

# *Image Layering Toolbox Plugin*

**HypX Laboratory, Brigham & Women's Hospital  
Karl Schmidt (kfschmidt@bwh.harvard.edu)**

**Document Version 0.9**

---

The Image Layering Toolkit plugin provides the ImageJ workspace with some basic image composition capabilities, with the specific aim of facilitating manual image alignment for composite image calculations and image adjustment.

It also implements a contour map with interactive scale adjustment and displayed legend.

The software was produced in the HypX laboratory by the author and company. All feedback is welcome, please contact the author at will (kfschmidt@bwh.harvard.edu).

Release 1.0 features:

- Compose transparent multi-layer images from images opened in ImageJ
- Contour map of layers with adjustable multi color scale
- Continuous two tone recoloring of color and grayscale images
- Legend & color bar display
- Layer translation, promotion & demotion
- Save translated layer as new image stack with offset
- Calculate ROIs for each Layer as they appear (with offsets)

## 1.0 Getting Started

---

### 1.1 GENERAL NOTES

- Depending on image sizes, the Image Layer Toolbox plugin can demand a lot of memory; to avoid OOM errors invoke the JRE with memory modifiers like:

```
java -Xms100M -Xmx150M -jar ij.jar
```

- Run ImageJ from the ImageJ home directory, so that the plugin can find its icon images located in `./plugins/plugin_images`
- Update speeds on large images (>512x512 pixels) are very slow (1-5 secs) be patient while making adjustments

### 1.2 WHAT YOU WILL NEED

- The zip file containing this document and the ImageJ plugin files (LAYER\_TOOLBOX\_PLUGIN.zip)
- ImageJ version 1.27 or later
- Java 1.4 or later

### 1.3 INSTALL THE JRE 1.4

If you do not have the recent version of Java installed on your system, download and install the JRE (current version is 1.4) from [www.javasoft.com](http://www.javasoft.com).

Several new swing features are used in the layer navigator.

### 1.4 INSTALL IMAGEJ

Download and install ImageJ as described on the ImageJ website:

```
http://rsb.info.nih.gov/ij/
```

The directory under which you install ImageJ will be referred to as `%IMAGEJ_HOME%` in the remainder of this document.

### 1.5 INSTALL THE IMAGE LAYERING TOOLKIT PLUGIN

The plugin is archived in Zip and jar file format, which should be unzipped to a temporary directory. Once unzipped, copy the contents of the plugin folder to the plugin folder located in `%IMAGEJ_HOME%`.

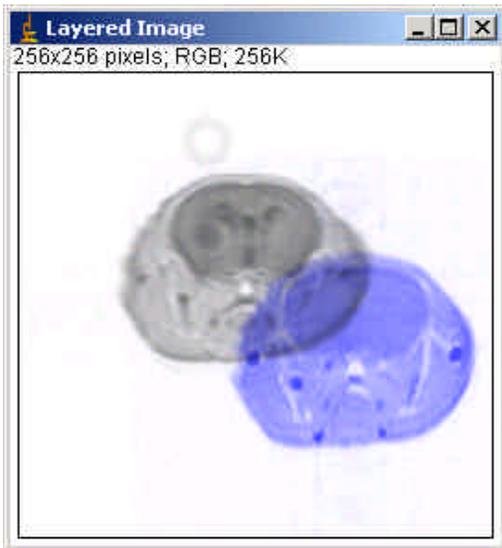
Verify that the plugin is installed by starting ImageJ. You should see the Image Layering Toolbox plugin in the drop down menu.

## 2.0 Quick Tour

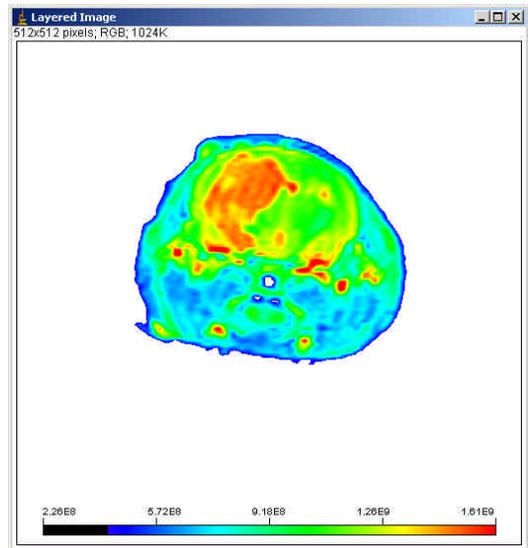
### 2.1 IMAGE LAYERING TOOLBOX

The Image Layering Toolbox is designed to facilitate the alignment, visualization, overlay and measurement of sets of images.

