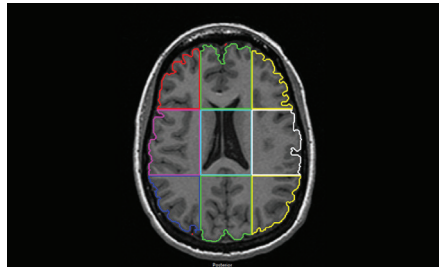
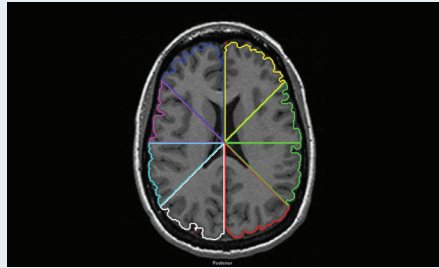
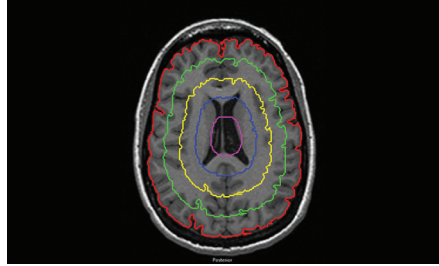


Divide Regions

The Divide Regions tool allows users to divide objects into subdivisions based upon the division type selected. Users can choose between Grid, Radial or Between Borders.

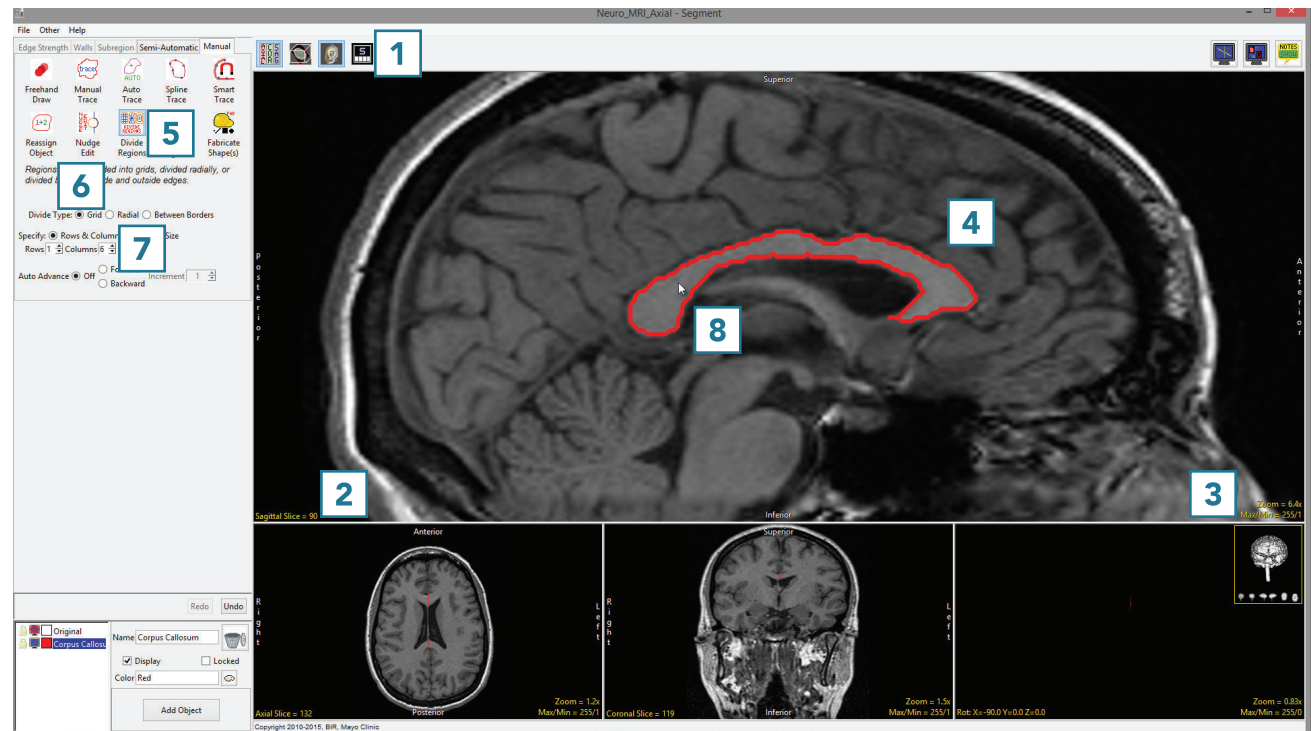
Divide Type	Function	Example
Grid	<p>Divides selected object into rectangles.</p> <p>Specify: Controls how the object will be divided by specifying between Rows and Columns or Region Size.</p> <p>Rows & Columns: specifies the number of rows and columns the object will be divided into.</p> <p>Region Size: specifies the size (in pixels) of the rectangle that will be used to divide the object.</p>	
Radial	<p>Radially divides selected object, splitting the object into pie wedges.</p> <p>Divisions: specifies the number of divisions the structure will be split into.</p> <p>Start Angle: specifies the starting angle of the first division.</p> <p>End Angle: disabled by default, but when enabled, specifies the ending angle for the radial division.</p>	
Between Borders	<p>Divides object into concentric shapes.</p> <p>Divisions: specifies the number of concentric divisions the structure will be split into between borders. Enter the number into the text entry box or use the arrow up/down keys to set number.</p>	

