

Slicer3 minute tutorial

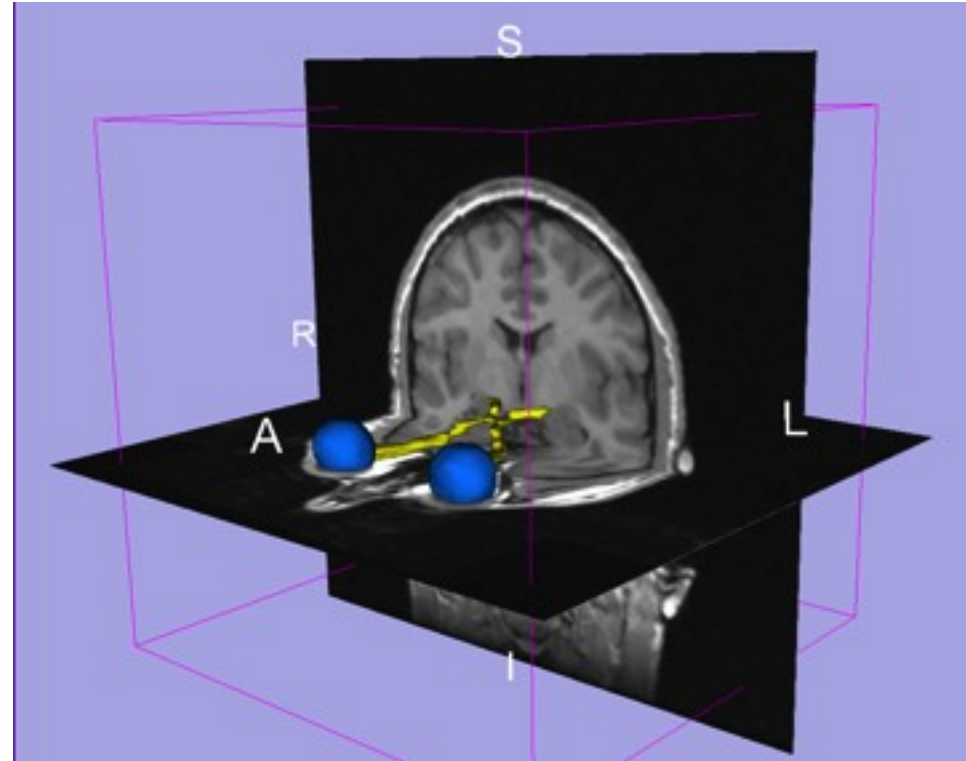
Sonia Pujol, Ph.D.

Surgical Planning Laboratory
Harvard Medical School



Slicer3 minute tutorial

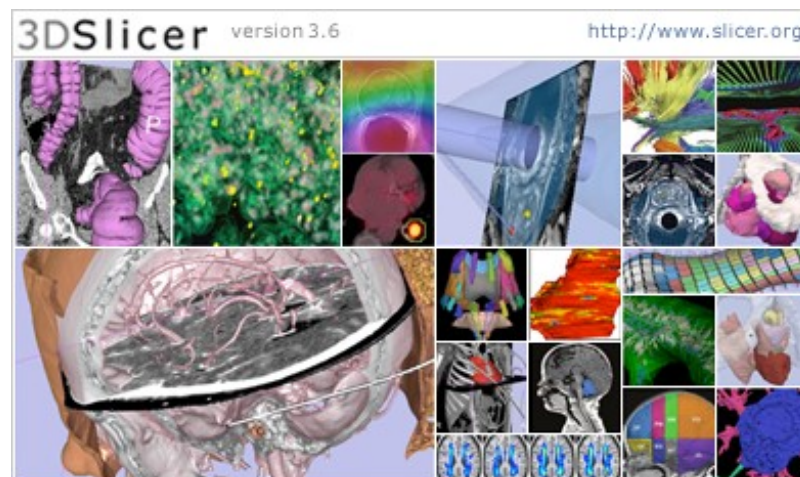
This tutorial is a short introduction to the advanced **3D visualization** capabilities of the **Slicer3** software for medical image analysis.





