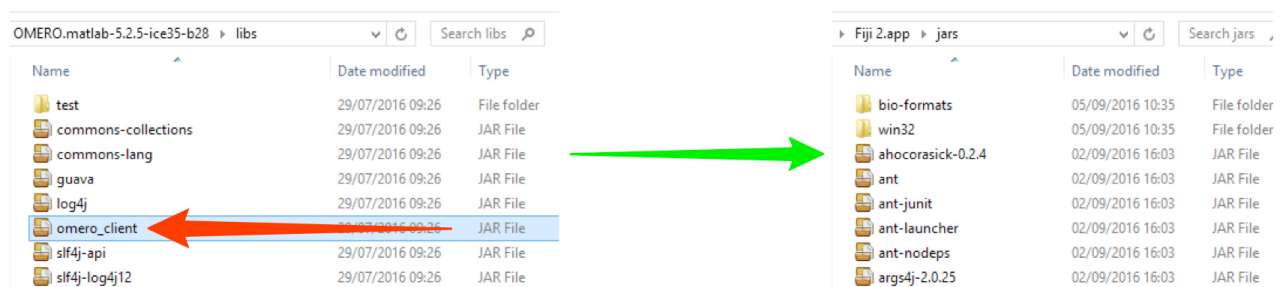
OMERO plugin downloads

Plugin	Size	File Name	Checksum
 ImageJ / Fiji	76.57 MB	OMERO.insight-ij-5.2.5-ice35-b28.zip	2b3e5901 (SHA1)
 Matlab	21.2 MB	OMERO.matlab-5.2.5-ice35-b28.zip	668272e3 (SHA1)

- Instructions for downloading and installing the ImageJ plugin: [Using ImageJ with OMERO](#)
- Instructions for using the Matlab plugin are at: [OMERO Matlab language bindings](#)

2 Unzip the archive.

Drag-and-drop or copy the `libs > omero_client.jar` file into the jars folder of Fiji.



3 Download the example script and related files from:

<https://github.com/bramalingam/Omero-Imagej-Scripts>

Links to individual files:
[bg_subtract.ijm](#)
[master/credentialsTemplate.txt](#)
[omero_batch_analysis.py](#)

(https://github.com/bramalingam/Omero-Imagej-Scripts/blob/master/bg_subtract.ijm)

(<https://github.com/bramalingam/Omero-Imagej-Scripts/blob/master/credentialsTemplate.txt>)

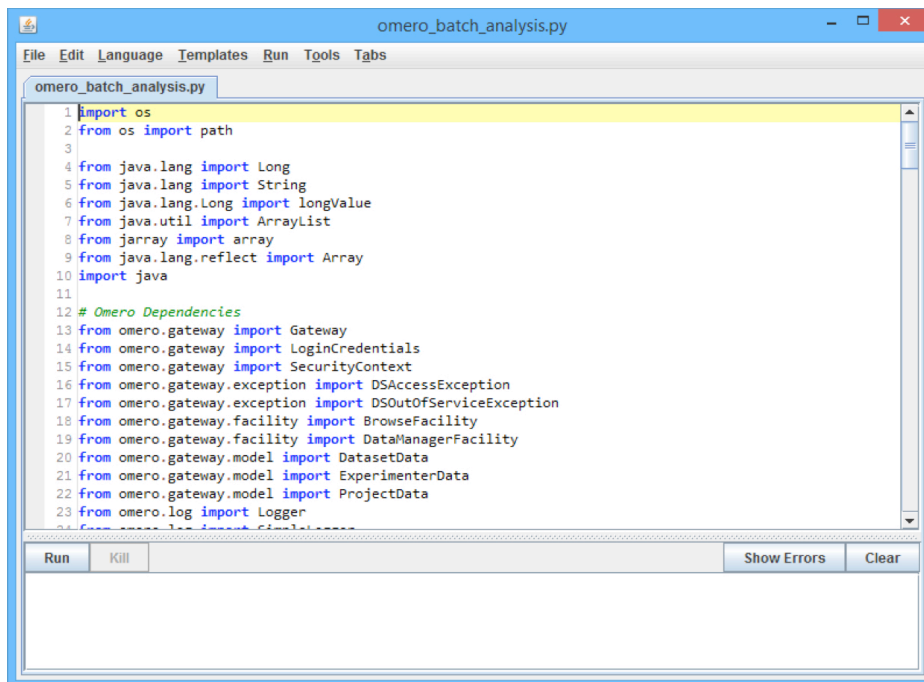
(https://github.com/bramalingam/Omero-Imagej-Scripts/blob/master/omero_batch_analysis.py)

Editing scripts

1

Open Fiji.

