

Manual Trace

Like the Freehand Draw tool, the Manual Trace tool allows the user to draw regions of interest directly onto the image data. Manual tracing allows contours to be drawn around the edges of a region of interest.

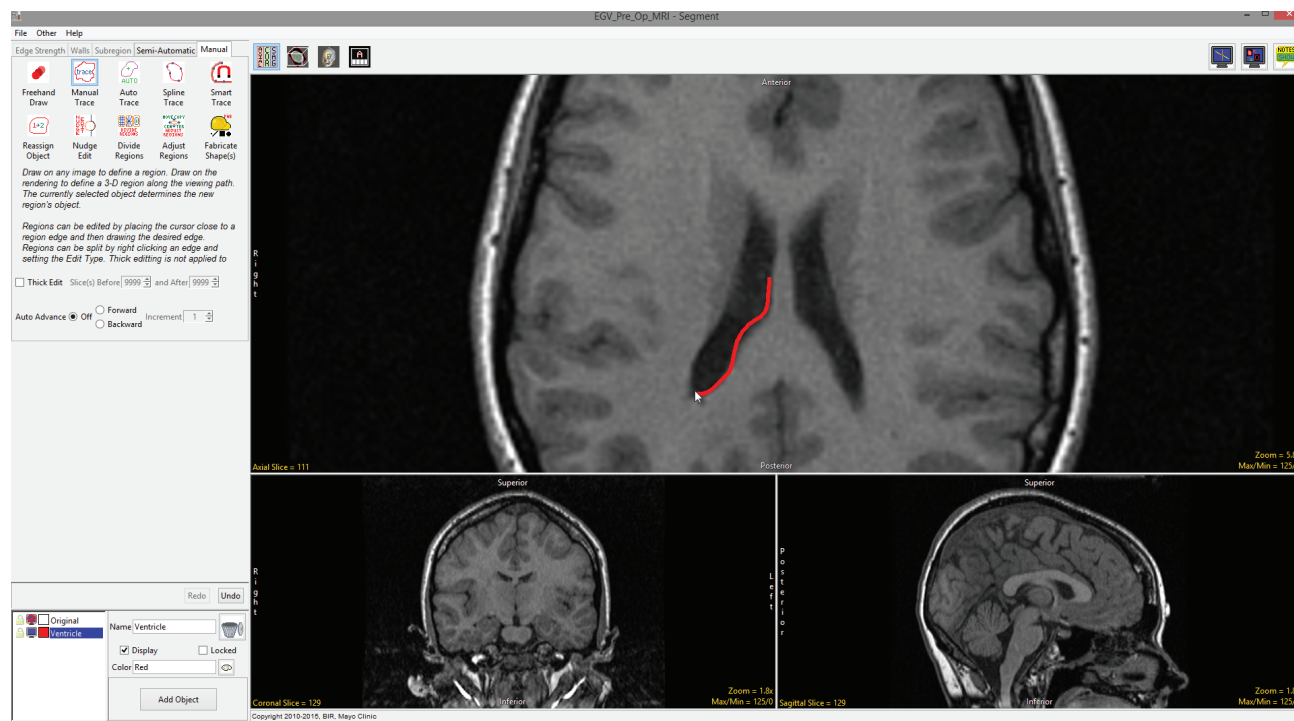
When the Manual Trace tool is selected the following options are available:

Thick Edit: The thick edit option allows users to apply edits (region definitions) defined on the current slice to other slices in the volume. When thick is enabled the following options are available:

- Slices(s) Before: Specifies the number of slices before the current slice in which to apply the edits.
- And After: Specifies the number of slices after the current slice in which to apply the edits.

Auto Advance: The auto advance option automatically moves users to a new slice, as defined by the auto advance options, once the current edit is defined. Note the auto advance will occur after the user releases the left mouse button and the edit is applied to the current slice. The auto advance option is a productivity tool allowing users to move through the image data without having to move the cursor from the current orientation window that regions are being defined on. The following options are available.

- Off: Off is the default option for auto advance. When off is selected auto advance is disabled.