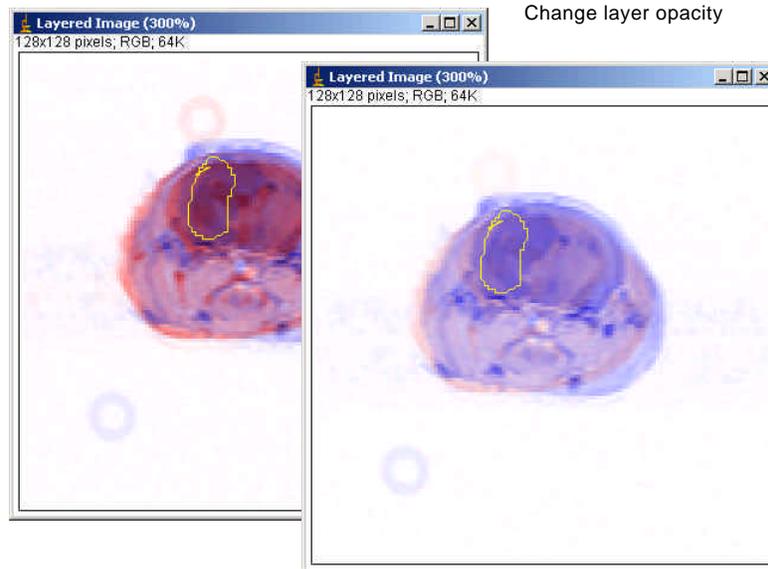
A Layered Image is produced by adding, translating, ordering, coloring and changing the overlay effects of open images by using the Layer Control Panel



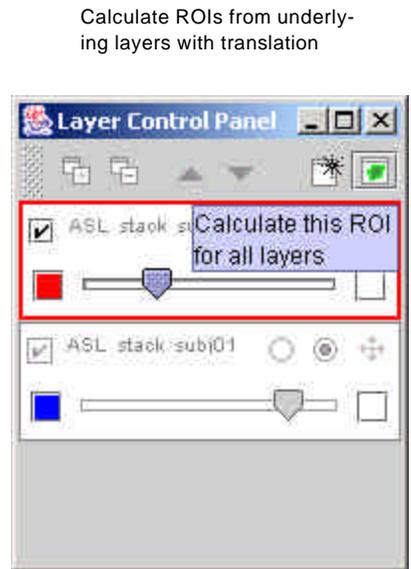
Translate one layer with respect to another



Contour map with legend



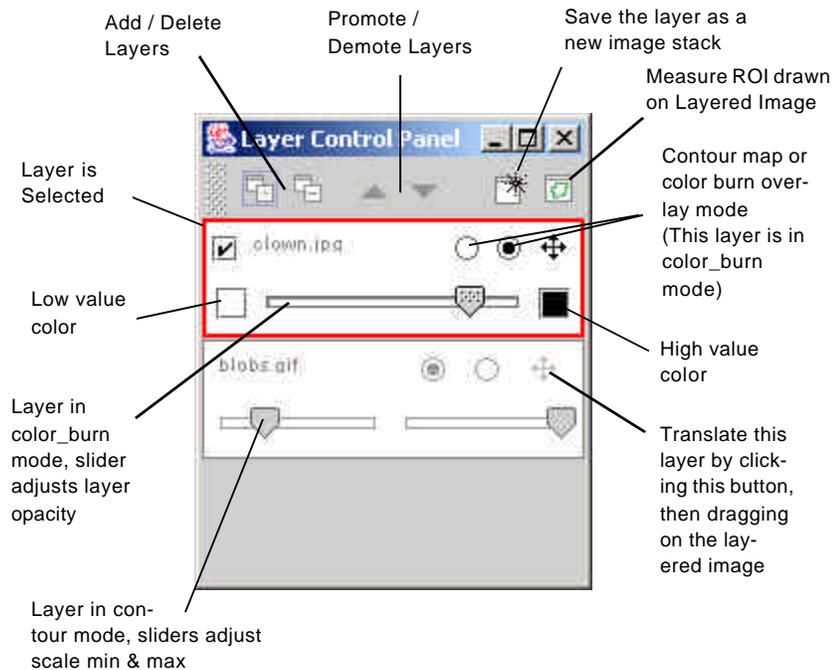
Change layer opacity



Calculate ROIs from underlying layers with translation

## 2.2 THE BASICS: ADDING A LAYER AND CHANGING THE LAYER COLORING

Every layer operation is performed through the Layer Control Panel.



### STEP 1

Start the Image Layering Toolbox plugin & open an image in ImageJ.

Click the Add Layer icon on the Image Layering Toolbox toolbar, and select the image from the drop down menu.

A new layer should appear in the Layer Control Panel.

### STEP 2

Select the layer for editing. On the control panel, select the layer by clicking on the layer name, the layer border should turn red to indicate that the layer is selected.

### STEP 3

Change the low and high value colors. Click the colored square to the left and right of the slider and select a new color for the image. The Layered Image will be updated once the selection is made.