Sante DICOM Viewer Lite

Work with the selection tools

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The program offers seven selection tools:

- Rectangle Tool
- Polygon Tool
- Circle Tool
- Ellipse Tool
- Freehand Tool
- Magic Wand Tool
- Eyedropper Tool

These tools enable you to select portions of an image. Using any of these tools, you can create a new selection, add to an existing selection, subtract from a selection, or select an area that intersects with other selections. Selected areas are marked with a dashed, rotating black-and-white line.

The selection tools can be used to:

- Measure the area and volume of the selected region.
- Perform statistical analysis (e.g., maximum, minimum, mean values, standard deviation, etc.).
- Export the selected area to a text file (formatted as X position, Y position, Value) for further analysis in other programs, such as MATLAB or ANSYS.

Accuracy of the selection tools

The program's selection tools are highly accurate, having been tested against other well-established image processing tools, such as Adobe® Photoshop™ and Corel® Paint Shop Pro™. The statistical results (e.g., number of pixels, minimum value, maximum value, mean value, standard deviation, etc.) for the same selected area are identical across all programs.

The selection tools

Rectangle

The rectangle tool lets you select a rectangular area of your image.

Polygon

The polygon tool lets you draw straight-edged segments of a selection border.

Circle

The circle tool lets you select a circular area of your image.

Ellipse

The ellipse tool lets you select an elliptical area of your image.

Free Hand

The free hand tool lets you draw freehand segments of a selection border.

Magic Wand

The **Magic Wand Tool** allows you to select a continuous area of similar intensity without the need to trace its outline manually. If you modify the tolerance after selecting an area with the Magic Wand Tool (and before switching to a different tool), the selected area will automatically update based on the new tolerance. You can adjust the tolerance using the **Selection Tolerance Dialog Box** available in the **View** menu.

Eyedropper

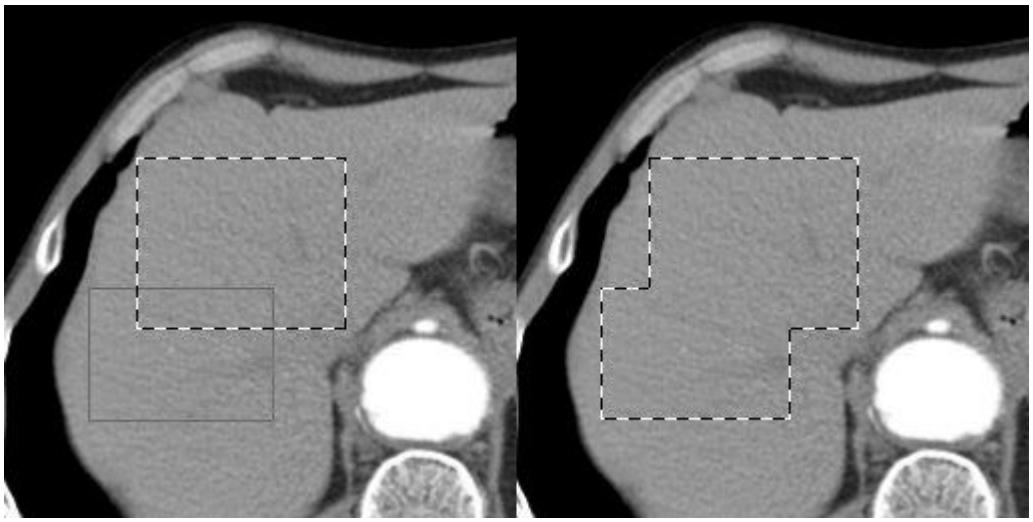
The **Eyedropper Tool** allows you to select non-continuous areas of your image with similar intensity. If you modify the tolerance after selecting an area with the Eyedropper Tool (and before switching to a different tool), the selected area will automatically adjust based on the new tolerance. You can modify the tolerance using the **Selection Tolerance Dialog Box** available in the **View** menu.

Selection operations

NOTE: Selection operations are available in all the selection tools and in **any combination** of them.
In the examples is used the selection rectangle tool.

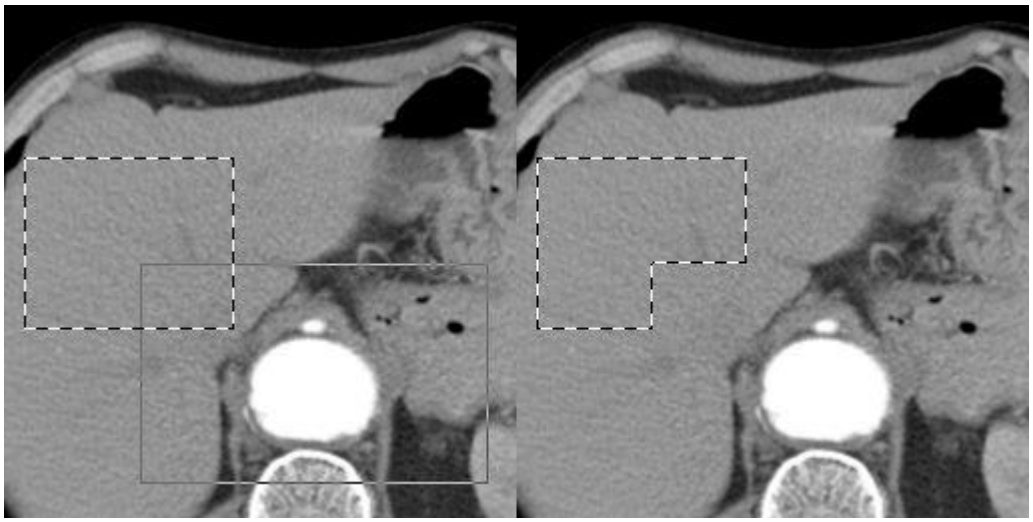
Selection Addition

Before you select the second area hold down the **<Shift>** key of the keyboard, and then use your mouse for the second selection.