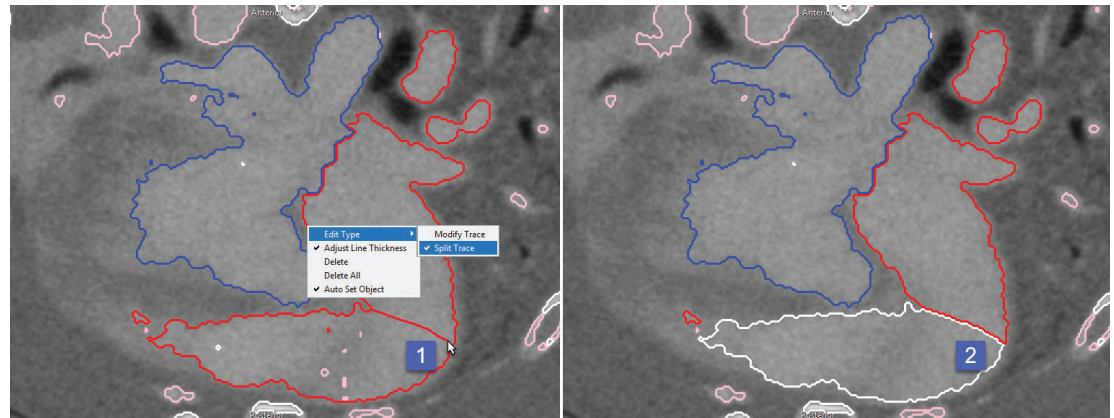
Manual Trace Options (continued)

Auto Advance (continued):

- Forward: Specifies that auto advance will move forward through the image data (slice number increases).
- Backwards: Specifies that auto advance will move backwards through the image data (slice number decreases).
- Increment: Specifies the number of slices the auto advance will move forward or backwards.

Right click options: Right clicking on a trace when Auto Trace is selected will provide access to the following additional editing options:

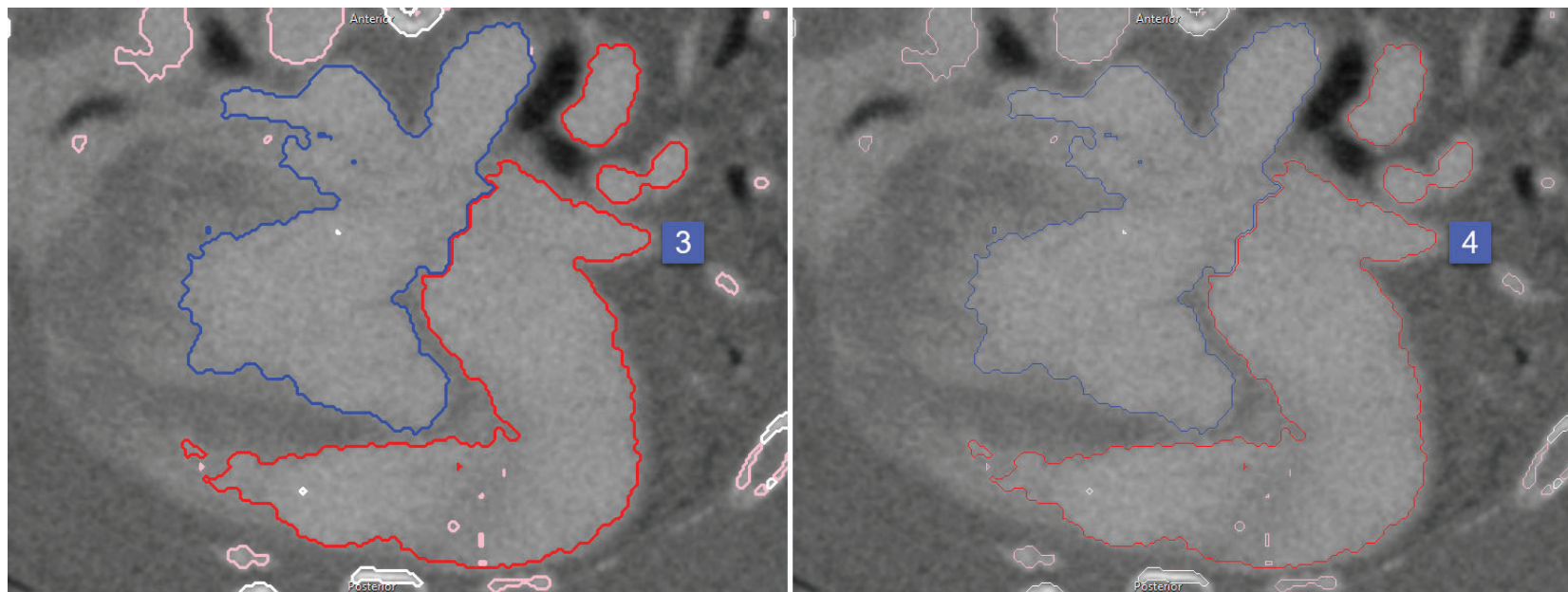
- Edit Type: Allows users to switch between the modify trace and split trace edit modes.
 - Modify Trace: The modify trace option is the default mode for manual trace editing. If the cursor is held over the boundary of an object when tracing begins the edit will apply to that object whose boundary is being modified, regardless of the object selected from the object list. If you wish to have edits applied to the object selected in the object list uncheck the Auto Set Object option. For more information on how to edit a trace refer to Manual Contour Tracing and Editing.
 - Split Trace: Split trace mode allows the current object to be edited [1] and split into two objects with the smaller section of the trace being assigned to the object selected in the object list. If the object selected is the same as the object being split the smaller section will be automatically assigned to a new object [2].