Use **File > Open...** to select and open the `omero_batch_analysis.py` file.
 The jython script will open in the script window.



```

omero_batch_analysis.py
File Edit Language Templates Run Tools Tabs
omero_batch_analysis.py
1 import os
2 from os import path
3
4 from java.lang import Long
5 from java.lang import String
6 from java.lang.Long import longValue
7 from java.util import ArrayList
8 from jarray import array
9 from java.lang.reflect import Array
10 import java
11
12 # Omero Dependencies
13 from omero.gateway import Gateway
14 from omero.gateway import LoginCredentials
15 from omero.gateway import SecurityContext
16 from omero.gateway.exception import DSAccessException
17 from omero.gateway.exception import DSOutOfServiceException
18 from omero.gateway.facility import BrowseFacility
19 from omero.gateway.facility import DataManagerFacility
20 from omero.gateway.model import DatasetData
21 from omero.gateway.model import ExperimenterData
22 from omero.gateway.model import ProjectData
23 from omero.log import Logger
24 from omero.log import Logger
  
```

2 Edit the following:

Line 131:

```
From: HOST = "omero-latest-analysis.docker.openmicroscopy.org"
To:    HOST = "your.omero.server.url"
```

Line 133:

```
From: datasetId = "1"
To:    datasetId = "x"
```

Where "x" is an OMERO Dataset ID of your choice.

Line 139:

```
From: CREDENTIALS =
      "/Users/bramalingam/Desktop/FijiDemonstration/credentials.txt"
To:    CREDENTIALS = "PATH_TO/credentials.txt"
```

Line 142:

```
From: macroFilePath =
      "/Users/bramalingam/Desktop/FijiDemonstration/bg_subtract.ijm"
To:    macroFilePath = "PATH_TO/bg_subtract.ijm"
```

Line 145:

```
From: paths = "Users/bramalingam/Desktop/FijiDemonstration"
To:    paths = "PATH_TO"
```

Where "PATH_TO" is the file path on your system to the files you downloaded previously.

3 Use **File > Save** to save the script file.

4 Use **File > Open...** to select and open the `credentialsTemplate.txt` file.

5 Enter the following using the OMERO login credentials you have been given:

Line 1:

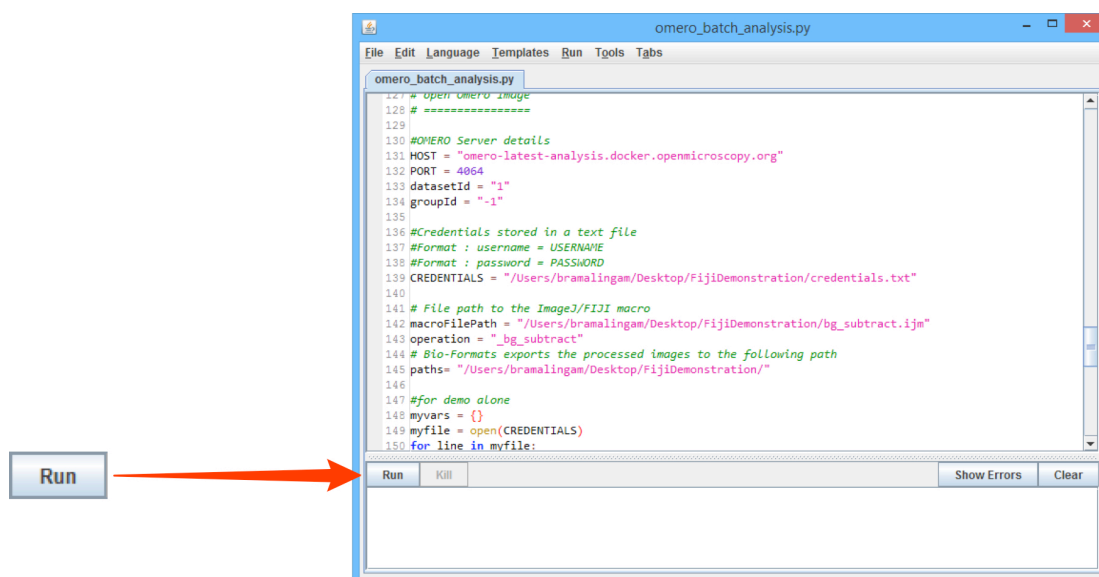
```
From: USERNAME = <OMERO USERNAME>
To:    USERNAME = <your_username>
```

Line 2:

```
From: PASSWORD = <OMERO PASSWORD>
To:    PASSWORD = <your_password>
```

6 Use **File > Save As > Text...** to save the credentials file as `credentials.txt` in the same directory.

- 7 Click the **Run** button to run the script.



- 8 Once the script is completed, use OMERO to check the processed images, which should be found in the dataset with the ID used in Step 2, Line 133. Repeat Steps 5 - 7.
- 9 To run the same macro on a different set of Images, in Step 2 Line 133, enter a different Dataset ID number. Repeat Steps 5 - 7.
- 10 To run a different macro on the same set of Images, in Step 2 Line 142, enter a different .ijm file name. Repeat Steps 5 - 7.

Other resources

Videos of these workflows:

[fiji_omero_manual_workflow.mov](#)

[fiji_scripting_demo.mov](#)

(http://downloads.openmicroscopy.org/movies/omero-5-2/mov/fiji_omero_manual_workflow.mov)
 (http://downloads.openmicroscopy.org/movies/omero-5-2/mov/fiji_scripting_demo.mov)

Fiji Scripting Tutorials:

http://imagej.net/Jython_Scripting

<https://www.ini.uzh.ch/~acardona/fiji-tutorial/>