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# Slicer3 minute tutorial

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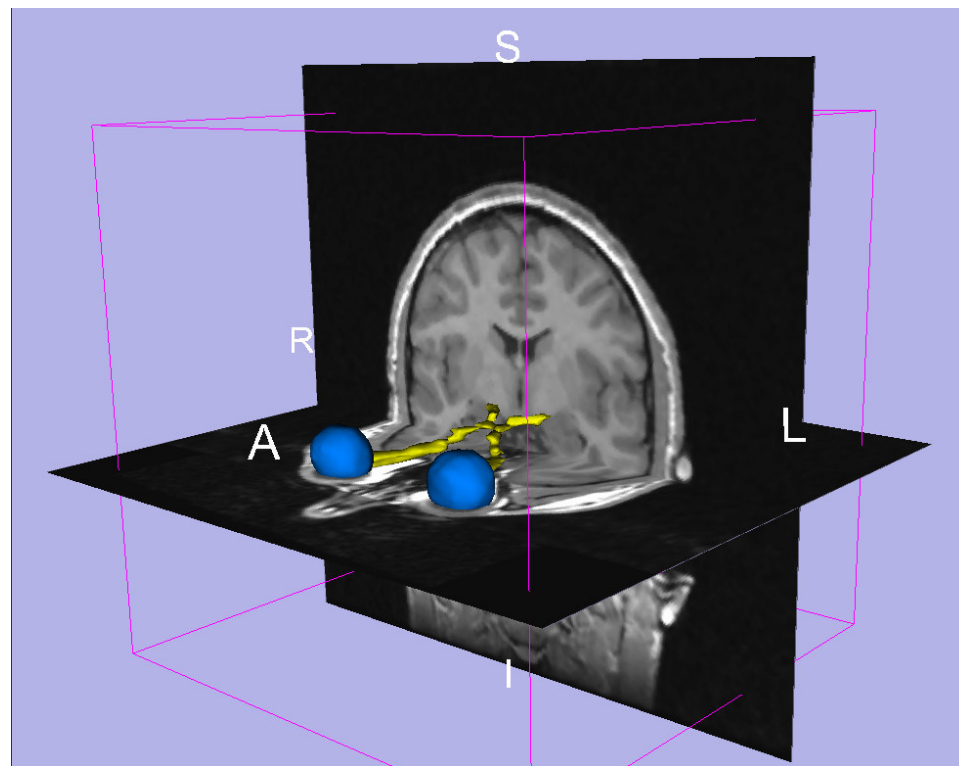
Surgical Planning Laboratory  
Harvard Medical School



# *Slicer3 minute tutorial*

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





# *Download the material*

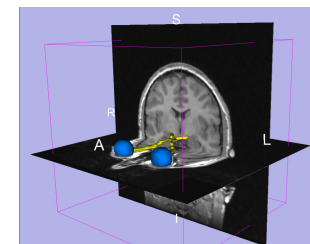
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Slicer3 is a **multi-platform** software running on **Windows**, **Linux**, and **Mac OSX**.

- Download and install the Slicer3.4 software  
<http://www.slicer.org/pages/Special:SlicerDownloads>



- Download the training Dataset: Slicer3minute.zip  
<http://wiki.na-mic.org/Wiki/index.php/Slicer3.4:Training>



## **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.*



# *The Slicer3 software*

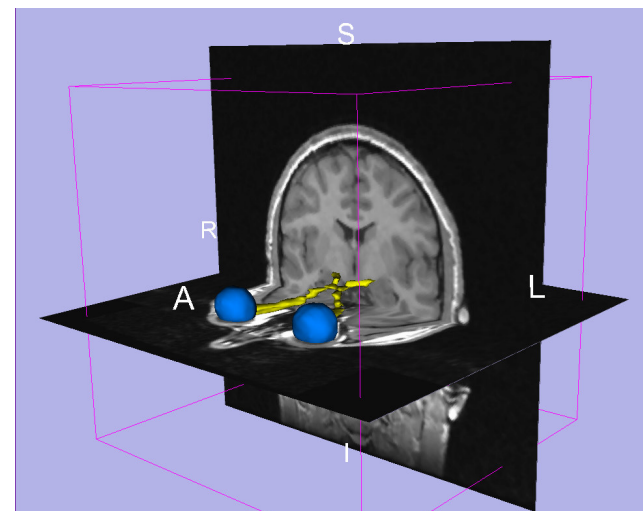
- An end-user application for image analysis
- An open-source environment for software development
- A software platform that is both easy to use for clinical researchers and easy to extend for programmers





# *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 on the Slicer3 101 page.

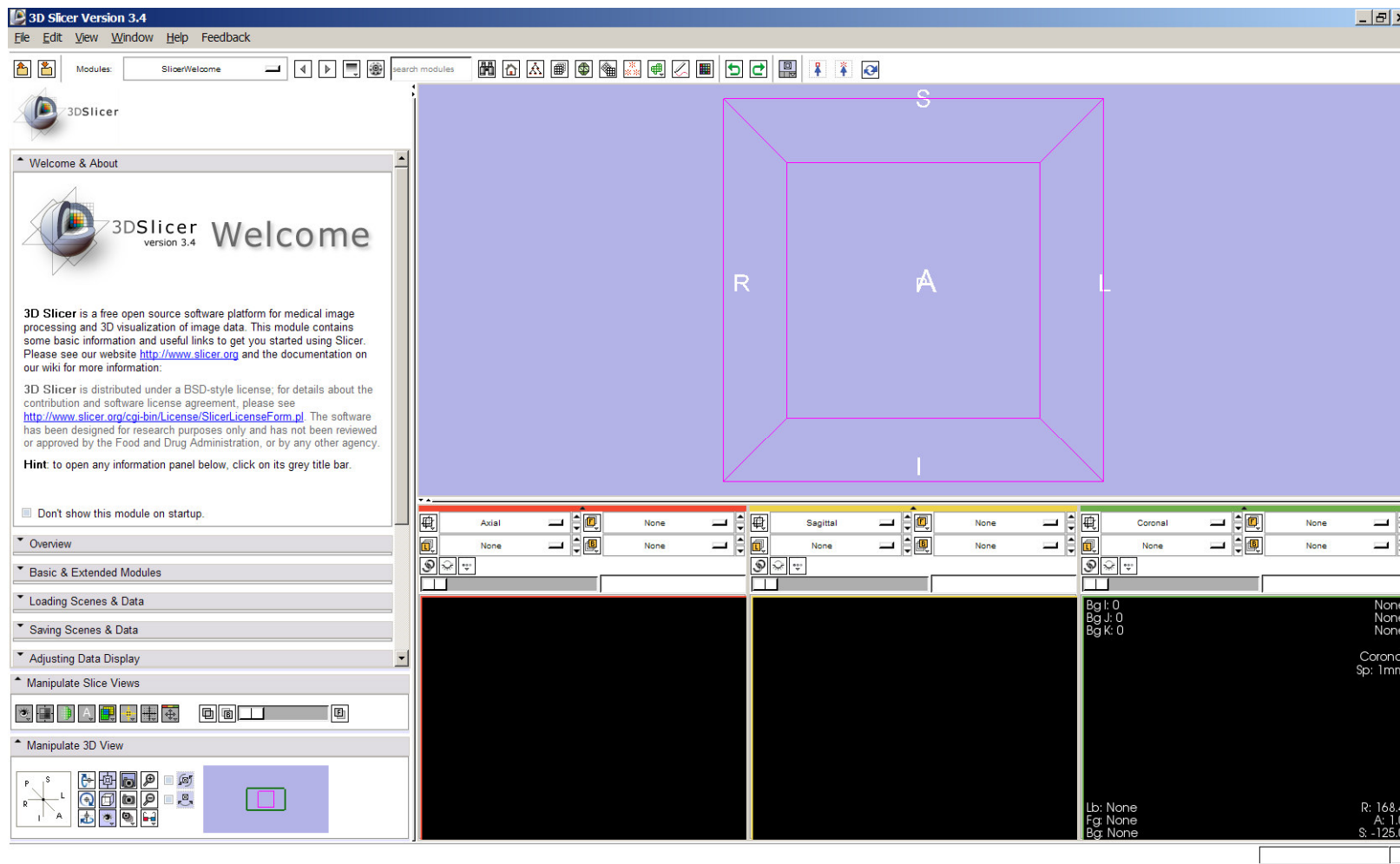


<http://www.na-mic.org/Wiki/index.php/Slicer3.2:Training>  
<http://www.spl.harvard.edu/publications/item/view/1265>



