

Using ImageJ with OMERO

This initial section assumes you have never installed ImageJ or Fiji before and covers both OMERO version 4.4.x and version 5.0.x.

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



Upgrading from OMERO version 4.4.x to OMERO version 5.0.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>

home | news | docs | download | plugins | resources | list | links

Download

Platform Independent
To install ImageJ 1.47 on a computer with Java pre-installed, or to upgrade to the latest full distribution (including macros, plugins and LUTs), download [ij147.zip](#) (3.2MB) and extract the ImageJ directory. Use the [Help>Update ImageJ](#) command to upgrade to newer versions.

Mac OS X
Download [ImageJ 1.47](#) (5.7MB) as a double-clickable Mac OS X application. Includes ImageJ64, which uses Java 1.6 in 64-bit mode on Intel Macs running OS X 10.5 or later. ([Instructions](#))

Linux
Download ImageJ 1.47 bundled with [64-bit Java](#) (40MB) or with [32-bit Java](#) (46MB). Both versions include Java 1.6.0_24 from Oracle. ([Instructions](#))

Windows
Download ImageJ 1.47 bundled with [64-bit Java](#) (25MB; requires 64-bit Windows), [32-bit Java](#) (28MB) or without Java (5MB). ([Instructions](#))

Documentation
Tiago Ferreira's comprehensive [ImageJ User Guide](#) is available as an 8MB PDF document and as a [ZIP archive](#). The online [JavaDoc API documentation](#) is also available as a [ZIP archive](#).

2

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

On Mac, 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 install instructions can be found on the ImageJ web site (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>



The screenshot shows the 'Downloads' section of the Fiji website. It includes a note about the authoritative site being <http://fiji.sc/>. It features a 'Download' section with links for Windows (32-bit and 64-bit), OS X (32-bit and 64-bit), Linux (32-bit and 64-bit), Java, and All platforms (no JREs). Below this, there's a note about PowerPC support and a link to Mac OSX tips. A 'Continuous release' section shows links for Line-Line version (32-bit and 64-bit) and OS X (32-bit and 64-bit).

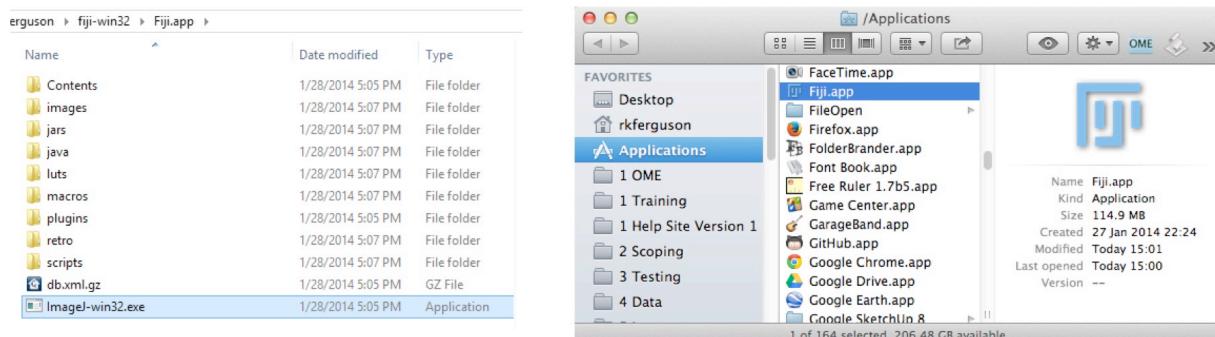
2

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, 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 Fiji.app appears as a single .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:

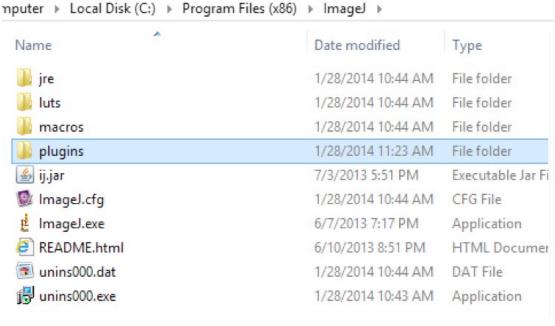
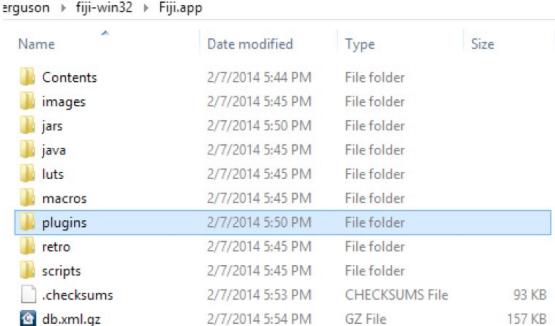
- on Windows, Fiji sometimes has an additional level of hierarchy, depending on how the downloaded archive was expanded, for example:

ImageJ - Windows (32 bit):

