Exercise 43 : Region of Interest Measuring Objects in Object Maps

As well as allowing users to define and measure objects defined in the module the Region of Interest module also allows users to load and measure object maps created in other modules.

1. Load the **MRI_3D_Head.avw** data set from the **$:\BIR\images\TutorialData** directory. The data set may be available in the Analyze workspace if you have completed exercise 45 or 46.

2. Open the **Region of Interest** module (**Measure > Region of Interest**).

3. Choose **File > Load Object Map** and load the **MRI_3D_Head.obj** object map from the **$:\BIR\images\TutorialData** directory.

4. Open the **Objects** window (**View > Objects**) and set **Control** to **by Attribute**.

5. Notice that this object map contains several objects. With the **Display** attribute selected, switch the **Lenticular** and **Caudate** objects to **On**.

6. Open the **Slice** window (**Generate > Slice**) and navigate through the volume, the objects with the 'Display' attribute set to 'On' will be seen on the images (figure 1).

7. Open the **Sample Options** window (**Generate > Sample Options**).

8. In the Sample Options window set the following:
   - **Sample Type: Object(s),** check **Brain**
   - **Summing: On**
   - **Sample: All Slices**
   - **Sequence Display: Off**
   - **Log Stats: On**

9. Click the **Sample Images** button to sample the 'Brain' object.

10. The ROI Stat Log will automatically be returned, displaying the object statistics (figure 2). Note the volume given is only for the 'Brain' object, not the entire brain. To find the total volume of the brain you need to obtain the volume of the objects that make up the brain – in this exercise this includes the 'Brain', 'Ventricle', 'Lenticular', and 'Caudate' objects.

11. Click **Done** to close the ROI Stat Log; in the dialog box returned click **Discard, then Exit**.

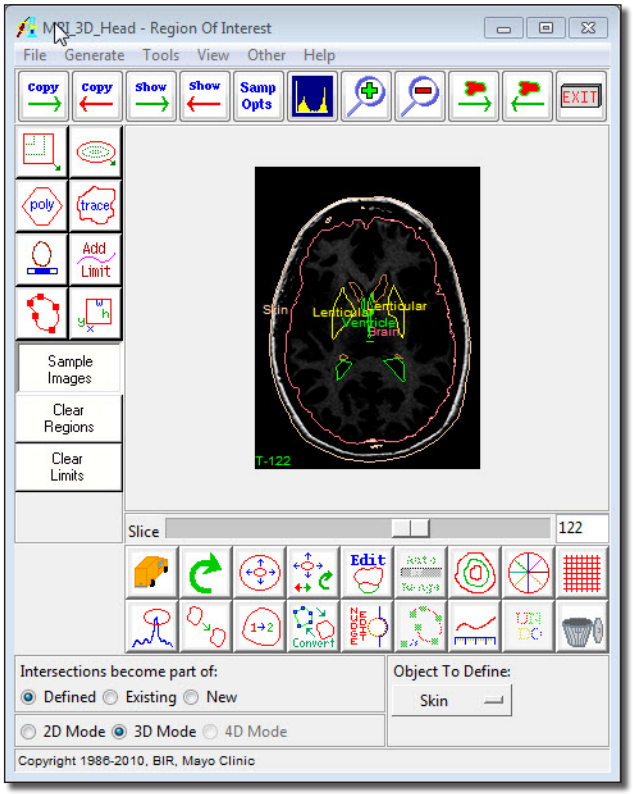

Figure 1

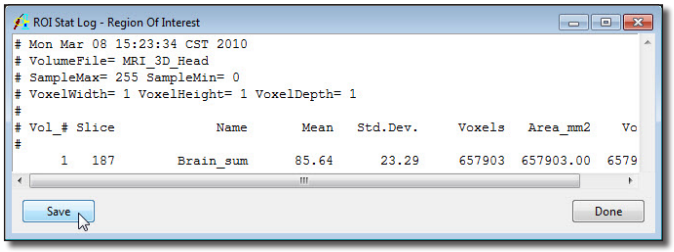

Figure 2

12. In the Sample Options window, check the **Ventricle, Lenticular**, and **Caudate** objects (the 'Brain' object should already be checked).
13. Click **Sample Images** button. The individual volumes for each object will be returned to the ROI Stat Log. The sum of these volumes is the total brain volume.
14. To have the volume of the objects added together automatically for the total volume, set **Combine Objects** to **Yes** under the selection area (figure 3).
15. Click **Sample Images**. The total brain volume will now be returned to the ROI Stat Log (figure 4)