Grid Division of an Object

Grid division can be useful for subdividing structures into various anatomical substructures. Here we will perform a grid division of the corpus callosum (CC) on the mid-sagittal slice into its substructures.

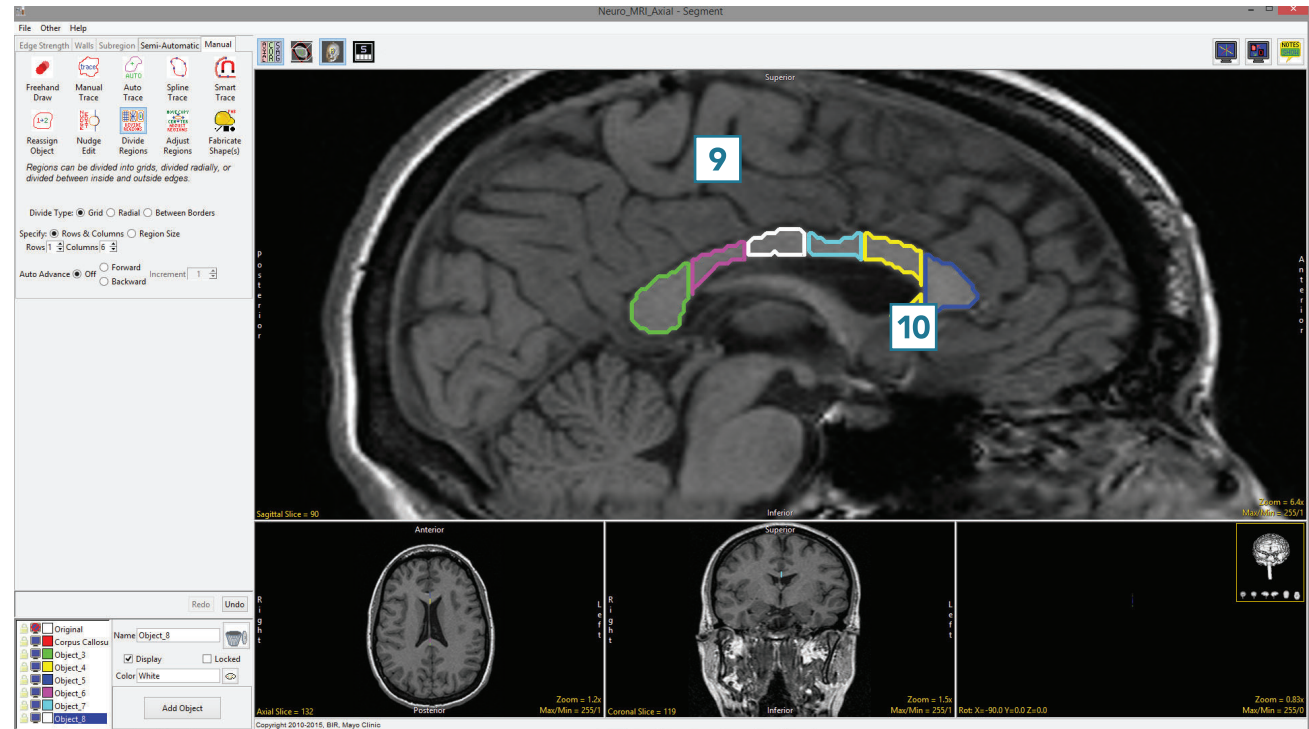
To follow along, download MRI_3D_Head from analyzedirect.com/data and load into Analyze using Input/Output.