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

The screenshot shows the 3DSlicer website at www.slicer.org. The page is titled "Slicer Downloads" and provides instructions for downloading compiled versions of the 3D Slicer software. It includes a "LICENSE AGREEMENT" section and a "DOWNLOADS" section with a form to select the type of download (Stable Releases), operating system (Windows), and file to download. A sidebar on the left contains links to the Slicer Wiki, About Slicer, and Resources. A search bar is located in the top right corner.

Slicer3 is under active development by the medical research community.

Frequent releases incorporating cutting-edge medical image analysis capabilities. This tutorial uses the current stable Slicer3.6 RC2 release version.

Download Slicer3.6

 www.slicer.org

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Select the type of download
'Stable Releases'

Slicer software. If you are looking for the source code, please [click here](#).

Please fill out the [Slicer License Form](#) before downloading any binary releases of Slicer.

CONTACT US

Resources

- ▶ Download Slicer
- ▶ For Users
- ▶ For Developers
- ▶ Commercial Use
- ▶ NCIA
- ▶ Publication DB
- ▶ Image Gallery
- ▶ Slicer Community
- ▶ Source Code
- ▶ Licensing
- ▶ Mailing Lists
- ▶ Web Archive

DOWNLOADS

Type of download:

Operating System:

File to download:

May 2009: Slicer 3.4 released
to download, select stable releases and your platform


NOTES

- Stable Releases: Pre-compiled stable Slicer Releases for Linux, Windows, Mac and Solaris. This is what most people will want to download.
- Snapshots: Custom built Slicer binaries, in various states of completion, i.e. some features might not be stable.
- Nightly builds: This contains a week's worth of nightly builds. Nightly builds are experimental and sometimes unstable.
- x86 means Intel or AMD processors, ppc means PowerPC processors
- Mac: Darwin is the OpenSource software environment for Apple's Mac OS X
- Hardware/OS requirement: Either Windows XP or more recent, Linux (x86 or x86_64), Mac OS X (ppc or Intel), min 2 GB of RAM and a dedicated graphic accelerator with at least 128 MB of on-board graphic memory. Shared memory graphics will result in slow render speeds.
- X11 for Mac: On Mac OS X you will need to install X11 from the CD. As an alternative, we had good experience with [xquartz](#).





Download Slicer3.6

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Select the Operating System appropriate for your computer.

If you are looking for the source code, please click here:

Please fill out the Slicer License Form before downloading any binary releases of Slicer.

DOWNLOADS

Type of download: Stable Releases

Operating system: **Windows**

File to download: Slicer-3.6-RC2-2010-05-25-win32.exe

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DOCUMENTATION AND TRAINING

- Please visit the documentation pages for the 'live' reference manual for 3D Slicer.
- Instructions on how to use Slicer can be found on the training pages.

OTHER RESOURCES

- Mantis Tracker: Report bugs and make feature requests here

May 2009: Slicer 3.4 released to download, select stable releases and your platform



Download Slicer3.6

Select the Slicer3.6 release and click on Download.



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looking for the source code, please click here:

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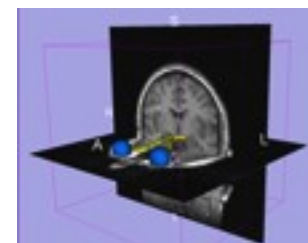




