

# Region of Interest: Histogram Analysis

Exercise 56

This exercise will provide instructions on how to generate a histogram for an individual slice within a volume, an entire volume, and for a defined object.

## Sampling a Single Slice

1. Load the **MRI\_3D\_Head.avw** data set from the **\$:\BIR\images\TutorialData** directory.
2. Open the **Region of Interest** module (**Measure > Region of Interest**).
3. Use the slice slider directly below the image, and move to slice **97**.
4. Open the **Histograms** window (**Generate > Histograms**).
5. In the Histograms window, set **Histogram Display** to **On** and set **Log Histogram** to **On**.
6. In the main ROI window click on the image. The module will sample voxel intensity vs. occurrences. The results will be displayed as a histogram and saved to a Histogram Log file. The Histogram Log file can be saved by right-clicking in it and selecting **Save Log**.
7. Close all windows associated with the ROI module.

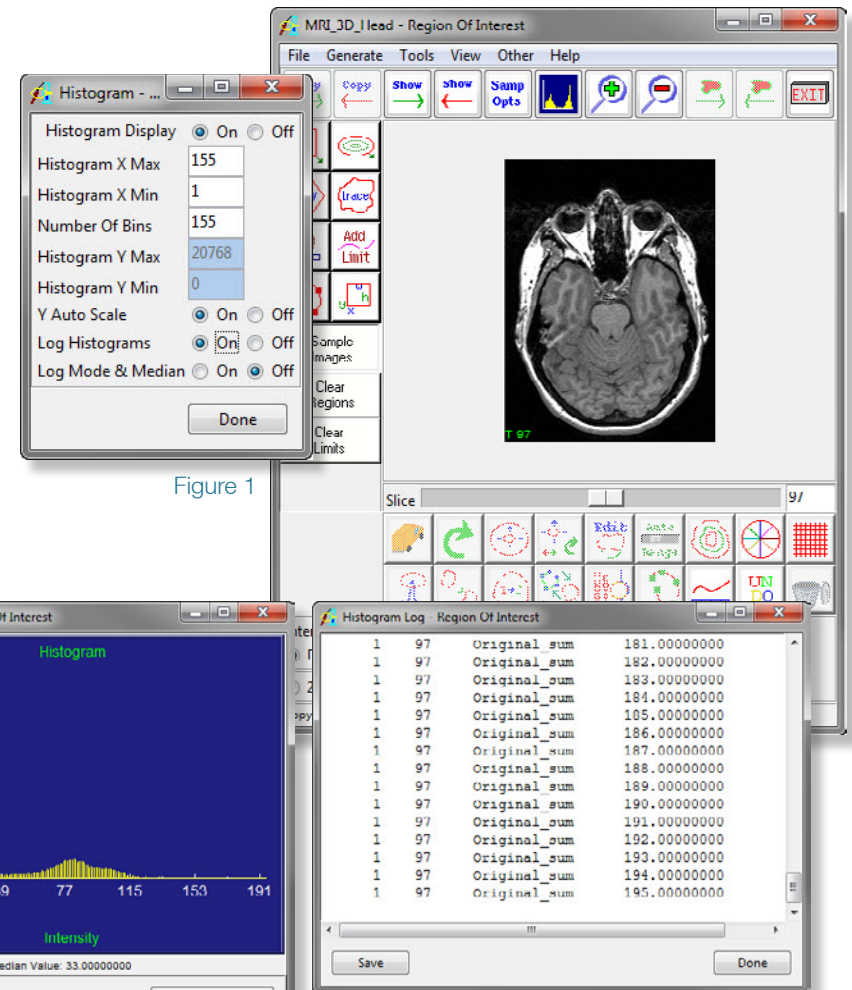


Figure 1

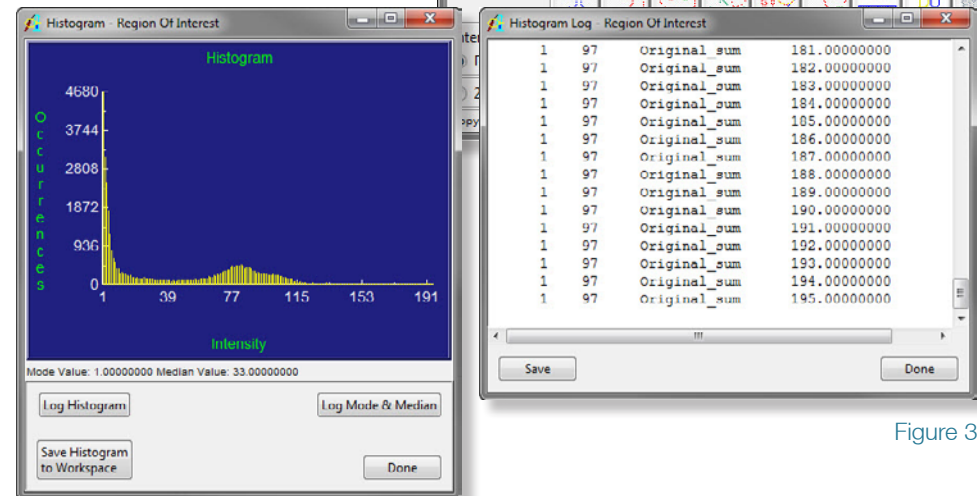


Figure 2

Figure 3

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## Sampling a Volume