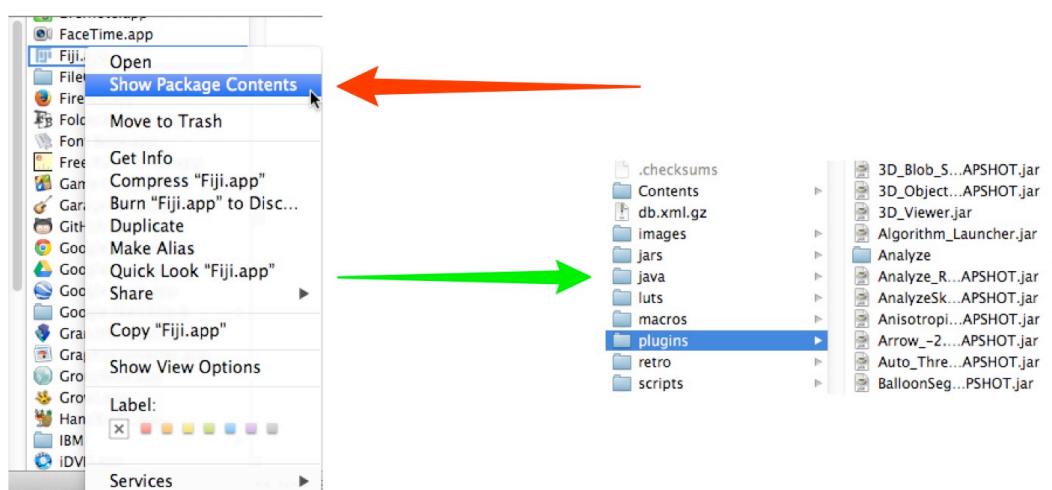
Local Disk (C:) > Program Files (x86) > ImageJ > plugins

Fiji - Windows (32 bit):

Local Disk (C:) > username > Fiji-win32 > Fiji.app > plugins

 <pre> nputer > Local Disk (C:) > Program Files (x86) > ImageJ > Name Date modified Type jre 1/28/2014 10:44 AM File folder luts 1/28/2014 10:44 AM File folder macros 1/28/2014 10:44 AM File folder plugins 1/28/2014 11:23 AM File folder ijjar 7/3/2013 5:51 PM Executable Jar File ImageJ.cfg 1/28/2014 10:44 AM CFG File ImageJ.exe 6/7/2013 7:17 PM Application README.html 6/10/2013 8:51 PM HTML Document unins000.dat 1/28/2014 10:44 AM DAT File unins000.exe 1/28/2014 10:43 AM Application </pre>	 <pre> erguson > fiji-win32 > Fiji.app > Name Date modified Type Contents 2/7/2014 5:44 PM File folder images 2/7/2014 5:45 PM File folder jars 2/7/2014 5:50 PM File folder java 2/7/2014 5:45 PM File folder luts 2/7/2014 5:45 PM File folder macros 2/7/2014 5:45 PM File folder plugins 2/7/2014 5:50 PM File folder retro 2/7/2014 5:45 PM File folder scripts .checksums 2/7/2014 5:53 PM CHECKSUMS File 93 KB db.xml.gz 2/7/2014 5:54 PM GZ File 157 KB ImageJ-win32.exe 2/7/2014 5:44 PM Application 129 KB </pre>
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- on Mac, Fiji is a .app package, so to see the plugins folder you must right-click the Fiji.app and select **Show Package Contents**:



Note: After installing or upgrading plugins, you need to restart ImageJ or Fiji to be able to use the plugins.

Note: There are some differences between ImageJ and Fiji, and for OMERO version 4.4.x and OMERO version 5.0.x regarding which plugins are needed. These are outlined below.

Using ImageJ with OMERO version 4.4.x

Two plugins are required:

- `loci_tools.jar`
- `OMERO.insight-ij`

1

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.



Bio-Formats 4.4.11 Downloads

[Tools](#) | [Components](#) | [Code](#) | [Legacy](#)

- Full documentation is available as [web documentation](#) or [PDF documentation](#).
- The Bio-Formats API documentation is available to read on the web [here](#).
- Internet Explorer sometimes renames JAR files to ZIP (e.g., `loci_tools.jar` becomes `loci_tools.zip`); if this happens to you, simply rename the file back to its original name after the download is complete.
- For some browsers, you may need to right-click or control-click the link and choose "Save link as..." or a similar option to download the file.

Bio-Formats tools downloads

Clients	Size	File Name	Checksum
 LOCI Tools	10.01 MB	<code>loci_tools.jar</code>	dbbf3c (MD5)
 Command Line Tools	17.42 KB	<code>bftools.zip</code>	15d697 (MD5)
 MATLAB Toolbox	13.74 KB	<code>bftoolbox.zip</code>	b0e7b1 (MD5)

- `loci_tools.jar` is a complete bundle (for end users) containing everything needed to read images into ImageJ using Bio-Formats. Instructions for installing Bio-Formats in ImageJ are available in the [user guide](#).
- `bftools.zip` is a bundle of scripts for using Bio-Formats on the command line.
- `bftoolbox.zip` is a bundle of functions for using Bio-Formats from MATLAB.

2

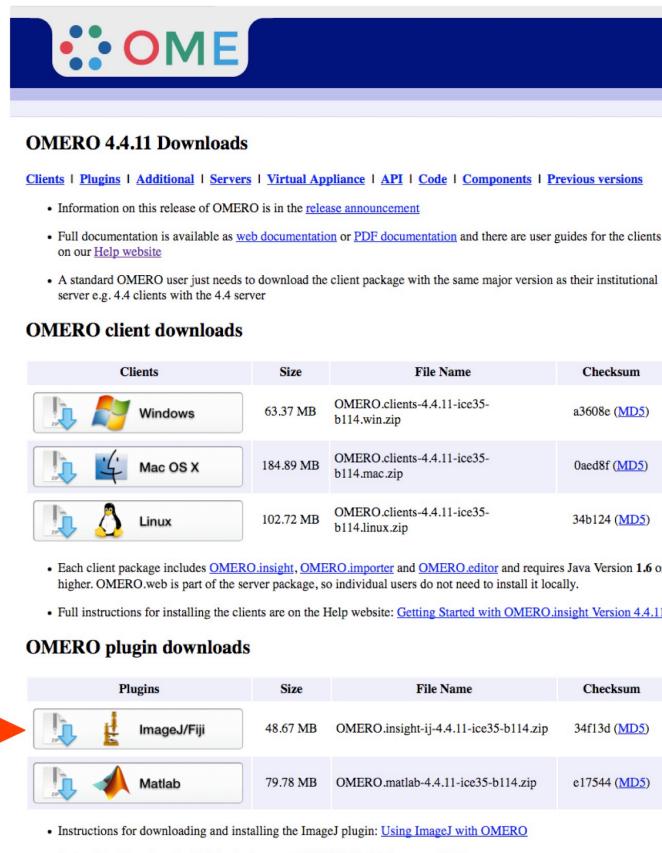
Save or move the downloaded file into the `ImageJ > plugins` folder.

