

# How to load Leica LIF-files with ImageJ ?

## 1) First install ImageJ via

[http://www.macbiophotonics.ca/imagej/installing\\_imagej.htm](http://www.macbiophotonics.ca/imagej/installing_imagej.htm) MBF ImageJ bundle

OR

[http://www.embl.de/almf/html/EMBL\\_ImageJ.htm](http://www.embl.de/almf/html/EMBL_ImageJ.htm) EMBL ImageJ bundle

There are lots of plugins and applications already implemented in both bundles (also the plugin needed for loading LIF-files, but as it might be outdated, please also download and install the LOCI plugin).

The screenshot shows a web browser displaying the 'Online Manual for the MBF-ImageJ collection'. The page title is 'ImageJ for microscopy' and the subtitle is 'Image Processing and Analysis in Java'. The main content is titled '1 INSTALLING MBF IMAGEJ BUNDLE'. It includes instructions for 32-bit Windows, 64-bit Windows, and Mac and Linux. A red arrow points to the link 'Download the MBF ImageJ setup.exe (~23Mb)' in the 32-bit Windows section.

McMaster Biophotonics Facility  
www.macbiophotonics.ca

Online Manual for the MBF-ImageJ collection  
Journal of Cell Biology article on Image Processing  
Link to ImageJ homepage

### 1 INSTALLING MBF IMAGEJ BUNDLE

The official version of NIH ImageJ can be downloaded from the official ImageJ website.

#### 1.1.1 32-bit Windows

If you already have ImageJ installed, it may be worthwhile uninstalling it and following the installation instructions below. This will match your copy of ImageJ to this manual. Extra plugins can be easily added later - see below for instructions on how to do this.

1. Download the [MBF ImageJ setup.exe](#) (~23Mb)
2. Run the program.
3. A shortcut will be installed on your desktop and in your Start menu.

The setup program will add ImageJ to the registry (with the line:  
HKEY\_CLASSES\_ROOT\Applications\ImageJ.exe\shell\open\command Value: ("%path%\ImageJ.exe" "%1")

**Note: Windows can throw a security alert when ImageJ first starts.**  
When the software is first run it automatically sets Memory allocation thanks to George Silva's modifications of the [ImageJ.exe](#) file. Also, thanks to George's work, files can be associated with ImageJ by:  
a. Right-click on file;  
b. Select pop-up menu item "Open With/Choose Program"  
c. Select "ImageJ Launcher" from list and check the "Always use this program..." checkbox.

#### 1.1.2 64-bit Windows

Using 64-bit windows and the Java runtime environment for 64-bit Windows allows the allocation of greater than 1.7Gb of RAM. I have found the main advantage of this is when using the [Deconvolution](#) plugins.

1. Download JRE for Win64 from Sun's website <http://java.sun.com/javase/downloads/index.jsp>
2. Install to "ImageJ\jre"
3. Restart ImageJ and set memory allocation to 2/3 physical RAM. (menu command *Edit/Options/Memory*). If this is greater than 1.7 Gb you will be warned that this may cause ImageJ to not function correctly. This is in reference to the Win32 version.
5. Restart ImageJ.

#### 1.2 Mac and Linux

The MBF ImageJ installation is for Windows.

1. Download your OS specific version of ImageJ from the [ImageJ website](#).
2. Download [MBF ImageJ bundle plugins only](#) (~2Mb) and unzip to ImageJ/Plugins folder. (This contains only the plugins, IJ preferences, LUTs and plugin source code).
3. For Mac: The *IJPrefs.txt* file needs to be moved from the *imageJ* folder to the *Library/Preferences* folder.

## 2) Download "loci\_tools"

(always use the latest version and update from time to time!)

<http://www.loci.wisc.edu/ome/formats.html>

Save the jar-file into the ImageJ/plugins folder

The screenshot shows the 'OME at LOCI' website. The page title is 'OME at LOCI - 5'. The main content is titled 'Bio-Formats with ImageJ'. It includes a description of Bio-Formats, instructions on how to use it as a plugin for ImageJ, and a download link for 'loci\_tools.jar'. A red arrow points to the 'loci\_tools.jar' link.

OME at LOCI - 5

Bio-Formats is a standalone Java library for reading and writing popular image file formats. It is capable of parsing both pixels and metadata. For complete details, see the [Bio-Formats website](#).

Bio-Formats is intended for use by those who wish to add support for image file formats to [ImageJ](#), [VisBio](#), [OME](#), and [VisAD](#).

### Getting Bio-Formats with ImageJ

You can use Bio-Formats as a plugin for [ImageJ](#), to read and write image files.

[loci\\_tools.jar](#)  
2007 June 6 - 3,838,394 bytes

Drop [loci\\_tools.jar](#) into your [ImageJ/plugins](#) folder. Next time you run ImageJ, including the Bio-Formats Importer and Bio-Formats Exporter.

**Windows users:** The Bio-Formats plugins require Java 1.4 or later. Make sure you have the latest version of Java installed.