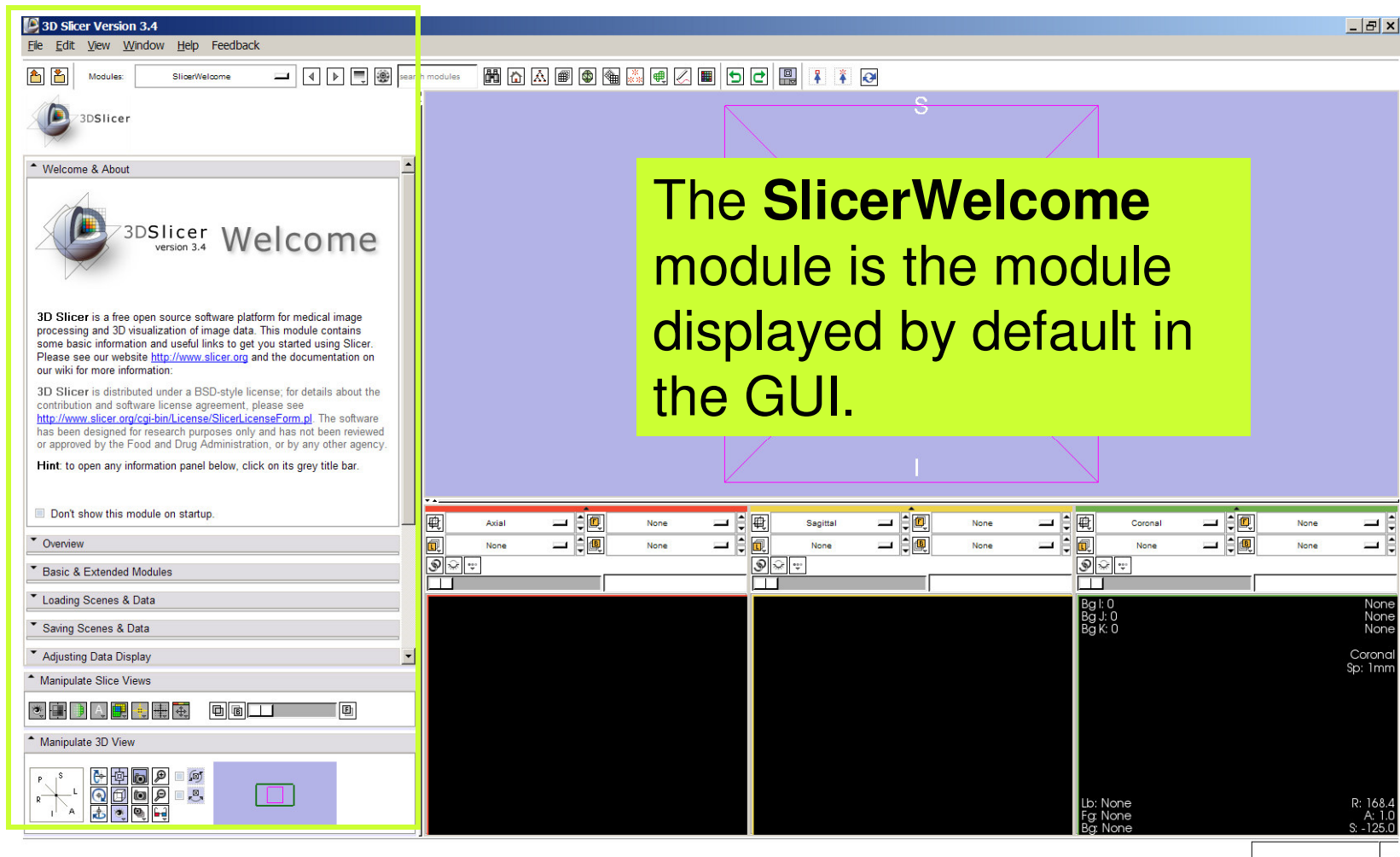
# Start Slicer3

Launch the Slicer3 executable located in the Slicer3.4 directory





# Slicer Welcome



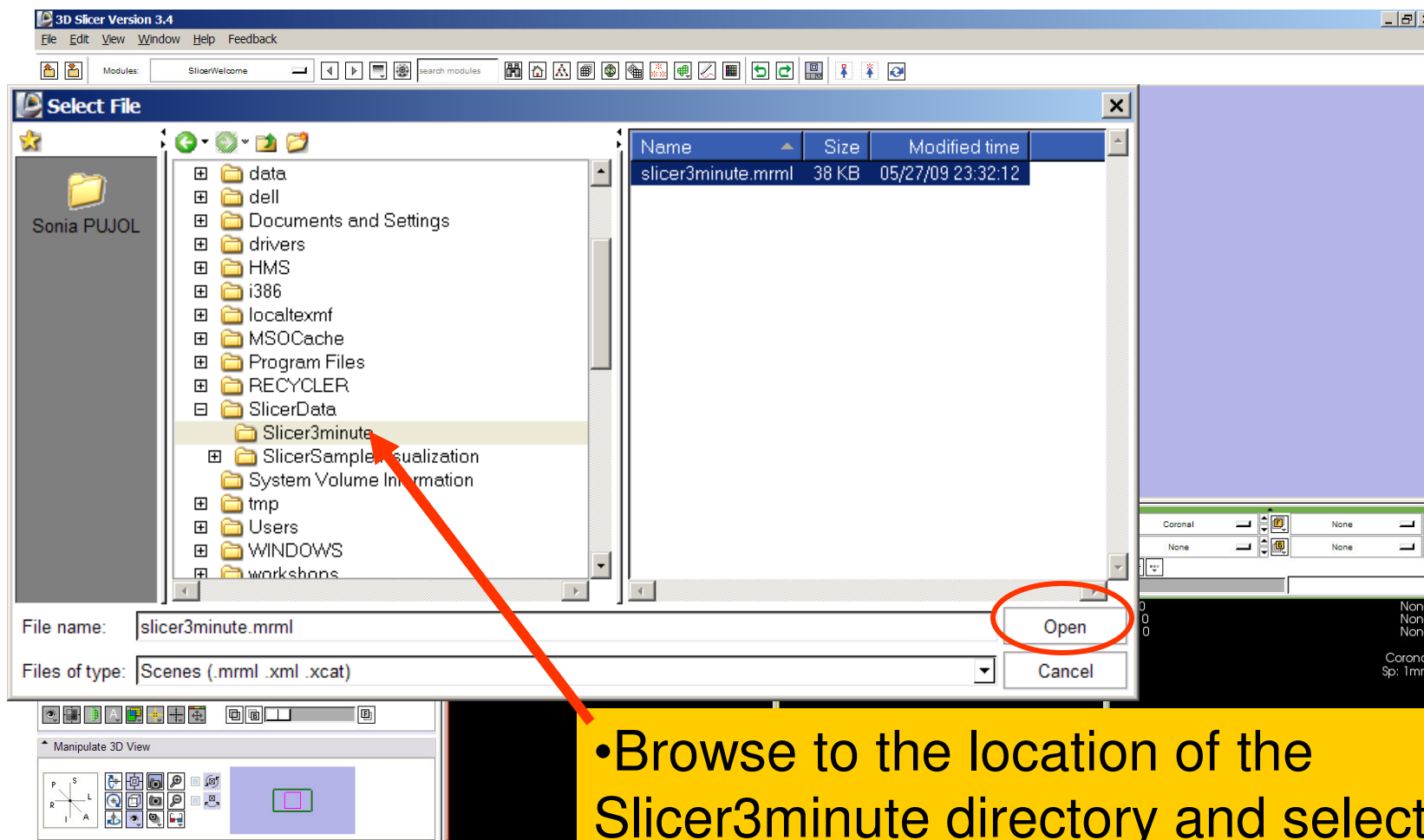


# Loading a 3D Scene

The screenshot shows the 3DSlicer Version 3.4 interface. The 'File' menu in the top-left corner is circled in red. A red arrow points from a yellow callout box to the 'File' menu. The callout box contains the text: **Select File → Load Scene from the File menu**. The main 3D view area is currently empty, showing a purple background with a white wireframe box. The interface includes a menu bar (File, Edit, View, Window, Help, Feedback), a toolbar, and several panels: 'Welcome & About' on the left, 'Overview' below it, and three view control panels (Axial, Sagittal, Coronal) at the bottom. The status bar at the bottom right displays parameters for the Coronal slice: Bg I: 0, Bg J: 0, Bg K: 0, Lb: None, Fg: None, Bg: None, R: 168.4, A: 1.0, S: -125.0, Sp: 1mm.



# Loading a 3D Scene

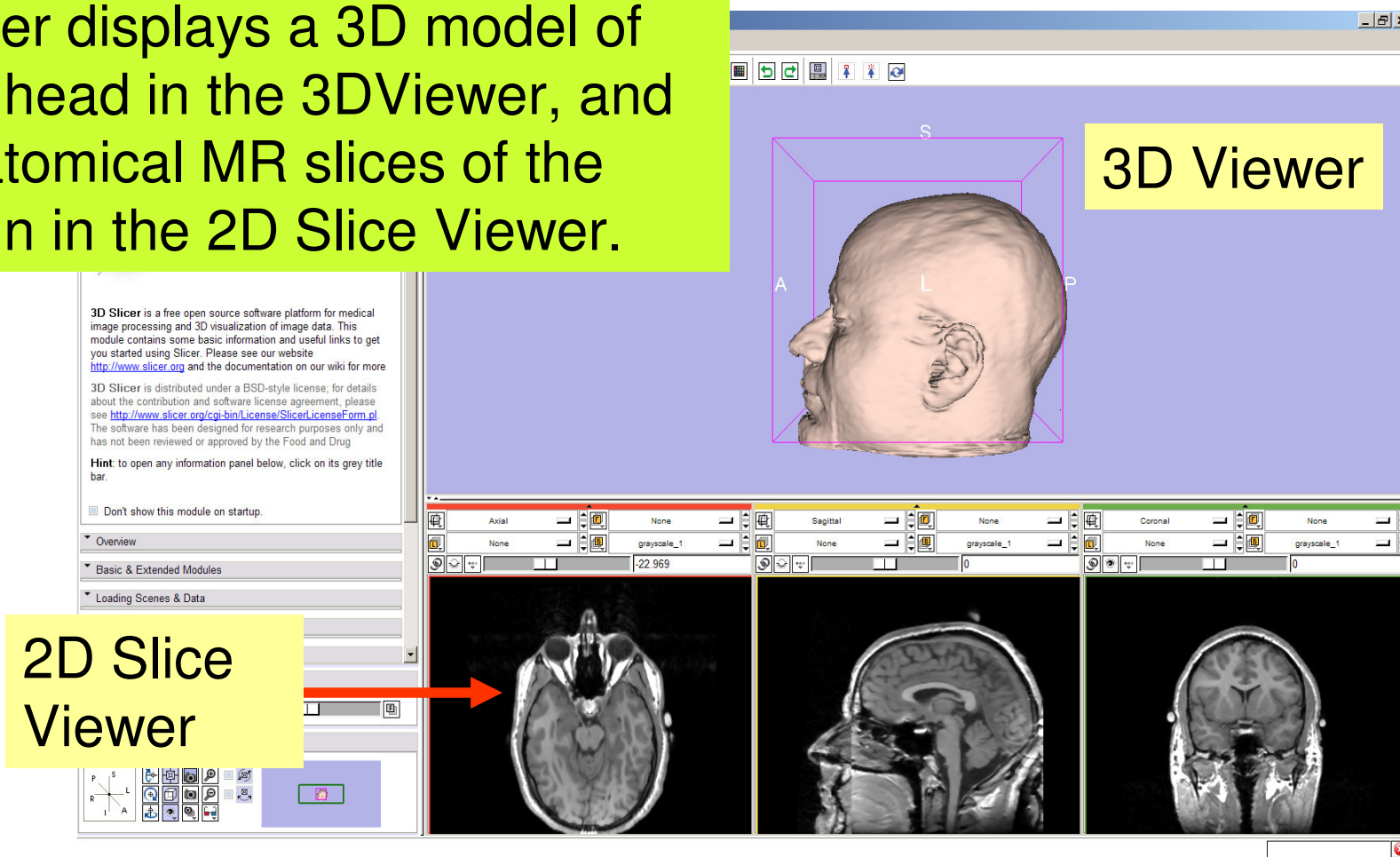


- Browse to the location of the Slicer3minute directory and select the scene file **slicer3minute.mrml**
- Click on **Open** to load the scene