Name	Date modified	Type
 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
 Input-Output	1/28/2014 10:44 AM	File folder
 jars	1/28/2014 10:44 AM	File folder
 Scripts	1/28/2014 10:44 AM	File folder
 Stacks	1/28/2014 10:44 AM	File folder
 Tools	1/28/2014 10:44 AM	File folder
 <code>loci_tools.jar</code>	1/28/2014 10:54 AM	Executable Jar File
 README.txt	6/10/2013 8:56 PM	Text Document

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.



The screenshot shows the OMERO 4.4.11 Downloads page. At the top, there's a navigation bar with links to Clients, Plugins, Additional, Servers, Virtual Appliance, API, Code, Components, and Previous versions. Below the navigation, there are three bullet points:

- 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. 4.4 clients with the 4.4 server.

 The next section is titled "OMERO client downloads" and lists three packages:

Clients	Size	File Name	Checksum
 Windows	63.37 MB	OMERO.clients-4.4.11-ice35-b114.win.zip	a3608e (MD5)
 Mac OS X	184.89 MB	OMERO.clients-4.4.11-ice35-b114.mac.zip	0aed8f (MD5)
 Linux	102.72 MB	OMERO.clients-4.4.11-ice35-b114.linux.zip	34b124 (MD5)

 Below the clients, there are two more bullet points:

- Each client package includes [OMERO.insight](#), [OMERO.importer](#) and [OMERO.editor](#) and requires Java Version 1.6 or higher. OMERO.web is part of the server package, so individual users do not need to install it locally.
- Full instructions for installing the clients are on the Help website: [Getting Started with OMERO.insight Version 4.4.11](#).

 The final section is titled "OMERO plugin downloads" and lists two packages:

Plugins	Size	File Name	Checksum
 ImageJ/Fiji	48.67 MB	OMERO.insight-ij-4.4.11-ice35-b114.zip	34f13d (MD5)
 Matlab	79.78 MB	OMERO.matlab-4.4.11-ice35-b114.zip	e17544 (MD5)

 Below the plugins, there are two more bullet points:

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

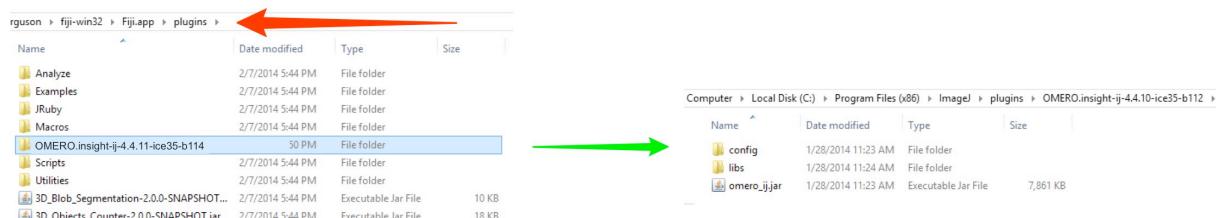
4

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.



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

Using ImageJ with OMERO version 5.0.x

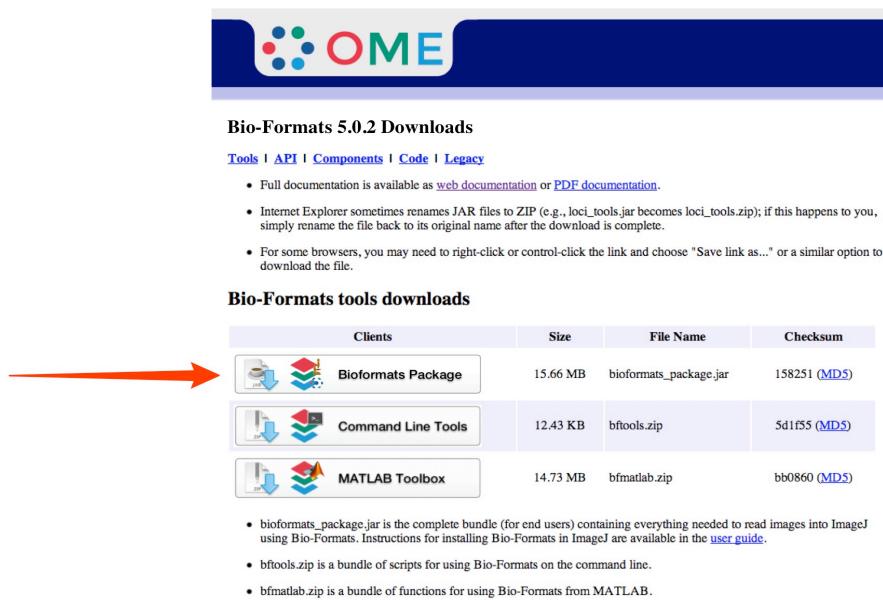
Two plugins are required:

- `bioformats_package.jar`
- `OMERO.insight-ij`

- 1 Download the latest 5.0.x version of the **Bioformats Package** plugin from:

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

Check there is a “Bio-formats 5.0.x Downloads” heading on the page.