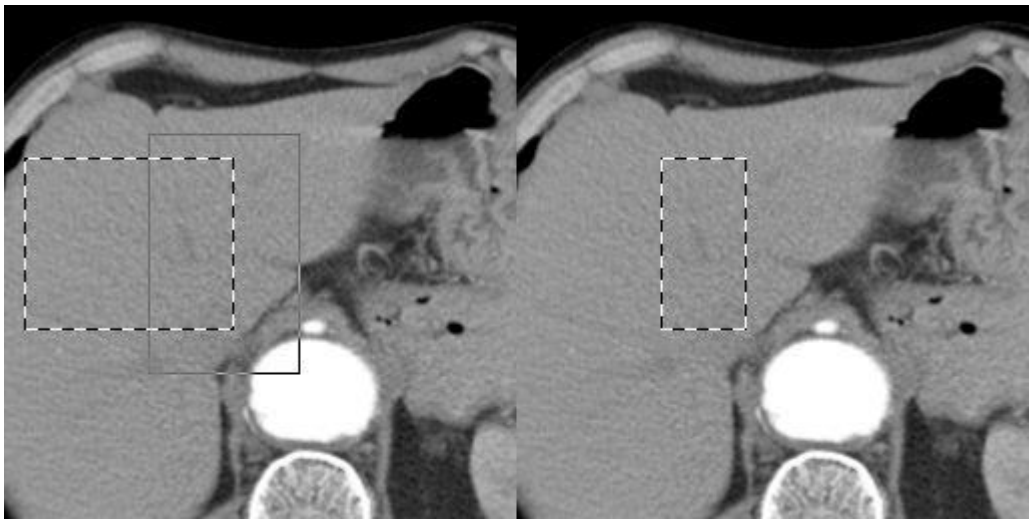
Selection Subtraction

Before you select the second area hold down the **<Ctrl>** key of the keyboard, and then use your mouse for the second selection.

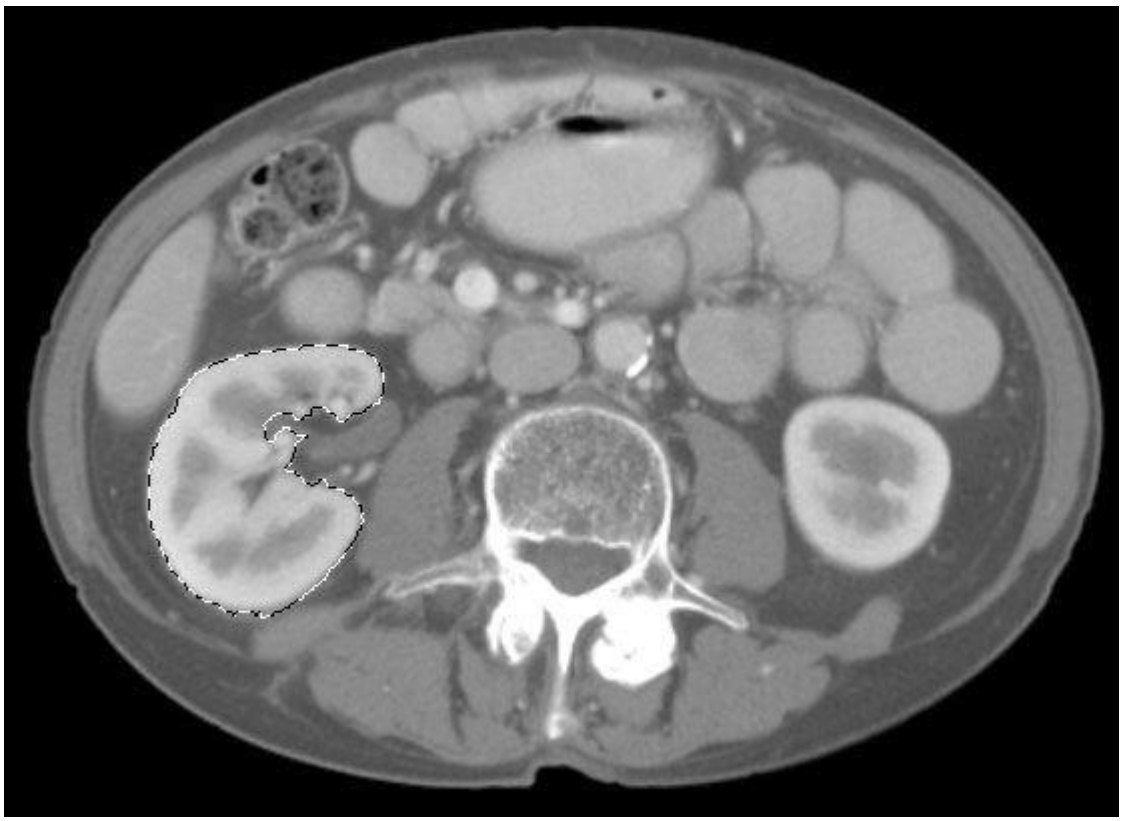


Selection Intersection (common area)

Before you select the second area hold down the **<Shift>** and **<Ctrl>** keys of the keyboard, and then use your mouse for the second selection.