- Select the dataset and open Segment.
- Set the primary display to Sagittal, [1] move to the mid-sagittal slice [2] and Zoom to the CC [3].
- Select Manual and use either Smart Trace or Auto Trace to define the CC on the mid-sagittal slice [4].
- Select Divide Regions [5]. Set the Divide Type to Grid [6].
- Set the Number of Rows to 1 and Columns to 6 [7].
- Click in the CC [8].



Grid Division of an Object (continued)

- The CC will be divided into 6 Subregions [9].
- Note that the Rostrum [10] will need to be assigned to a separate object. This can be achieved using the 2D reassignment option in the Reassign Object tool. Objects can be given the correct structural names (Splenium, Isthmus, Posterior Midbody, Anterior Midbody, Rostral Body, Genu and Rostrum) using the Object Control window.
- Use File > Save Object Map to save your work.

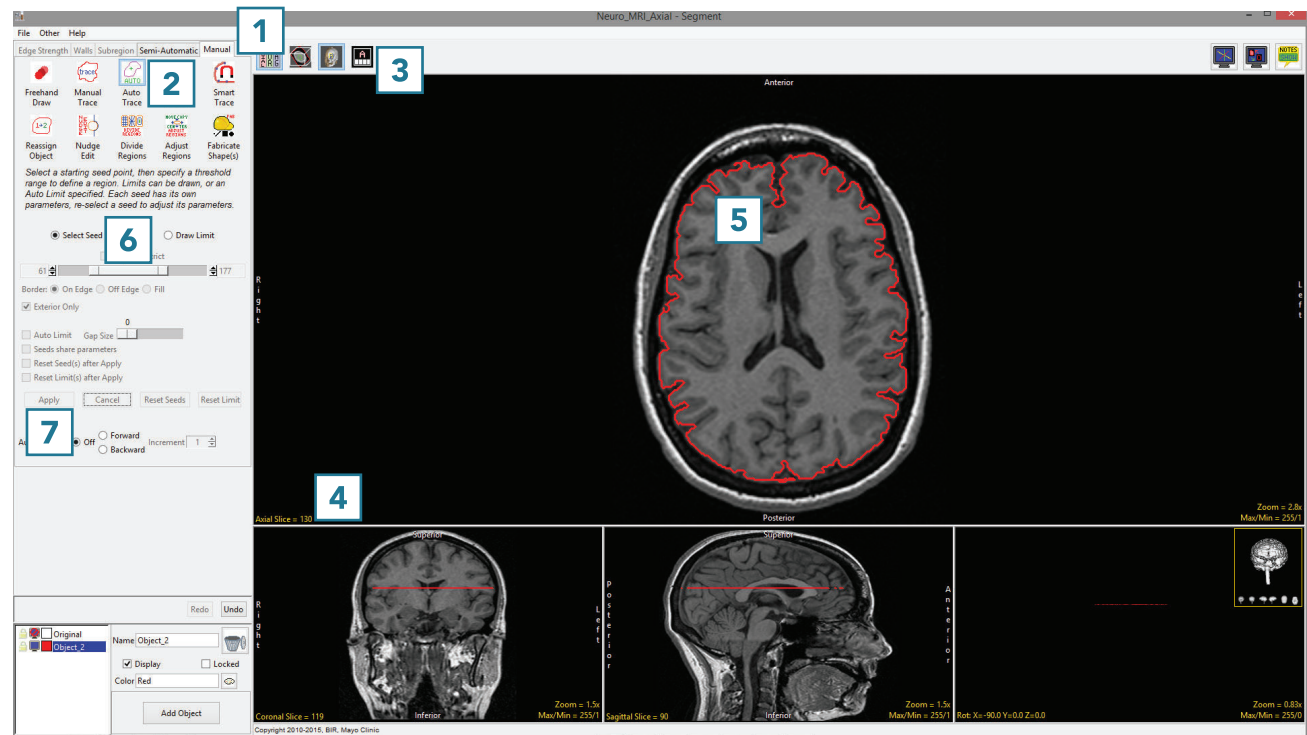


Radial Division of an Object

Like grid division, radial division of objects can be useful for subdividing structures into various substructures.