Bio-Formats 5.0.2 Downloads

[Tools](#) | [API](#) | [Components](#) | [Code](#) | [Legacy](#)

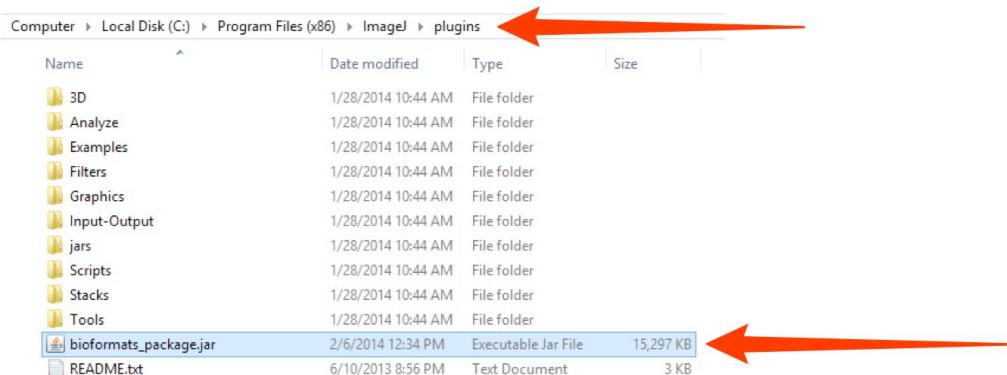
- Full documentation is available as [web documentation](#) or [PDF documentation](#).
- Internet Explorer sometimes renames JAR files to ZIP (e.g., loci_tools.jar becomes loci_tools.zip); if this happens to you, simply rename the file back to its original name after the download is complete.
- For some browsers, you may need to right-click or control-click the link and choose "Save link as..." or a similar option to download the file.

Bio-Formats tools downloads

Clients	Size	File Name	Checksum
 Bioformats Package	15.66 MB	bioformats_package.jar	158251 (MD5)
 Command Line Tools	12.43 KB	bftools.zip	5d1f55 (MD5)
 MATLAB Toolbox	14.73 MB	bfmatlab.zip	bb0860 (MD5)

- `bioformats_package.jar` is the complete bundle (for end users) containing everything needed to read images into ImageJ using Bio-Formats. Instructions for installing Bio-Formats in ImageJ are available in the [user guide](#).
- `bftools.zip` is a bundle of scripts for using Bio-Formats on the command line.
- `bfmatlab.zip` is a bundle of functions for using Bio-Formats from MATLAB.

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



Computer > Local Disk (C:) > Program Files (x86) > ImageJ > plugins

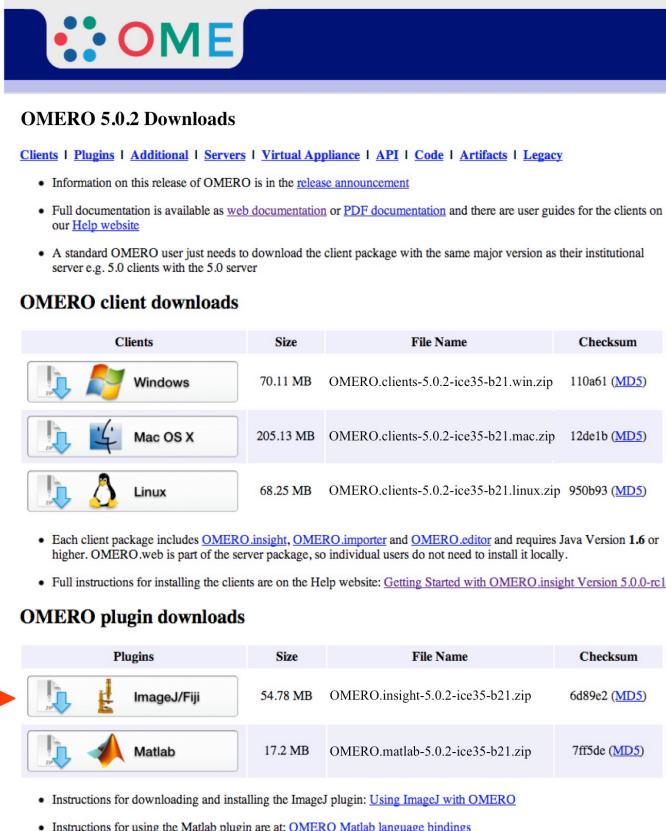
Name	Date modified	Type	Size
3D	1/28/2014 10:44 AM	File folder	
Analyze	1/28/2014 10:44 AM	File folder	
Examples	1/28/2014 10:44 AM	File folder	
Filters	1/28/2014 10:44 AM	File folder	
Graphics	1/28/2014 10:44 AM	File folder	
Input-Output	1/28/2014 10:44 AM	File folder	
jars	1/28/2014 10:44 AM	File folder	
Scripts	1/28/2014 10:44 AM	File folder	
Stacks	1/28/2014 10:44 AM	File folder	
Tools	1/28/2014 10:44 AM	File folder	
bioformats_package.jar	2/6/2014 12:34 PM	Executable Jar File	15,297 KB
README.txt	6/10/2013 8:56 PM	Text Document	3 KB

3

Download the latest 5.0.x version of the OMERO.insight-ij plugin from:

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

Check there is a “OMERO 5.0.x Downloads” heading on the page.



The screenshot shows the OMERO 5.0.2 Downloads page. It features a header with the OME logo and navigation links for Clients, Plugins, Additional, Servers, Virtual Appliance, API, Code, Artifacts, and Legacy. Below this is a section titled "OMERO 5.0.2 Downloads" with a bulleted list of information about the release. The main content is divided into two sections: "OMERO client downloads" and "OMERO plugin downloads".

