

Using ImageJ with OMERO 4.4

This covers and version 4.4.x and the initial section assumes you have never installed ImageJ or Fiji before.

For OMERO versions 5.1.x and 5.0.x see the <u>Using ImageJ with OMERO 5.1</u> web page (http://help.openmicroscopy.org/imagej.html).

You can tell what version your OMERO is from the fine print at the bottom of the login screen.

<u>L</u> ogin <u>Quit</u>
 5.1.0-m3-1226-aa54o69-los35-b415 OMERO is distributed under the terms of the GNU GPL. For more information, visit openmicroscopy.org
••• OME

Upgrading from OMERO version 4.4.x to OMERO version 5.1.x is dealt with in a later section.

In order to connect to an OMERO server and use the data stored there directly in ImageJ and Fiji, plugins have to be installed. The following instructions guide you through the download and installation and use of ImageJ, Fiji and the plugins.

Downloading and installing ImageJ

1 Download the latest version of ImageJ for your platform from the website:

http://rsbweb.nih.gov/ij/download.html

W	nload
To fu ex	Platform Independent binstall ImageJ 148 on a computer with Java pre-installed, or to upgrade to the lates all distribution (including macros, plugins and LUTs), download ij148.zip (3MB) and stract the ImageJ directory. Use the Help>Update ImageJ command to upgrade to ever versions.
D In	lac OS X lownload ImageJ 1.48 (4.7MB) as a double-clickable Mac OS X application. Includes nageJ64, which uses Java 1.6 in 64-bit mode on Intel Macs running OS X 10.5 or ter. Instructions.
D	inux ownload ImageJ 1.48 bundled with 64-bit Java (40MB) or with 32-bit Java (46MB). oth versions include Java 1.6.0_24 from Oracle. Instructions.
D 32 a0	Vindows ownload ImageJ 1.48 bundled with 64-bit Java (25MB; requires 64-bit Windows), 2-bit Java (28MB) or without Java (5MB). Can't use an installer because you lack Iministrator privileges? ImageJ i saloa available as a ZIP archive (ij148-jdk6-64.zip rij148-jdk6-32.zip). Instructions.
Ti	Occumentation iago Ferreira's comprehensive ImageJ User Guide is available as an 8MB PDF occument and as a ZIP archive. The online JavaDoc API documentation is also vailable as a ZIP archive.

2

On Windows, run the set-up programme (either from the Downloads folder or when prompted by the download Wizard) and follow instructions, and security prompts as appropriate, to install ImageJ.

On Mac OS X, extract the .zip archive and drag the ImageJ folder to your applications folder.

On Linux, extract the .gz archive and double click the "run" script. Further installation instructions can be found on the ImageJ web site (URL above).





Downloading and Installing Fiji

Fiji (Fiji is Just ImageJ) is a distribution of ImageJ together with Java, Java3D and a lot of plugins organized into a coherent menu structure.

1 Download the latest version of Fiji for your platform from the website:

http://fiji.sc/Downloads

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See	also						
	ImageJ2 development releases t	for early vers	ions of ImageJ2.				
	ImageJ1 download archive & for	old versions	of ImageJ 1.x.				
Fiii							
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he Fij	i distribution of ImageJ is focused	on the life s	ciences. Fiji Is Just Image	eJ, batteries	included (s	ome ass	embly required).
			Fiji continuous releas	e			
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We inc update	corporated some extensive chang	es to reconc	ile Fiji with ImageJ2 &. Th	ne packages	below refle	ict Fiji fro	om just prior to these
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			windows (o4-bit) @				Linux (o4-bit) @

- The Fiji downloads page includes installation instructions. On Windows it is recommended you install the Fiji executable within your user space for example: C:\Users\[your name]\Fiji.app, not in the normal C:\Programs directory, otherwise future updating may fail. On Mac OS X, mount the .dmg and drag the Fiji folder to your applications folder. On Linux extract the .gz archive and double click the "run" script.
- **3** On Windows, depending on how the downloaded archive was expanded, the ImageJ executable can appear one level deeper in the Fiji.app folder than in ImageJ. On Mac OS X, Fiji.app appears as a single .app.