Manual Trace Options (continued)

Right click options (continued):

- Adjust Line Thickness: The adjust line thickness options allows users to switch the thickness display of the traced boundaries of objects. When enabled (default) traces appear thicker, [3] when disabled traces appear thinner. [4]



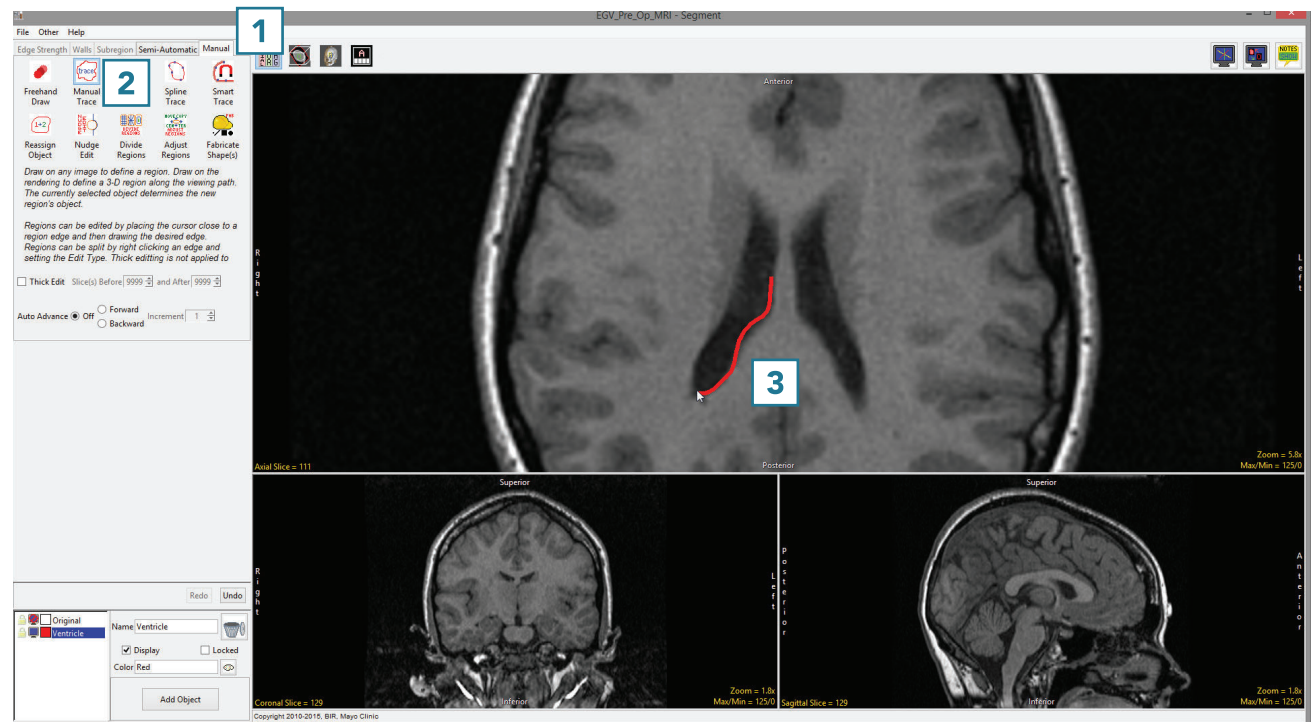
- Delete: Deletes selected region.
- Delete All: Deletes all regions on the slice.
- Auto Set Object: When enabled (default) edits made to object boundaries in Modify Trace mode are assigned to the object being edited. Unchecking the option will ensure boundary edits are assigned to the object selected in the object list.