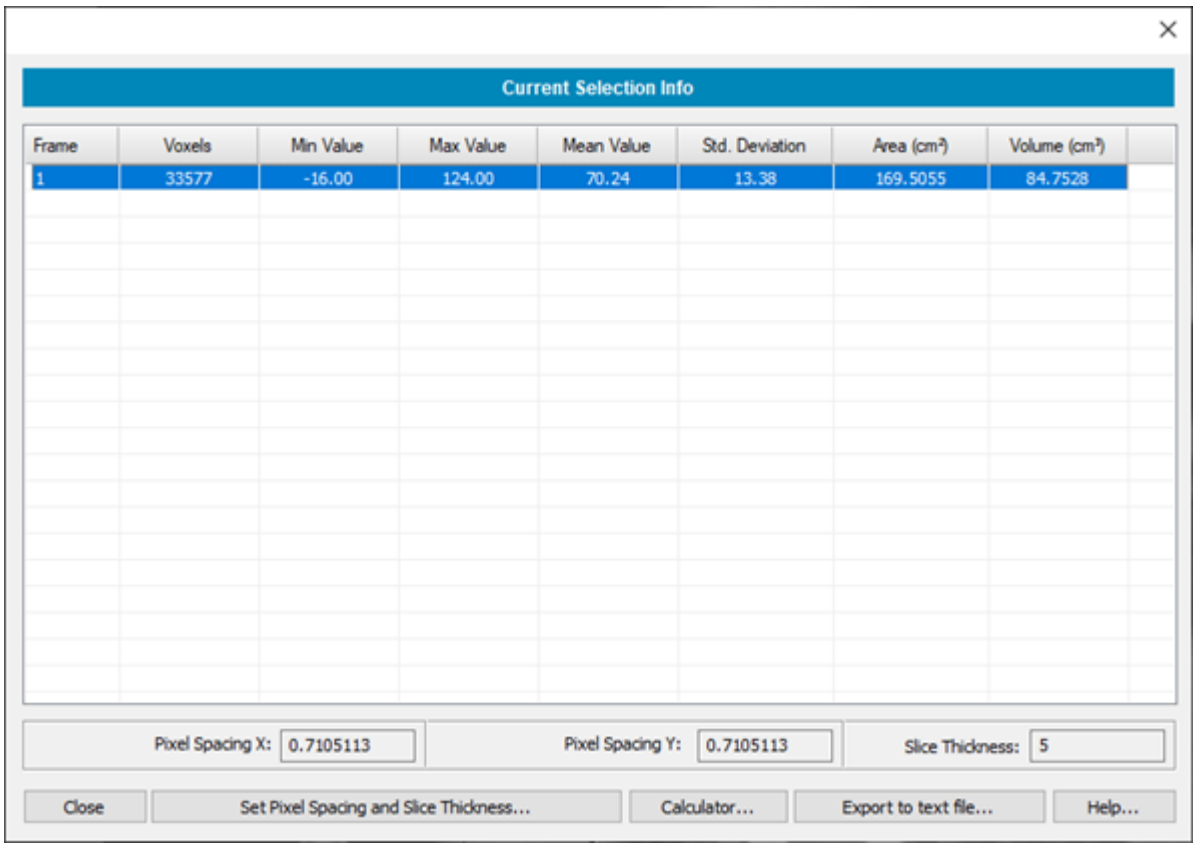


You can use the **Magic Wand** and the **Free Hand** tools in combination, to select a complex area of your image.



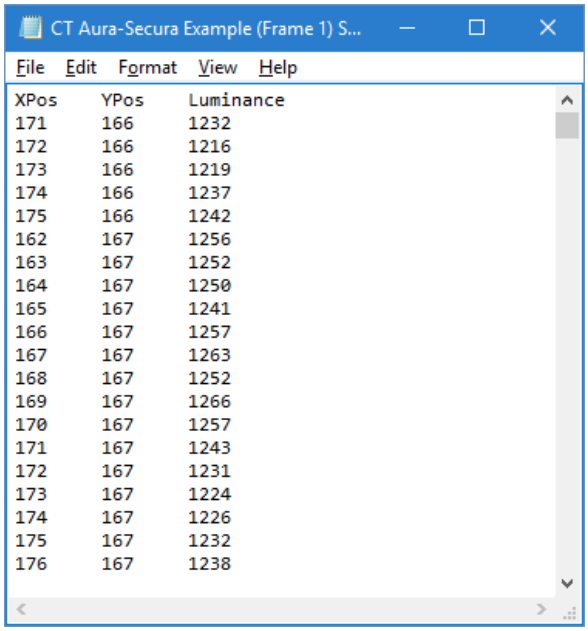
Selection statistics, area and volume measurements

From the **Selection** menu, use the **Current Selection Info** command to view detailed information about the selected area. The dialog box displays area and volume measurements, along with basic statistical analysis. You can adjust pixel spacing and slice thickness directly in the dialog box, especially if this information is missing from the file's header. If selections have been made in multiple frames, the dialog box provides details for all the selections.



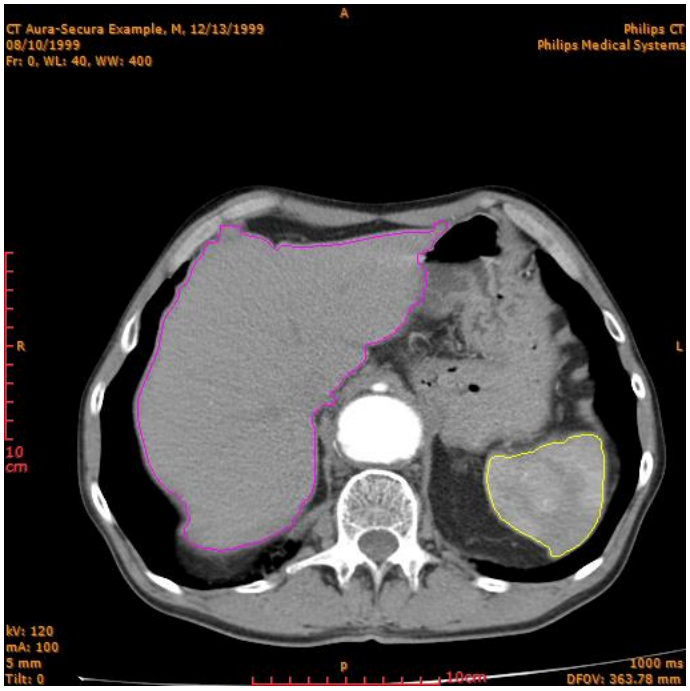
Export a selection to a text file

From the **Selection** menu, use the **Export to Text File** command to export the selected area of the current frame. The data is saved in the format: **X Position, Y Position, Value**. These files can be used in other programs for further analysis.

