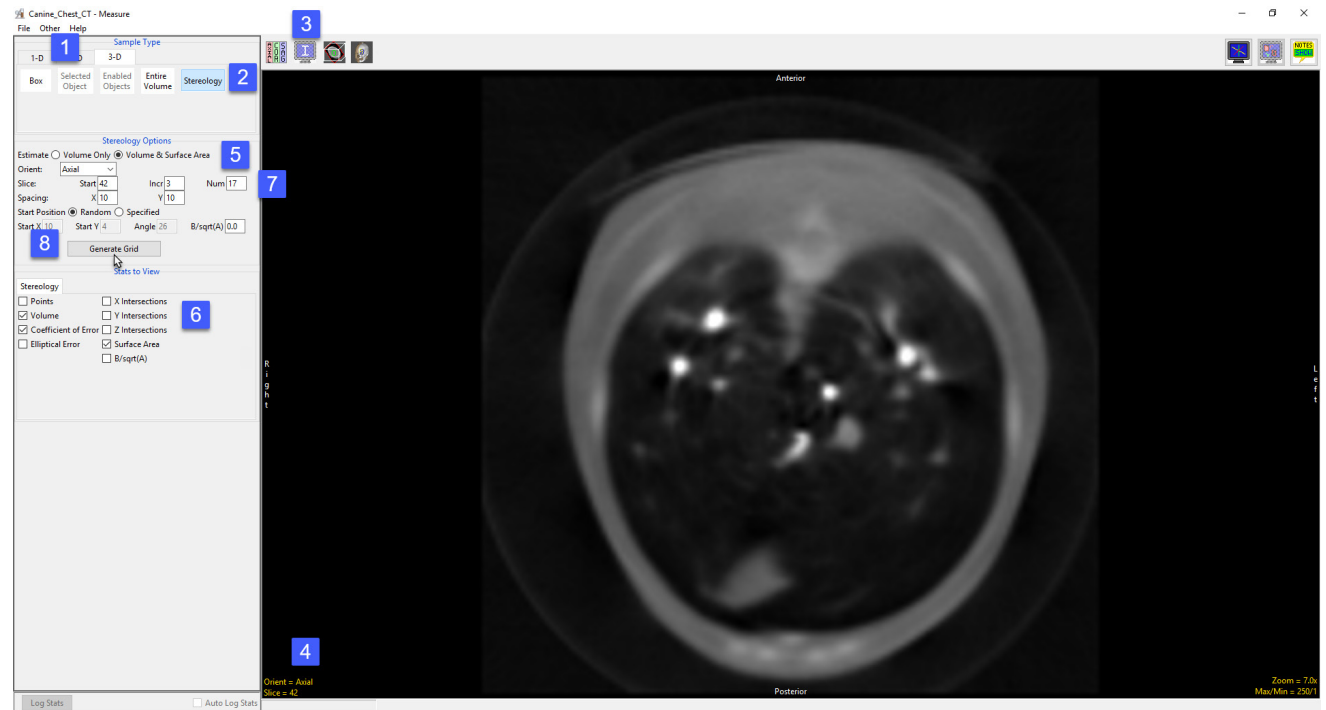


Estimating Volume using Stereology

In this example we will use Stereology to estimate the volume of the heart in a CT data set.

Download the Canine_Chest_CT.avw data set from analyzedirect.com/data to follow along.

- Open Input/Output and load Canine_Chest_CT.avw into Analyze. Select Canine_Chest_CT and open Measure.
- Select the 3D Sample Type [1] and choose Stereology [2].



- Use the Display tools to configure the image display so that the rendering is disabled and only one orthogonal slice is displayed [3].
- Ensure the orientation is set to Axial and then move to slice 42 [4]. This is the first axial slice that the heart can be seen on.
- From Stereology Options set Estimate to Volume & Surface Area [5]. Notice that the surface area related measurement options become available in the Stats to View area [6].
- The heart first appears around axial slice 42 and remains visible until slice 94. To create a sampling grid that will encompass the heart set the Start Slice to 42. Using Stereology, it is not necessary to sample every slice, set the Grid Slide Increment to 3 and Number of Grid Slices to 17 [7].
- Click Generate Grid [8] to generate the sampling grid on the image.

Estimating Volume using Stereology (continued)

- The grid will be overlaid on the image data.[9].
- The stereology options to generate the grid will no longer be visible, however, if you need to modify or recreate the grid click the Regenerate Grid button [10] and all options will be displayed.
- Move the cursor over to the image and click on any point that falls on the heart [11]. When completed press the + key on your keyboard to move to the next grid slice and repeat.
- As you continue to move through the data selecting points [12] the stats review area [13] will update with the measurements selected.
- When sampling is complete select Log Stats to log the measurements to a stats log that can be saved to disk as a .csv file.

Note: If Stereology is to be used for research study, it is necessary to validate the process for the study application. To validate a stereologic-based estimate of volume, segmentations of the structure of interest need to be established as gold standard volume measurements to which the stereologic estimates can be compared. These gold standard test volumes also provide the opportunity to establish best grid parameters to be used for the study.