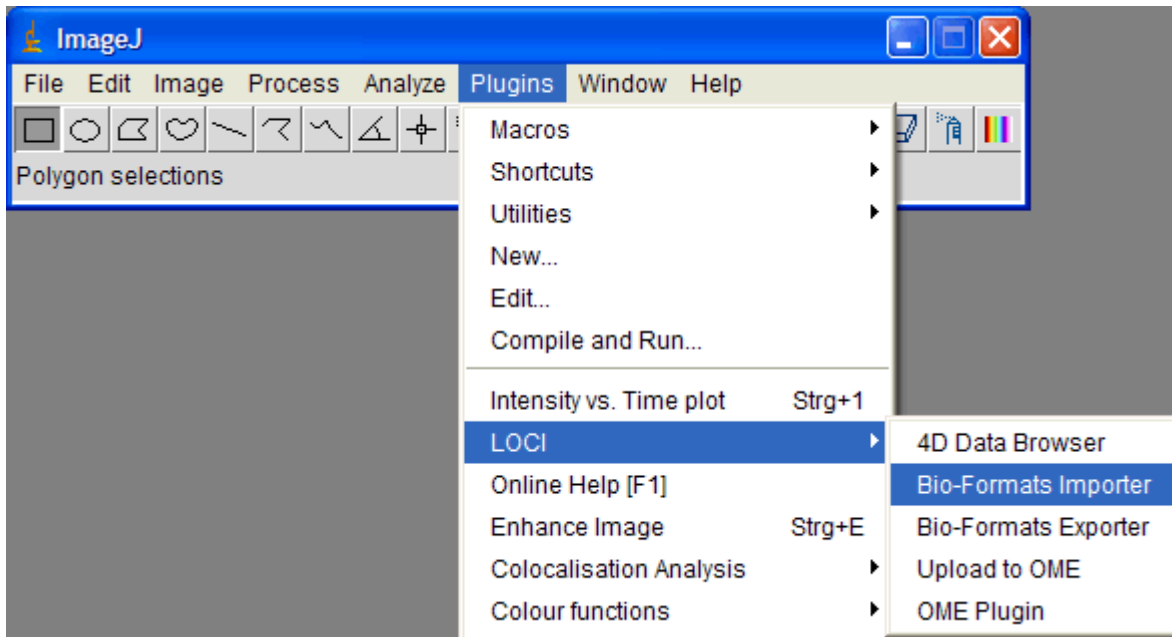
The Bio-Formats Importer plugin can display image stacks in several ways:

- In a standard ImageJ window
- Using our [4D Data Browser](#) plugin (included)
- With Joachim Walter's [Image5D](#) plugin (if installed)
- With Rainer Heintzmann's [View3D](#) plugin (if installed)

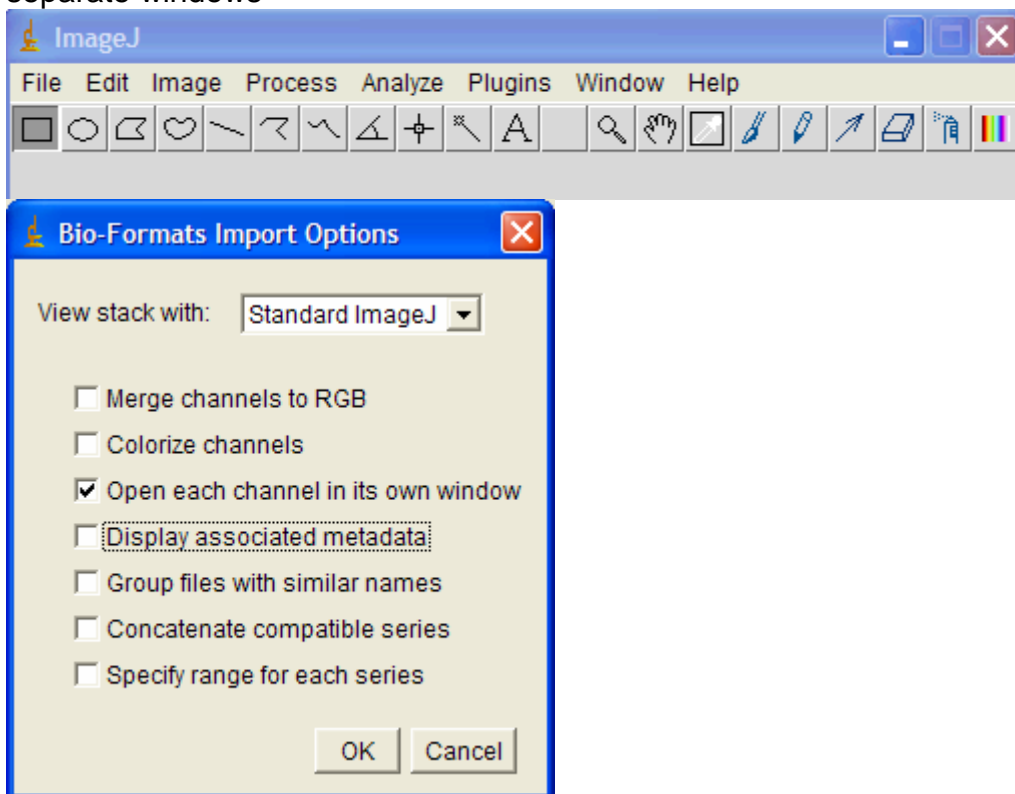
Lastly, ImageJ v1.37 and later automatically (via [HandleExtraFileTypes](#)) using File/Open instead of explicitly choosing "Bio-Formats Importer" file type.

### 3) Start ImageJ

You can now load lif-files using the Bio-formats Importer command of the LOCI plugin:



Choose whether you like to display multi-channel series as merged RGB series or as separate windows



Checking the 'Display associated metadata' displays an additional window showing metadata like the used objective lens, voxel size etc.

Select the series within the lif-set and ready.