Download the material

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

- Download the training dataset:
Slicer3minuteDataset.zip

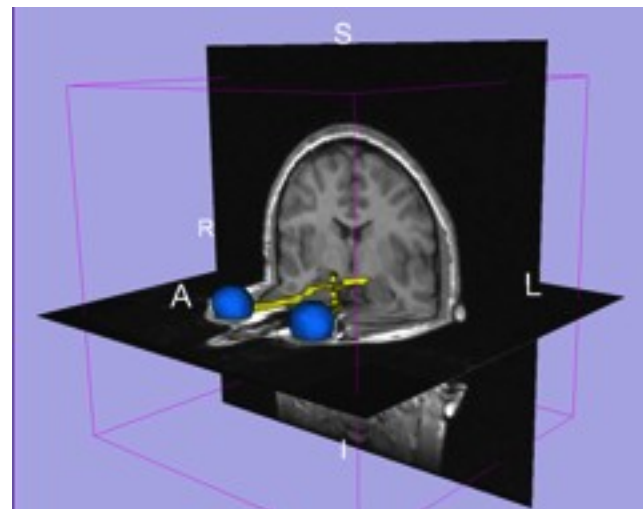


<http://www.slicer.org/slicerWiki/index.php/Slicer3.6:Training>



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>





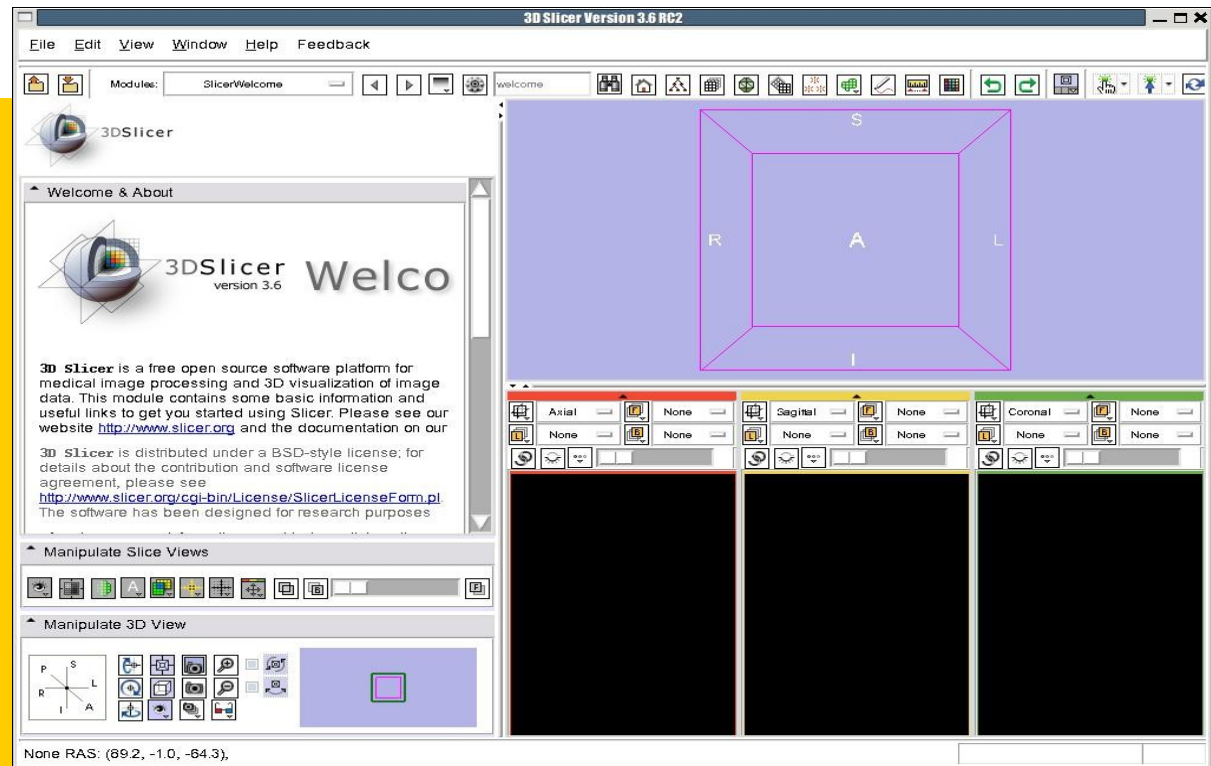
Start Slicer3

Linux/Mac users
Launch the Slicer3
executable located in
the Slicer3.6 directory