OMERO client downloads

Clients	Size	File Name	Checksum
 Windows	70.11 MB	OMERO.clients-5.0.2-ice35-b21.win.zip	110a61 (MD5)
 Mac OS X	205.13 MB	OMERO.clients-5.0.2-ice35-b21.mac.zip	12de1b (MD5)
 Linux	68.25 MB	OMERO.clients-5.0.2-ice35-b21.linux.zip	950b93 (MD5)

Each client package includes OMERO.insight, OMERO.importer and OMERO.editor and requires Java Version 1.6 or higher. OMERO.web is part of the server package, so individual users do not need to install it locally.

Full instructions for installing the clients are on the Help website: [Getting Started with OMERO.insight Version 5.0.0-rc1](#).

OMERO plugin downloads

Plugins	Size	File Name	Checksum
 ImageJ/Fiji	54.78 MB	OMERO.insight-5.0.2-ice35-b21.zip	6d89e2 (MD5)
 Matlab	17.2 MB	OMERO.matlab-5.0.2-ice35-b21.zip	7ff5de (MD5)

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

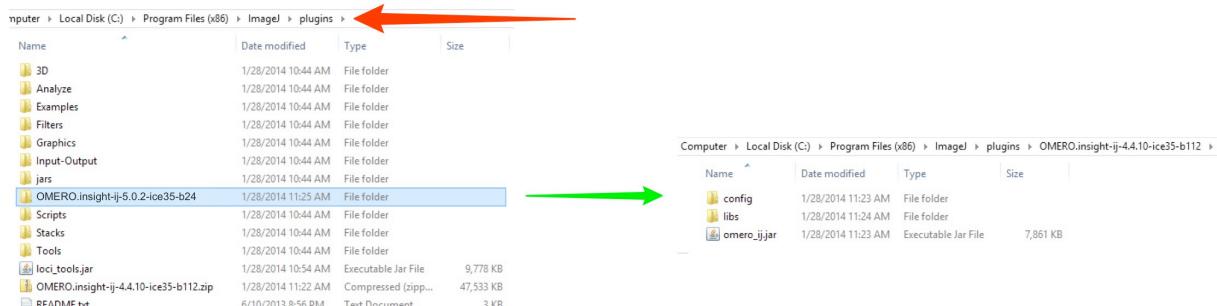
4

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-5.0.x folder into the ImageJ > plugins folder.



The screenshot shows two file explorer windows. The left window shows the contents of the OMERO.insight-ij-5.0.2-ice35-b21.zip archive, which includes subfolders like 3D, Analyze, Examples, Filters, Graphics, Input-Output, jars, Scripts, Stacks, Tools, loc_tools.jar, and README.txt. The right window shows the extracted contents of the archive in the C:\Program Files (x86)\ImageJ\plugins directory, which includes config, libs, and omero_ij.jar files.

The OMERO.insight-ij-5.0.x.zip archive can be left in the plugins folder or deleted.

Upgrading ImageJ from 4.4.x to 5.0.x

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

1

Go to the `ImageJ > plugins` folder.

Delete the `loci_tools.jar` and the `OMERO.insight-ij-4.4.x` folder.

2

Download the latest 5.0.x version of the Bioformats Package plugin from:

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

(See screenshot above)

Check there is a “Bio-formats 5.0.x Downloads” heading on the page.

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

3

Download the latest 5.0.x version of the `OMERO.insight-ij` plugin from:

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

(See screenshot above)

Check there is a “OMERO 5.0.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 5.0.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 5.0.x versions of OMERO from ImageJ that you run two appropriately named copies of ImageJ each with the appropriate plugins for the version.

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.

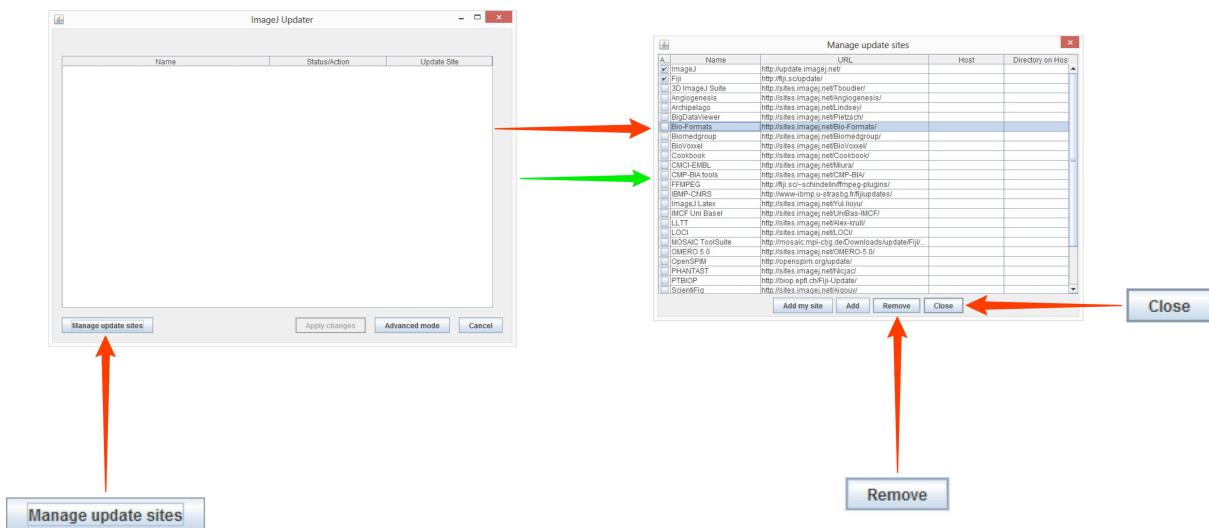
1

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**.