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Contents	1/28/2014 5:05 PM	File folder	FAVORITES	FaceTime.app Fiji.app	
images	1/28/2014 5:07 PM	File folder	Desktop	FileOpen	
jars	1/28/2014 5:07 PM	File folder	😭 rkferguson	Firefox.app	
java	1/28/2014 5:07 PM	File folder	Applications	FolderBrander.app	
luts	1/28/2014 5:07 PM	File folder	1 OME	Sent Book.app	Name Fiji.app
macros	1/28/2014 5:07 PM	File folder	1 Training	Free Ruler 1.7b5.app	Kind Application
plugins	1/28/2014 5:05 PM	File folder	1 Help Site Version 1	GarageBand.app	Size 114.9 MB
retro	1/28/2014 5:07 PM	File folder	2 Scoping	GitHub.app	Created 27 Jan 2014 22:2 Modified Today 15:01
scripts	1/28/2014 5:07 PM	File folder		Google Chrome.app	Last opened Today 15:00
db.xml.gz	1/28/2014 5:05 PM	GZ File	3 Testing	Google Drive.app	Version
ImageJ-win32.exe	1/28/2014 5:05 PM	Application	🛄 4 Data	Google Earth.app	





Installing Plugins for ImageJ and Fiji

The location for the plugins in ImageJ and Fiji are essentially the same, with the following differences in gaining access to them:

• on Windows, Fiji sometimes has an additional level of hierarchy, depending on how the downloaded archive was expanded, for example:

```
ImageJ - Windows (32 bit):
Local Disk (C:) > Program Files (x86) > ImageJ > plugins
Fiji - Windows (32 bit):
Local Disk (C:) > username > Fiji-win32 > Fiji.app > plugins
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	ım Files (x86) → ImageJ →		erguson → fiji-win32 → Fij	ագիհ		
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📙 jre	1/28/2014 10:44 AM	File folder	🍌 Contents	2/7/2014 5:44 PM	File folder	
luts	1/28/2014 10:44 AM	File folder	퉬 images	2/7/2014 5:45 PM	File folder	
i macros	1/28/2014 10:44 AM	File folder	鷆 jars	2/7/2014 5:50 PM	File folder	
📙 plugins	1/28/2014 11:23 AM	File folder	鷆 java	2/7/2014 5:45 PM	File folder	
🖆 ij.jar	7/3/2013 5:51 PM	Executable Jar Fi	🍌 luts	2/7/2014 5:45 PM	File folder	
🕼 lmageJ.cfg	1/28/2014 10:44 AM	CFG File	imacros	2/7/2014 5:45 PM	File folder	
ImageJ.exe	6/7/2013 7:17 PM	Application	🍌 plugins	2/7/2014 5:50 PM	File folder	
🗿 README.html	6/10/2013 8:51 PM	HTML Documer	🍌 retro	2/7/2014 5:45 PM	File folder	
🗊 unins000.dat	1/28/2014 10:44 AM	DAT File	scripts	2/7/2014 5:45 PM	File folder	
ଟ unins000.exe	1/28/2014 10:43 AM	Application	.checksums	2/7/2014 5:53 PM	CHECKSUMS File	93 KE
			🙆 db.xml.gz	2/7/2014 5:54 PM	GZ File	157 KE
			ImageJ-win32.exe	2/7/2014 5:44 PM	Application	129 KE

 on Mac OS X, Fiji is an .app package, so to see the plugins folder you must right-click the Fiji.app and select Show Package Contents:

💵 Fiji.	Open						
File	Show Package Contents	s, 🦛		-			
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🎸 Gari	Burn "Fiji.app" to Disc			db.xml.gz	P	3D_Viewer.jar	
Git⊦	Duplicate			images	Þ	Algorithm_Launcher.jar	r
Goc	Make Alias			jars	Þ	analyze	⊳
Coc	Quick Look "Fiji.app"			java	⊳	Analyze_RAPSHOT.ja	r
Goc	Share	•		luts	Þ	AnalyzeSkAPSHOT.ja	r
Goo	Copy "Fiji.app"			macros	Þ	AnisotropiAPSHOT.ja	r
Gra	copy riji.app			plugins	•	Arrow2APSHOT.ja	r
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Note: After installing or upgrading plugins, you need to restart ImageJ or Fiji to be able to use the plugins.





Using ImageJ with OMERO version 4.4.x

Two plugins are required:

1

- loci_tools.jar
- OMERO.insight-ij

Download the latest 4.4.x version of the **LOCI Tools** plugin from:

http://downloads.openmicroscopy.org/latest/bio-formats4

Check there is a "Bio-Formats 4.4.x Downloads" heading on the page.



2 Save or move the downloaded file into the ImageJ > plugins folder.

Name	Date modified	Туре
\mu 3D	1/28/2014 10:44 AM	File folder
] Analyze	1/28/2014 10:44 AM	File folder
Examples	1/28/2014 10:44 AM	File folder
Filters	1/28/2014 10:44 AM	File folder
Graphics	1/28/2014 10:44 AM	File folder
鷆 Input-Output	1/28/2014 10:44 AM	File folder
鷆 jars	1/28/2014 10:44 AM	File folder
🌽 Scripts	1/28/2014 10:44 AM	File folder
퉬 Stacks	1/28/2014 10:44 AM	File folder
퉬 Tools	1/28/2014 10:44 AM	File folder
🕌 loci_tools.jar	1/28/2014 10:54 AM	Executable Jar File
README.txt	6/10/2013 8:56 PM	Text Document



4





3 Download the latest 4.4.x version of the OMERO.insight-ij plugin from:

http://downloads.openmicroscopy.org/latest/omero4

Check there is a "OMERO 4.4.x Downloads" heading on the page.

	s		
Clients Plugins Additional Server	<u>'s</u> <u>Virtual Ap</u>	pliance API Code Artifacts Legac	Y
 Information on this release of OMER 	O is in the relea	se announcement	
Full documentation is available as we	eb documentation	n or PDF documentation and there are user gui	des for the clients
 A standard OMERO user just needs 	to download the	client package with the same major version as	their institutional
OMERO client downloads			
Clients	Size	File Name	Checksum
🐚 💕 Windows	63.37 MB	OMERO.clients-4.4.11-ice35-b9.win.zip	35e607 (MD5)
1 Mac OS X	184.89 MB	OMERO.clients-4.4.11-ice35-b9.mac.zip	e29db6 (<u>MD5</u>)
📙 👌 Linux	102.72 MB	OMERO.clients-4.4.11-ice35-b9.linux.zip	2 178900 (<u>MD5</u>)
 Each client package includes <u>OMER</u> package, so individual users do not n 		RO.importer and OMERO.editor and requires ocally.	Java Version 1.6
Full instructions for installing the clie	ints are on the He	elp website: Getting Started with OMERO.insi	ght Version 4.4.1
OMERO plugin download	s		
	Size	File Name	Checksum
Plugins			
Plugins	48.67 MB	OMERO.insight-4.4.11-ice35-b9.zip	f11b02 (<u>MD5</u>)

4 Save or move the .zip archive to the ImageJ > plugins folder.

Extract the archive into the plugins folder to give a folder named "OMERO.insight-ij-x" where x is the version number.

Leave the complete OMERO.insight-ij plugin folder with its components in the ImageJ > plugins folder.

Note: Some Windows unzip apps create a double folder enclosing the plugin. Check, and if this has happened, copy the inner OMERO.insight-ij-4.4.x folder into the ImageJ > plugins folder.

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The OMERO.insight-ij-4.4.x.zip archive can be left in the plugins folder or deleted.





Using Fiji with OMERO 4.4.x

Fiji changed the way it bundles and updates the plugins and jars needed to work with OMERO version 4.4.x in April 2014. Versions of Fiji since require the following steps to work with OMERO version 4.4.x.

Two plugins are required:

- loci_tools.jar
- OMERO.insight-ij

and incompatible Bio-Formats and SCIFIO plugins and jars need to be deleted.