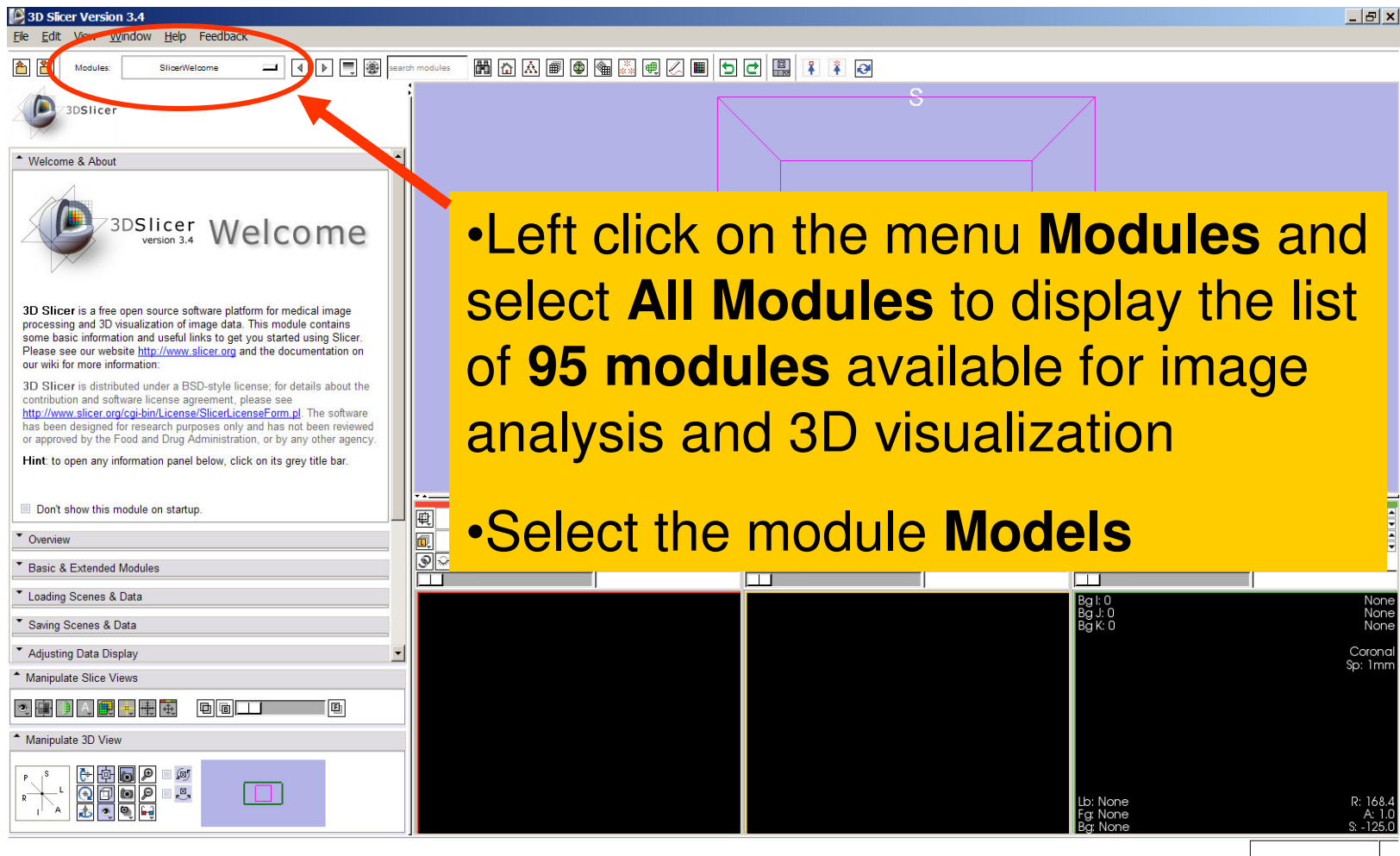


# Loading a 3D Scene

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



# Loading a 3D Scene



3D Slicer Version 3.4

File Edit View Window Help Feedback

Modules: SlicerWelcome

3DSlicer

Welcome & About

3DSlicer version 3.4 Welcome

3D Slicer is a free open source software platform for medical image processing and 3D visualization of image data. This module contains some basic information and useful links to get you started using Slicer. Please see our website <http://www.slicer.org> and the documentation on our wiki for more information:

3D Slicer is distributed under a BSD-style license; for details about the contribution and software license agreement, please see <http://www.slicer.org/cgi-bin/License/SlicerLicenseForm.pl>. The software has been designed for research purposes only and has not been reviewed or approved by the Food and Drug Administration, or by any other agency.

Hint: to open any information panel below, click on its grey title bar.

Don't show this module on startup.

