Slicer3 Minute Tutorial

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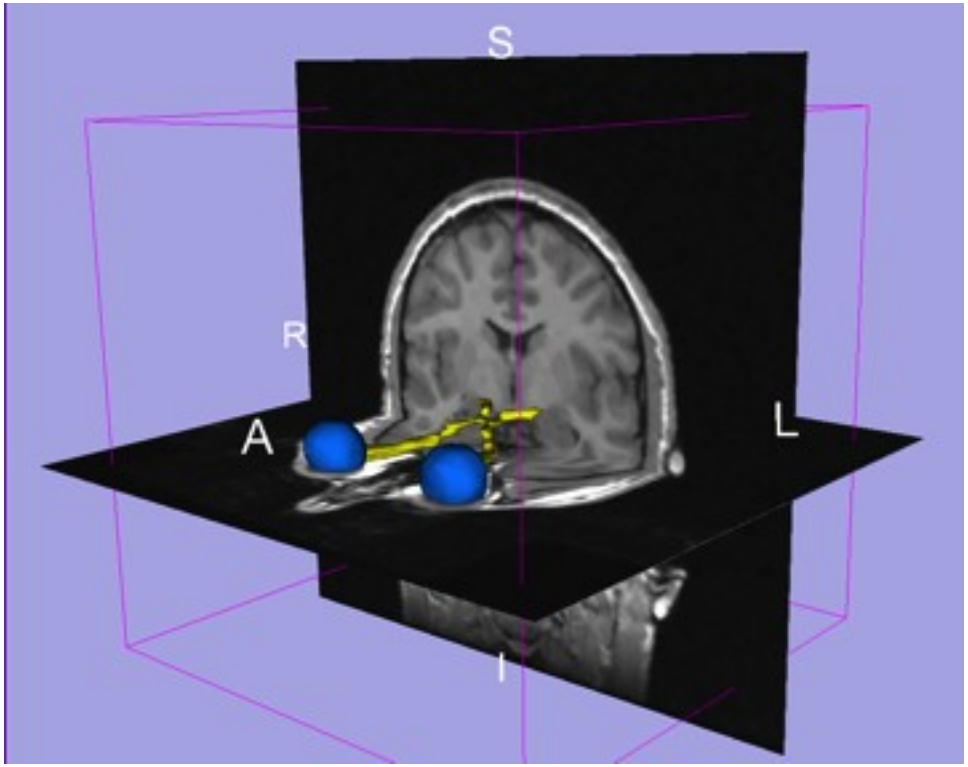
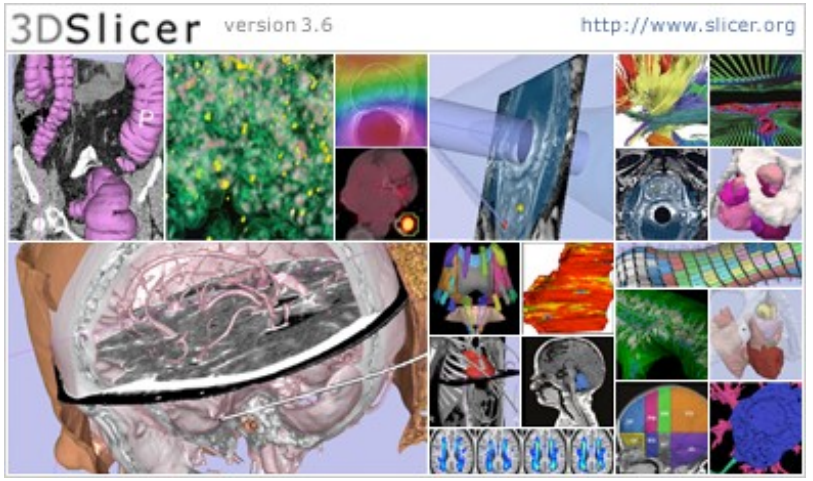
This tutorial is a short introduction to the advanced 3D visualization capabilities of the Slicer3 software for medical image analysis.



The Slicer3 Software

- An end-user application for image analysis
- An open-source environment for software development
- A software platform that is both easy to use for clinical researchers and easy to extend for programmers



Download the Material

Slicer3 is a multi-platform software running on Windows, Linux, and Mac OSX.

- Download and install the Slicer3.6 software from the Slicer web site

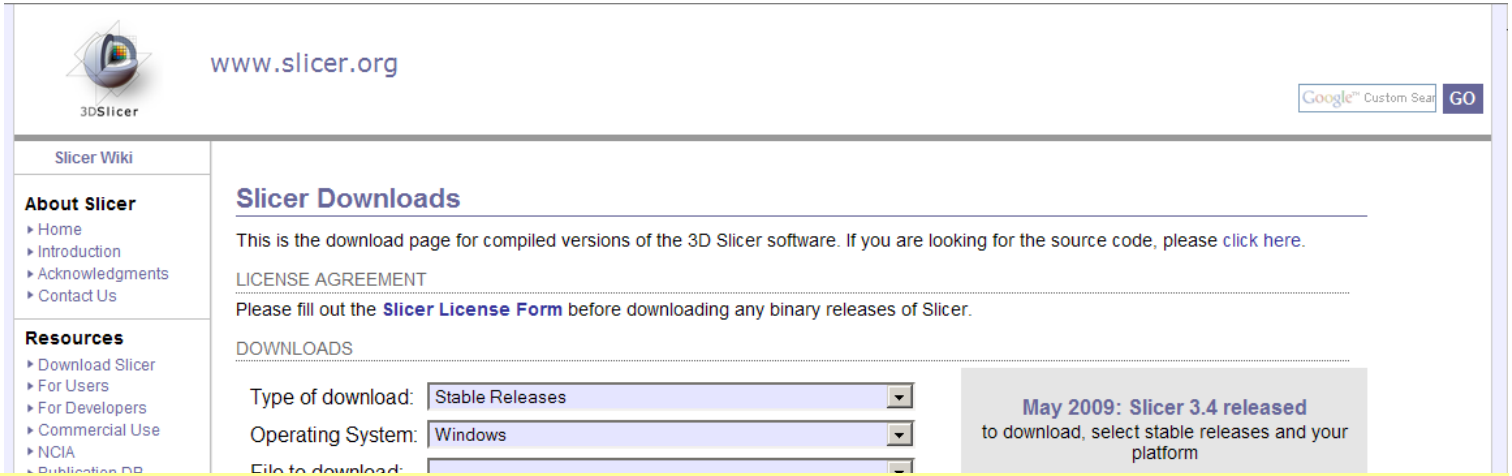
http://www.slicer.org/pages/Special:SlicerDownloads

Disclaimer

It is the responsibility of the user of 3DSlicer to comply with both the terms

of the license and with the applicable laws, regulations and rules.

Download Slicer3.6



Slicer3 is under active development by the medical research community.
Frequent releases incorporating cutting-edge medical image analysis capabilities. This tutorial uses the current Slicer3.6.1 release version.

Download Slicer3.6

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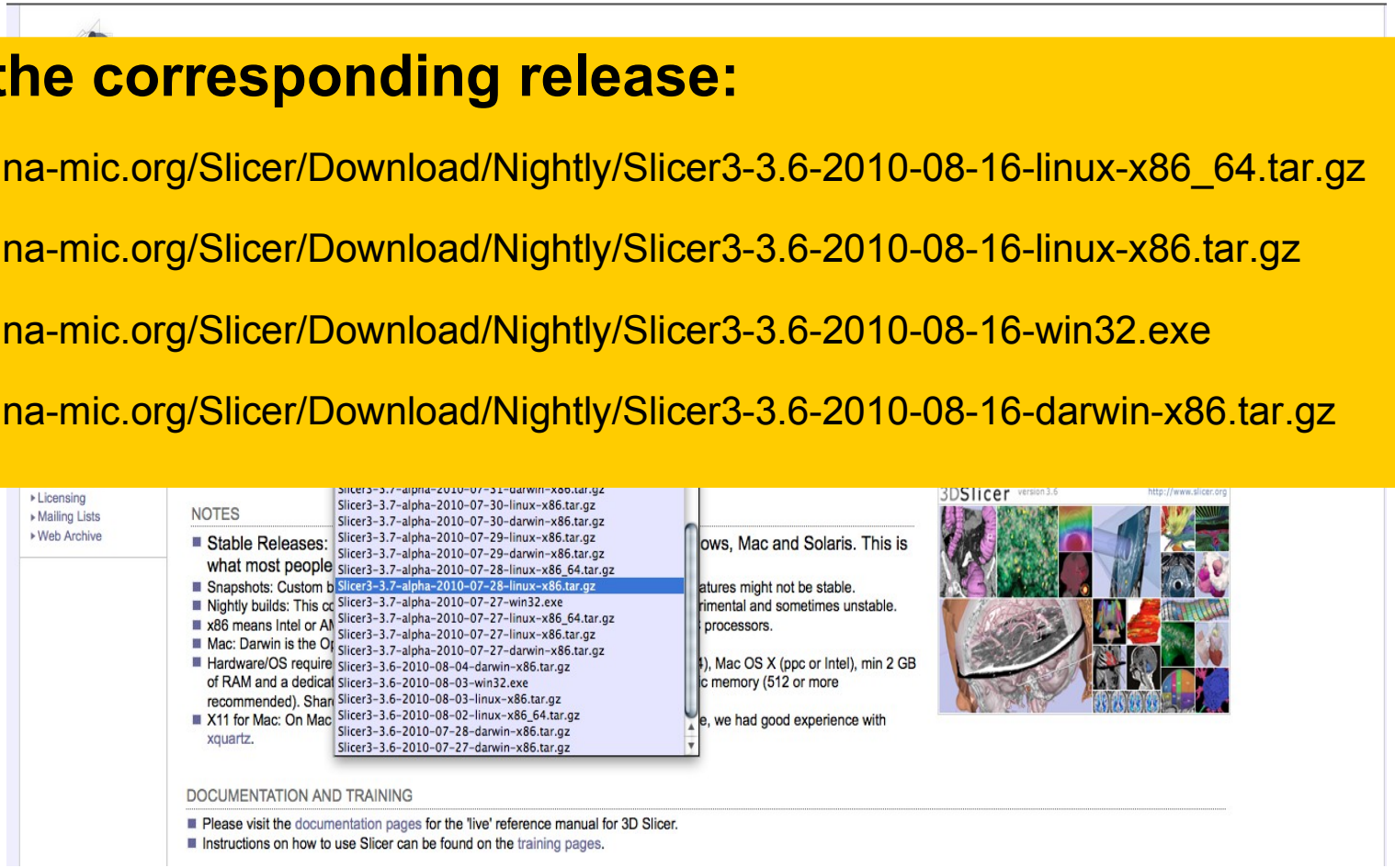
Select the corresponding release:

http://www.na-mic.org/Slicer/Download/Nightly/Slicer3-3.6-2010-08-16-linux-x86_64.tar.gz

http://www.na-mic.org/Slicer/Download/Nightly/Slicer3-3.6-2010-08-16-linux-x86.tar.gz

http://www.na-mic.org/Slicer/Download/Nightly/Slicer3-3.6-2010-08-16-win32.exe

http://www.na-mic.org/Slicer/Download/Nightly/Slicer3-3.6-2010-08-16-darwin-x86.tar.gz



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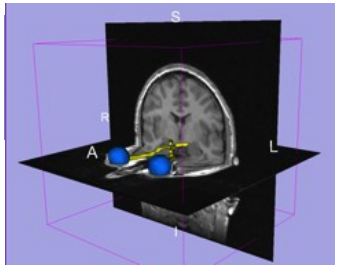


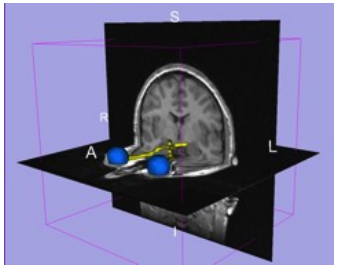
- Download the training dataset:

Slicer3minuteDataset.zip

http://www.slicer.org/slicerWiki/index.php/Slicer3.6:Training

Tutorial Dataset

- The Slicer3minute dataset is composed of an MR scan of the brain and 3D surface reconstructions of anatomical structures.