Manual Contour Tracing and Editing

To perform contour tracing and editing using Manual Trace, use the following steps.

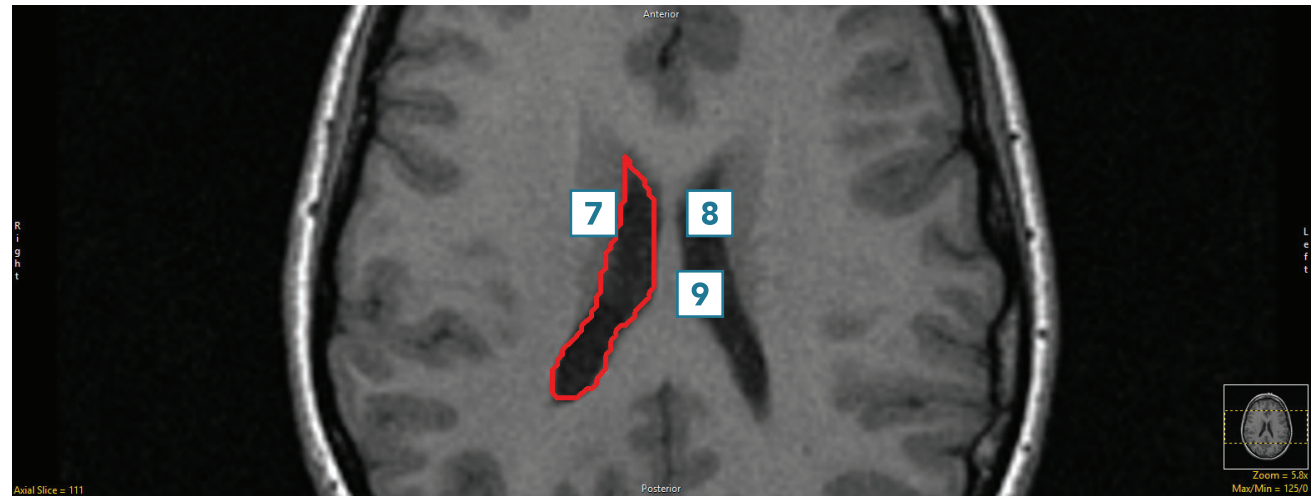
To follow along, download the data set MRI_3D_Head from analyzedirect.com/data and load into Analyze using Input/Output.

- Select the data set and open Segment.
- Select Manual [1] and choose Manual Trace [2].
- Left-click on a slice to begin tracing and move the cursor around the region you want to define [3].
- Release the left mouse button to complete the trace [4].
- To edit the trace and add pixels that may be missing [5], click on the trace [6].