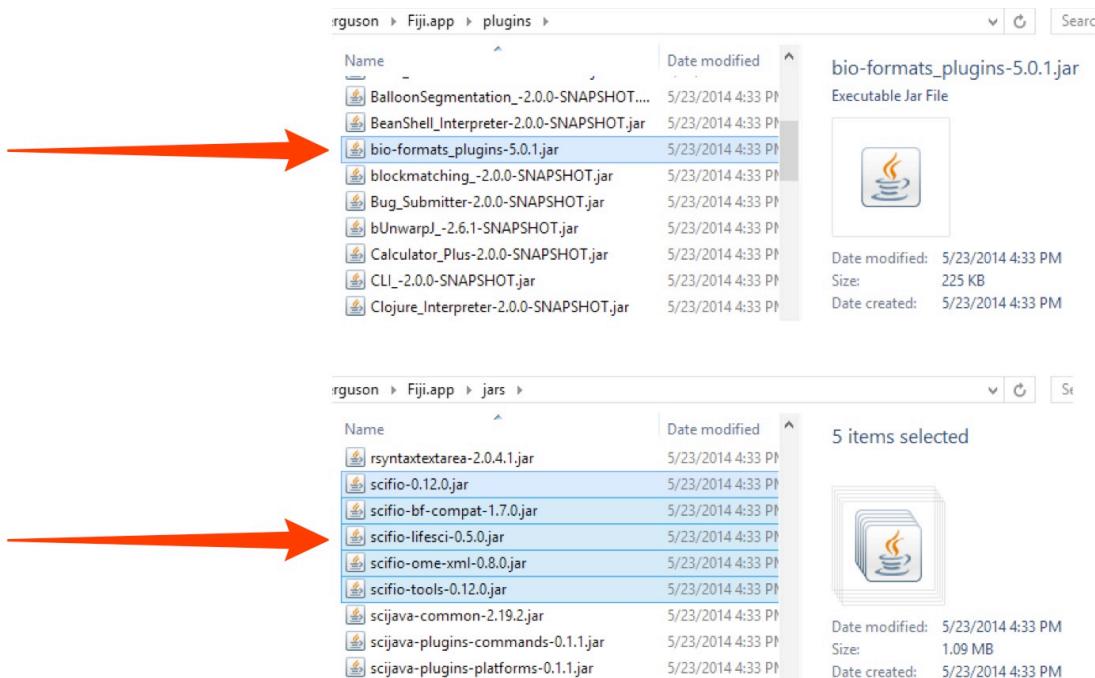


2

Quit Fiji.

Go to the Fiji app > plugins folder on your hard drive and delete bio-formats_plugins.jar

In the Fiji app > jars folder, select and delete the five jars with the prefix scifio-.



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.

Using Fiji with OMERO 5.0.x

As Fiji comes bundled with the components of Bioformats Package, there is no need to download and install this plugin.

Two actions are required for both a fresh installation and to upgrade from version 4.4.x:

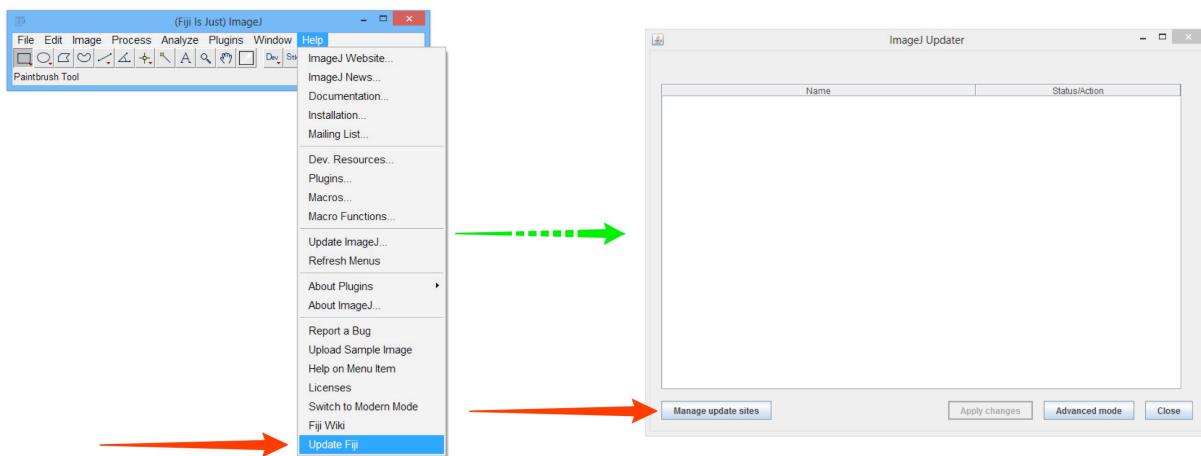
- select the Bio-Formats jars (equivalent of LOCI Tools in ImageJ) using the update menu
- add the OMERO.insight-ij plugin

1

Select **Help > Update Fiji**.

Fiji will check for updates and after following prompts you will end up at the ImageJ Updater Window.

Click on **Manage update sites**.