- The data are part of the SPL Brain Atlas developed by Talos et al. The atlas is available at: http://www.spl.harvard.edu/publications/item/view/1265

Start Slicer3

Linux/Mac users

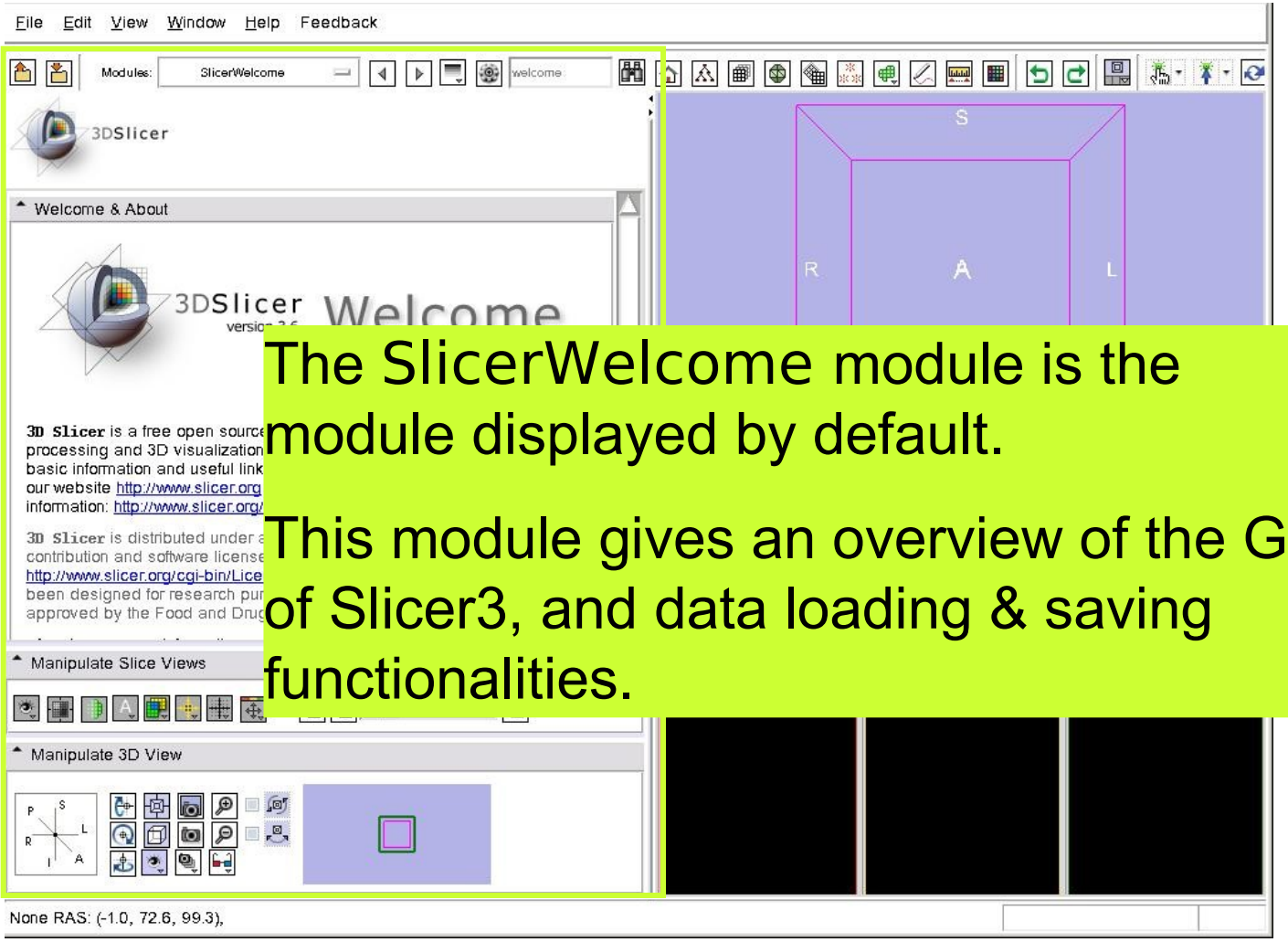
Launch the Slicer3executable located in the Slicer3.6 directory