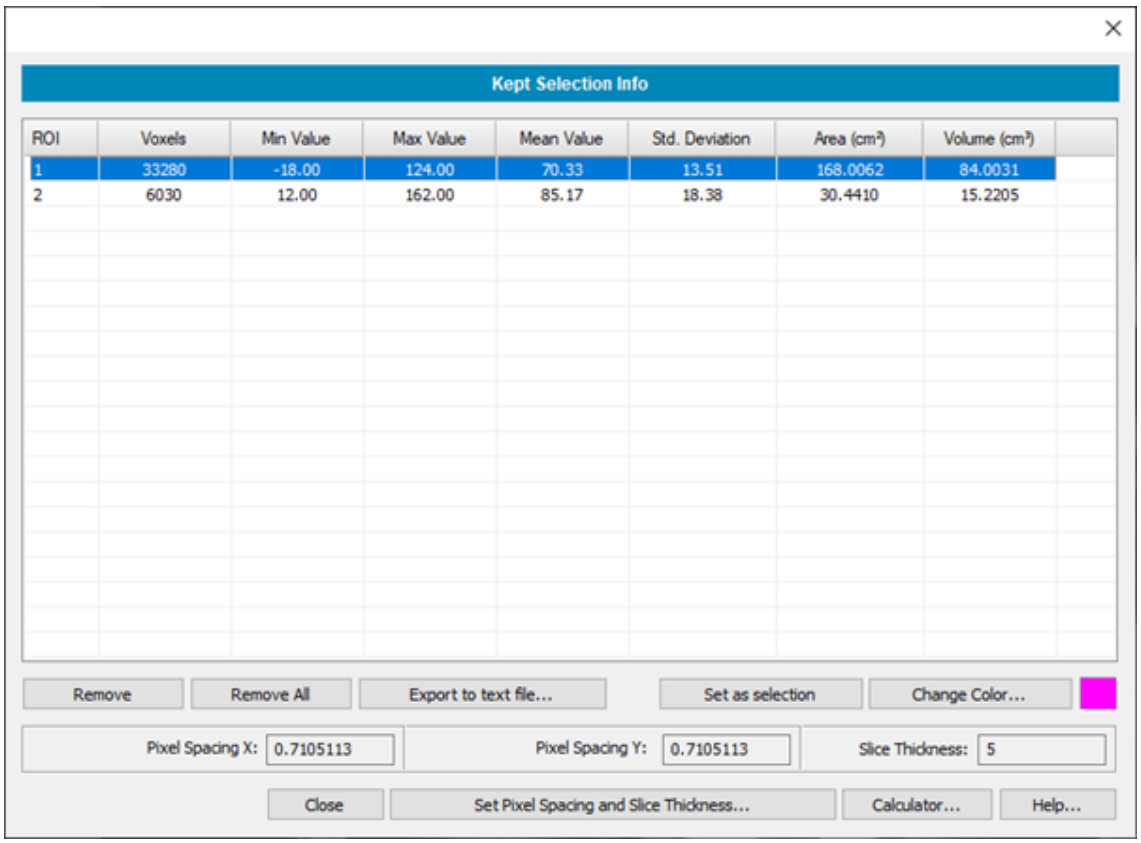


Keep many selections as Regions of Interest (ROI)

In many cases, you may need to create multiple Regions of Interest (ROIs) for analysis. These ROIs can be created from selections using the **"Keep Selection"** menu command. You can save as many selections as your computer's memory allows. Each ROI is assigned a unique color. You can delete an ROI, modify its color, export it to a text file, or restore it as a selection.



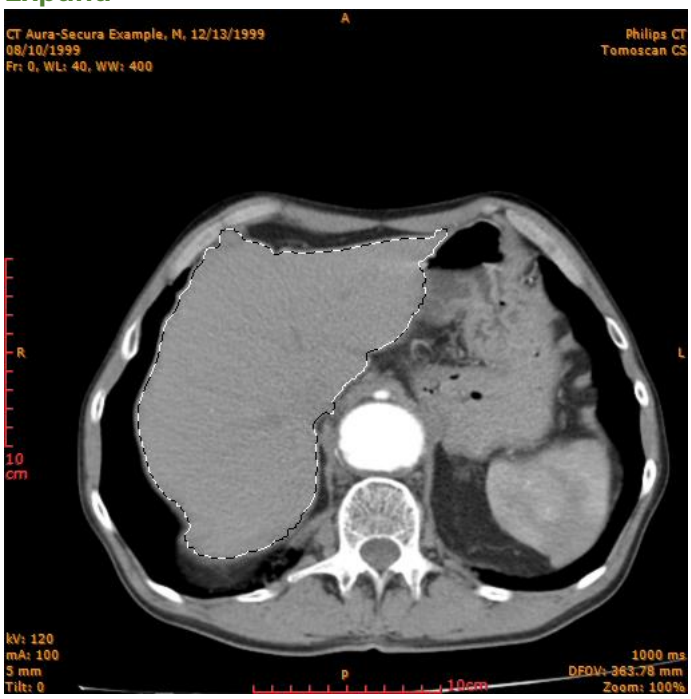
To view details about the saved ROIs, use the **"Kept Selection Info"** command from the **Selection** menu. The dialog box displays area and volume measurements for the ROIs, along with basic statistical analysis. You can adjust pixel spacing and slice thickness, especially if this information is missing from the file's header. If multiple ROIs have been created, the dialog box provides detailed information for all of them.

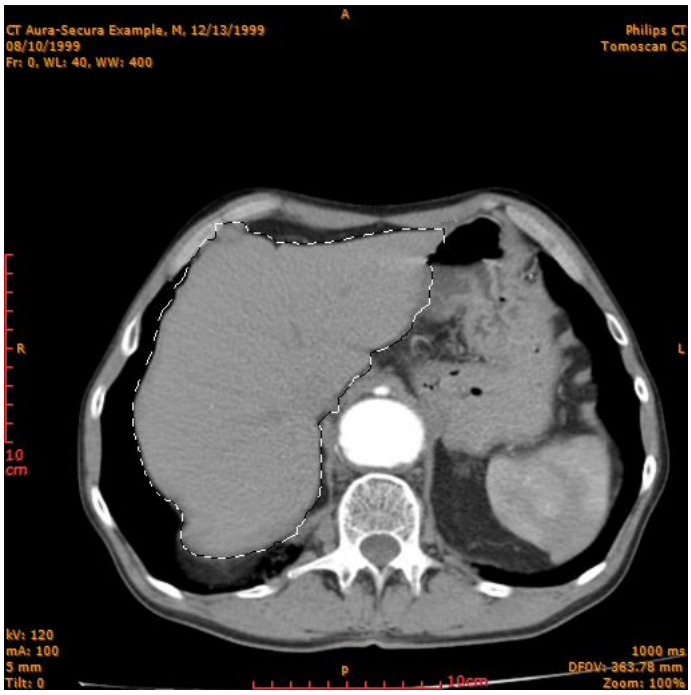


Modify a selection: Expand and Contract

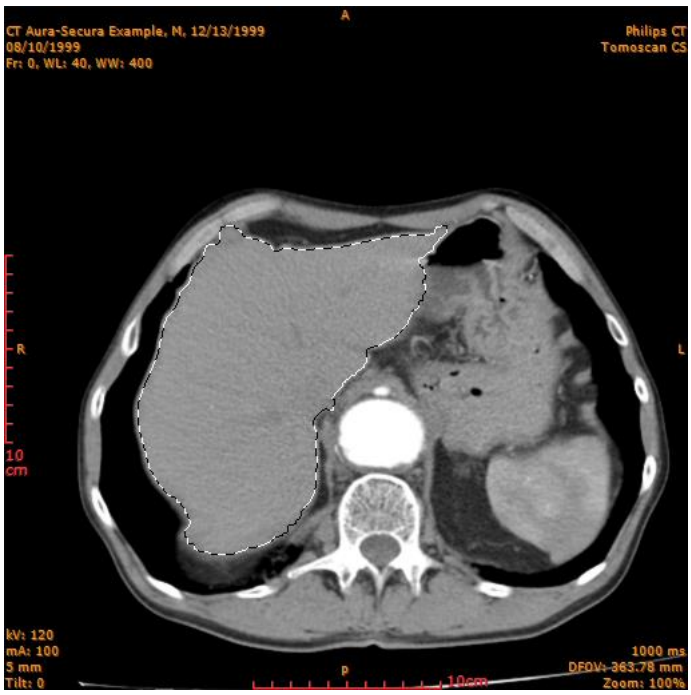
From the menu, select the " **Selection➡Modify➡Expand**" or " **Selection➡Modify➡Contract**" command. These commands adjust the size of the current selection while maintaining its shape, expanding or contracting it by a user-specified number of pixels.