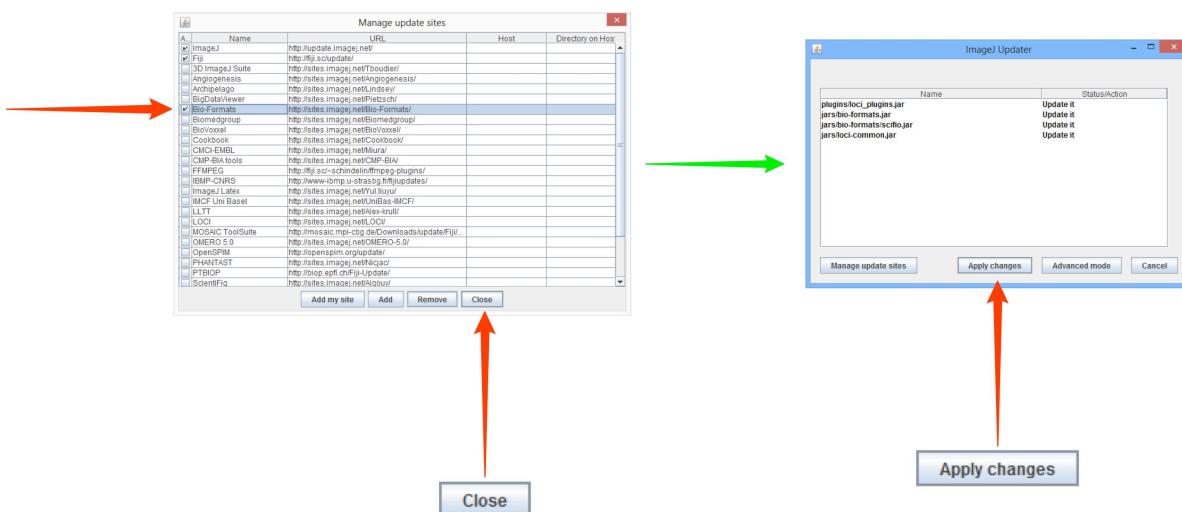
2

In the Manage update site window, select **Bio-formats 5**.

Click **Close**.

Click **Apply Changes**.

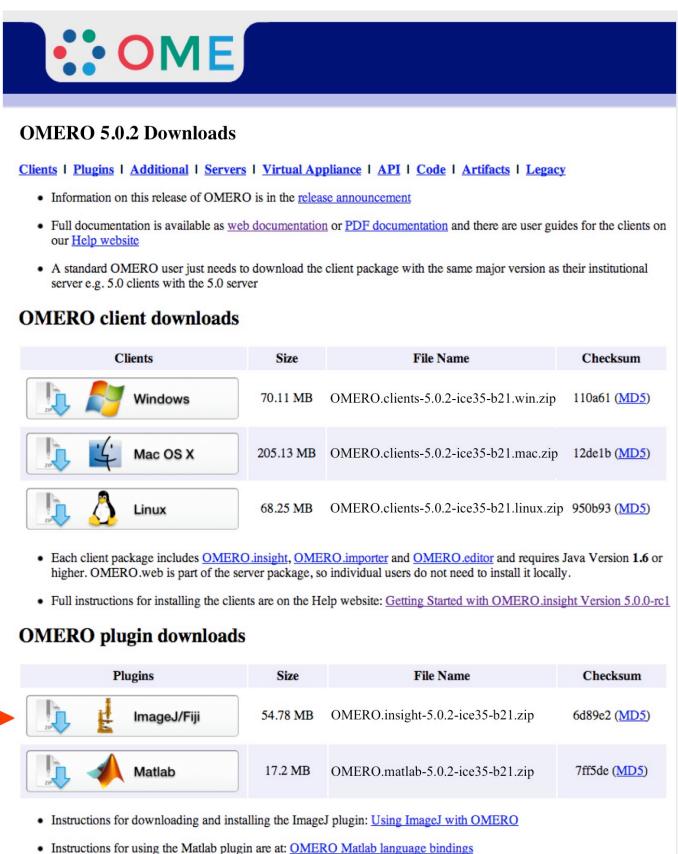
Fiji will fetch and install the updates.



3 Download the latest 5.0.x version of the OMERO.insight-ij plugin from:

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

Check there is a “OMERO 5.0.x Downloads” heading on the page.



The screenshot shows the OMERO 5.0.2 Downloads page. It includes sections for OMERO client downloads (Windows, Mac OS X, Linux) and OMERO plugin downloads (ImageJ/Fiji, Matlab). A red arrow points to the ImageJ/Fiji download link.

Clients	Size	File Name	Checksum
 Windows	70.11 MB	OMERO.clients-5.0.2-ice35-b21.win.zip	110a61 (MD5)
 Mac OS X	205.13 MB	OMERO.clients-5.0.2-ice35-b21.mac.zip	12de1b (MD5)
 Linux	68.25 MB	OMERO.clients-5.0.2-ice35-b21.linux.zip	950b93 (MD5)

Plugins	Size	File Name	Checksum
 ImageJ/Fiji	54.78 MB	OMERO.insight-5.0.2-ice35-b21.zip	6d89e2 (MD5)
 Matlab	17.2 MB	OMERO.matlab-5.0.2-ice35-b21.zip	7ff5de (MD5)

- 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

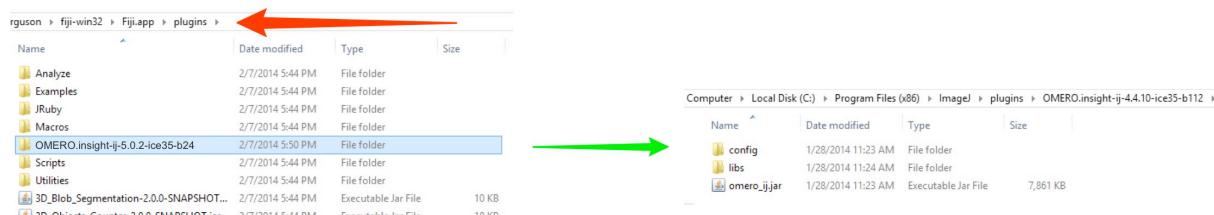
Save or move the .zip archive to the Fiji.app > plugins folder.

If upgrading delete the 4.4.x version of OMERO.insight-ij.

