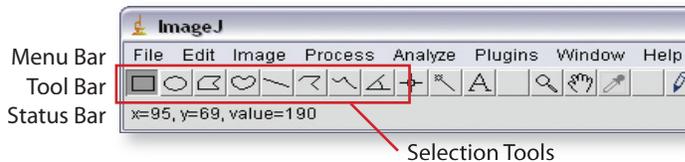


Selecting



Selecting tells the computer which pixels you are interested in. This is done using the selection tools in the ImageJ window. Selected pixels are defined by a colored line or outline. The selected pixels can be copied, filled, erased, outlined, filtered, or measured. The ImageJ status bar displays relevant information about selections as you make them.



Area selection tools

Use these tools to create area selections.

- Rectangle** - Creates rectangular or square selections. Holding the **Shift** key down forces the selection to be a square. Use the **arrow** keys with the **Alt** (Win) or **Option** (Mac) key pressed to change the width or height one pixel at a time.
- Oval** - Creates elliptical selections. Holding the **Shift** key down forces the selection to be circular. Use the **arrow** keys with the **Alt** (Win) or **Option** (Mac) key pressed to change the width or height by one pixel.
- Polygon** - Creates irregularly shaped selections defined by a series of line segments. Click at each vertex of the polygon, and either double-click or click in the box at the starting point to complete the polygon.
- Freehand** - Creates irregularly shaped selections by clicking and dragging with the mouse. When you release the mouse button, the area automatically completes.
- Wand Tool** - Creates a selection by tracing objects of uniform color or thresholded objects. To trace an object, either click inside near the right edge, or outside to the left of the object.

Line selection tools

Use these tools to create line selections.

- Straight Line** - Creates straight line selections. Holding the **Shift** key down forces the line to be horizontal or vertical.
- Segmented Line** - Creates segmented line selections by repeatedly clicking with the mouse. Each click defines a vertex. Double-click when finished.
- Freehand Line** - Creates freehand line selections by clicking and dragging with the mouse.
- Angle** - Creates angle selections using three mouse clicks. After the second click defines the angle vertex, the status bar displays the angle until you click the third time.

Reshaping selections

To resize or reshape selections, drag the small handles on the selection outline. To create editable handles on freehand selections, choose **Edit > Selections > Fit Spline**.



Creating complex selections

Area selections can be added to and subtracted from to create complex geometric and freehand selections. To add to an existing selection, hold down the **Shift** key while you select using any of the area selection tools. (When using the **rectangle** or **oval** selection tools, release the **Shift** key after you begin making the new selection unless you want to constrain your selection to a square or circle.) An example of a complex selection is shown at right.

Moving selections

Position the cursor inside the selection and drag it to a new location. You can nudge a selection one pixel at a time in any direction by pressing the **arrow** keys on your keyboard.

Selecting the entire image

Choose **Edit > Selection > Select All**, or press the **A** key.

Cancelling selections

Click anywhere on the image outside the selection boundary, choose **Edit > Selection > Select None**, or press **Shift-A**.

Restoring cancelled selections

Choose **Edit > Selection > Restore Selection** or press **Shift-E**.

Drawing selection boundaries

Choose **Edit > Draw** or press **D**. Set the drawing color using the Color Picker tool , by choosing **Image > Color > Color Picker**, or press **Shift-K**. Set the line width by choosing **Edit > Options > Line Width...** or by double-clicking one of the line selection tools.

Filling selections

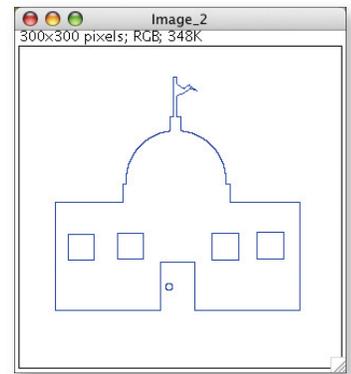
Choose **Edit > Fill** or press **F**. Set the drawing color (also called the *foreground color*) with the Color Picker tool by choosing **Image > Color > Color Picker**, by pressing **Shift-K**, or by double-clicking the Color Picker tool itself. (Note: if the image type is 8-, 16-, or 32-bit, the drawing color will be the shade of gray closest to the chosen foreground color. See **Image types and drawing colors** at right.)

Erasing selections

Press the **Backspace** key to erase the selection to the background color.

Measuring selections

After making a selection, choose **Analyze > Measure** (or press **M**). To measure in spatially calibrated units, first set the image scale by choosing **Analyze > Set Scale....** To spatially calibrate an image, create a line selection corresponding to a known distance (e.g. 10 mm), then enter that distance in the **Analyze > Set Scale** dialog box. (See the **Measuring Skill Sheet** for more information on setting scale and measuring.)



A complex selection created using the rectangle, oval, and polygon area selection tools by adding to a simple rectangular selection.

Saving selections for later use

There may be times when you need to use the same selection over and over on a series of images. To save a selection, choose **File > Save As... > Selection...** and name the selection (do not change the .roi file extension).

To select the same region on another image or at another time, choose **File > Open...** and locate and open the saved selection file.

Image types and drawing colors

"Help! The foreground color is set to red, but outlines are drawn in gray!"

This "problem" is normal ImageJ behavior. Colors are only available when working with color images. If the image type is 8-, 16-, or 32-bit, lines and fills will be made in shades of gray rather than the selected foreground color.

If you need to draw on a grayscale image in color, you must first convert the image to RGB color (**Image > Type > RGB Color**).