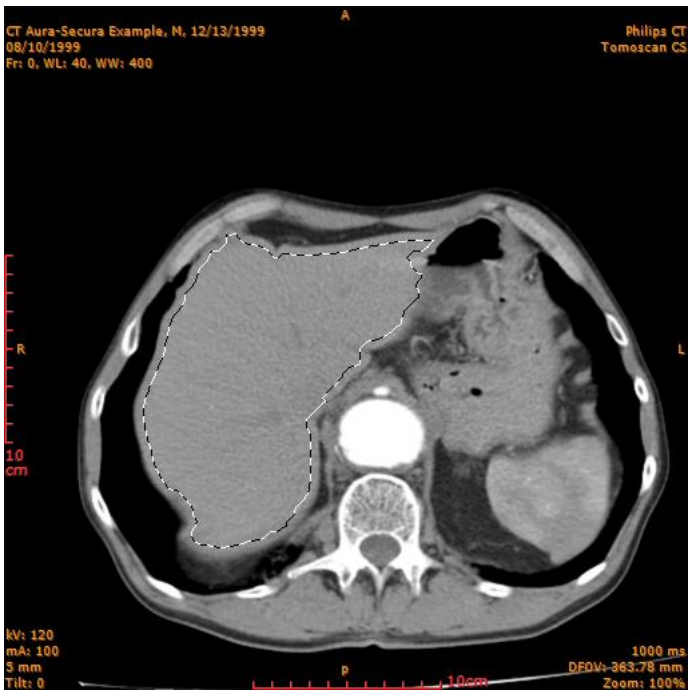
Expand





Contract

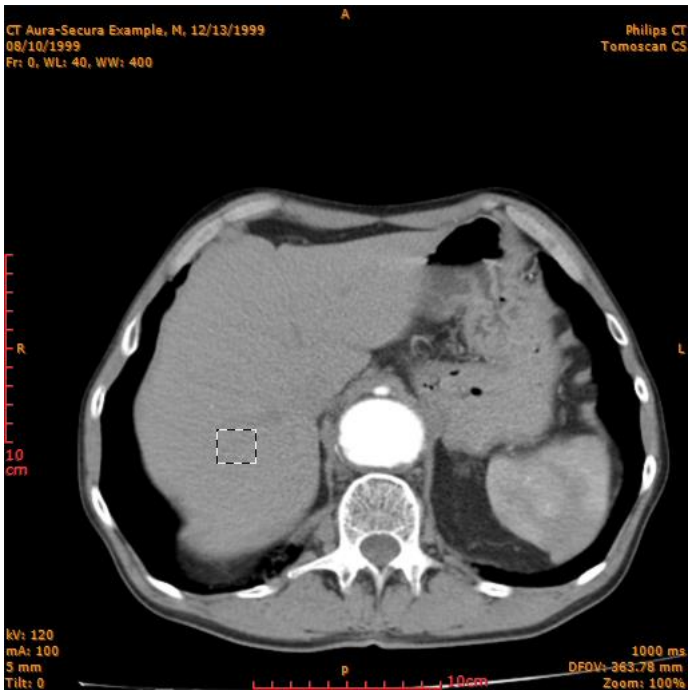


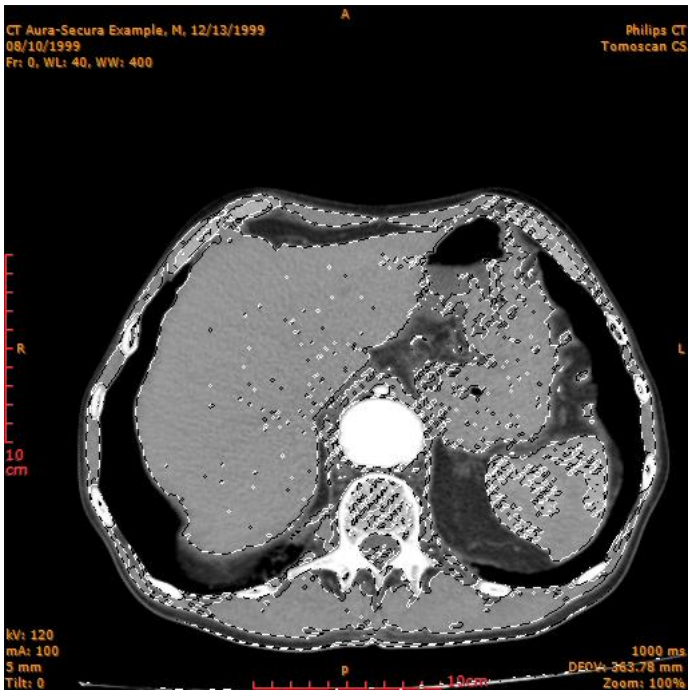


Modify a selection: Similar and Grow

Use the **" Selection ➡ Modify ➡ Similar"** command to expand the current selection by including all pixels in the image with similar intensity. This feature works similarly to the **Eyedropper Tool**, but the tolerance is automatically determined based on the minimum and maximum intensity values of the selected area.