Windows users
Select

Start → All Programs

→ Slicer3 3.6-RC2 2010-05-
25 → Slicer3



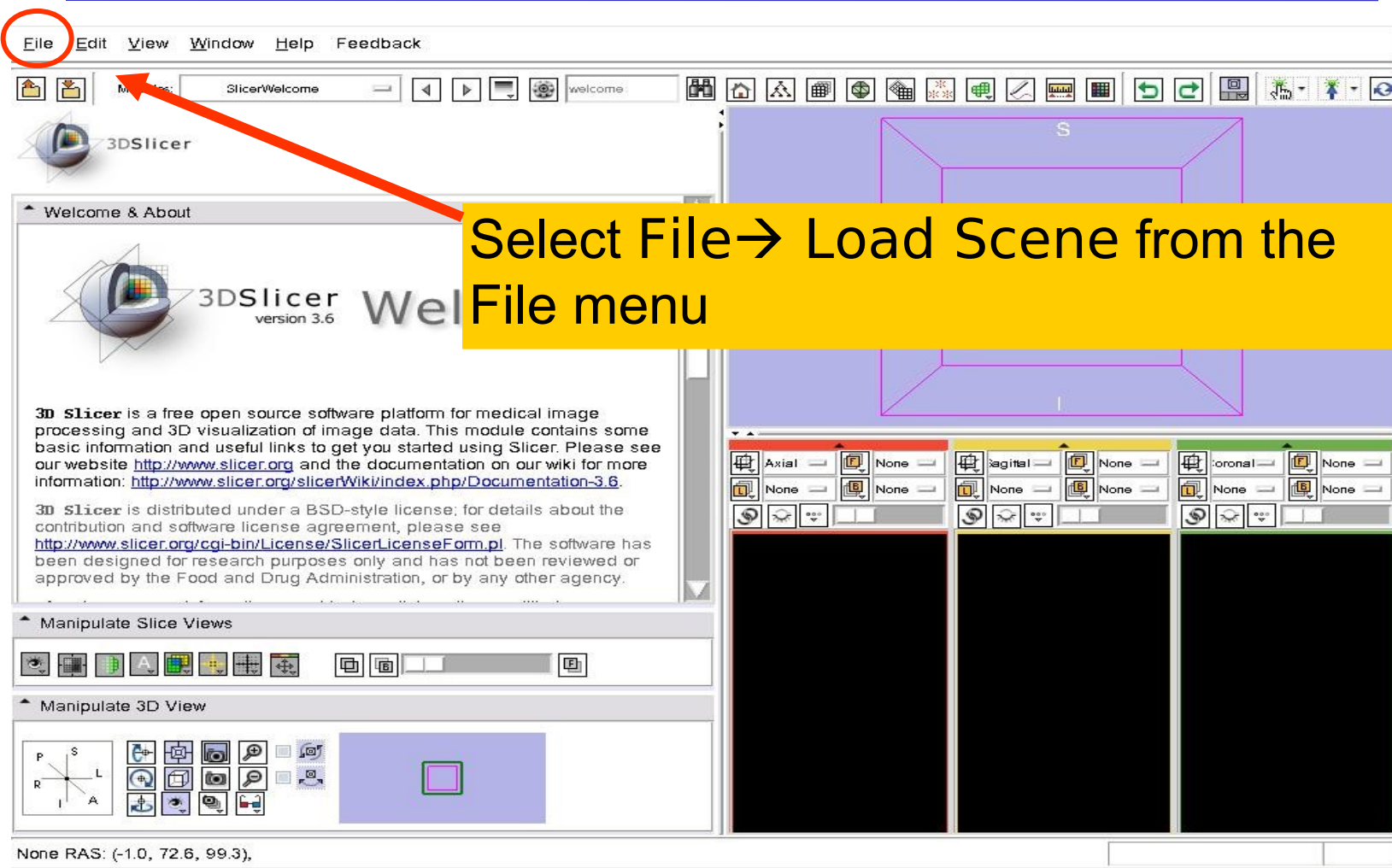


Slicer Welcome



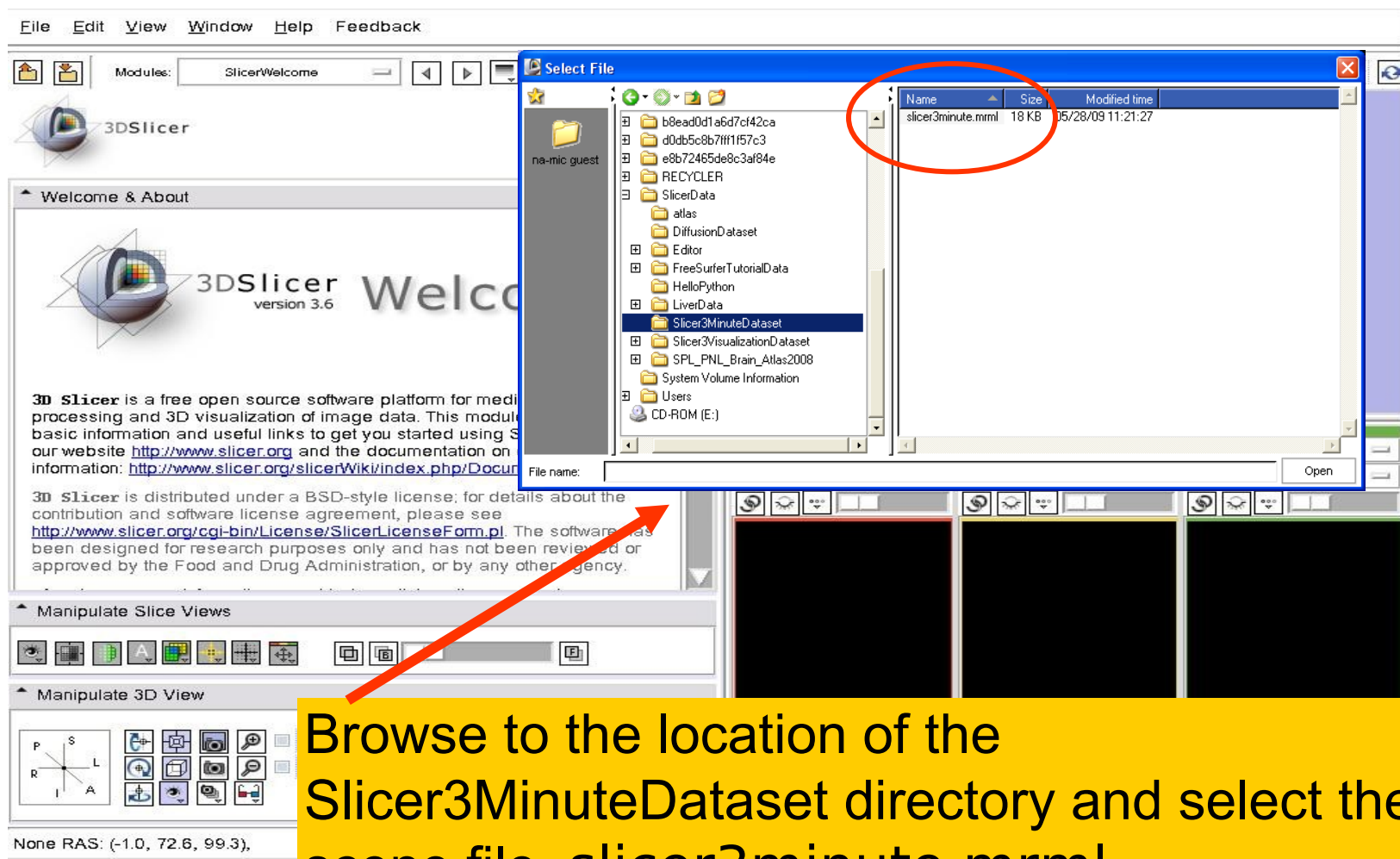


Loading a 3D Scene