1. Select the **MRI\_3D\_Head.avw** data set and open the **Region of Interest** module (**Measure > Region of Interest**).
2. In the Histograms window, set **Histogram Display** to **On** and set **Log Histogram** to **On**.
3. Next open the **Sample Options** window (**Generate > Sample Options**).
4. In the Sample Options window, set Summing to On and set Sample to All Slices (figure 4).
5. In the main ROI window click on the image display to start the sampling process. The module will sample voxel intensity vs. occurrences for the entire volume. The results will be displayed as a histogram and saved to a Histogram Log file (figure 5). The Histogram Log file can be saved out of Analyze by right-clicking in it and selecting **Save Log**.

*note* If you want to sample all slices at the same time, but do not want to 'sum' the information, simply set Summing to Off, intensity vs. occurrence will be reported for each individual slice in the volume. For a quicker sampling time, set Sequence Display to Off.

6. Close all windows associated with the ROI module.

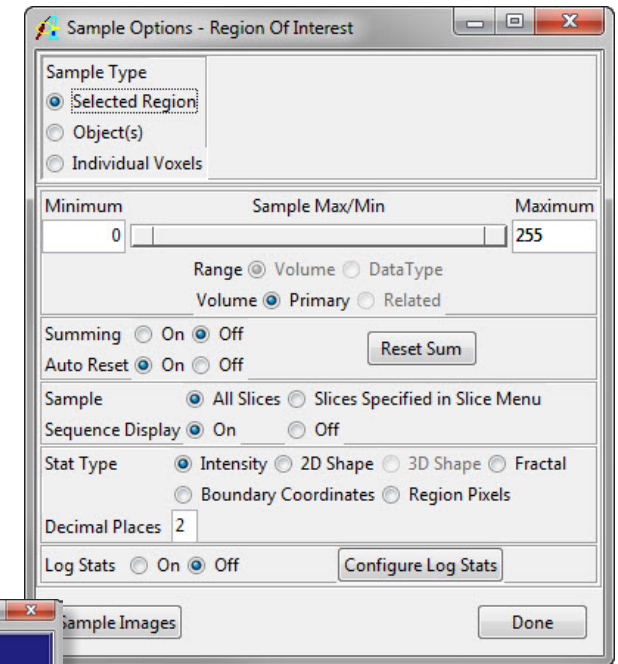


Figure 4

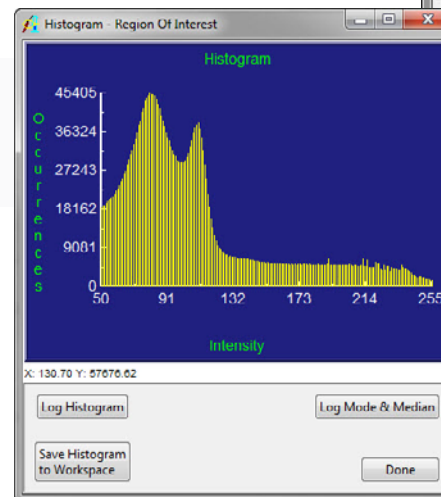
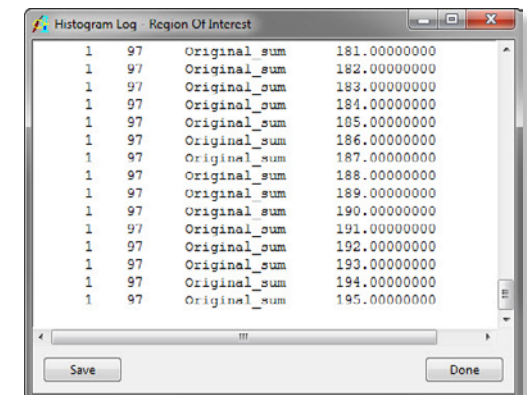