Overview

Basic & Extended Modules

Loading Scenes & Data

Saving Scenes & Data

Adjusting Data Display

Manipulate Slice Views

Manipulate 3D View

Bg I: 0  
Bg J: 0  
Bg K: 0

None  
None  
None

Coronal  
Sp: 1mm

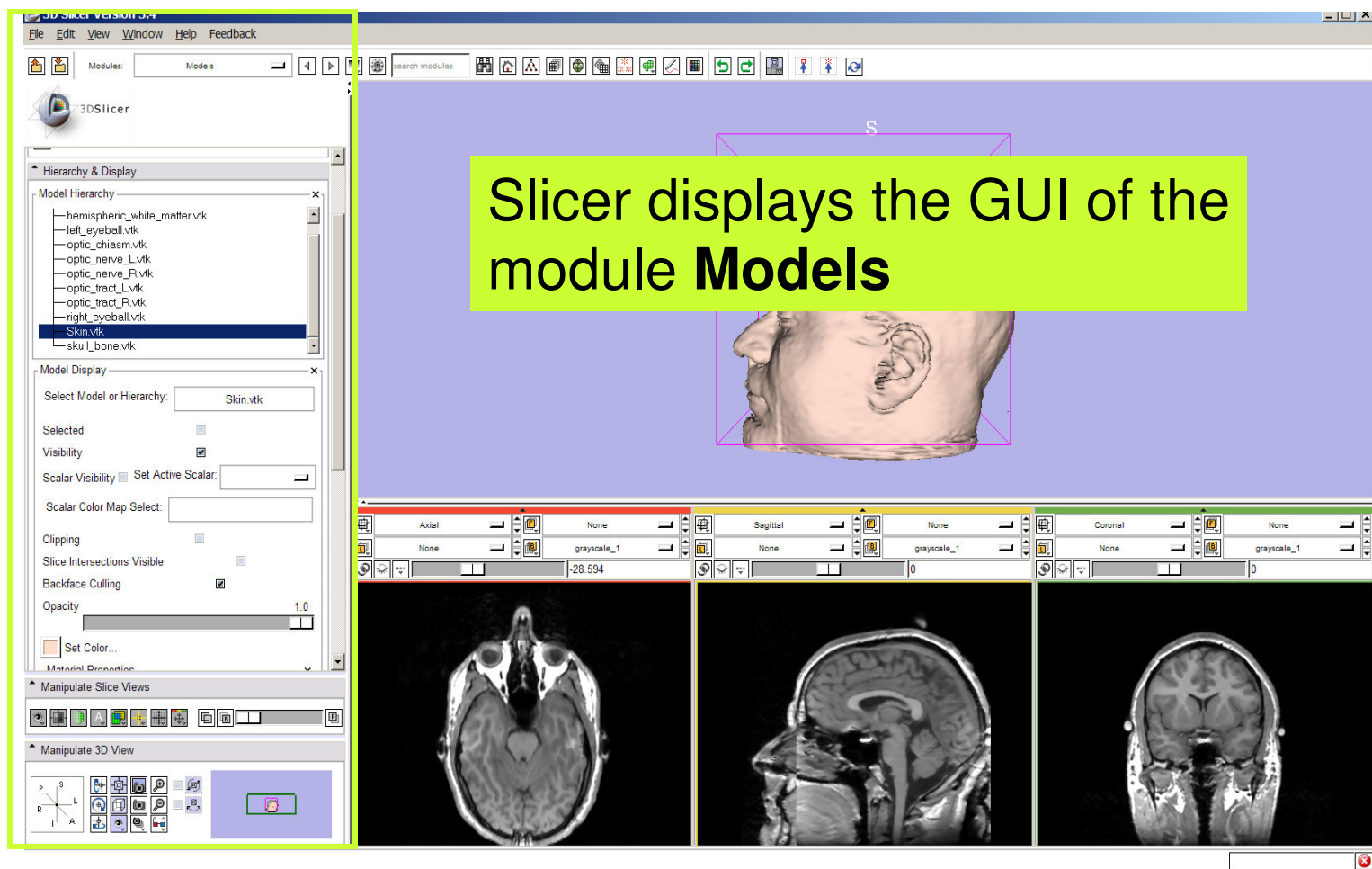
Lb: None  
Fg: None  
Bg: None

R: 168.4  
A: 1.0  
S: -125.0

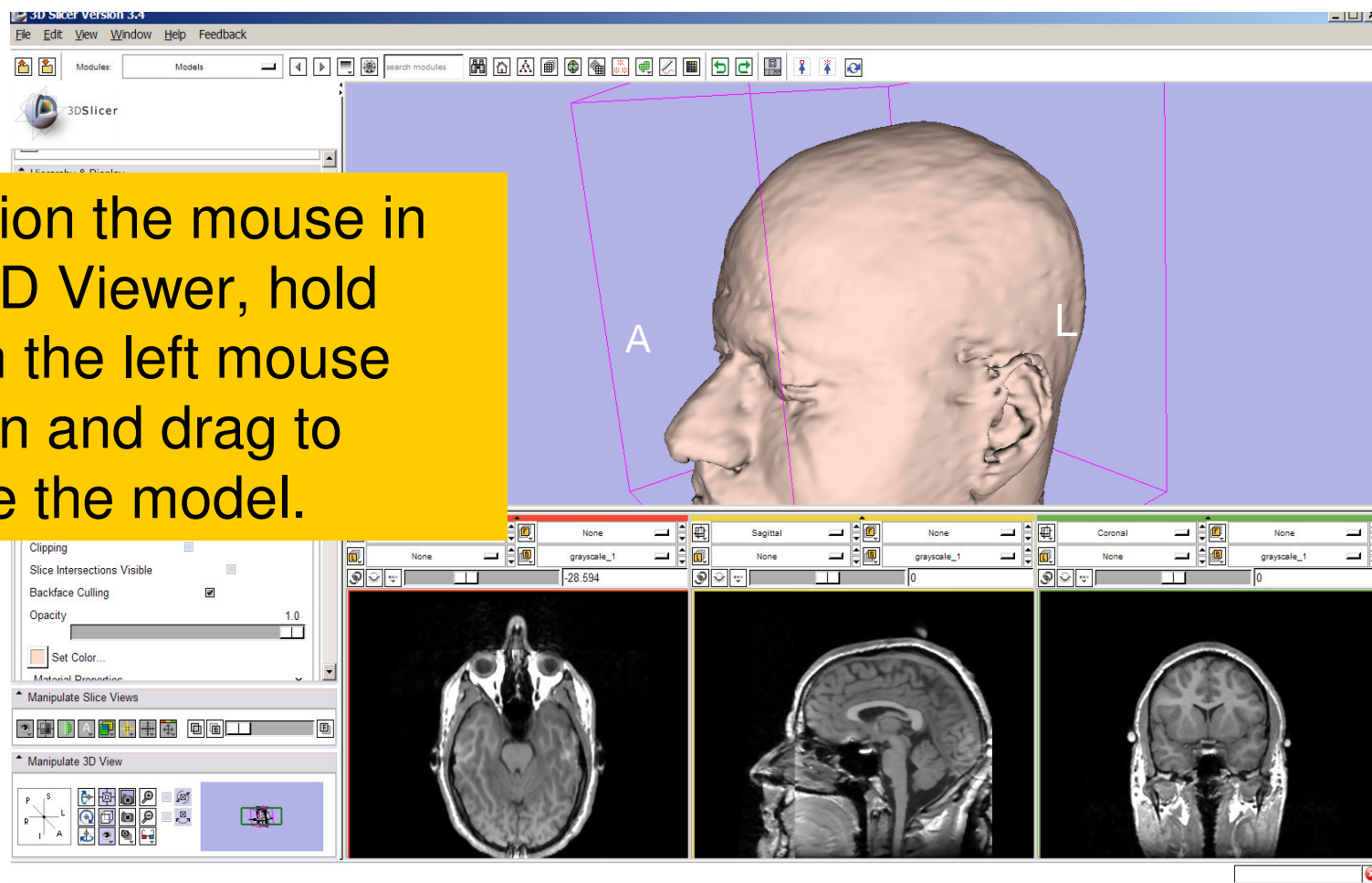
- Left click on the menu **Modules** and select **All Modules** to display the list of **95 modules** available for image analysis and 3D visualization
- Select the module **Models**



# Loading a 3D Scene




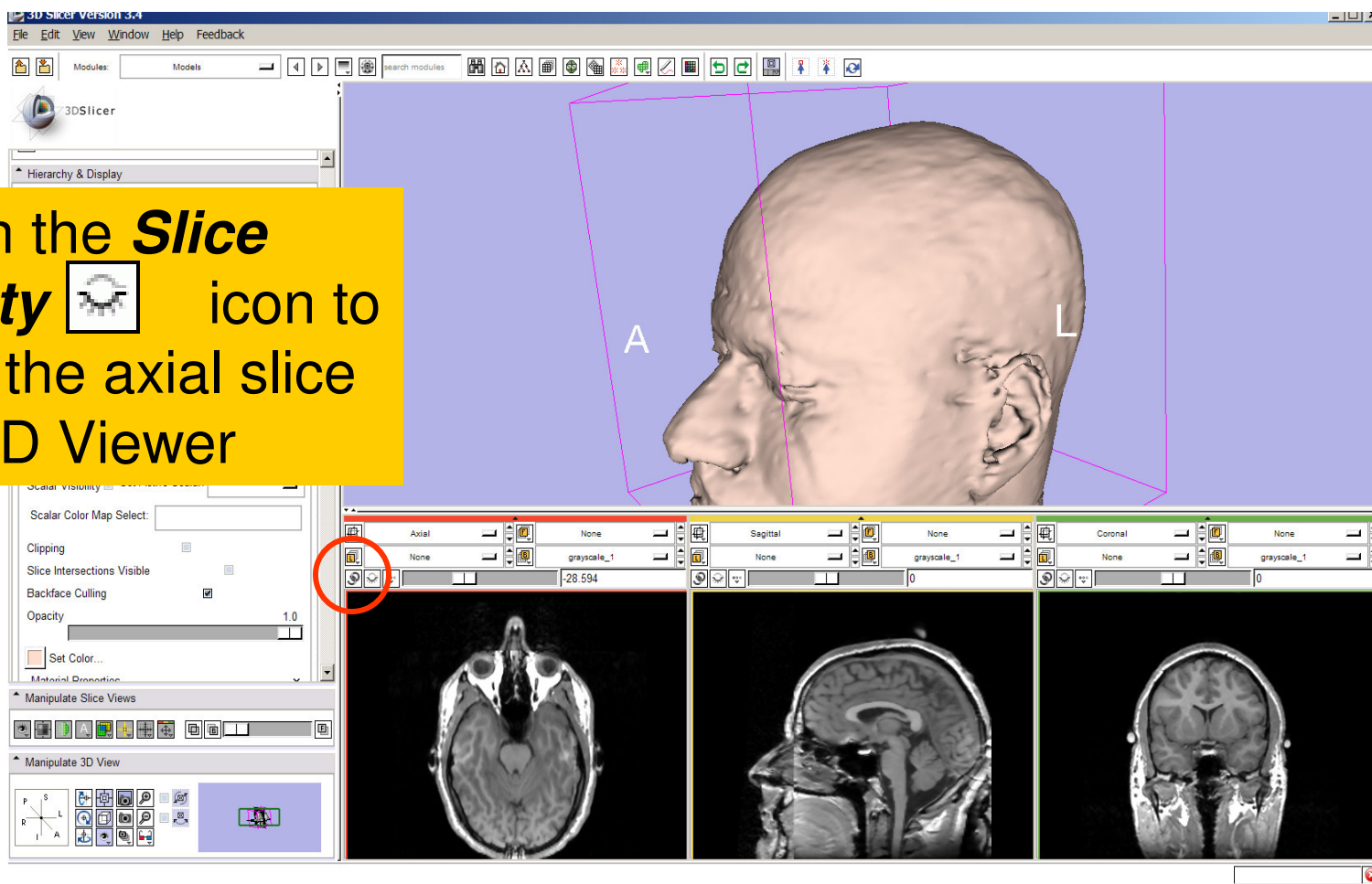
Position the mouse in the 3D Viewer, hold down the left mouse button and drag to rotate the model.