Windows users

Select

Start → All Programs→ Slicer3-3.6-2010-08 16→Slicer3

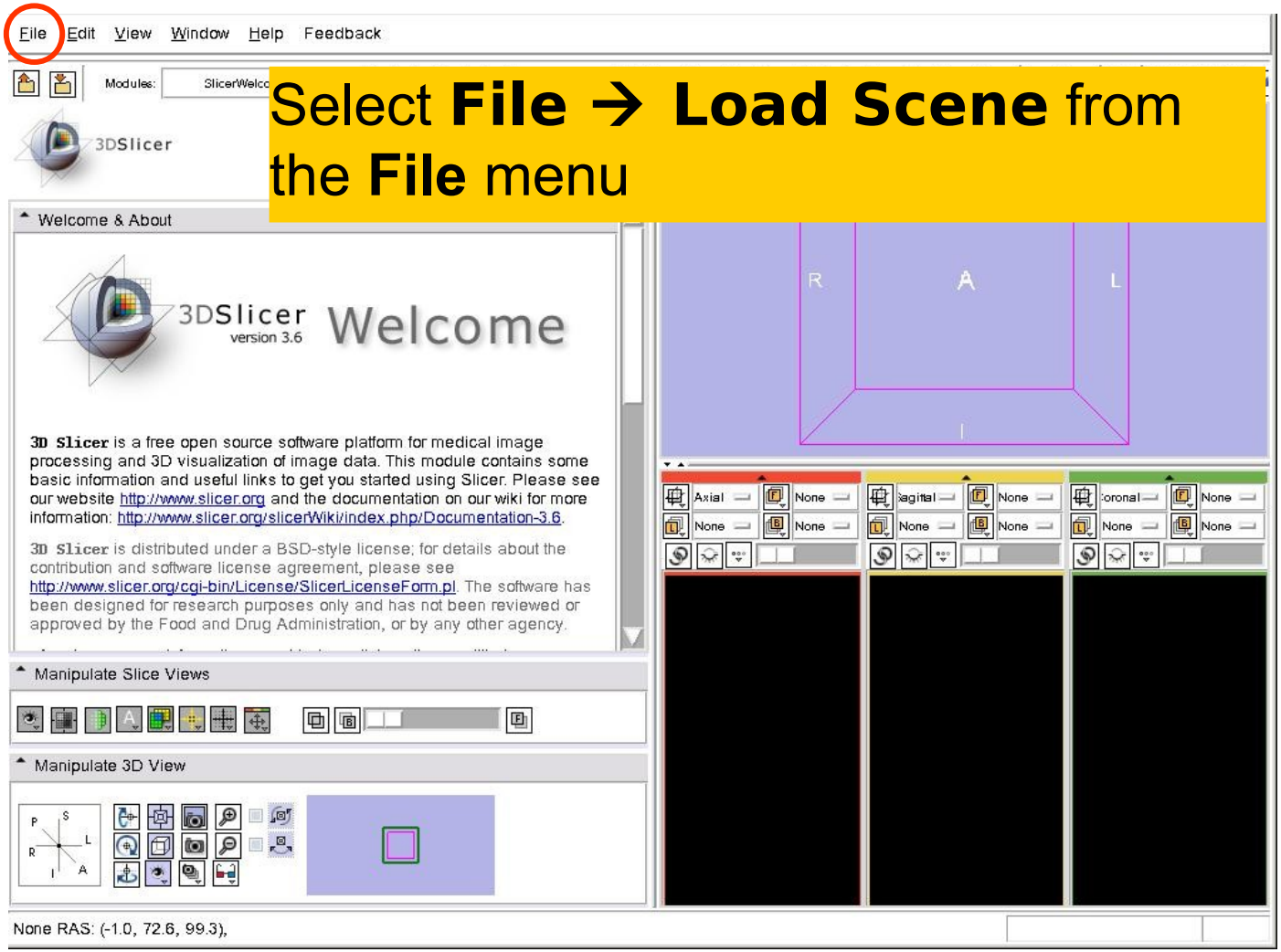
Slicer Welcome



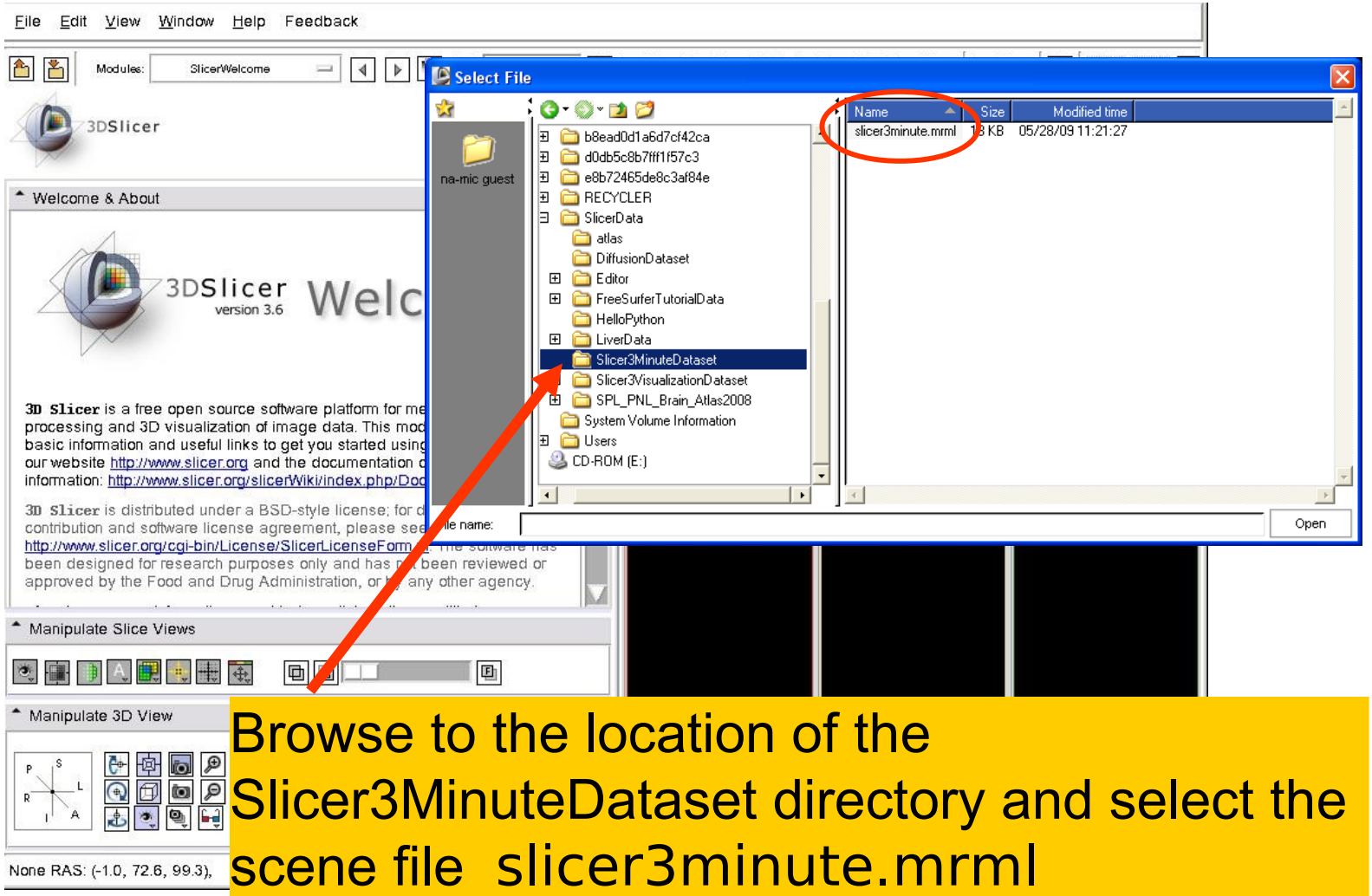
The SlicerWelcome module is the module displayed by default.

This module gives an overview of the GUI of Slicer3, and data loading & saving functionalities.

Loading a 3D Scene



Loading a 3D Scene

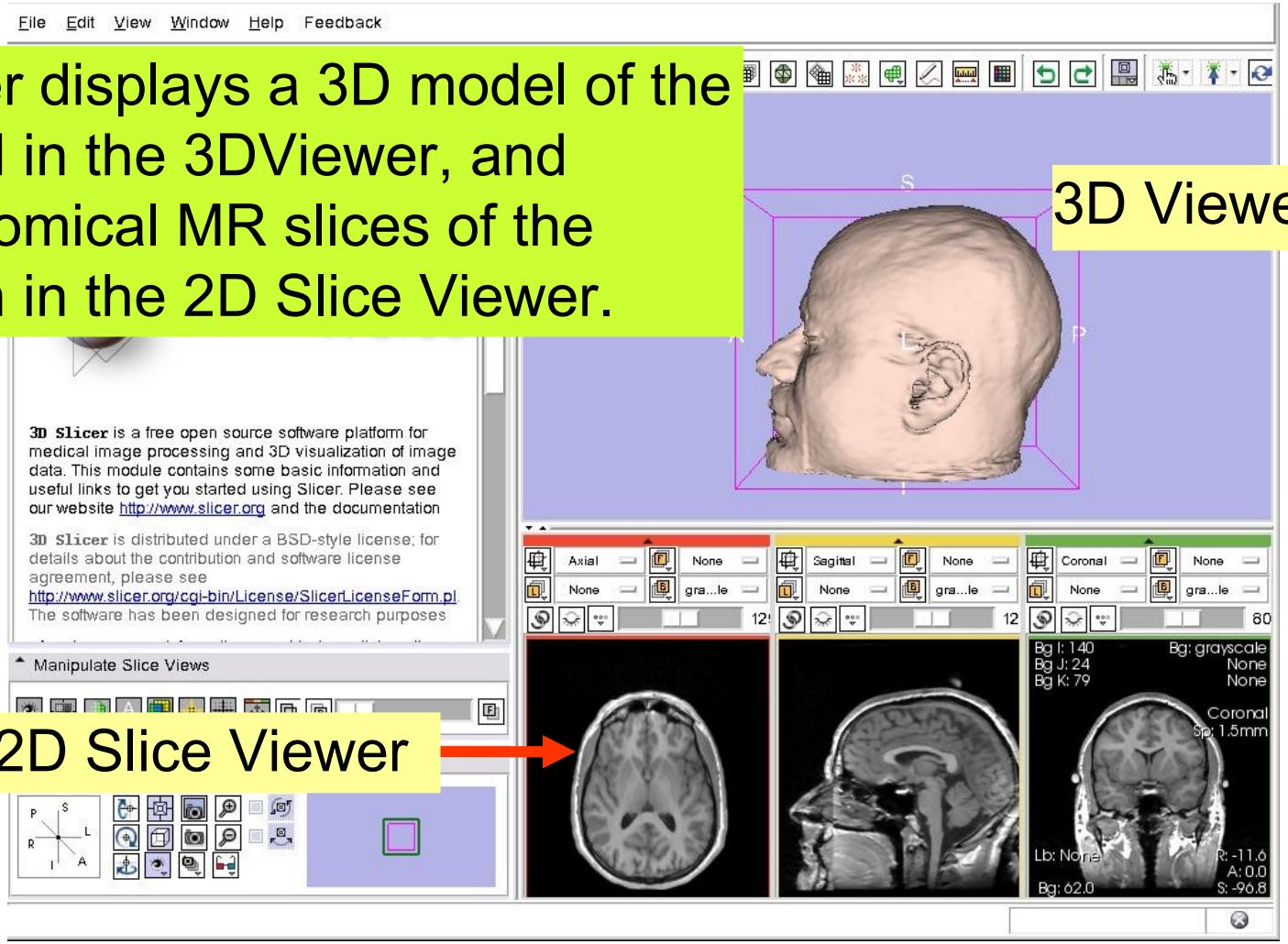


Browse to the location of the Slicer3MinuteDataset directory and select the scene file slicer3minute.mrml

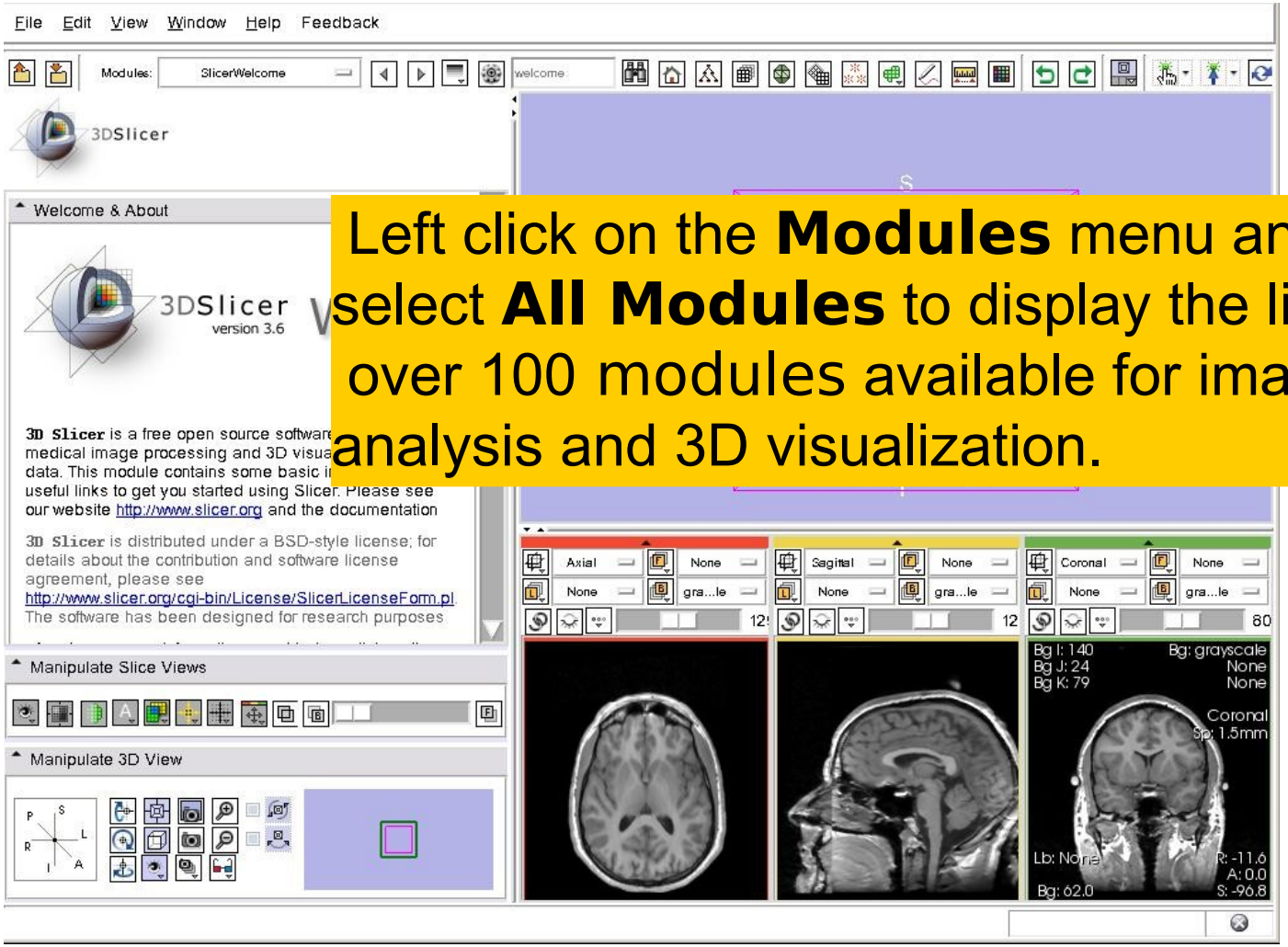
Click on Open to load the scene

Loading a 3D Scene

Slicer displays a 3D model of the head in the 3DViewer, and anatomical MR slices of the brain in the 2D Slice Viewer.