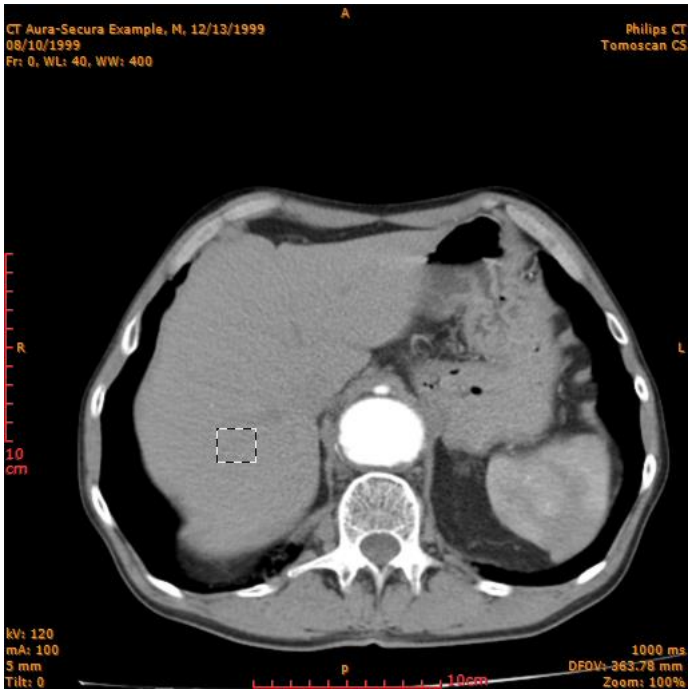
Similar

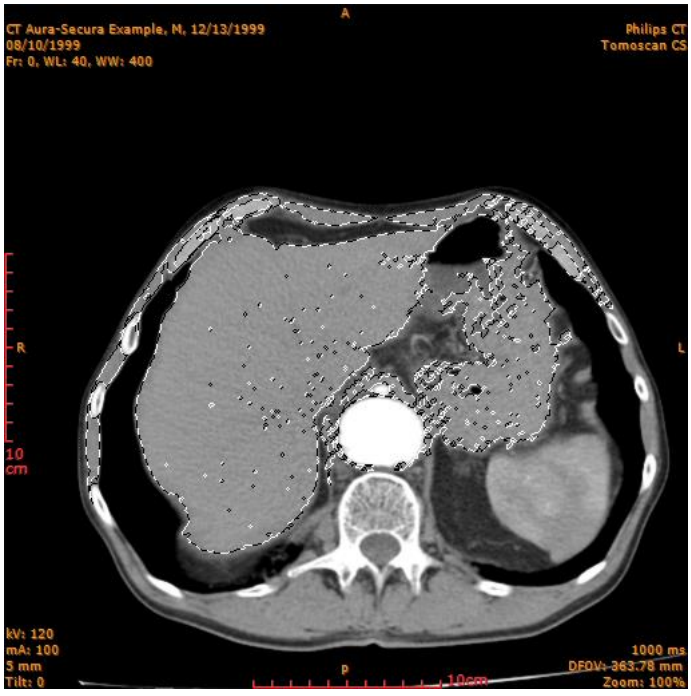




Use the **" Selection ➡ Modify ➡ Grow"** command to expand the current selection by including all neighboring pixels with similar intensity. This functionality is similar to the **Magic Wand Tool**, but the tolerance is automatically adjusted based on the minimum and maximum intensity values of the selected area.

Grow

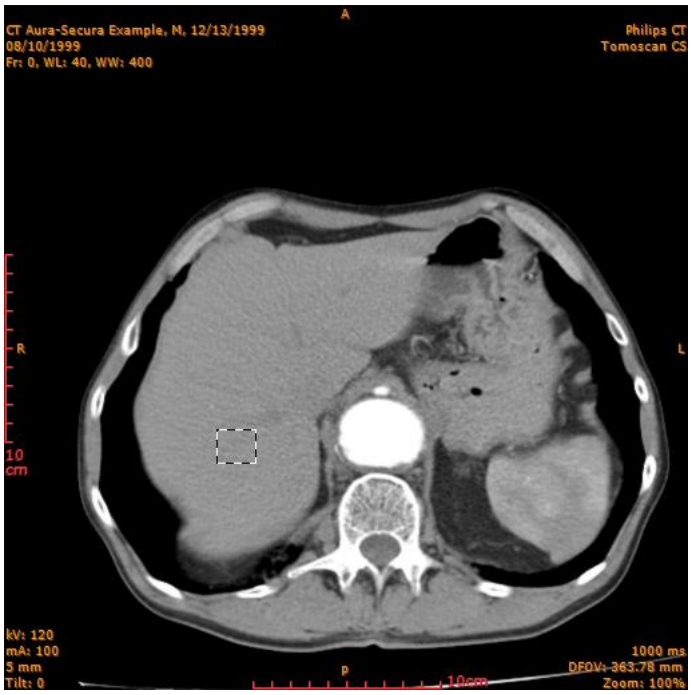


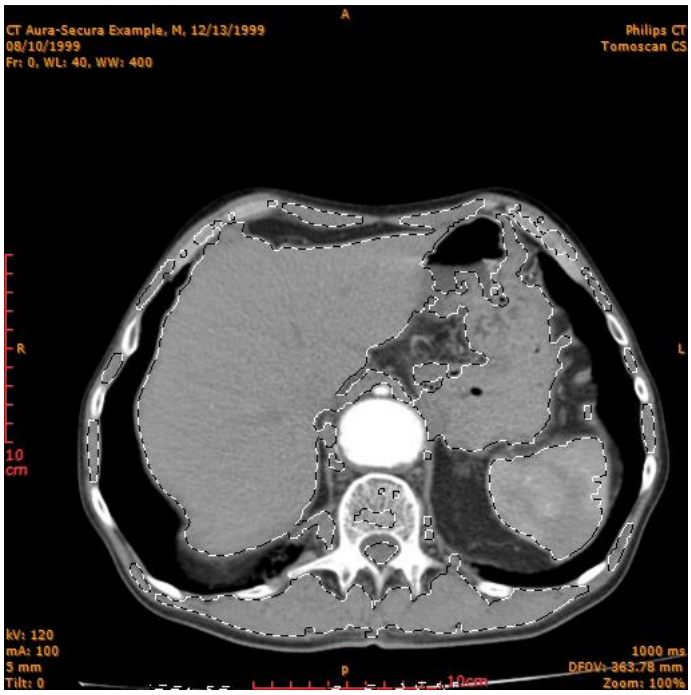


Modify a selection: Smart Similar and Smart Grow

Use the **" Selection➧Modify➧Smart Similar"** command to expand the selection by including all pixels in the image with similar intensity and standard deviation.