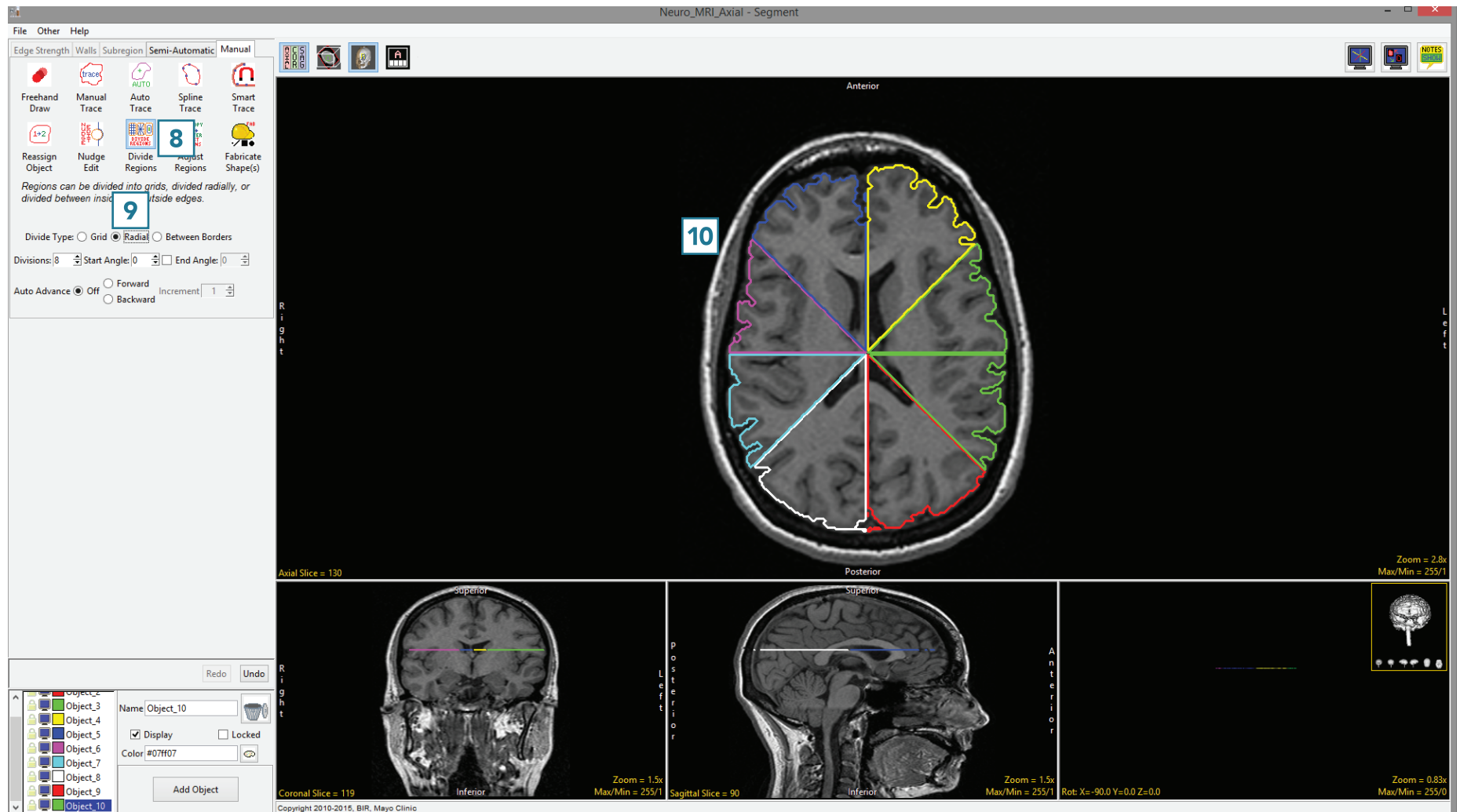
To follow along, download the data set MRI_3D_Head from analyzedirect.com/data and load into Analyze using Input/Output.