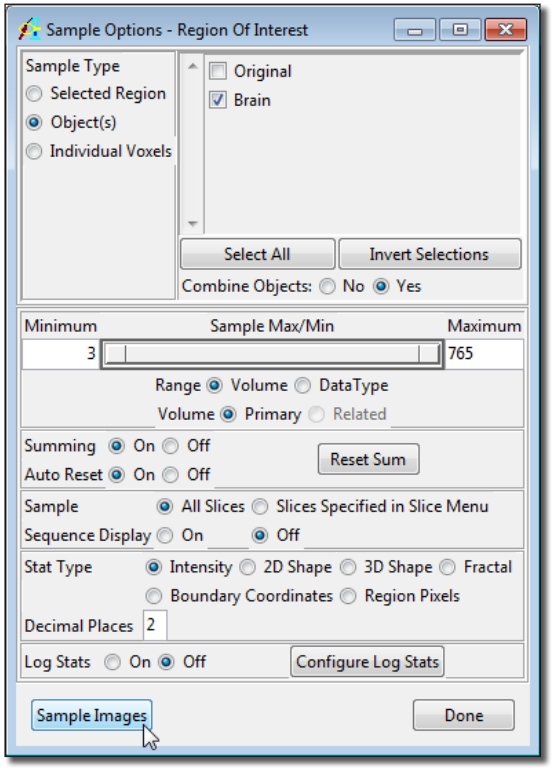

Figure 3

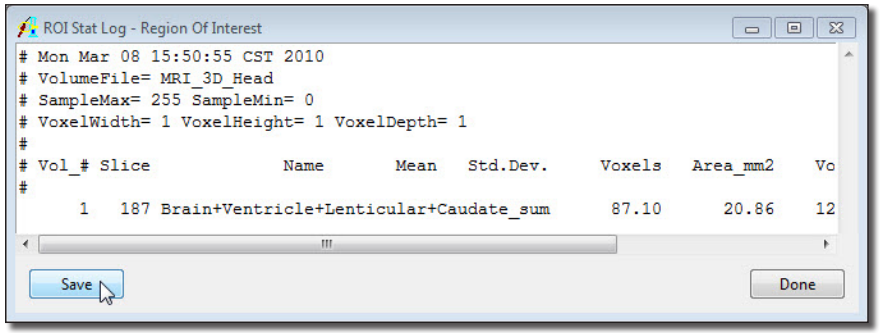

Figure 4

Additional Task

1. Volume Measurement - Manual vs. Automated Segmentation

1. Select **File > Load Object Map** and load the object map created in **Exercise 33: Object Extractor - Automated Segmentation**.
2. Follow steps 7-9 in the above exercise to calculate the volume of the 'Extracted' Brain object.
3. Compare the volume returned in the ROI Stat Log (figure 5) to that of the brain volume obtained in step 15.
4. Close the Region of Interest module before proceeding to the next exercise.

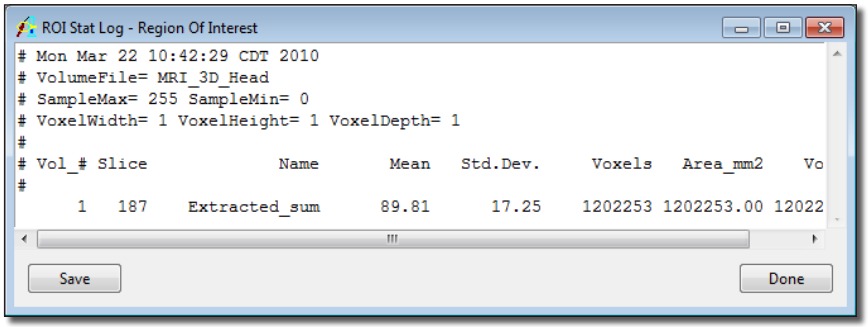

Figure 5