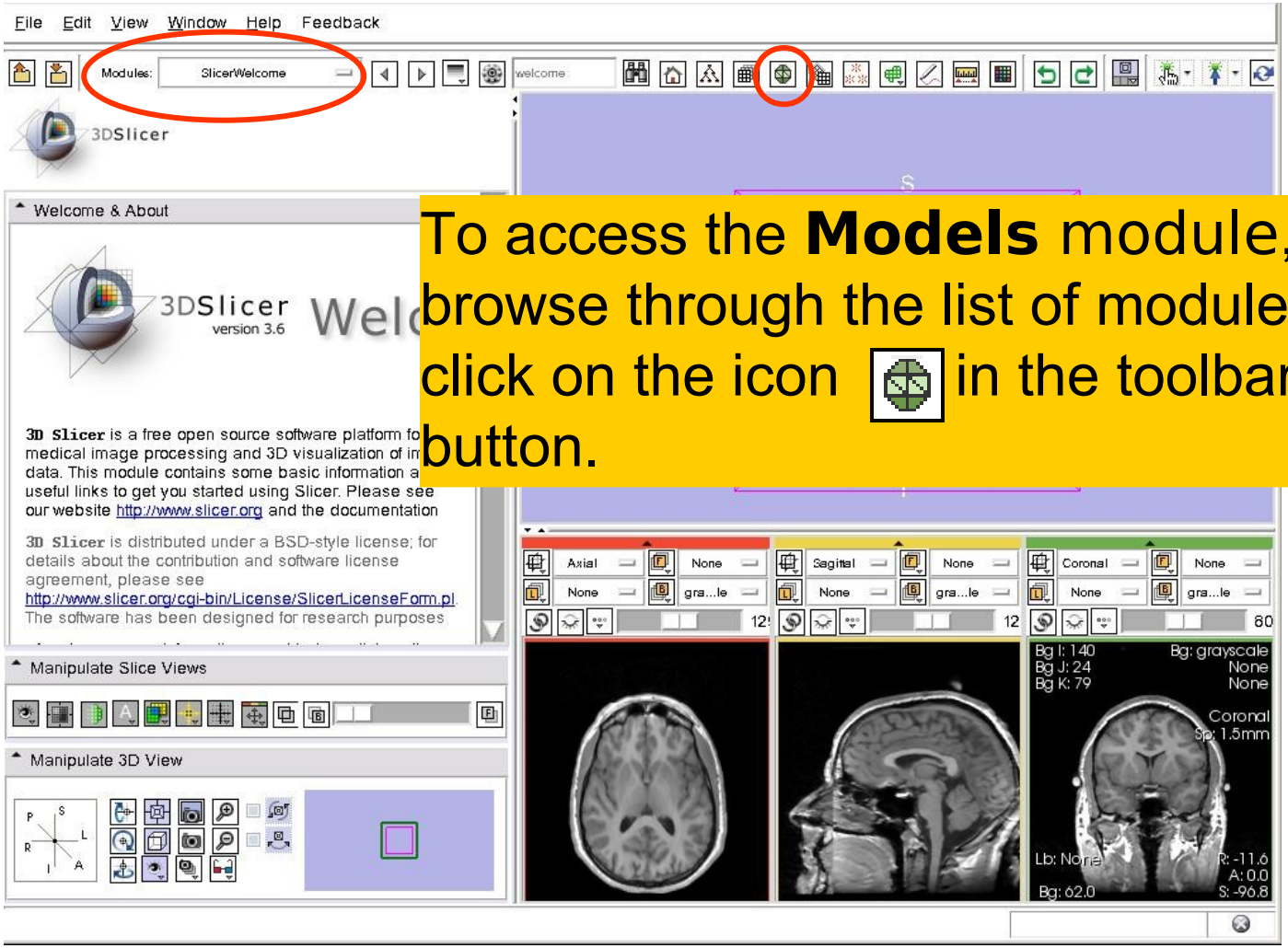


Loading a 3D Scene

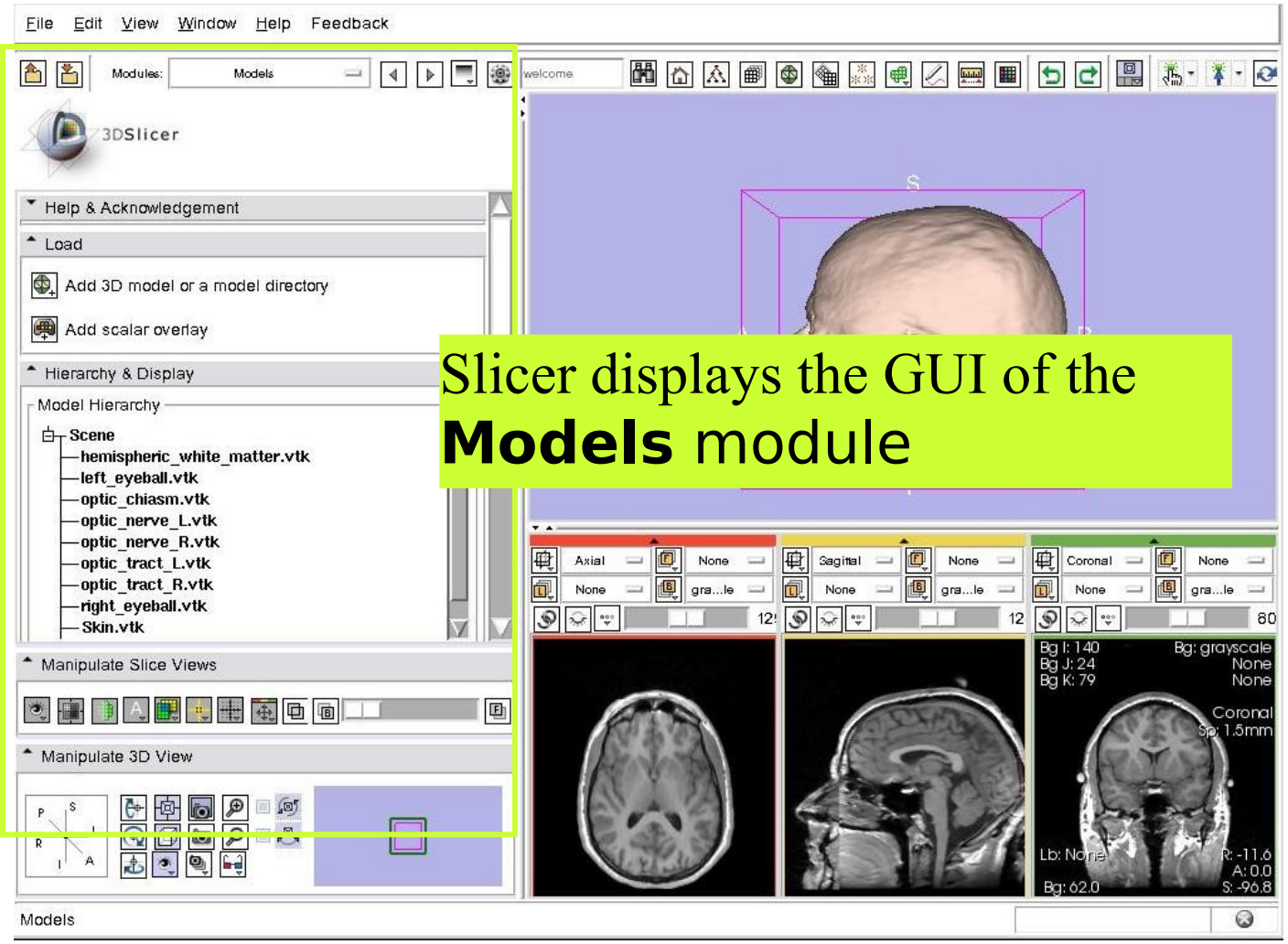


Left click on the **Modules** menu and select **All Modules** to display the list of over 100 modules available for image analysis and 3D visualization.