Using a new or existing Fiji app download, start the app and allow it to go through and complete the update procedure, or from the menu select Help > Update Fiji. In the ImageJ Updater window, click Manage update sites. Highlight the Bio-Formats entry in the list. Click Remove, and then Close.









2 Quit Fiji.

Go to the Fiji app > plugins folder on your hard drive and delete bioformats_plugins.jar In the Fiji app > jars folder, select and delete the five jars with the prefix scifio-.

Name	Date modified \land	bio-formats_plugins-5.0.1.jar
BalloonSegmentation2.0.0-SNAPSHOT.	5/23/2014 4:33 PM	Executable Jar File
BeanShell_Interpreter-2.0.0-SNAPSHOT.jz	r 5/23/2014 4:33 PM	
bio-formats_plugins-5.1.0.jar	5/23/2014 4:33 PM	
🕌 blockmatching2.0.0-SNAPSHOT.jar	5/23/2014 4:33 PN	٢
▲ Bug_Submitter-2.0.0-SNAPSHOT.jar	5/23/2014 4:33 PN	E
bUnwarpJ2.6.1-SNAPSHOT.jar	5/23/2014 4:33 PM	
🕌 Calculator_Plus-2.0.0-SNAPSHOT.jar	5/23/2014 4:33 PN	Date modified: 5/23/2014 4:33 PM
🕌 CLI2.0.0-SNAPSHOT.jar	5/23/2014 4:33 PN	Size: 225 KB
Clojure_Interpreter-2.0.0-SNAPSHOT.jar	5/23/2014 4:33 PM	Date created: 5/23/2014 4:33 PM
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3 Download and install the latest 4.4.x version of the OMERO.insight-ij plugin and loci tools.jar as described in **Using ImageJ 4.4.x** above.

Subsequent automatic Fiji updates should not affect these installations.





Accessing OMERO using ImageJ and Fiji

Launch the ImageJ application and click on the **Plugins** menu. Select **OMERO > Connect to OMERO**.
A version of OMERO insight will open and can be used as normal

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

🛓 ImageJ		
File Edit Image Process Analyze	Plugins Window He	lelp
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Magnifying glass (or use "+" and "-" keys)	Shortcuts	▶
	Utilities	•
	New	•
	Compile and Run	
	3D	•
	Analyze	•
	Examples	•
	Filters	•
	Graphics	•
	Input-Output	•
	LOCI	•
	Macros	•
	OMERO	Connect to OMERO
	Stacks	,
	Tools	•

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 two or three minutes for the progress bar to start moving and complete. Enter your OMERO server address (if needed) and **Username** and **Password**. Click **Login**.

Starting Log Service		
howe.openmicroscopy.org.uk [LAN] 🍱 🖄	howe apenmicroscopy org.uk [LAN] 🖬 🖄	
Username:	Username: polly	
Password:	Password:	
Login Quit	Login	<u>L</u> ogin
4.44/ex35-55559 OMERO is distributed under the terms of the GNU GPL. For more information, visit openmicroscopy.org	4.4.4.ext5-ext09 OMERO is distributed under the terms of the GNU GPL. For more information, visit openmicroscopy.org	
••• OME	* * OME	





You will then be taken to the OMERO.insight Data Manager screen.



9

Note: If you quit OMERO.insight and then connect again during the same ImageJ session, logging in and launching the OMERO plugin will be much quicker. So if you intend using the OMERO plugin through ImageJ again soon, it may be worth leaving your ImageJ application running.

4 Double click on the image in the data tree or selecting the image and View > View in ImageJ in the contextual menu. The Bioformats Import Options window opens. Select parameters and click OK.

	kio-Formats Import Options	
Polly Stack's Data Manager	Stack viewing Metadata viewing	Information
File Edit View Window Help 로 [2] 프 비 을 수, (응, (Salawa (Collab))	View stack with: Hyperstack	Autoscale - Stretches the channel histograms to each channel's global minimum and maximum value throughout the stack. Does
Projects Image: The mages Image: The mages Image: The mages Image: The	Dataset organization Memory management Group files with similar names Use virtual stack	not alter underlying values in the image.
P 49 35825 Torres et al functionalm Torres et al functin Torres et al functionalm Torres et al functionalm	Open files individually Swap dimensions Crop on import Open all series	ries If unselected, all channel histograms are scaled to the image's digitization bit depth. Note that this range may be narrower
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	Color options Splt focal planes	(0-65,535), to 12-bits (0-4,095), to 10-bits (0-1,023), etc.
B DTRE [3] Copy B D Structural Analysis [2]	I (Autoscale)	Note that you can use the





Upgrading ImageJ from 4.4.x to 5.1.x

To upgrade ImageJ for use with an OMERO version 5 server, you need to:

Go to the ImageJ > plugins folder. Delete the loci_tools.jar and the OMERO.insight-ij-4.4.x folder. Download the latest 5.1.x version of the Bioformats Package plugin from:

http://downloads.openmicroscopy.org/latest/bio-formats5

Check there is a "Bio-Formats 5.1.x Downloads" heading on the page. Save or move the downloaded file into the ImageJ > plugins folder.

2 Download the latest 5.1.x version of the OMERO.insight-ij plugin from:

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

Check there is a "OMERO 5.1.x Downloads" heading on the page. Save or move the downloaded file into the ImageJ > plugins folder.

Note: The bioformats_package.jar you need, to use ImageJ with OMERO version 5.1.x, is incompatible with loci_tools.jar, and ImageJ will not work with OMERO if both are in the plugins folder.

We suggest that if you wish to access both 4.4.x and 5.1.x versions of OMERO from ImageJ that you run two appropriately named copies of ImageJ each with the appropriate plugins for the version.

For more information on using ImageJ with OMERO versions 5.1.x and 5.0.x see:

Using ImageJ with OMERO (http://help.openmicroscopy.org/imagej.html).