Loading a 3D Scene

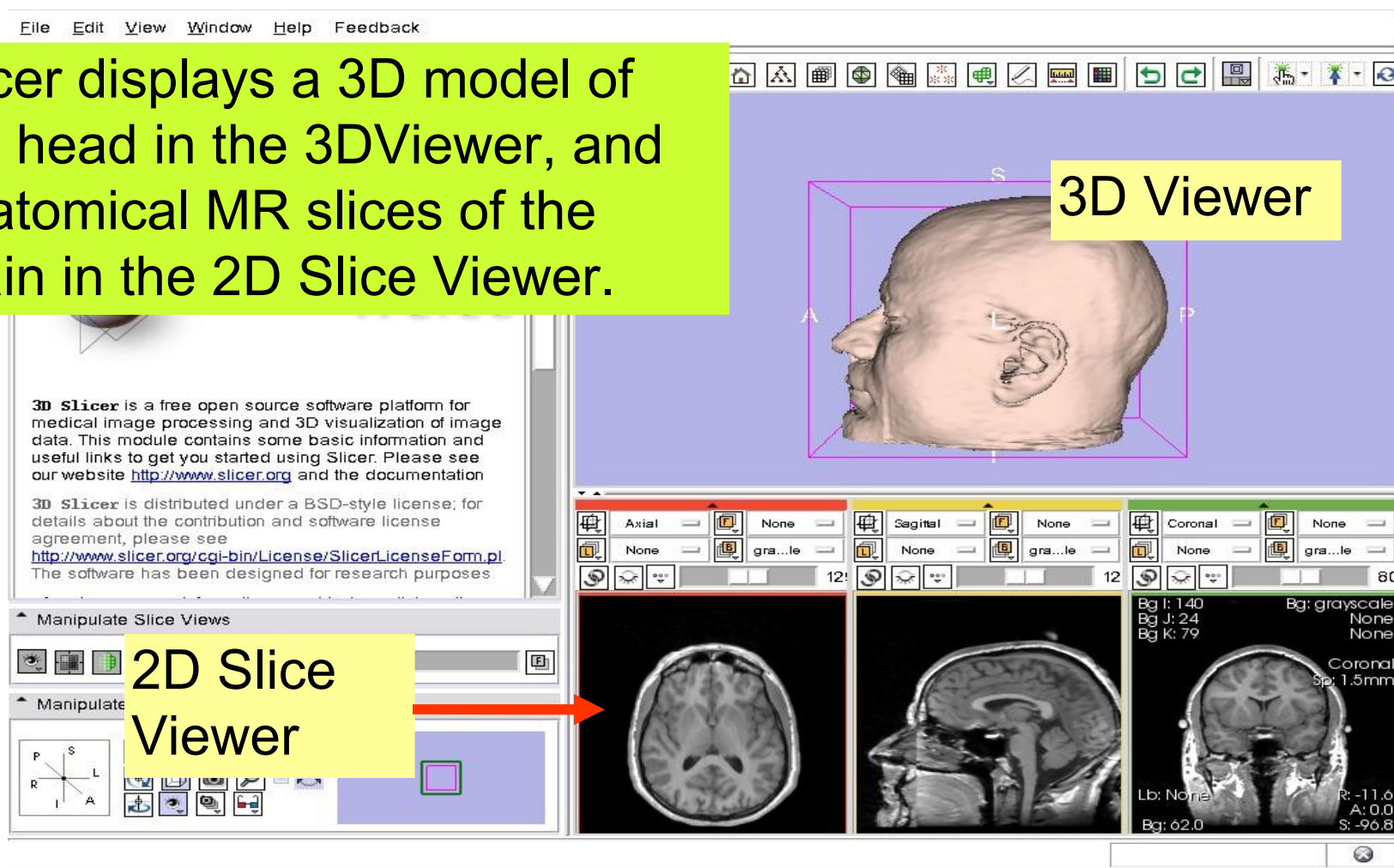


Browse to the location of the Slicer3MinuteDataset directory and select the scene file `slicer3minute.mrml`
Click on Open to load the scene



