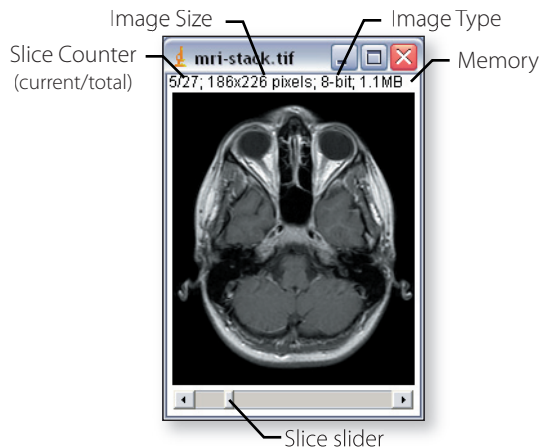


Stacks & Animation



What is a stack?

A stack is a series of two or more images in a single window. These images, called *slices*, can represent motion, time, space, or wavelength. Slices can be displayed in sequence either manually or automatically, and can be used to create two- and three-dimensional views of a scene or object. The features of a stack window are shown below.



Moving through a stack

- **Manually**—Use the > and < keys or the scroll bar (slice slider) to move forward and backward through the slices in a stack. (Hold the > and < keys down to move quickly through many slices.)
- **Animation**—Choose Image > Stacks > Animate or press the backslash (\) key to start and stop the animation. (You can also click on the image to stop the animation.)

Making a stack

To make a stack, all images must be the same type and have the same dimensions (height, width, and bit depth).

From a series of open images—Choose Image > Stacks > Convert Images to Stack. The new stack window is named **Stack**. (The original image names are shown to the right of the slice counter, but are lost when you save the stack.)

From a series of saved files—Choose File > Import > Image Sequence, and specify the sequence options for the slices you want to import.

Order of slices

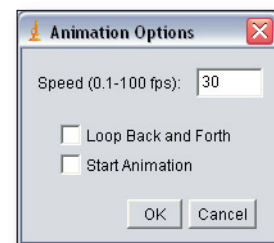
When you make a stack, the slices are arranged in the order in which they were created or opened, which is shown at the bottom of the **Windows** menu. When you *import* an image sequence, images are opened in alphanumeric order by image name.

The slice counter

The stack window status bar shows the current slice number and the total number of slices.

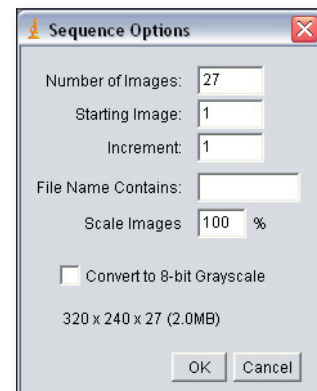
Setting the animation speed and direction

Choose Image > Stacks > Animation Options..., and enter the desired speed in frames per second (0.5 = one frame every two seconds).



Normally, the animation plays in 1-2-3-1-2-3 order. By checking the **Loop Back and Forth** option, the animation will play in 1-2-3-2-1 order.

Sequence options



Unstacking a stack

To separate a stack into separate windows, choose **Image > Stacks > Convert Stack to Images**. The windows are numbered 001, 002, 003, etc.

Editing a stack

To add a slice *after* the current slice—choose **Image > Stacks > Add Slice**.

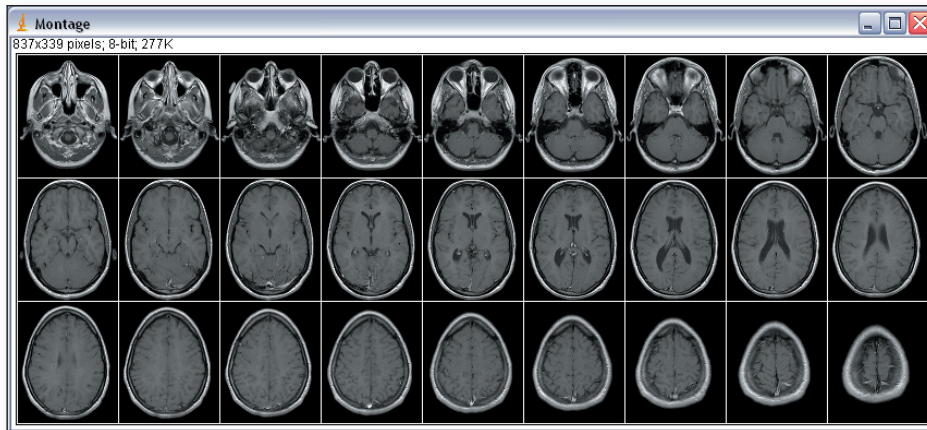
To add a slice *before* the current slice—hold down the **Alt** (Win) or **Option** (Mac) key, then choose **Image > Stacks > Add Slice**.

To delete a slice—choose **Image > Stacks > Delete Slice**.

Creating a montage

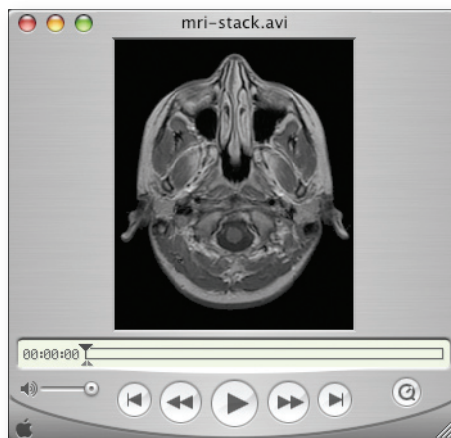
Since a stack cannot be printed for a report or poster, ImageJ provides a way to arrange the slices of a stack in rows and columns as a single image called a *montage*.

To make a montage, choose **Image > Stacks > Montage...**, specify the number of rows and columns, and click **OK**.



Converting a stack to an .avi movie

To convert a stack into an .avi movie that can be played on many freeware movie player applications such as QuickTime Player, choose **File > Save As... > AVI...** and save the file. Optional plugins are available from the ImageJ download site that may allow users to save stacks in other movie formats.



Processing stacks

When you conduct processing operations on a stack, you are given the option to process the current slice only (**No**), all slices (**Yes**), or cancel the process.



Montage options

In addition to the number of rows and columns, you can resize the images, include every Nth image, and other options.