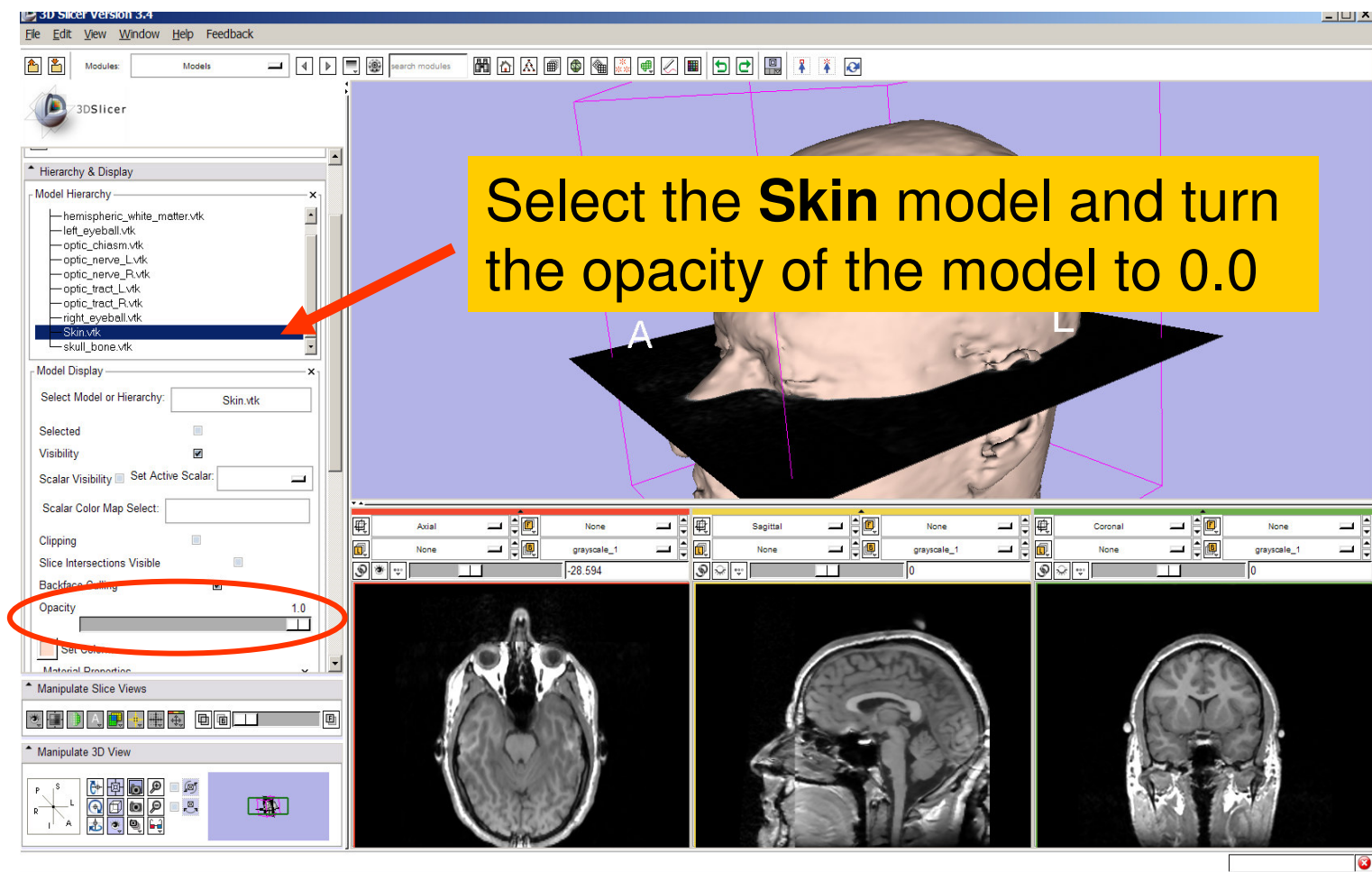




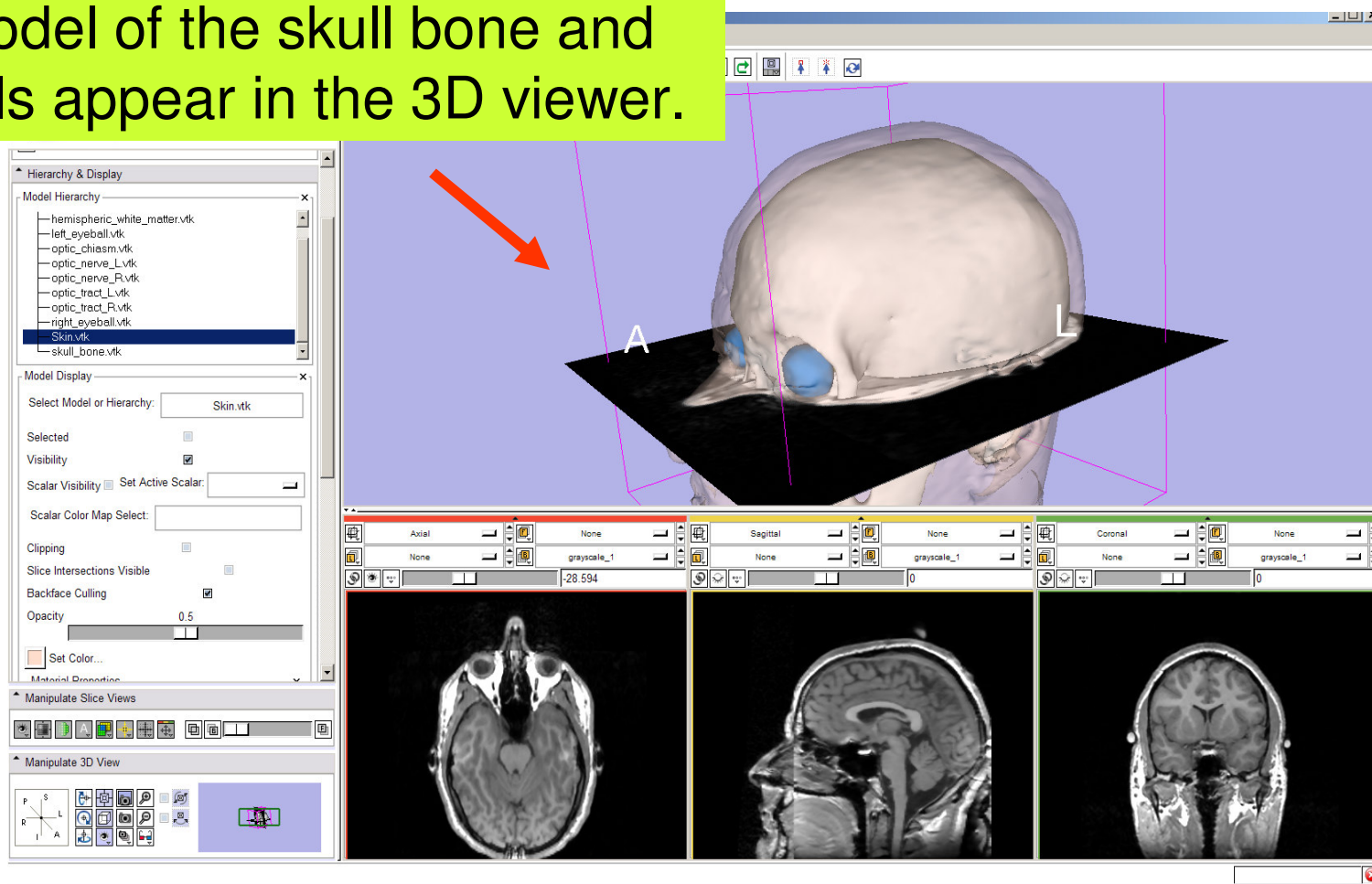
# 3D Visualization

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





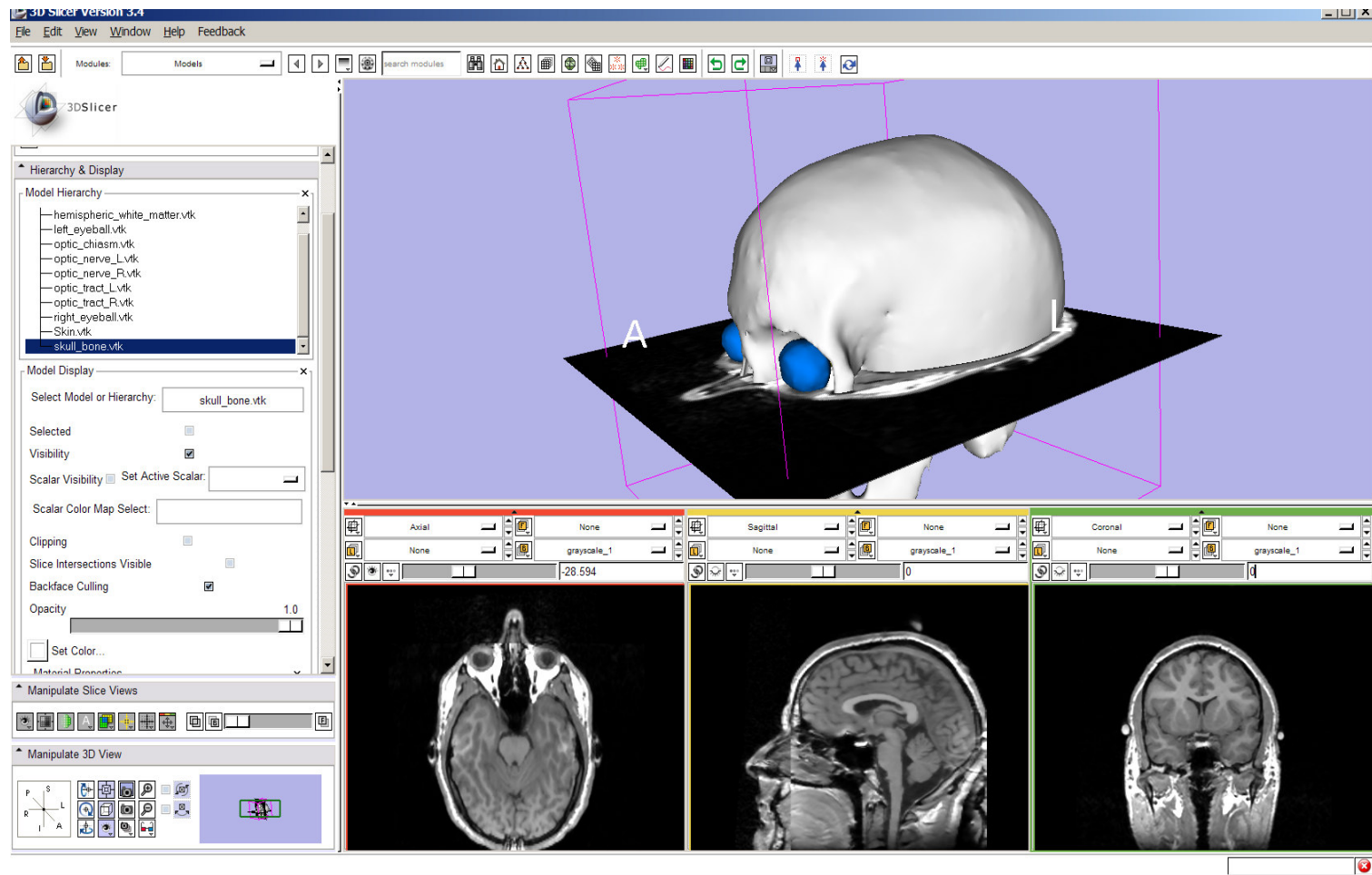
The model of the skull bone and eyeballs appear in the 3D viewer.