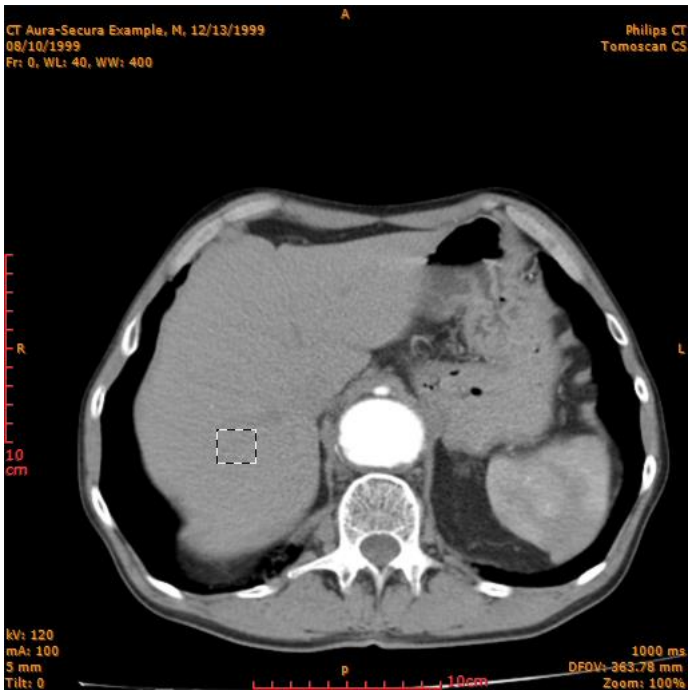
Smart Similar

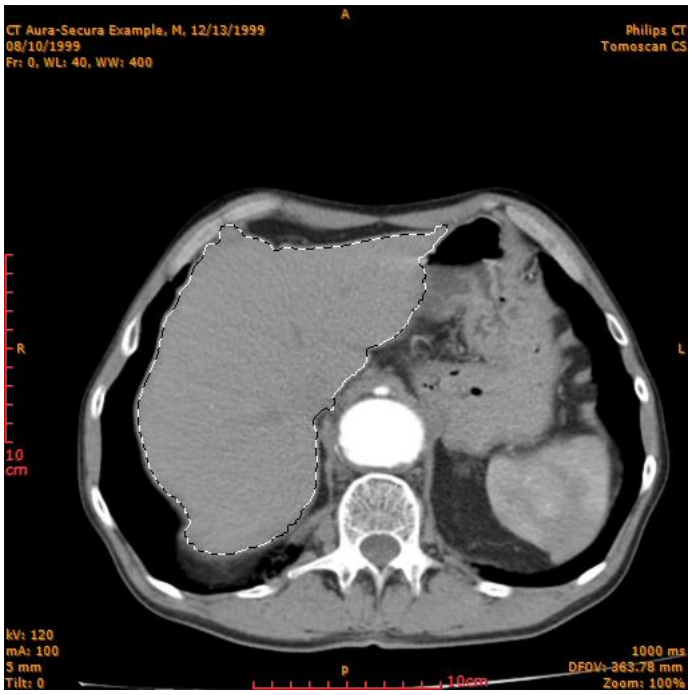




Use the **" Selection➧Modify➧Smart Grow"** command to expand the selection by including all neighboring pixels with similar intensity and standard deviation.