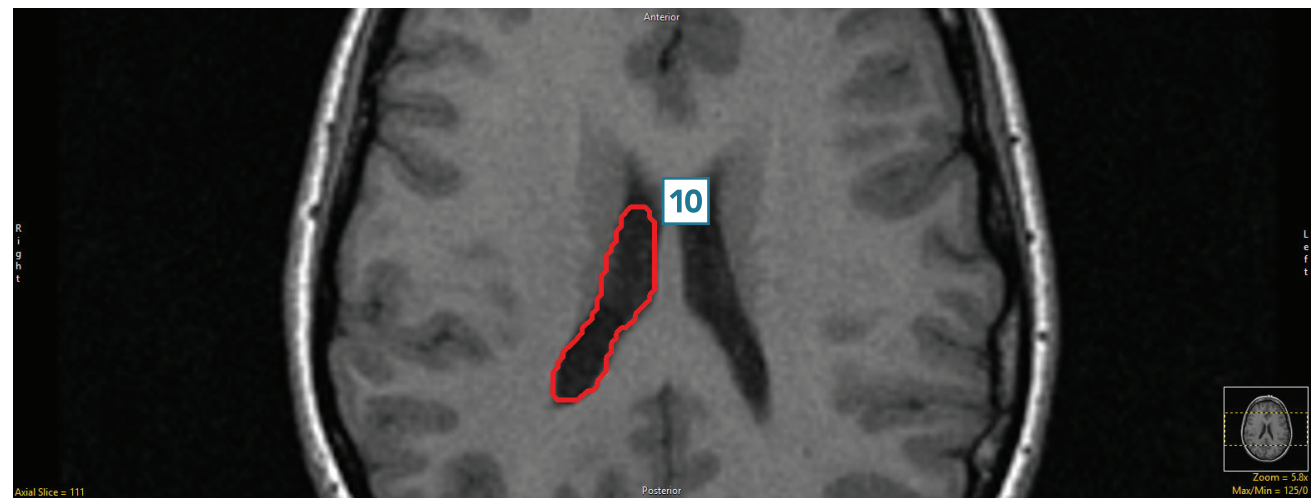


Manual Contour Tracing and Editing (continued)

- After clicking on the trace, draw in the missing region [7].
- To edit the trace and remove additional pixels [8], hover near the edge of the contour until the cursor changes to a + sign, then drag the cursor into the trace [9].



- Adjust the trace to remove the undesired pixels [10].

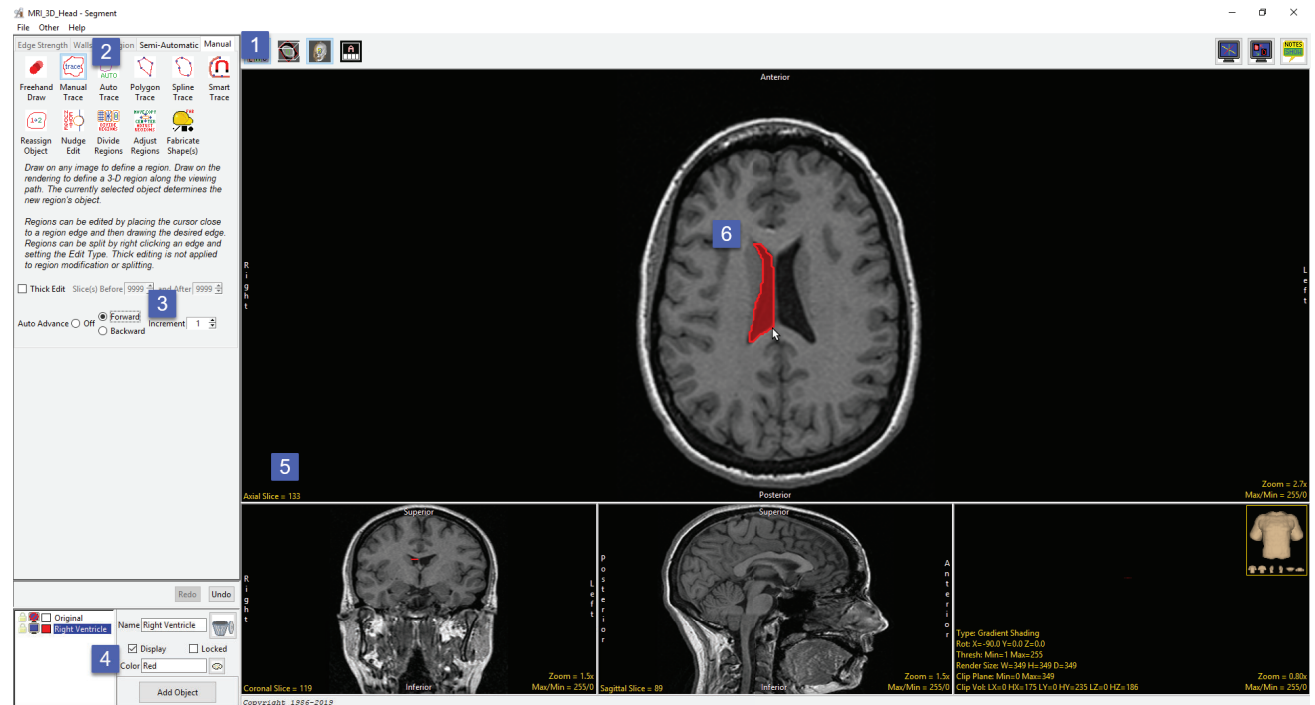


Manual Trace and Auto Advance

Here we will use the Auto Advance function of Manual Trace to automatically move forwards and backwards through image data as the region of interest is defined.