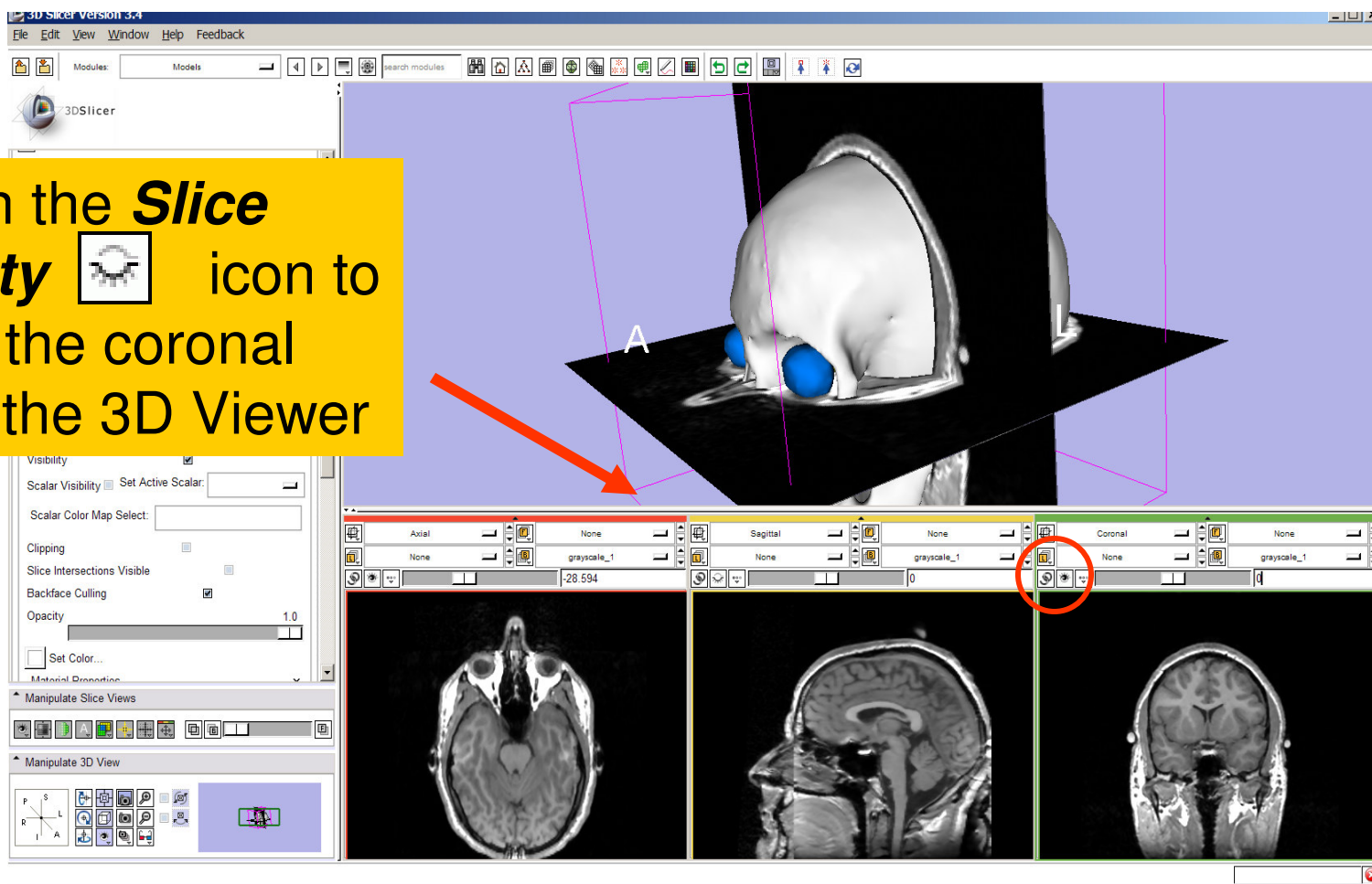


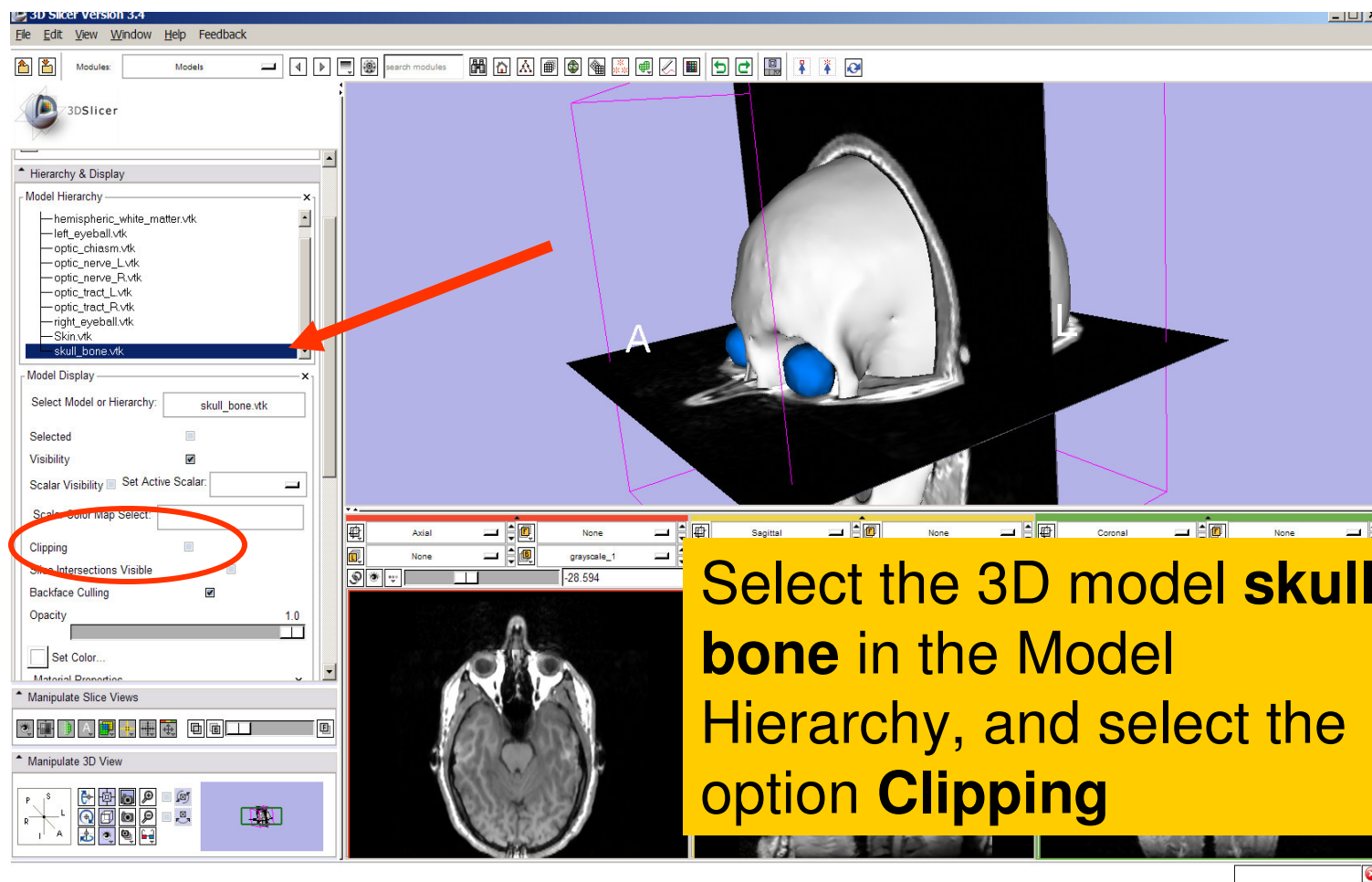


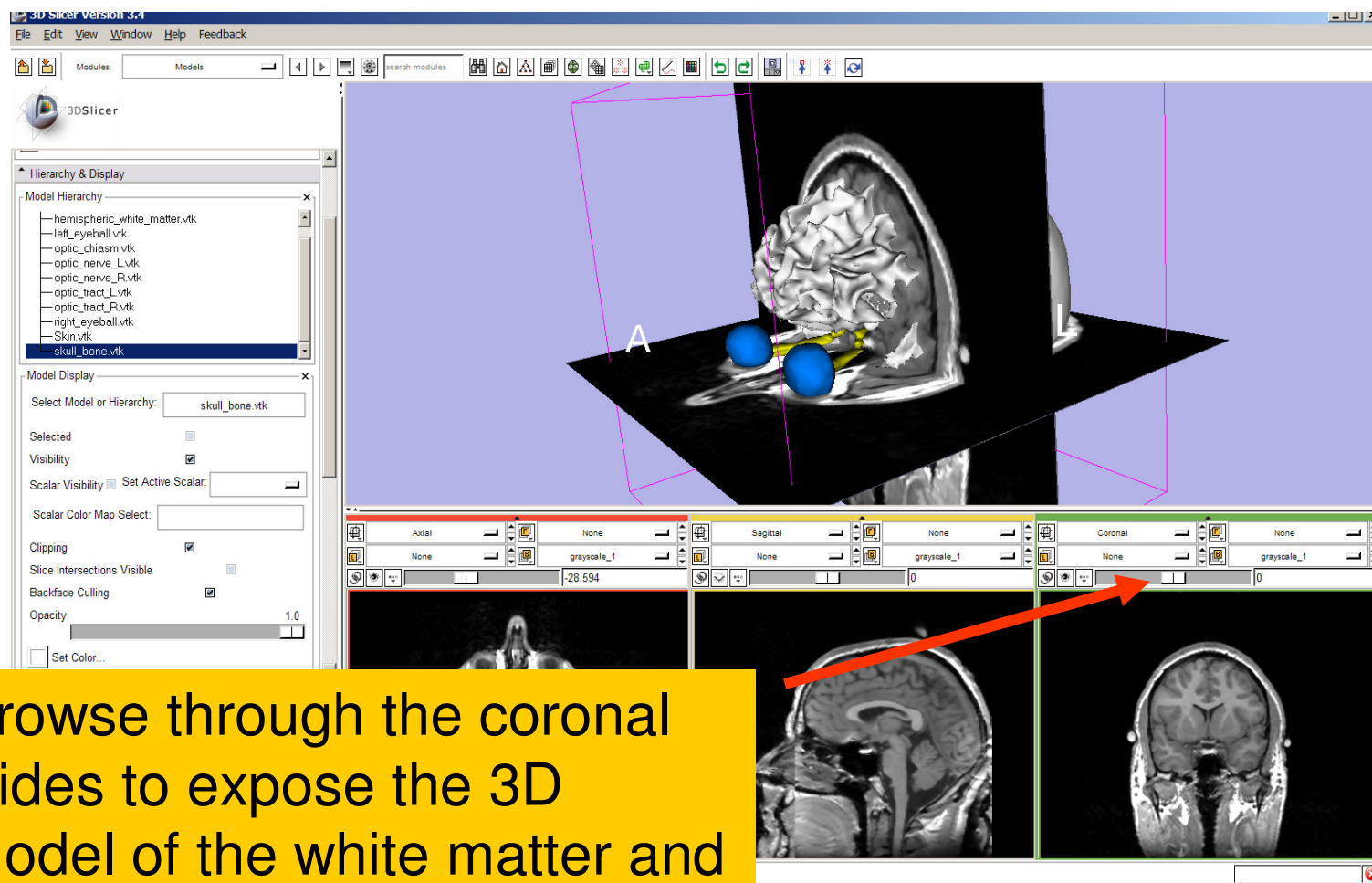
# 3D Visualization

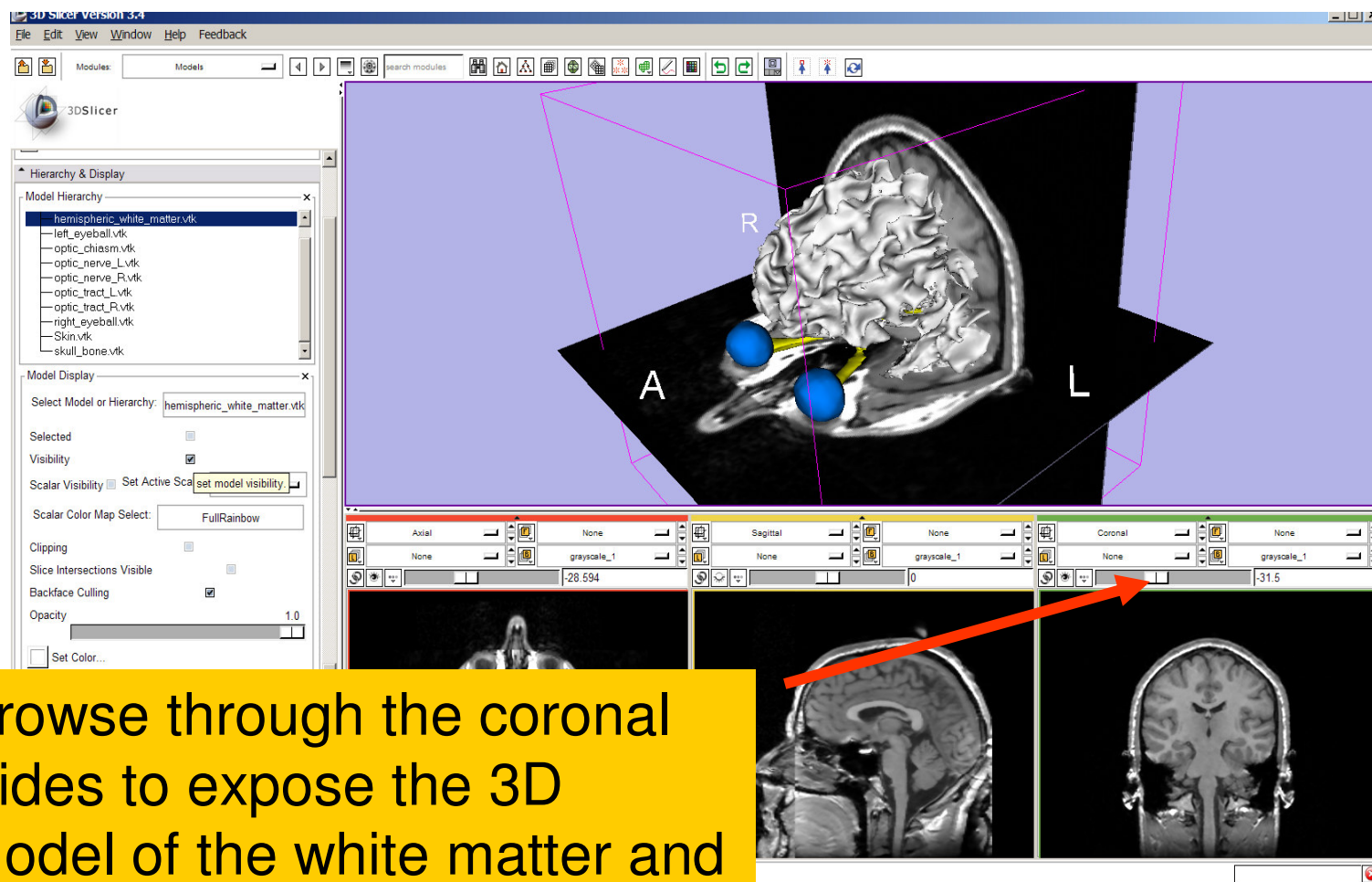


Click on the ***Slice Visibility***  icon to display