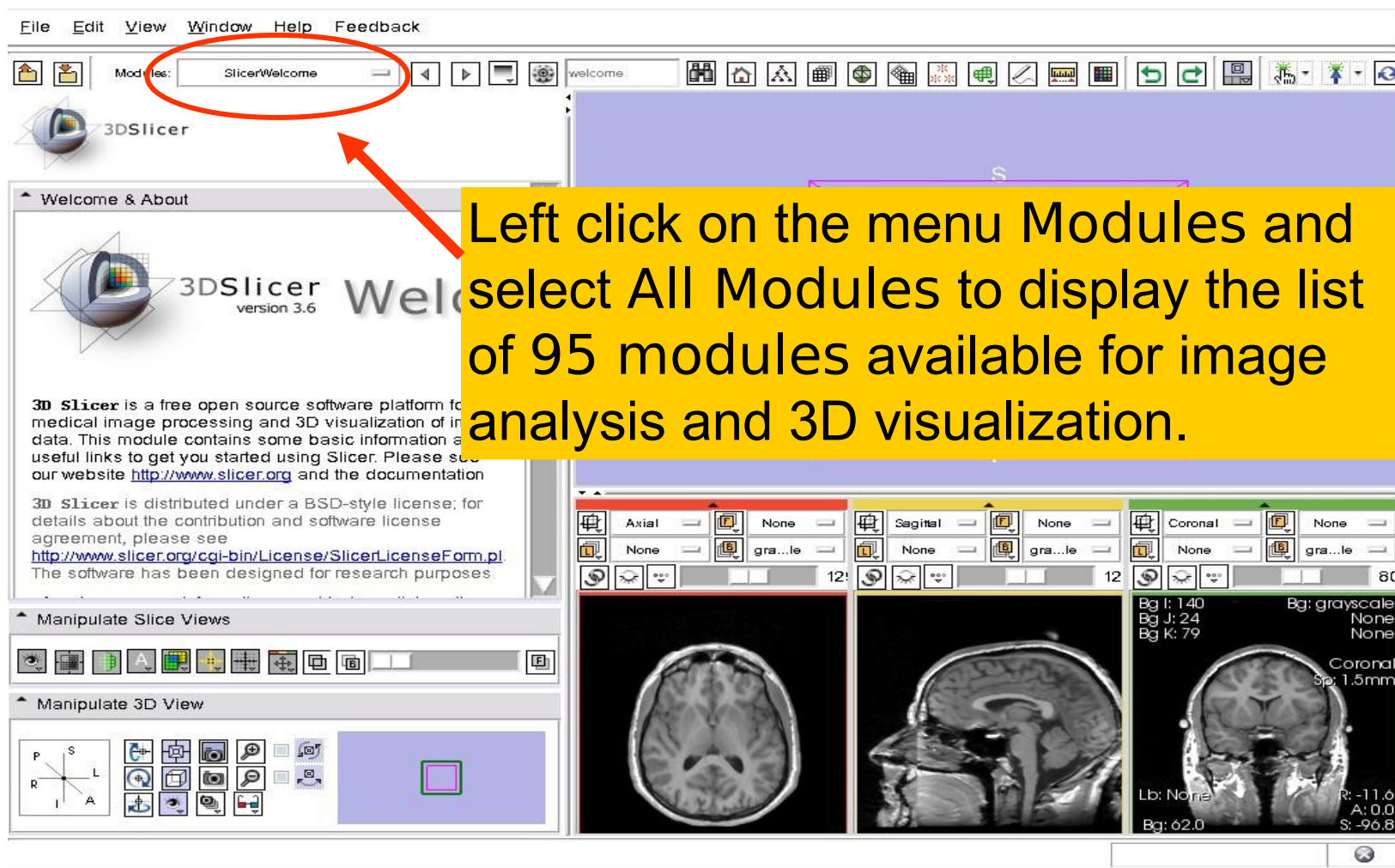
Loading a 3D Scene

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