- Select MRI_3D_Head and open Segment.
- Select Manual [1] and choose Auto Trace [2].
- Set the primary display to Axial [3] and use Slice [4] to move to axial slice 130.
- Set a seed pixel in the white matter [5] and adjust the minimum and maximum threshold values [6] to define the brain. A min value of 45 and max value of 125 works well for this data set.
- Click Apply [7] to define the brain.



Radial Division of an Object (continued)

- Select the Divide Regions tool [8] and set the Divide Type to Radial [9].
- With Division set to 8, click anywhere in the brain to divide the object into 8 radial divisions [10].

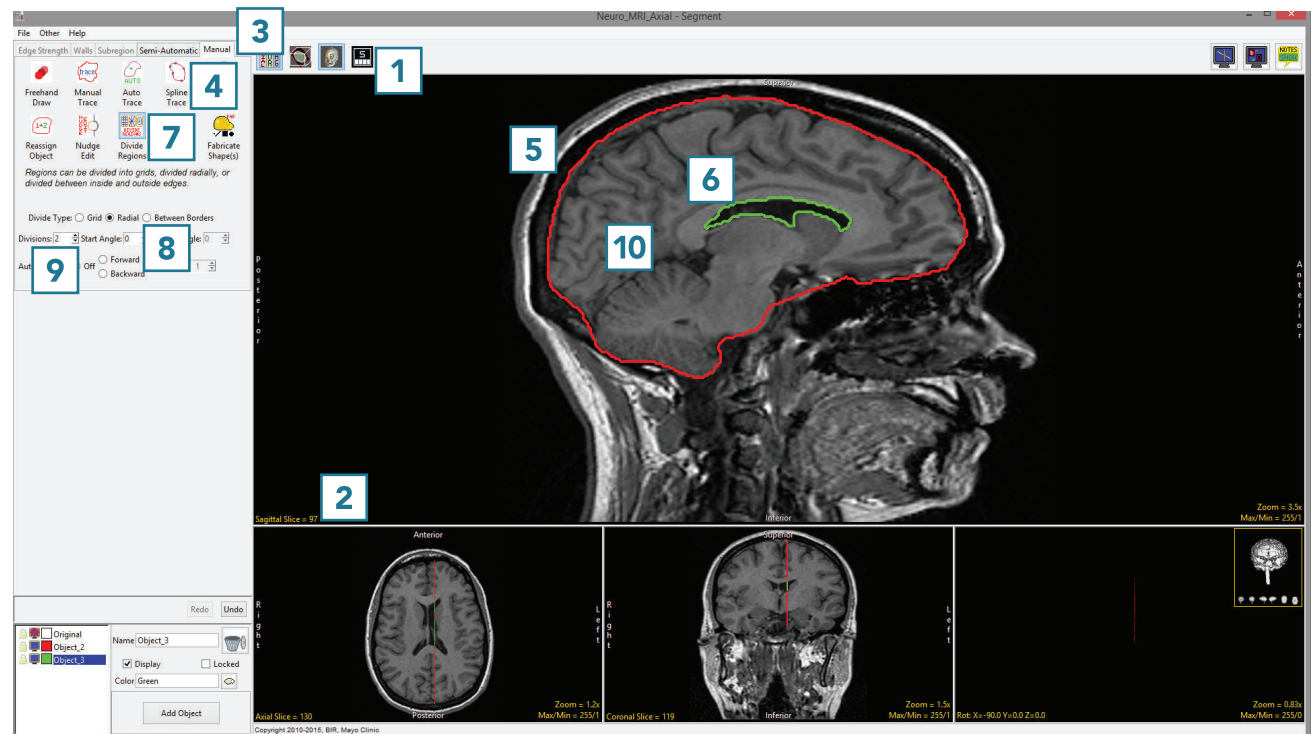


Dividing Regions Between Borders – Interpolating Between Objects

The Divide Regions Between Borders division type allows users to create a concentric set of objects. The tool will divide the area between an inner and outer border into the number of regions specified by the user, which is achieved by interpolating new borders between the inner and outer border.