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-5.0.x folder into the ImageJ > plugins folder.



The screenshot shows two file explorers. The left one shows the contents of the 'plugins' folder in a Fiji application, with a red arrow pointing to the 'OMERO.insight-ij-5.0.2-ice35-b24' folder. The right one shows the contents of the 'plugins' folder in the 'ImageJ' application, with a green arrow pointing to the 'omero_ijjar' executable jar file.

Name	Date modified	Type	Size
Analyze	2/7/2014 5:44 PM	File folder	
Examples	2/7/2014 5:44 PM	File folder	
JRuby	2/7/2014 5:44 PM	File folder	
Macros	2/7/2014 5:44 PM	File folder	
OMERO.insight-ij-5.0.2-ice35-b24	2/7/2014 5:50 PM	File folder	
Scripts	2/7/2014 5:44 PM	File folder	
Utilities	2/7/2014 5:44 PM	File folder	
3D_Blob_Segmentation-2.0.0-SNAPSHOT.jar	2/7/2014 5:44 PM	Executable Jar File	10 KB
3D_Objects_Counter-2.0.0-SNAPSHOT.jar	2/7/2014 5:44 PM	Executable Jar File	18 KB

Name	Date modified	Type	Size
config	1/28/2014 11:23 AM	File folder	
libs	1/28/2014 11:24 AM	File folder	
omero_ijjar	1/28/2014 11:23 AM	Executable Jar File	7,861 KB

Delete the OMERO.insight-ij-5.0.x.zip archive from the plugins folder.

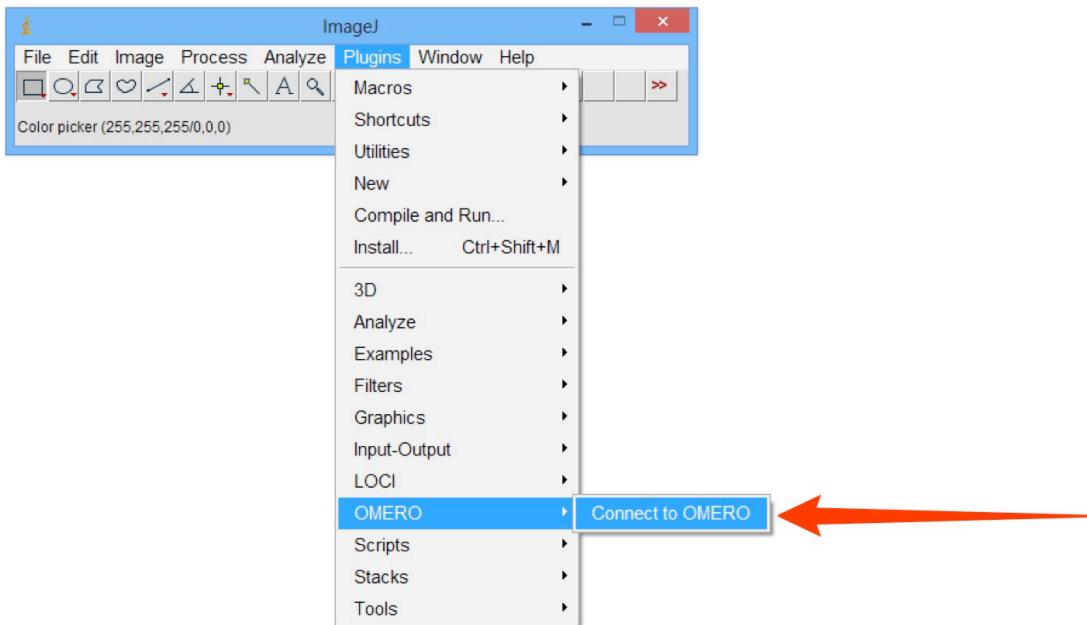
Accessing OMERO using ImageJ and Fiji

1

Launch the ImageJ or Fiji 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.

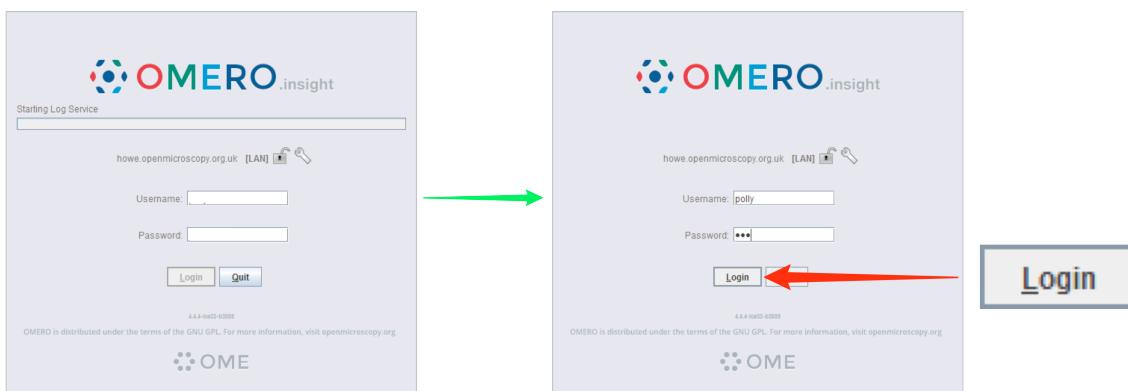


2

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.

Enter your OMERO server address, if needed, and **Username** and **Password**.

Click **Login**.



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

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.

3

Double click on the image in the data tree or select the image and **View > View in ImageJ** in the contextual menu.

Select the check box to set Bio-Formats to automatically check for updates.

Click **OK** and the Bio-Formats Import Options window opens.

Set parameters and click **OK**.

Your image will open in the ImageJ viewer.