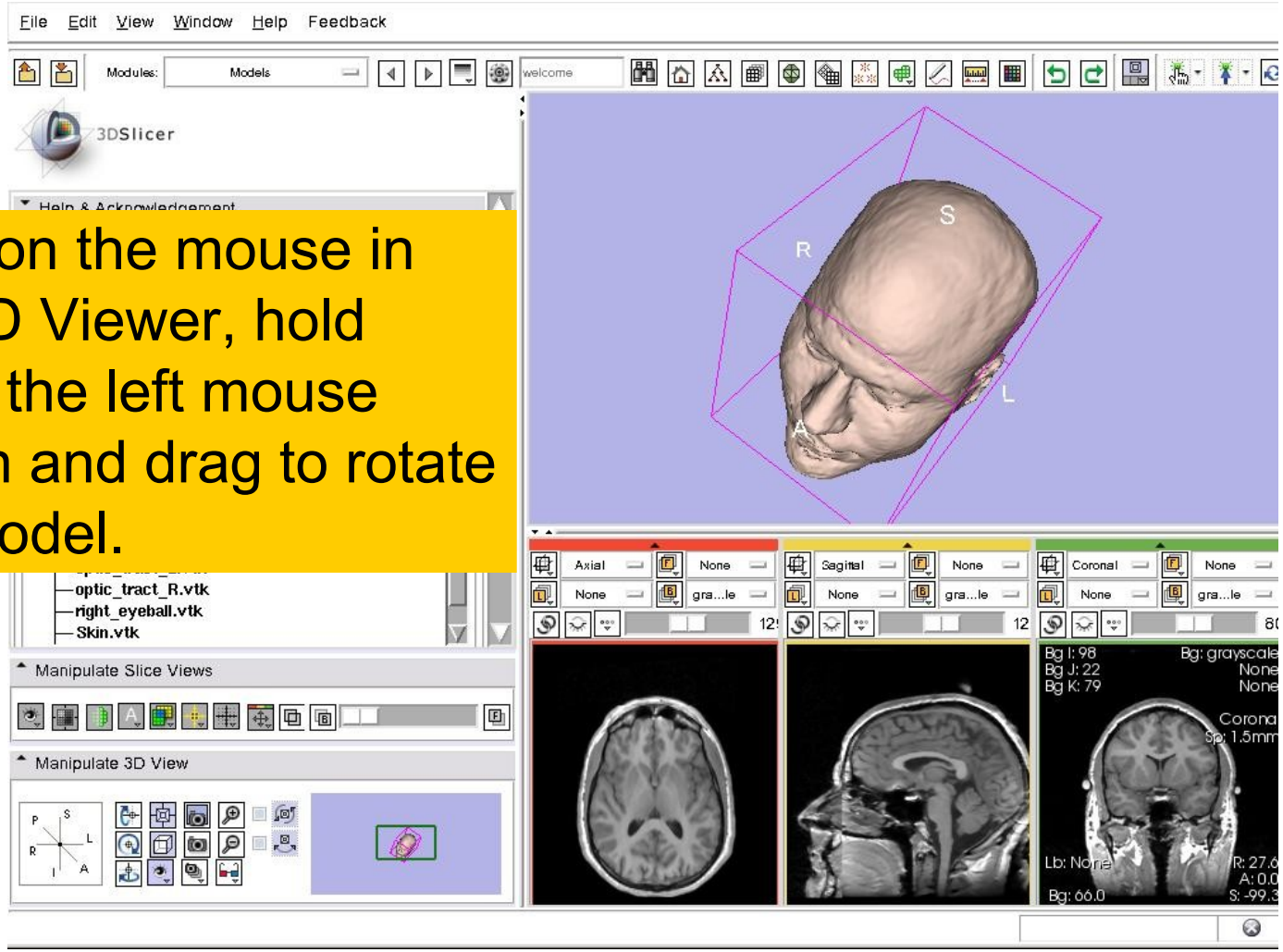
Loading a 3D Scene



Loading a 3D Scene

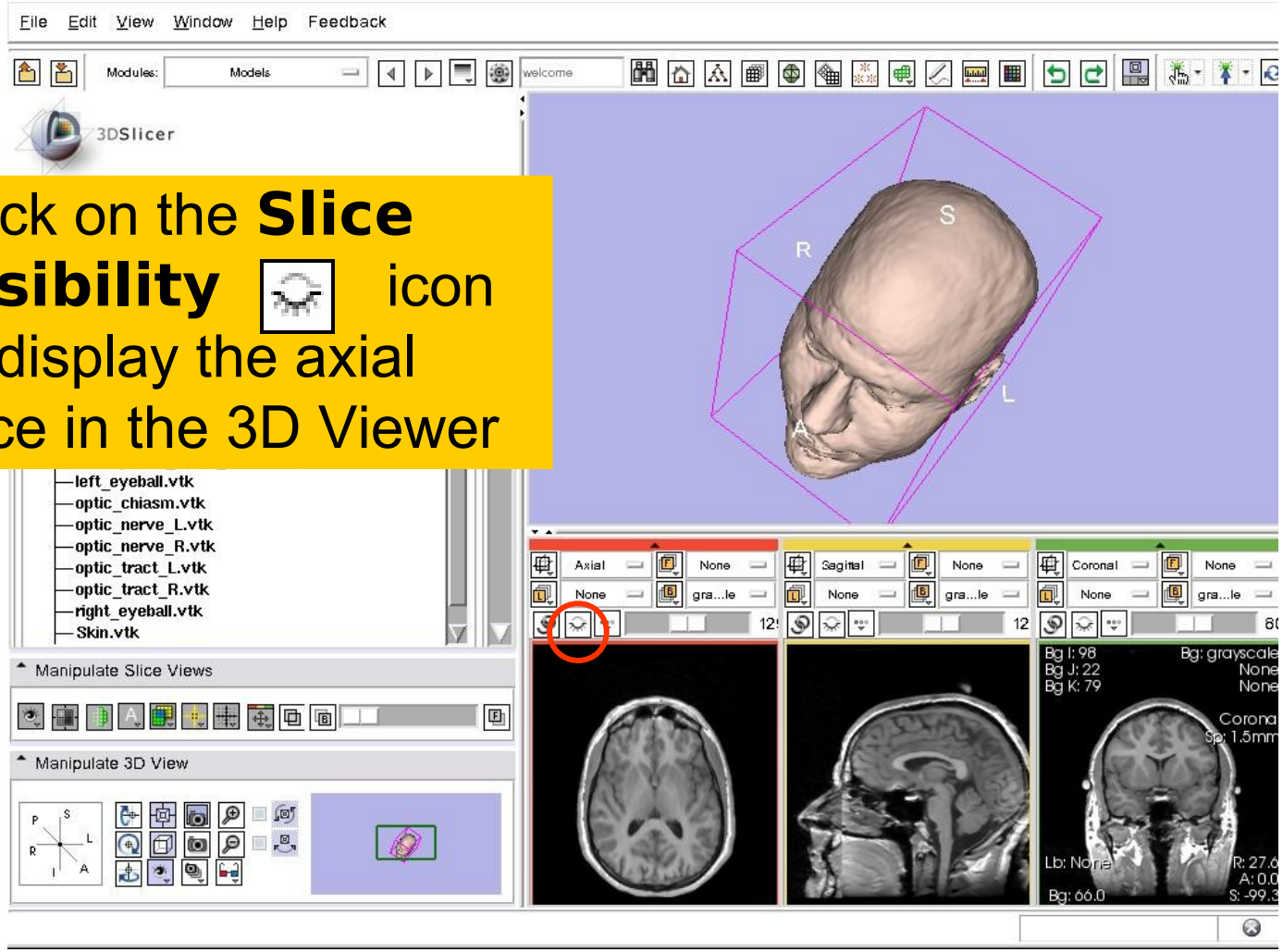


3D Visualization



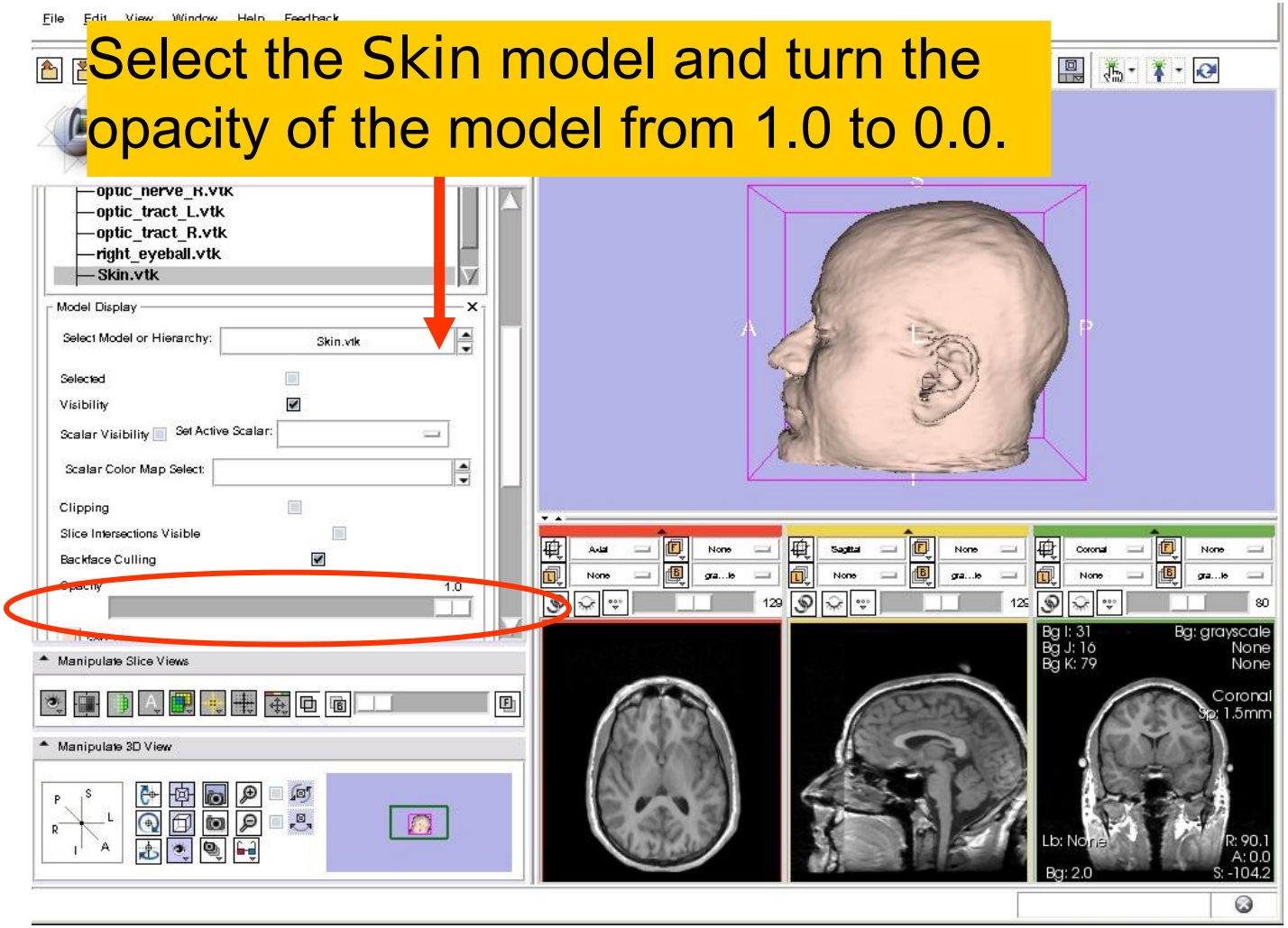
Position the mouse in the 3D Viewer, hold down the left mouse button and drag to rotate the model.