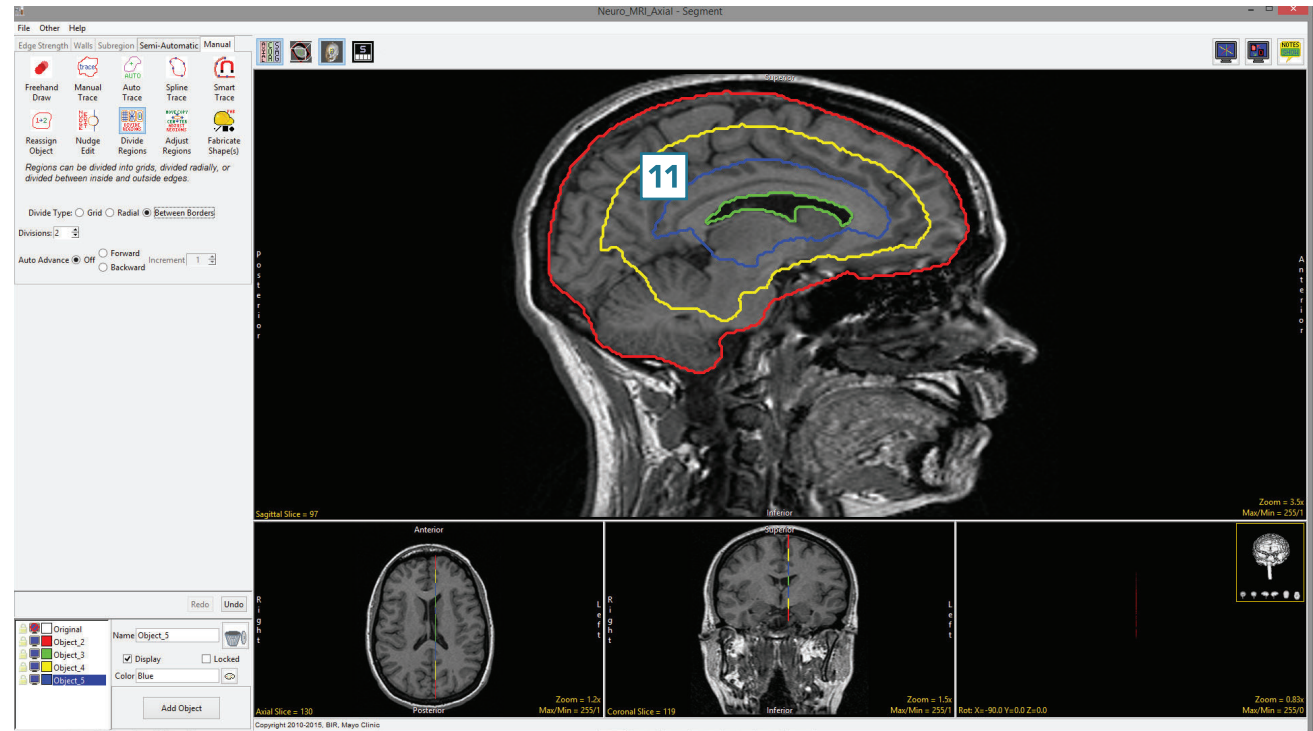
To follow along, download the data set MRI_3D_Head from analyzedirect.com/data and load into Analyze using Input/Output.

- Select the dataset and open Segment.
- Set the primary display to Sagittal [1] and use Slice [2] to move to sagittal slice 96.
- Select Manual [3], and choose Spline [4].
- Use the Spline tool to define a region of interest around the brain [5].
- Add a new object and define a region of interest around the ventricles [6].
- Select the Divide Regions tool [7] and set the Divide Type to Between Borders [8].
- Set the Divisions to 2 [9].
- Click anywhere in the brain between the red brain border and the green ventricle border [10].