the coronal slice in the 3D Viewer





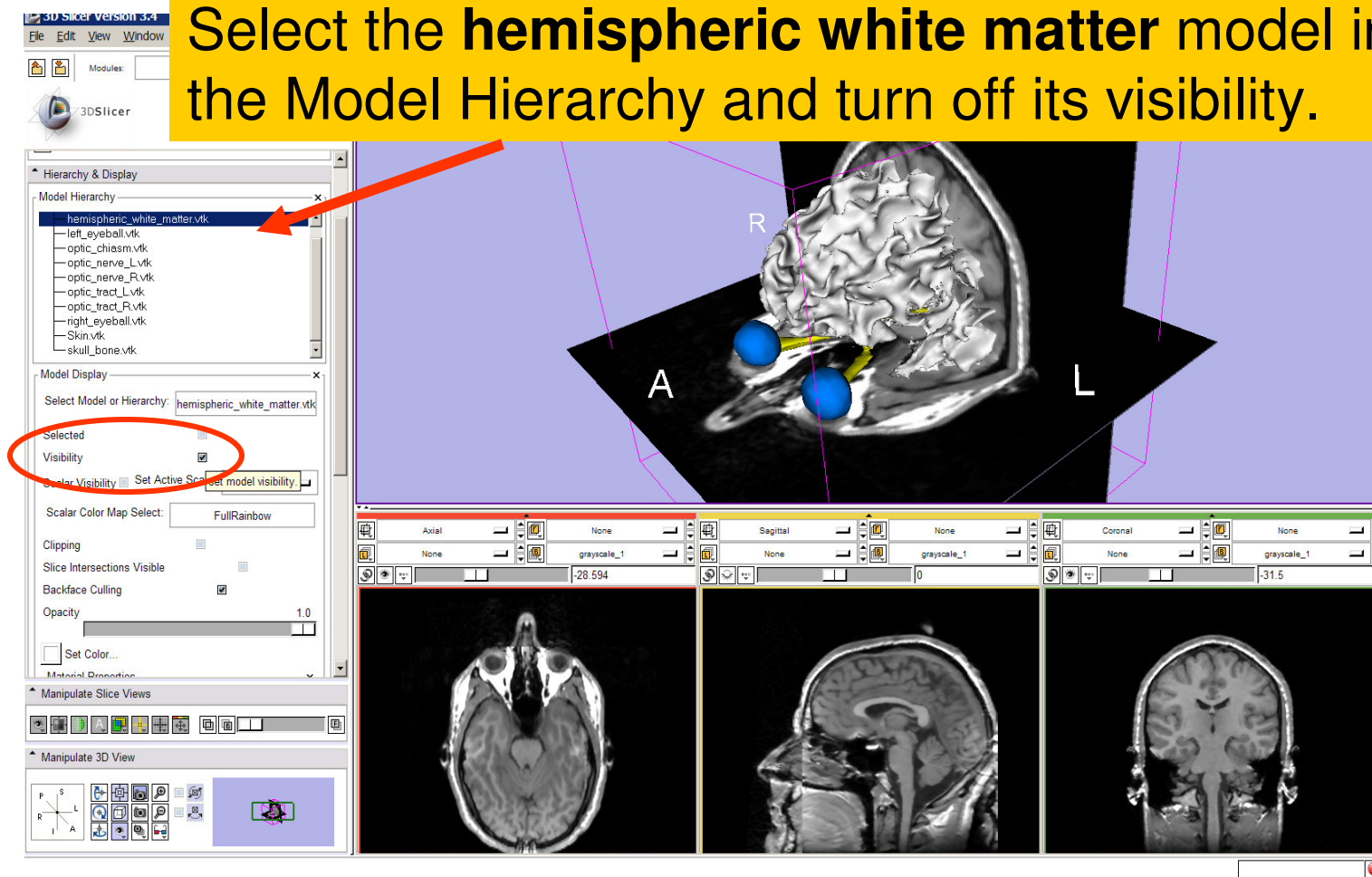


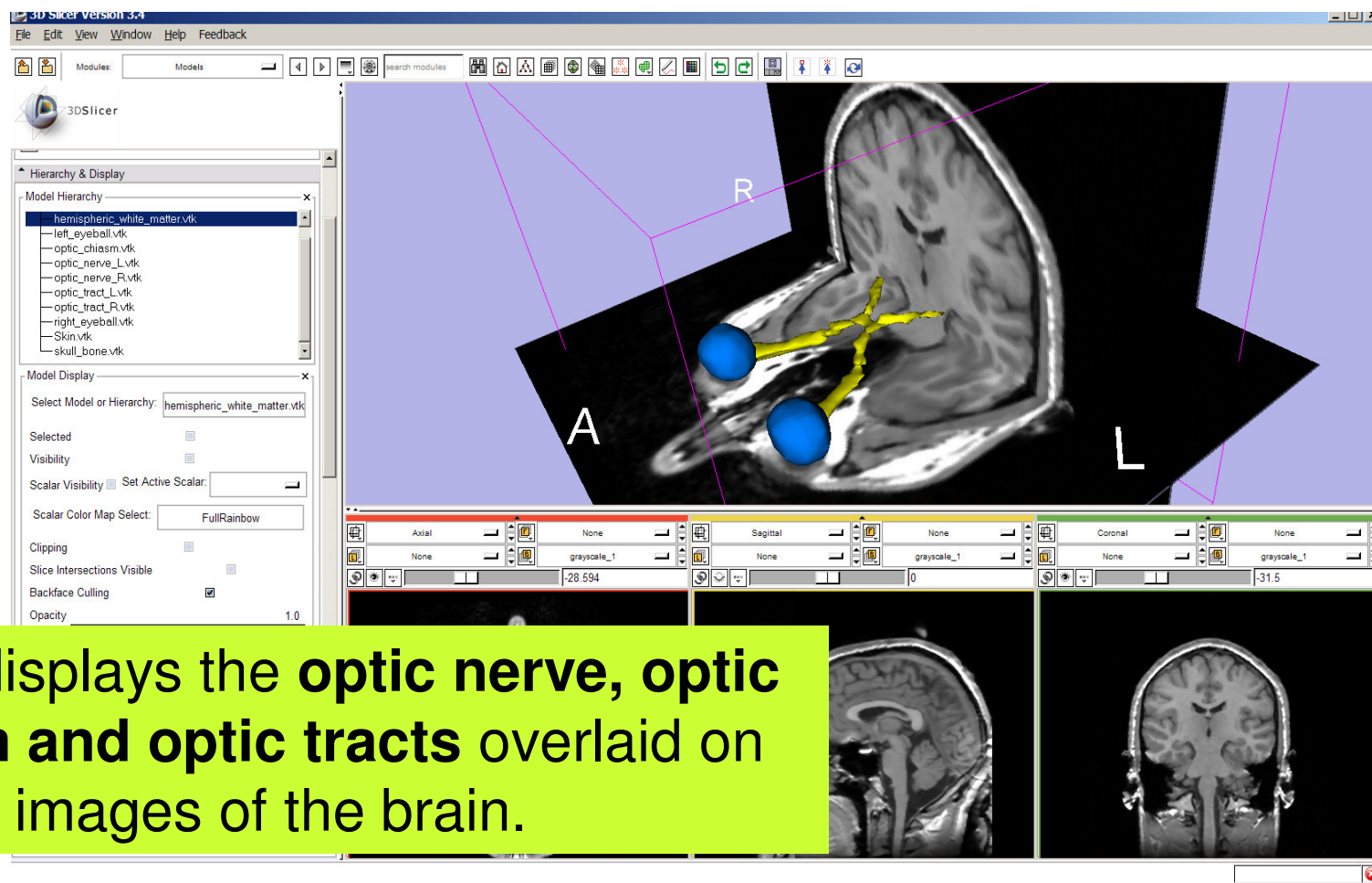


Browse through the coronal slides to expose the 3D model of the white matter and left and right optic nerves.