3D Visualization



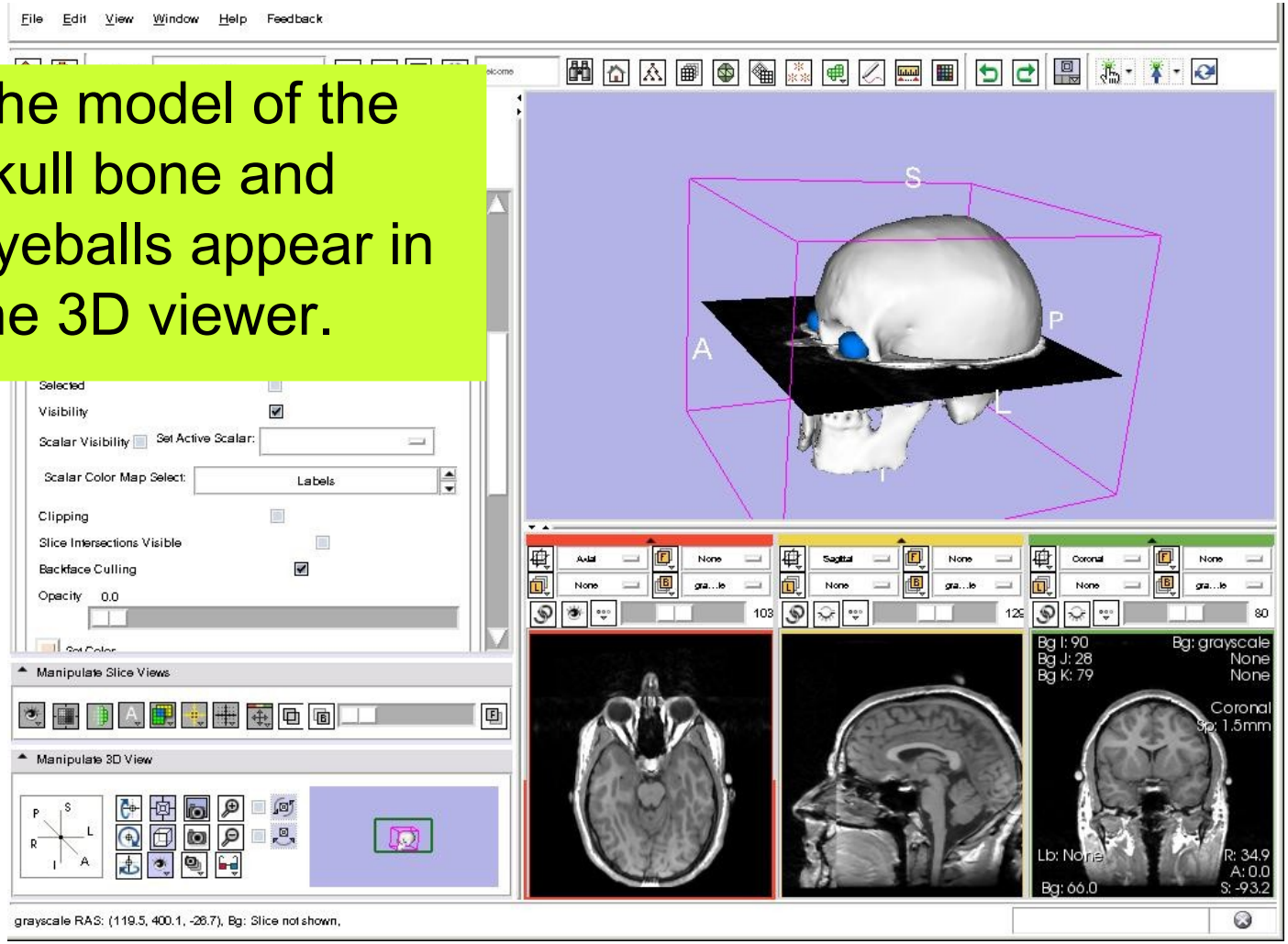
Click on the **Slice Visibility** icon to display the axial slice in the 3D Viewer

3D Visualization

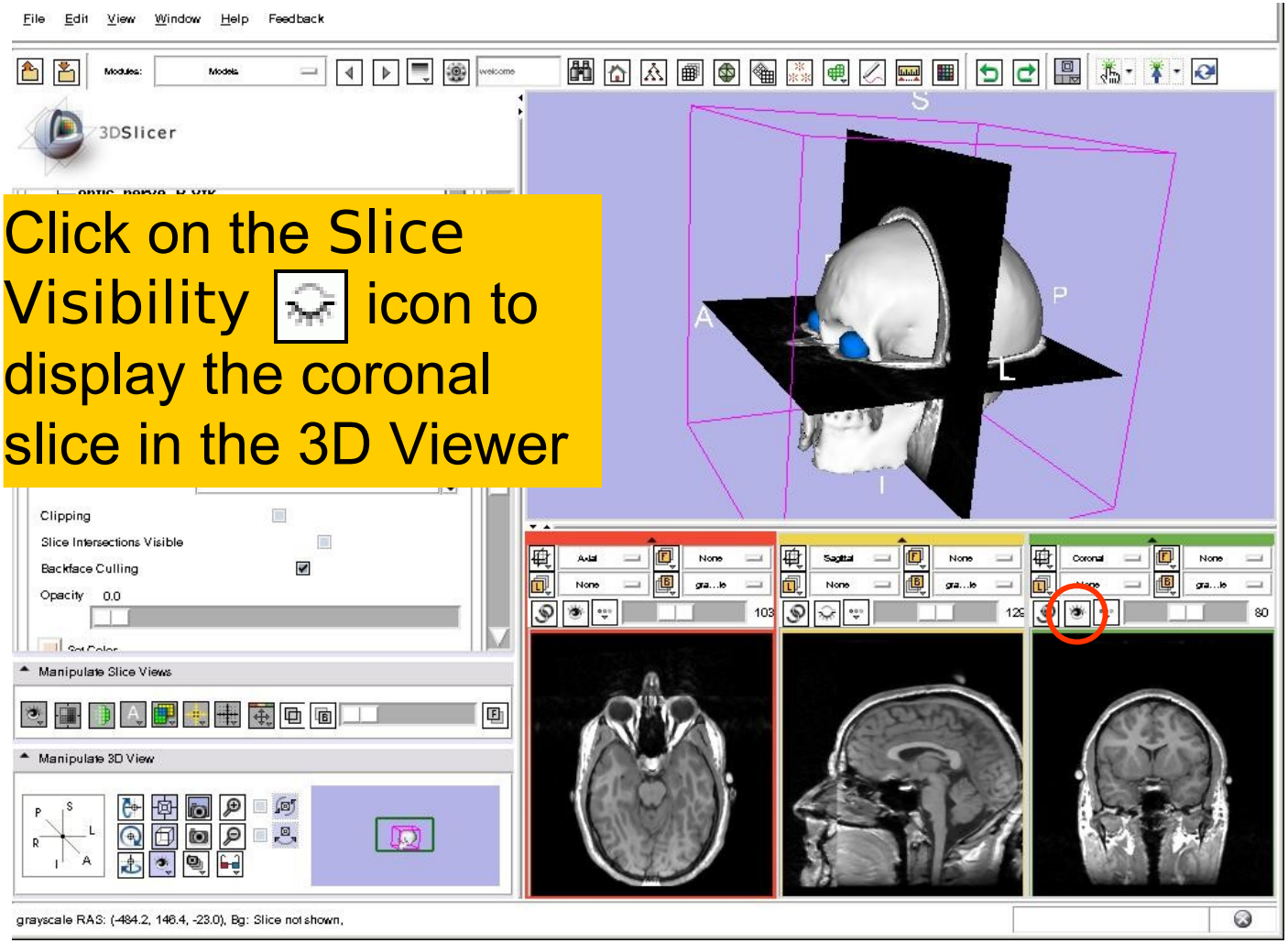


3D Visualization

The model of the skull bone and eyeballs appear in the 3D viewer.