Dividing Regions Between Borders – Interpolating Between Objects (continued)

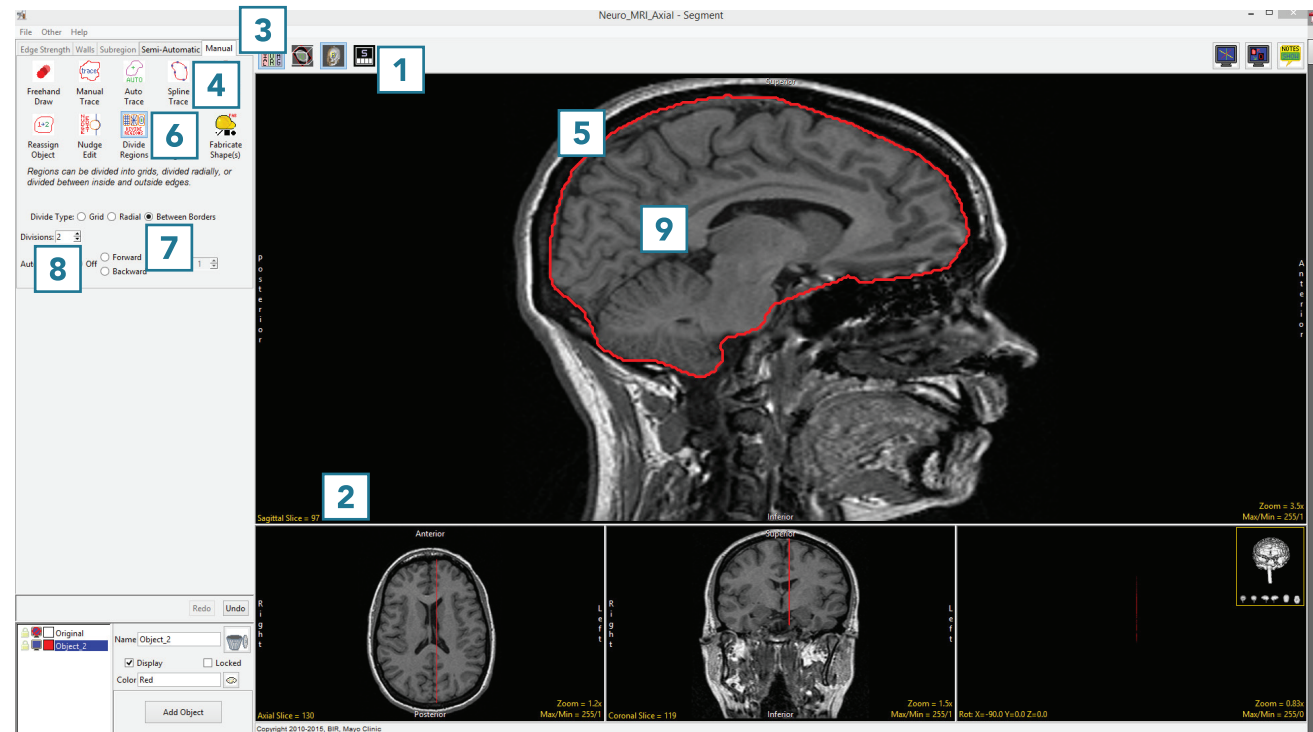
- 2 new regions will be interpolated between the brain and ventricles [11].



Dividing Regions Between Borders – Interpolating Within an Object

If there is no inner border defined when using the Divide Objects Between Border division type, the tool will calculate the center of the object and use this as an interpolation point, creating new interior object borders from the outer border.

- Select MRI_3D_Head and open Segment.
- Set the primary display to Sagittal [1] and use Slice [2] to move to sagittal slice 96.
- Select Manual [3] and choose Spline [4].
- Use the Spline tool to define a region of interest around the brain [5].
- Select the Divide regions tool [6] and set the Divide Type to Between Borders [7].
- Set the Divisions to 2 [8]. Click anywhere in the brain [9].



Dividing Regions Between Borders – Interpolating Within an Object (continued)

- The tool will detect that there is no interior border and return a Border Divide Error. Click OK [10] to enable the tool to use the center of the outside border as an interpolation point to substitute the interior border.
- The object will be subdivided into regions interpolated from the outer border and the new regions will look like smaller versions of the outer border [11].