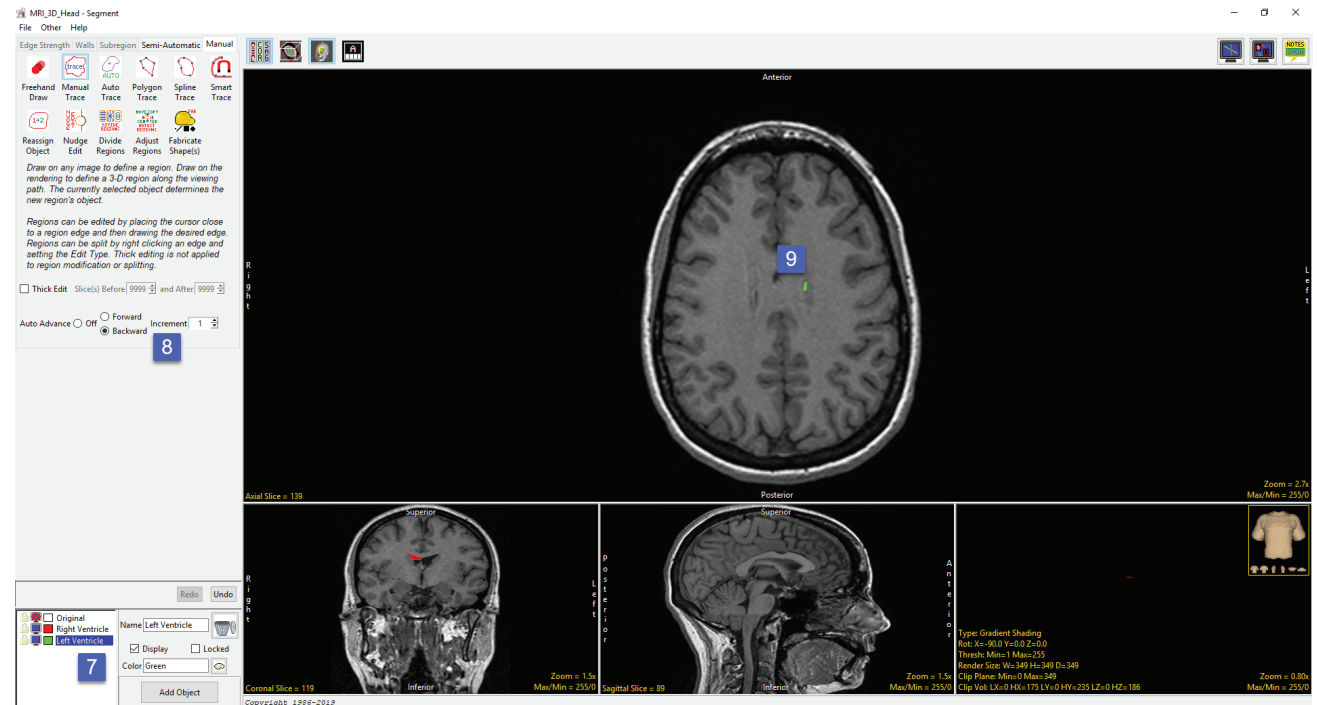
To follow along, download the data set MRI_3D_Head from analyzedirect.com/data and load into Analyze using Input/Output.

- Select the data set and open Segment.
- Select Manual [1] and choose Manual Trace [2].
- Set Auto Advance to Forward [3].
- Add an object and name it Right Ventricle [4].
- Move to Axial slice 133 [5].
- Left click on the border of the right ventricle and trace the structure [6]. When complete release the left mouse button. The trace will be applied to this slice, and the next slice forward, slice 134, will appear.



Manual Trace and Auto Advance (continued)

- Continue tracing the right ventricle in this manner until slice 139 is reached.
- At slice 139 add a new object and name it Left Ventricle [7]. Make sure the new object is selected.
- Change the Auto Advance option to Backward [8]
- Left click on the border of the left ventricle and trace the structure [9]. When complete release the left mouse button. The trace will be applied to slice 139 and slice 138 will appear. Continue tracing the left ventricle until slice 133 is reached.



Tip: Object regions can be deleted by holding the cursor over the object and then pressing the delete key on your keyboard. Note that the first time you delete an object in this way for the current segmentation session you will be prompted on which action to take; don't delete (No), delete (Yes), delete and don't prompt this message in the future (Yes, always), don't delete and don't prompt this message in the future.