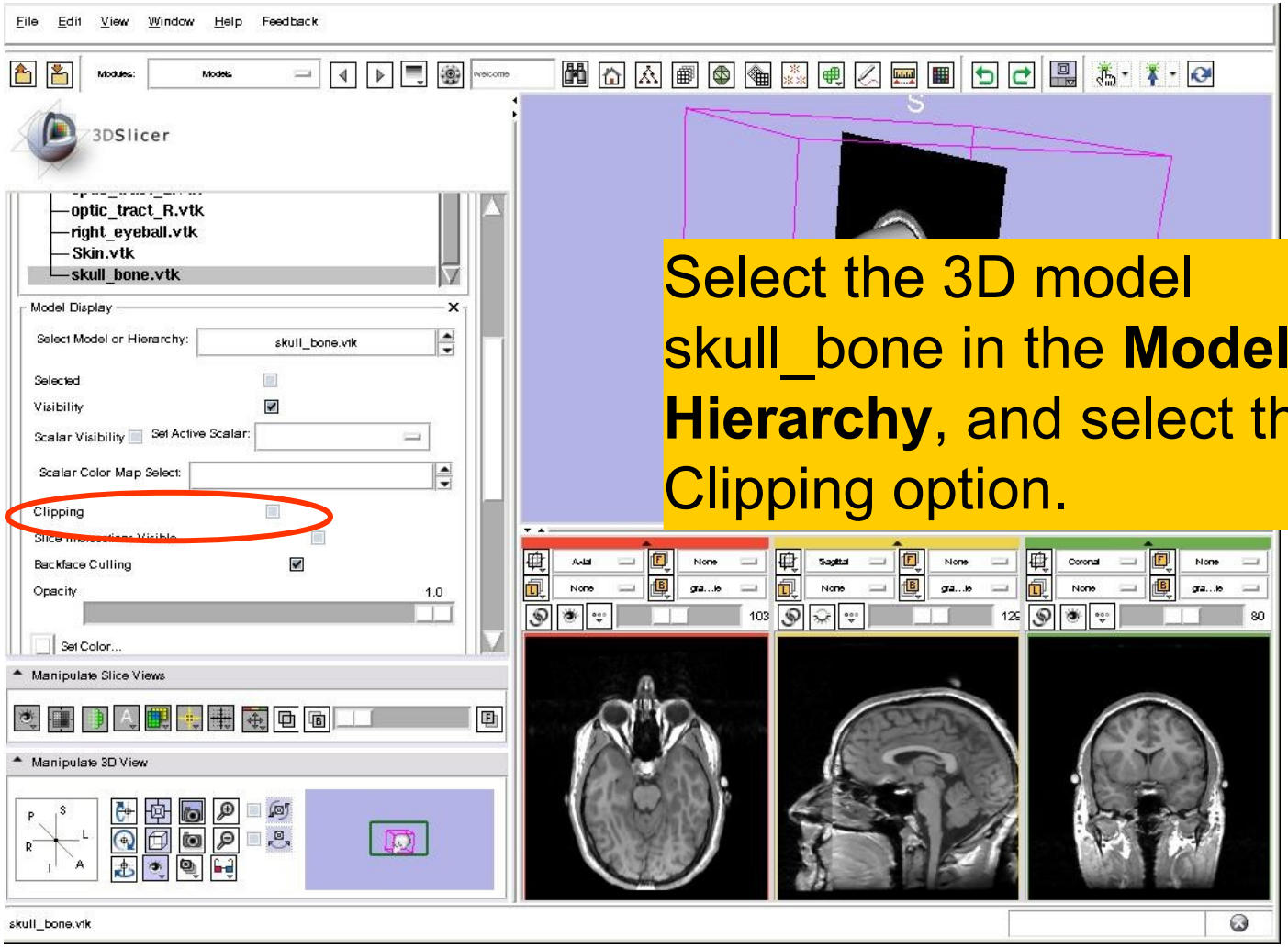


3D Visualization



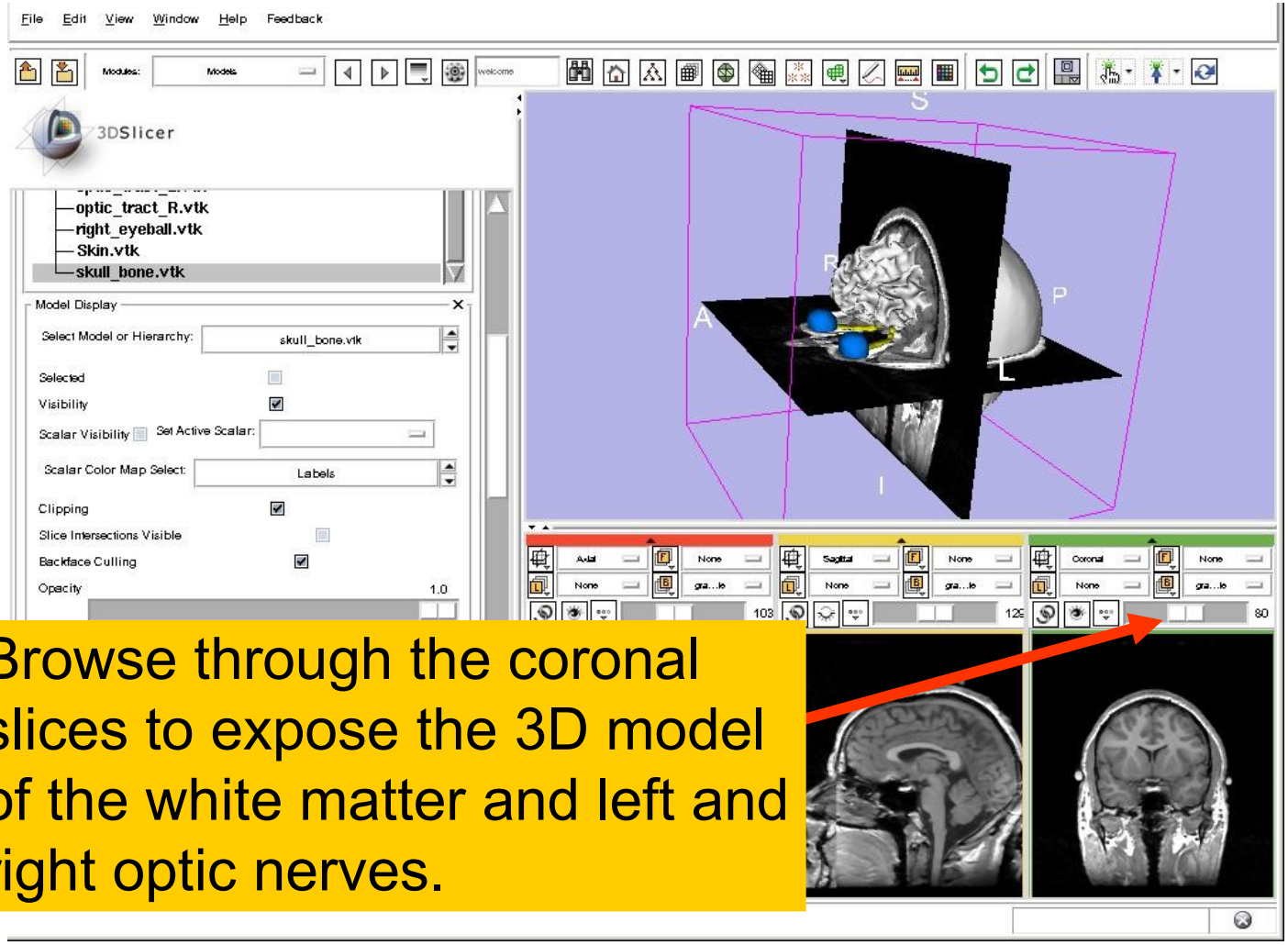
Click on the Slice Visibility icon to display the coronal slice in the 3D Viewer

3D Visualization



Select the 3D model skull_bone in the **Model Hierarchy**, and select the Clipping option.

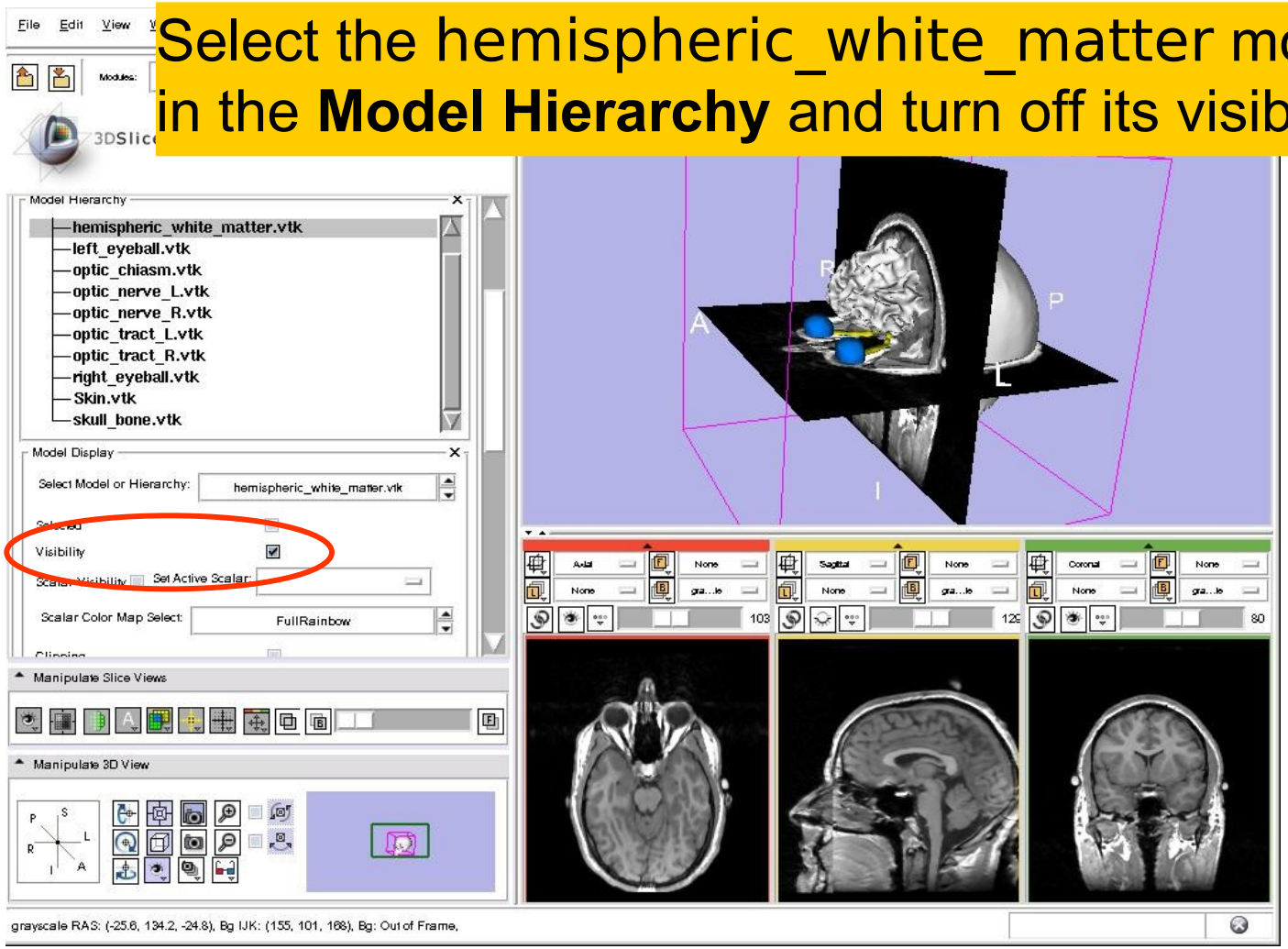
3D Visualization



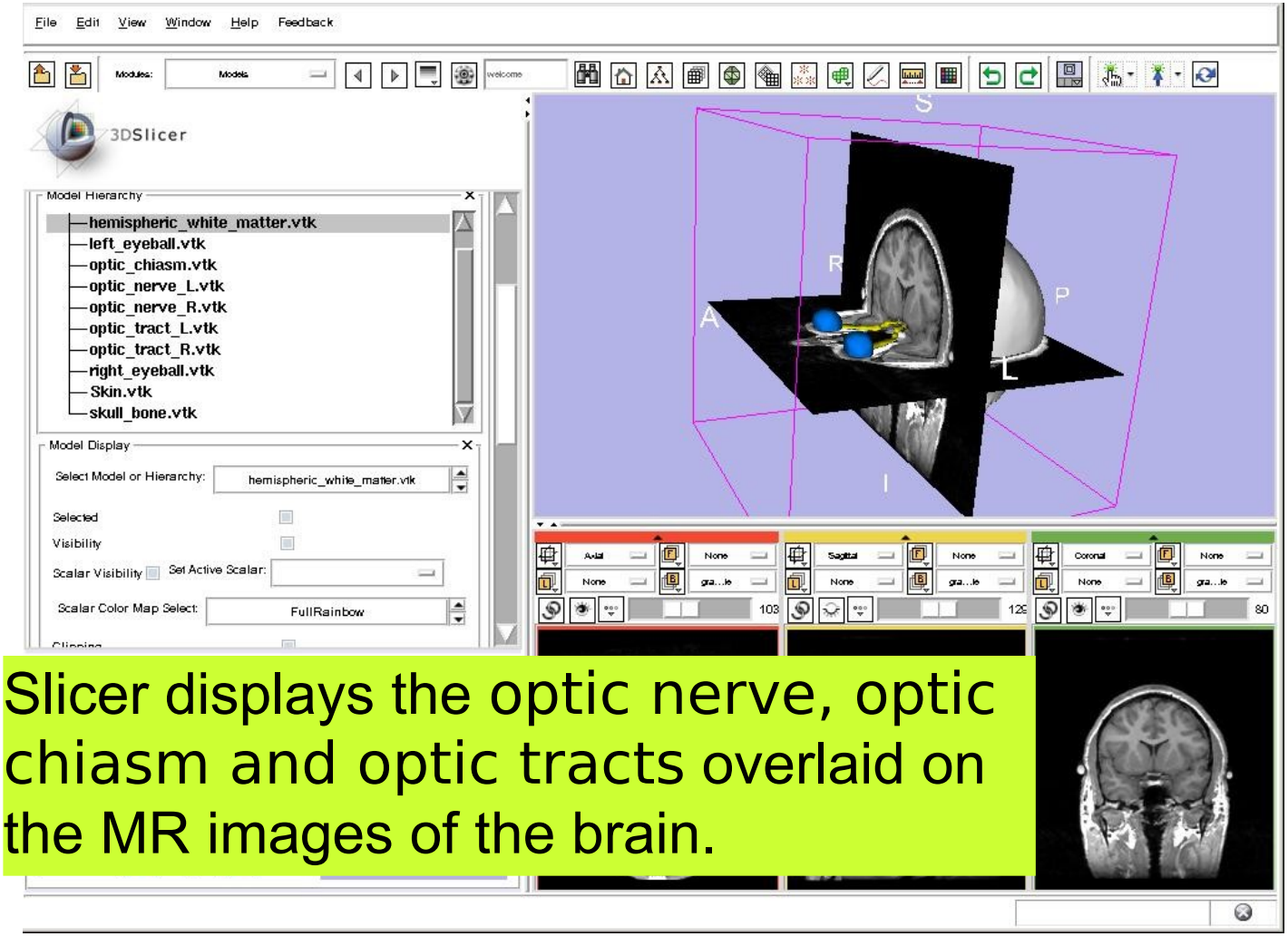
Browse through the coronal slices to expose the 3D model of the white matter and left and right optic nerves.