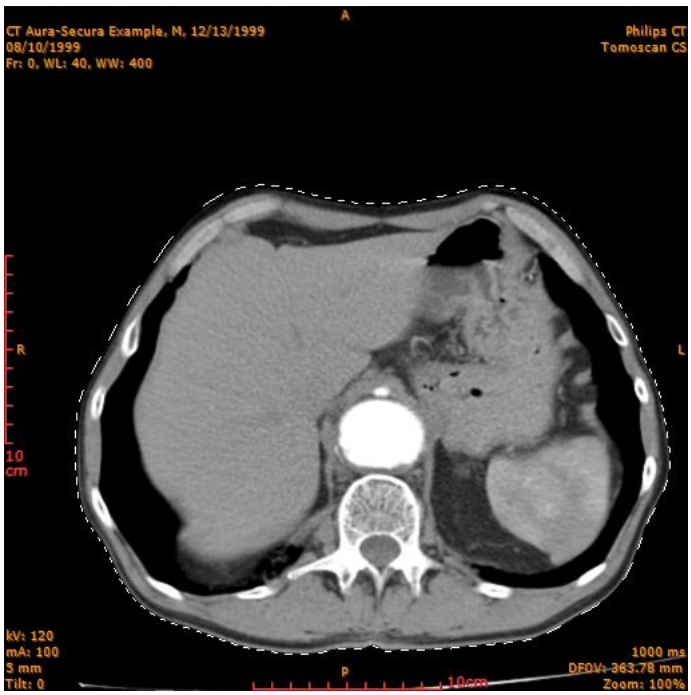
Smart Grow

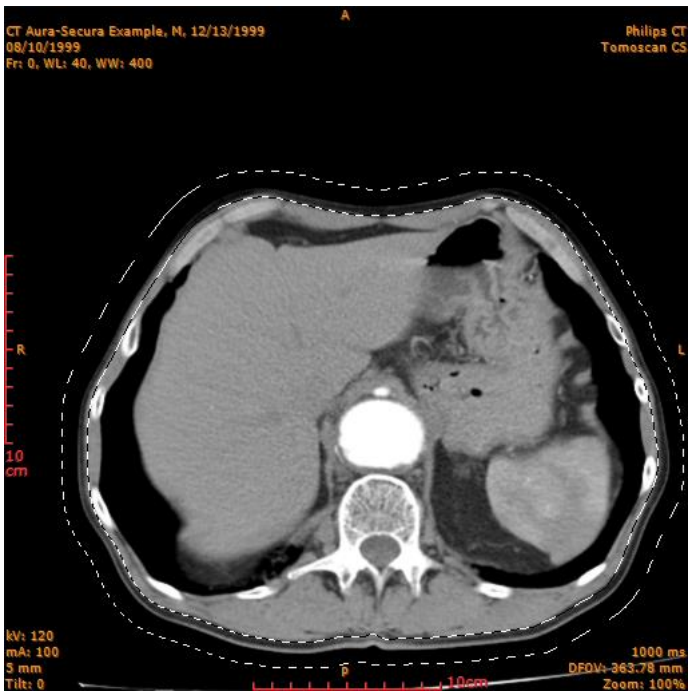




Modify a selection: trace contour

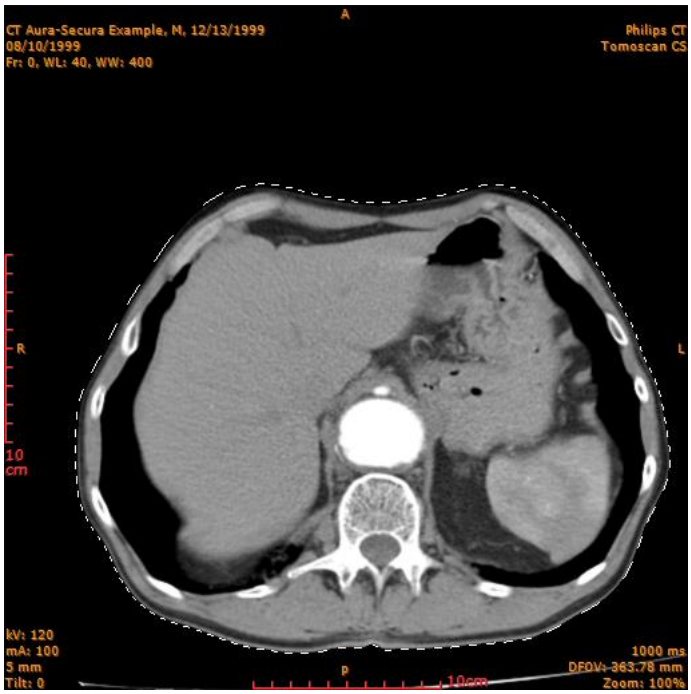
Use the command **“Selection➧ Modify➧ Trace Contour”** to retain only a thick contour of the current selection. The user can specify the thickness of the border.

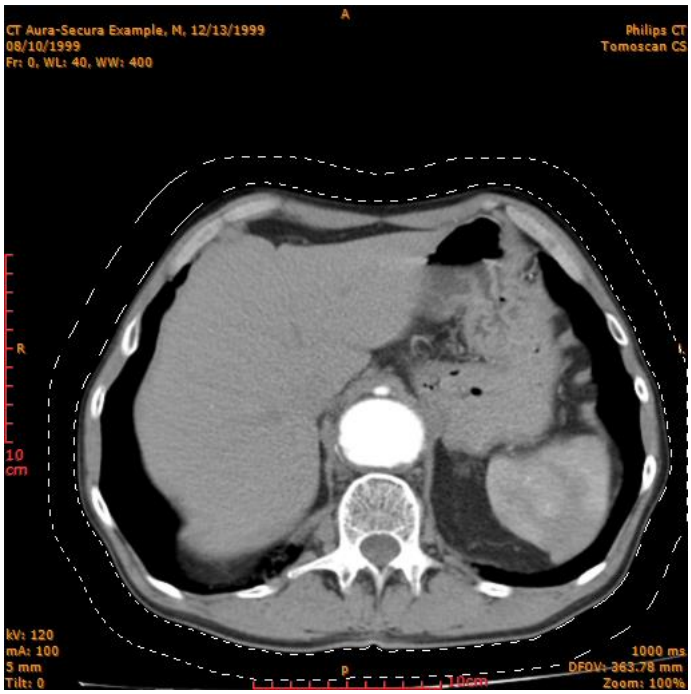




Modify a selection: surround

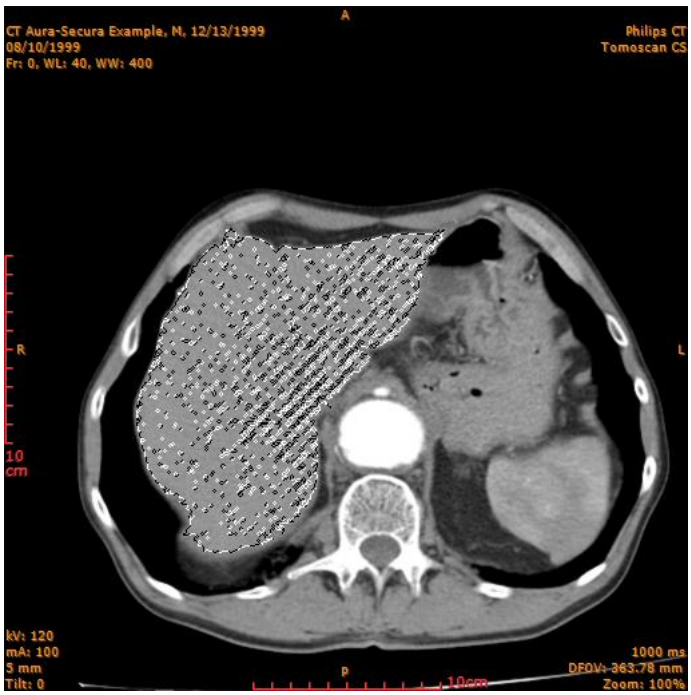
Use the **" Selection➧ Modify➧ Surround"** command to retain only the outer border of the current selection. The user can specify the thickness of the border.

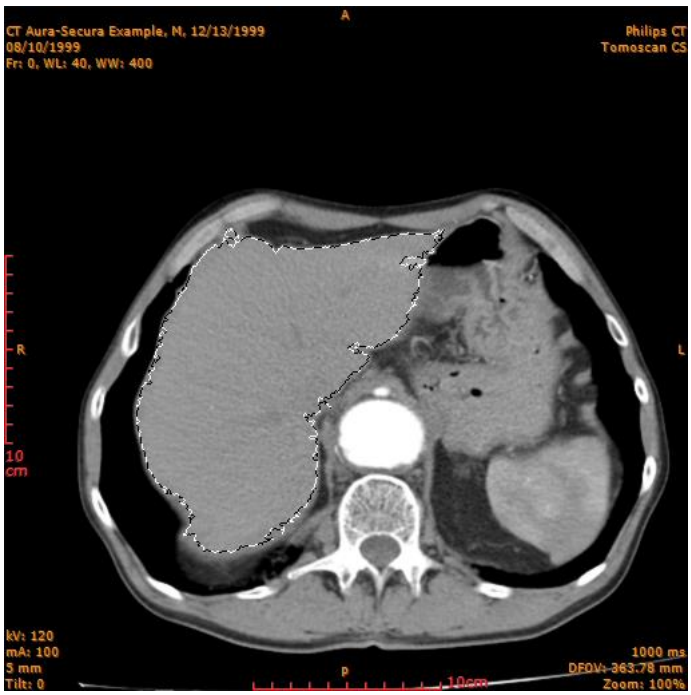




Modify a selection: add interior

Use the **" Selection➧ Modify➧ Add Interior"** command to include any unselected areas within the boundaries of the selected area into the selection.





Modify a selection: Inverse Selection

Use the **" Selection➧ Modify➧ Invert"** command to reverse the current selection, selecting the previously unselected areas and deselecting the previously selected ones. This effectively selects the opposite part of the image.