# 3D Visualization

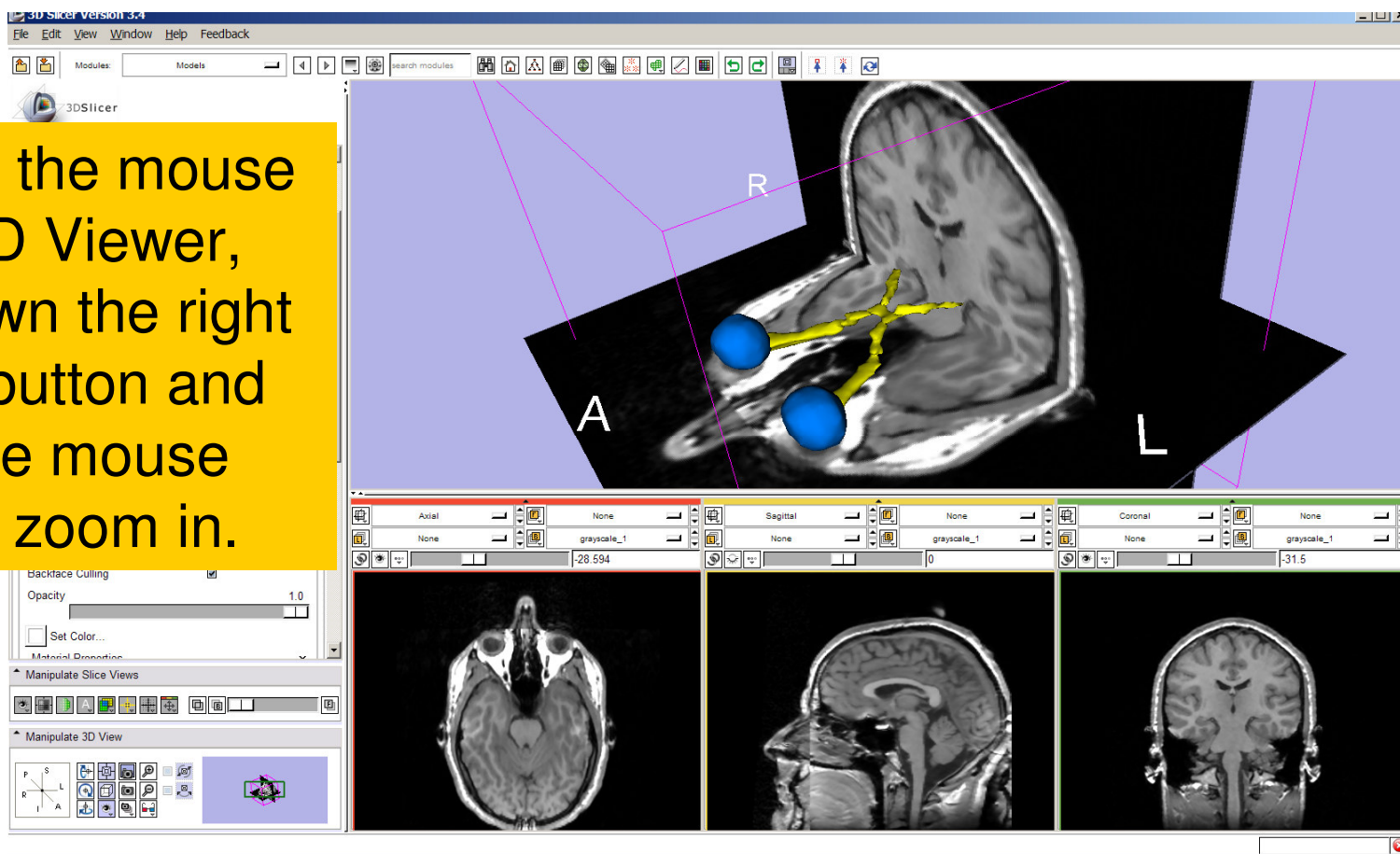
Select the **hemispheric white matter** model in the Model Hierarchy and turn off its visibility.





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

Position the mouse in the 3D Viewer, hold down the right mouse button and move the mouse down to zoom in.

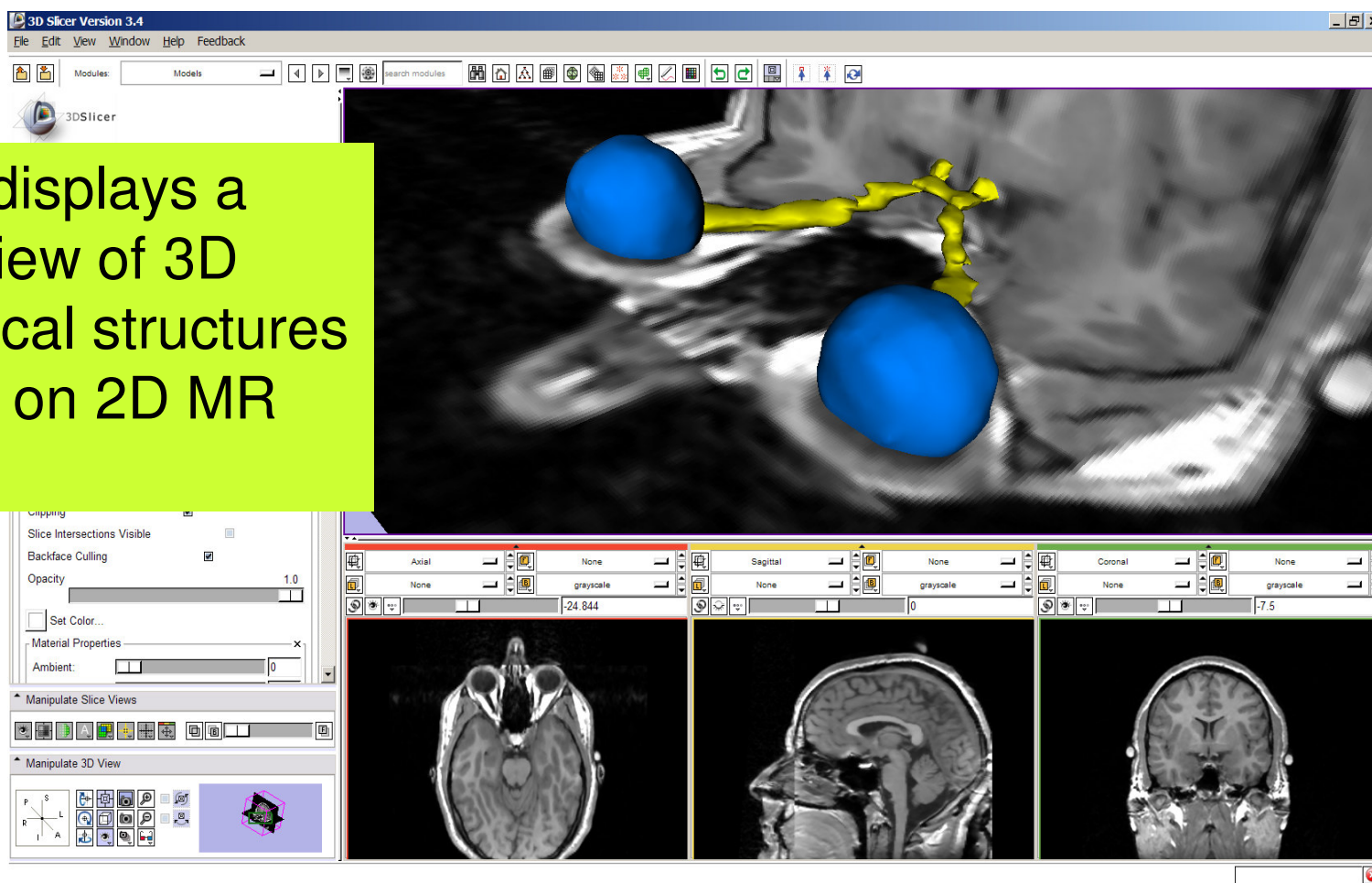






# 3D Visualization

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

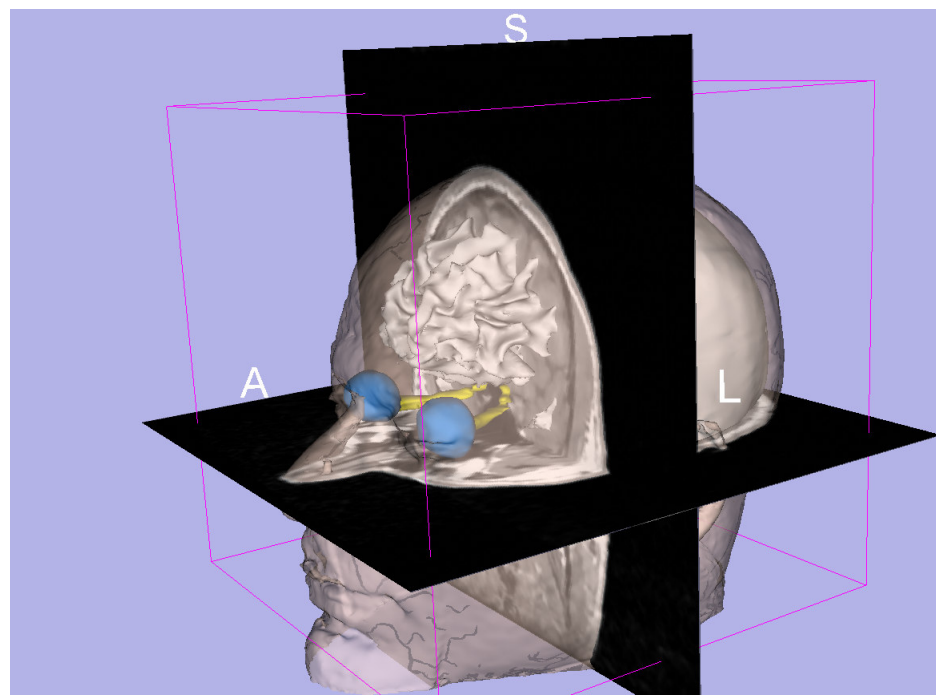




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- Slicer is an **open-source software** for image analysis and 3D visualization
- The core functionalities and **95 available modules** represent more than **3.2 million lines of code**
- Slicer3 is a **multi-institution effort** to share the latest advances in image analysis with the **scientific and clinical community**.



[www.slicer.org](http://www.slicer.org)



# *Acknowledgments*

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