3D Visualization

Select the hemispheric_white_matter model in the **Model Hierarchy** and turn off its visibility.

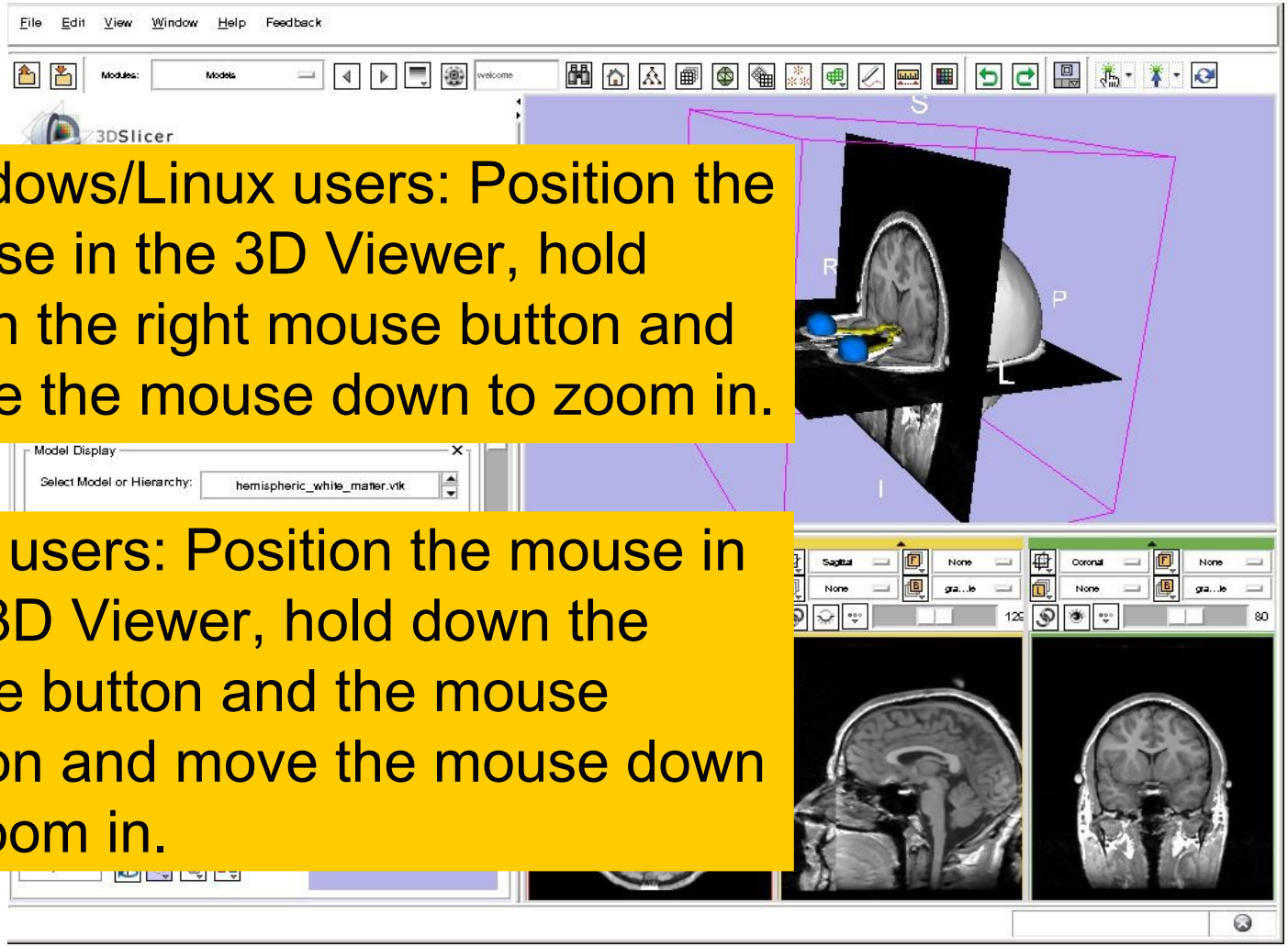


3D Visualization



Slicer displays the optic nerve, optic chiasm and optic tracts overlaid on the MR images of the brain.

3D Visualization

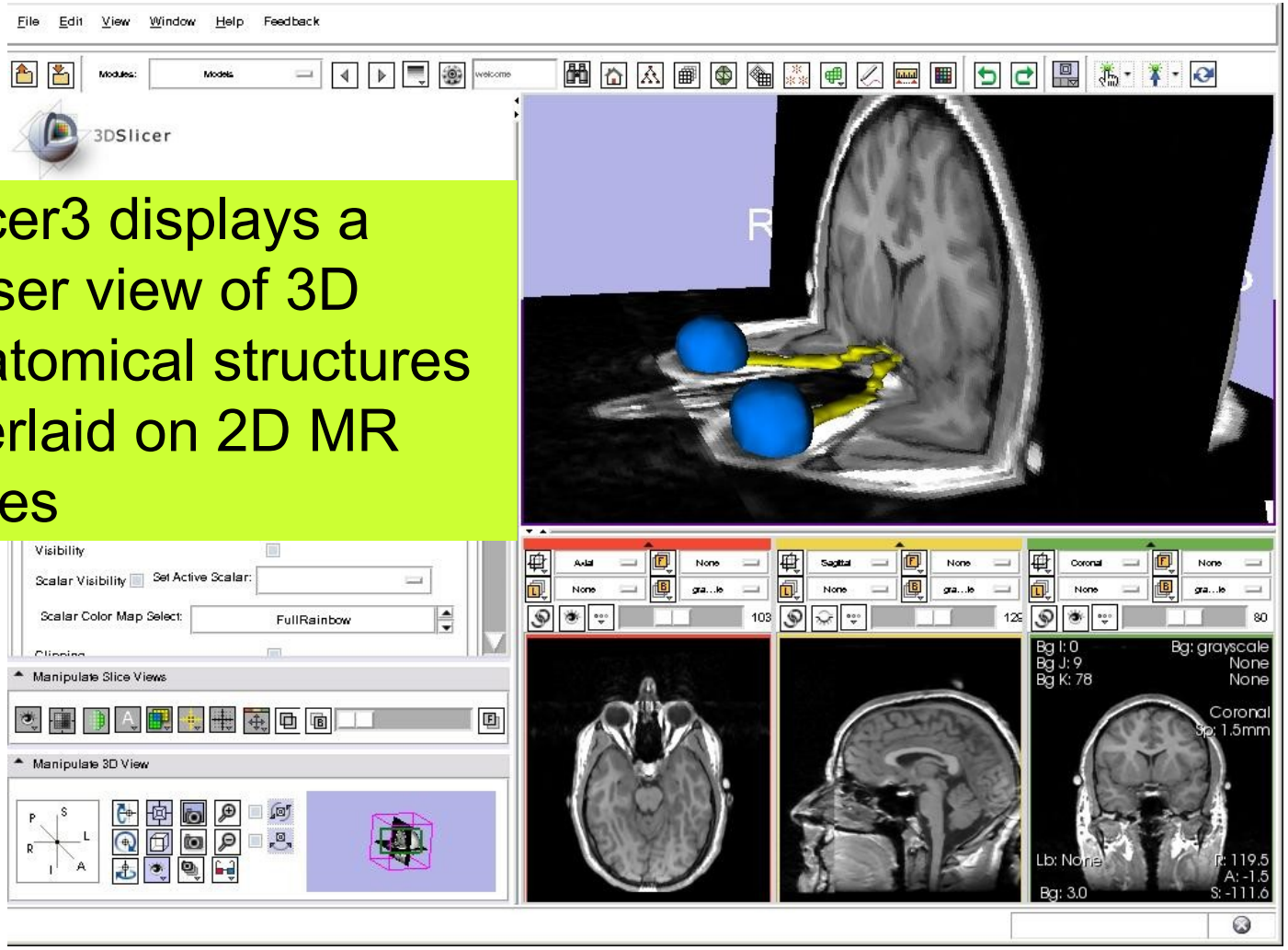


Windows/Linux users: Position the mouse in the 3D Viewer, hold down the right mouse button and move the mouse down to zoom in.

Mac users: Position the mouse in the 3D Viewer, hold down the apple button and the mouse button and move the mouse down to zoom in.

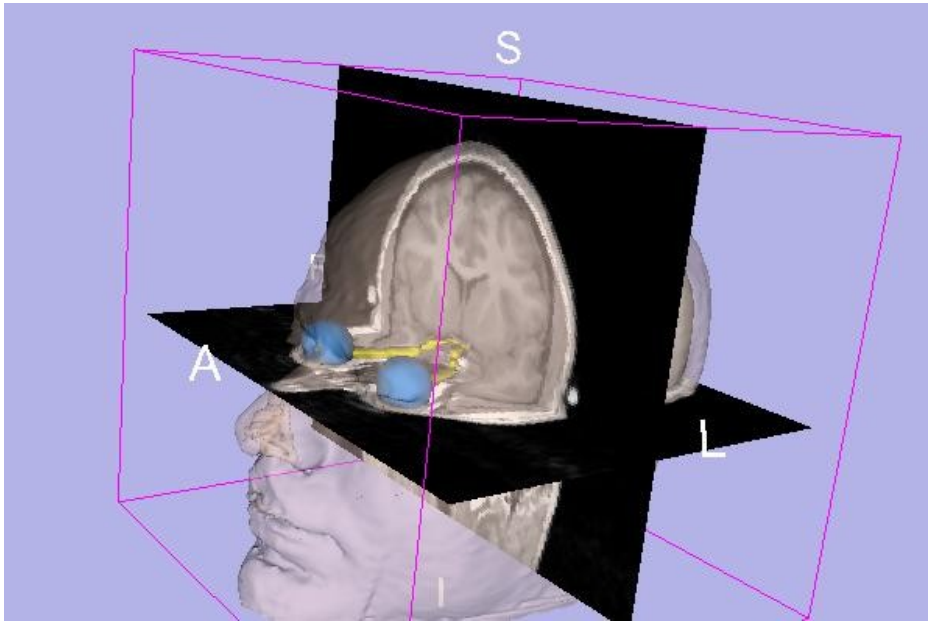
3D Visualization

Slicer3 displays a closer view of 3D anatomical structures overlaid on 2D MR slices



Slicer3 Minute Tutorial

- Slicer3 is an open-source software for image analysis and 3D visualization
- Slicer3 core functionalities, 95 available modules and built-in libraries represent more than 2.8 million lines of code
- Slicer3 is a multi-institution effort to share the latest advances in image analysis with the scientific and clinical community.



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Acknowledgments

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NIH U54EB005149

Neuroimage Analysis Center

NIH P41RR013218