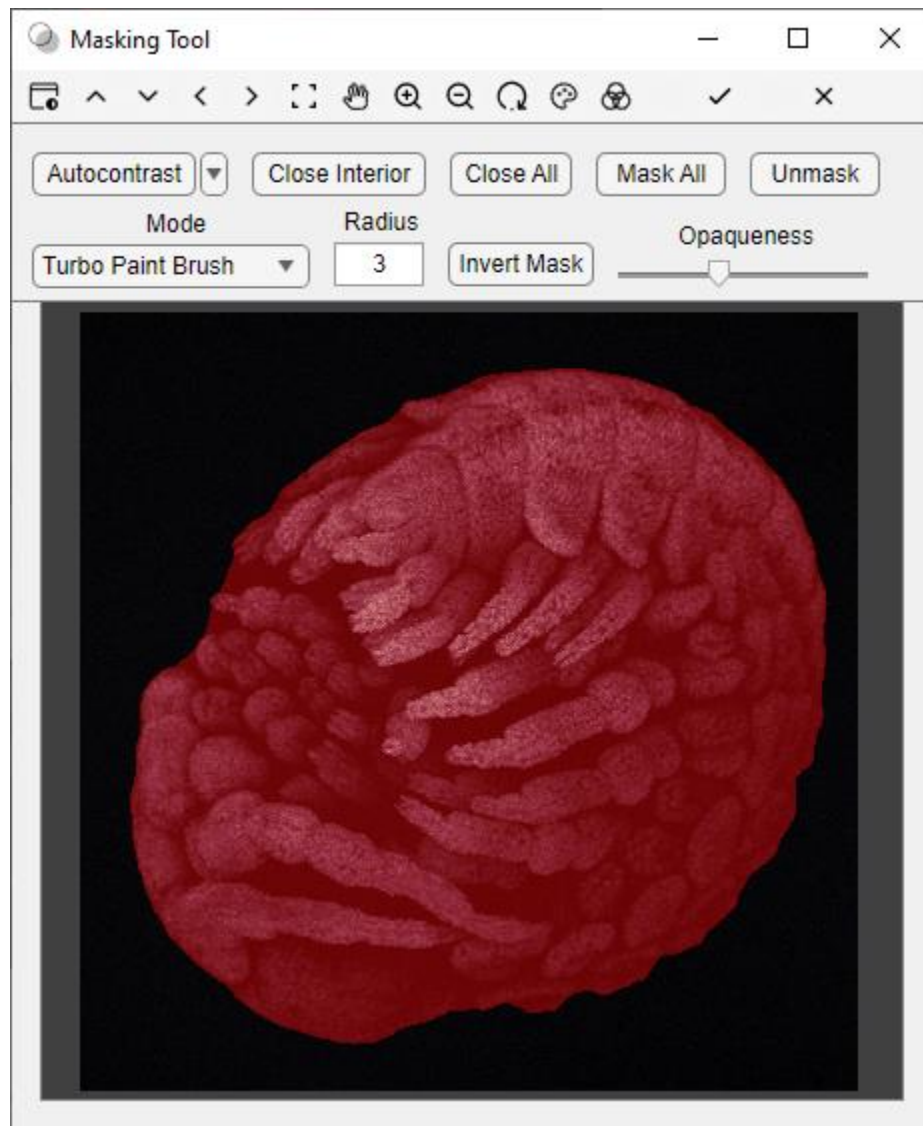
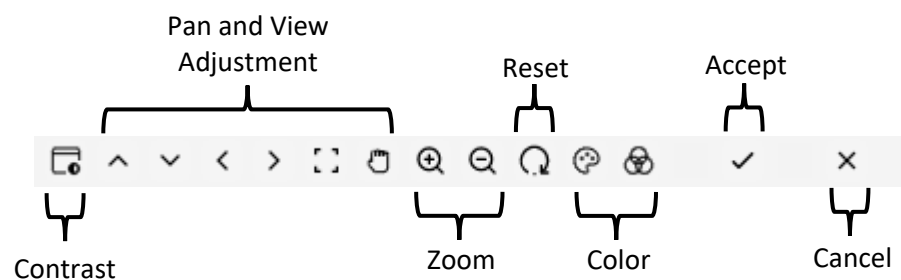


Masking Tool Graphical User Interface (GUI) Features









Overview



Toolbar



Toolbar Buttons

-  - Manual contrast. The user is prompted to set the color limits via a GUI displaying a histogram of the pixels. These limits are then applied to subsequently loaded images. If toggled off, the minimum and maximum pixel values of the image are reinstated as the color limits.
- ^ - Pan up will move the image up in the viewing window (frame moves down).
- ∨ - Pan down will move the image down in the viewing window (frame moves up).
- ◀ - Pan left will move the image left in the viewing window (frame moves right).
- ▶ - Pan right will move the image right in the viewing window (frame moves left).
-  - Maximize view will maximize the image inside the frame and recenter the view.
-  - Manual pan allows the user to enter pan mode. User can click and drag to move the image around inside the viewing frame.
-  - Zoom in mode allows user to click to zoom in on a point of interest. The user can also click and drag to draw a rectangle which leads to zooming into the region of interest.
-  - Zoom out mode allows the user to click to zoom out of the current view. CI
-  - Reset to the original mask that was loaded into the masking tool.
-  - Change the colormap for the displayed image.
-  - Change the color used to represent the masked region.
- ✓ - Accept the mask edits. The GUI will close.
- ✕ - Cancel the manual mask edits. The mask will be left as it originally was. The GUI will close after the user confirms that they will discard any changes.

Interface Button Panel

Autocontrast – user can autocontrast with a couple different methods. By default, 1% quantiles are set as the top and bottom color limits. Alternatively, the user can simply match the intensity range of the image or utilize the median filtered image 1%-iles as color limits.

Close interior – will fill in any holes left behind after masking a region with the turbo paint brush. If the region is not a closed loop – i.e. the path drawn never crosses over itself or connects – then a line is connected between the first and last point of the path and the resulting area is filled in.

Close all – this will exhibit the same behavior as close interior but rather than solely acting on the last drawn region, it will act on the entire mask.

Mask all – masks the entire image. Can be useful if user wants to take a subtractive rather than additive approach.

Unmask – will unmask the entire image. Can be useful if user wants to take an additive rather than subtractive approach.

Masking Mode – user can select from a list of available masking methods. By default, **turbo paint brush** mode is selected, and it allows user to set a brush radius for their brush that can draw over regions to be appended to the mask. **Touch up** mode will allow the user to click a single point and mask the region with a specified radius. **Point** mode will allow the user to append individual pixels. **Bounding curves mode** allows the user to draw an arbitrarily shaped region. **Seed Region** mode allows the user to set a tolerance between pixel values to be grouped together. Upon clicking on a pixel, other similar pixels from the image will be grouped together and appended to the mask. **Edge Based Cut** mode perform the same functionality as Seed Region except that it will utilize the image convolved with the Sobel operator rather than the normal image. This transformed image will enhance edges and regions with similar gradients can be grouped together.

Field: Radius / Tolerance – radius adjustment is for the turbo paint brush mode as it determines how wide to mask along the path being drawn by the user. The tolerance adjustment is for the Seed Region and Edge Based Cut modes.

Invert Mask – will invert the mask such that unmasked regions are now masked and the previously masked regions are now unmasked.

Opacity – adjust the opacity of the mask by moving the slider. Opacity is set to increase from left to right.

Functionality and Shortcuts

Ctrl + A/W/S/D – Pan left/up/down/right

Scroll up/down – zoom in/out

Left / Right click – add/remove from mask using the selected mode