Figure 5



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## Sampling an Object



1. Select the **MRI\_3D\_Head.avw** data set and open the **Region of Interest** module (**Measure > Region of Interest**).
2. Select **File > Load Object Map** and load the **MRI\_3D\_Head.obj** from the **\$:\BIR\images\TutorialData** directory.
3. Open the **Histograms** window (**Generate > Histograms**).
4. In the Histograms window, set **Histogram Display** to **On** and set **Log Histogram** to **On**.
5. In the Sample Options window set the following (figure 7):
  - **Sample Type: Object(s)**
  - **Check only the Brain object**
  - **Summing: On**
  - **Sample: All Slices**
6. Click on the **Sample Images** button to start the sampling process. The module will sample voxel intensity vs. occurrences for the brain object. The results will be displayed as a histogram, and also saved to a Histogram Log file (figure 7). The Histogram Log file can be saved out of Analyze by right-clicking in it and selecting **Save Log**.
7. Close all windows associated with the ROI module.

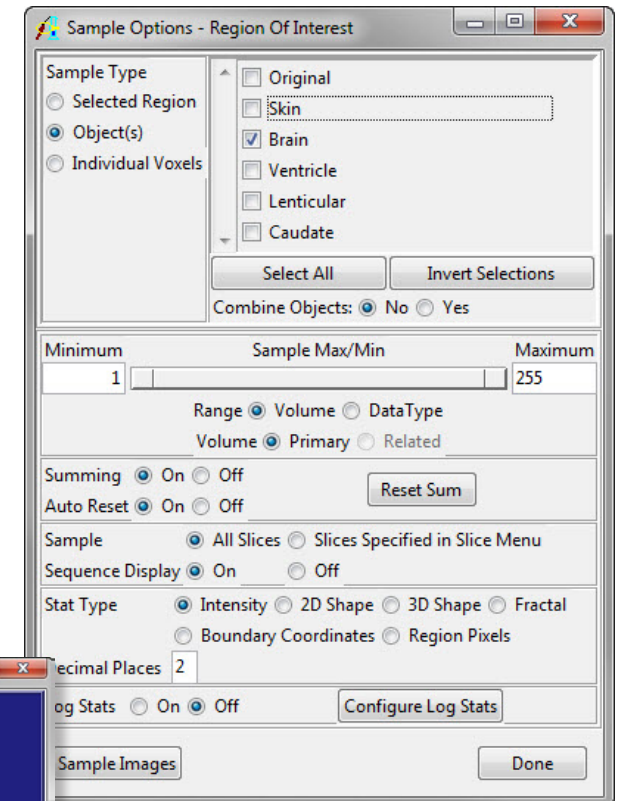


Figure 6

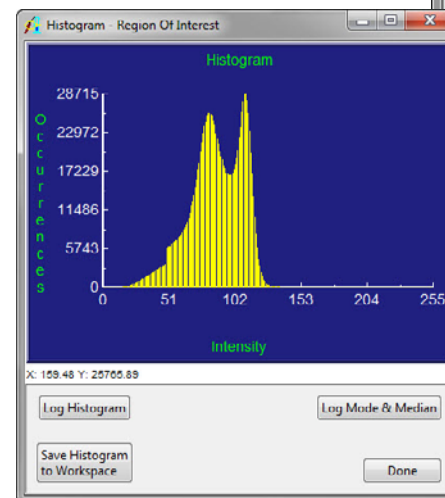


Figure 7

1	187	Brain_sum	247.00	0
1	187	Brain_sum	248.00	0
1	187	Brain_sum	249.00	1
1	187	Brain_sum	250.00	0
1	187	Brain_sum	251.00	0
1	187	Brain_sum	252.00	0
1	187	Brain_sum	253.00	0
1	187	Brain_sum	254.00	0
1	187	Brain_sum	255.00	0