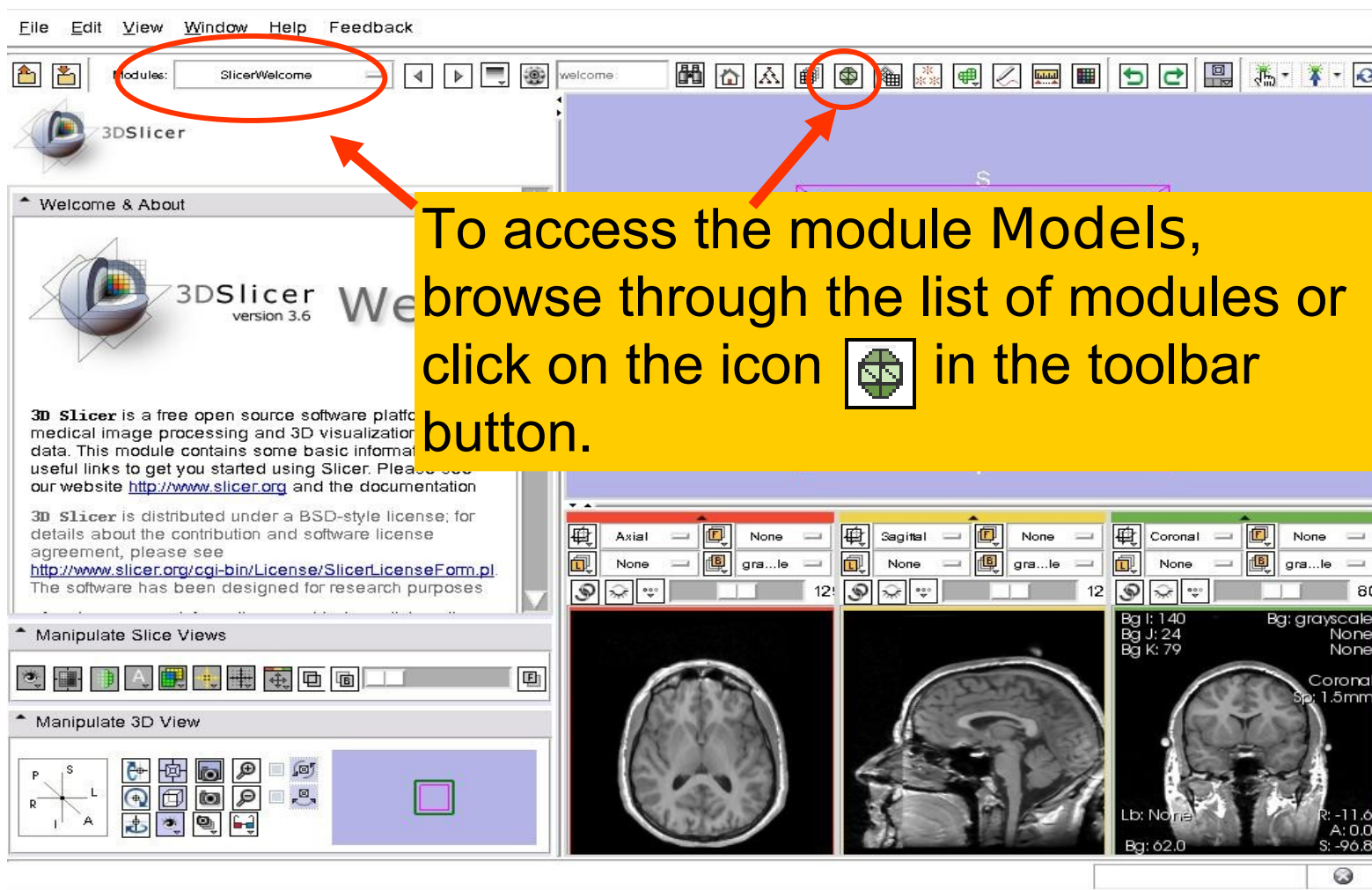


Loading a 3D Scene



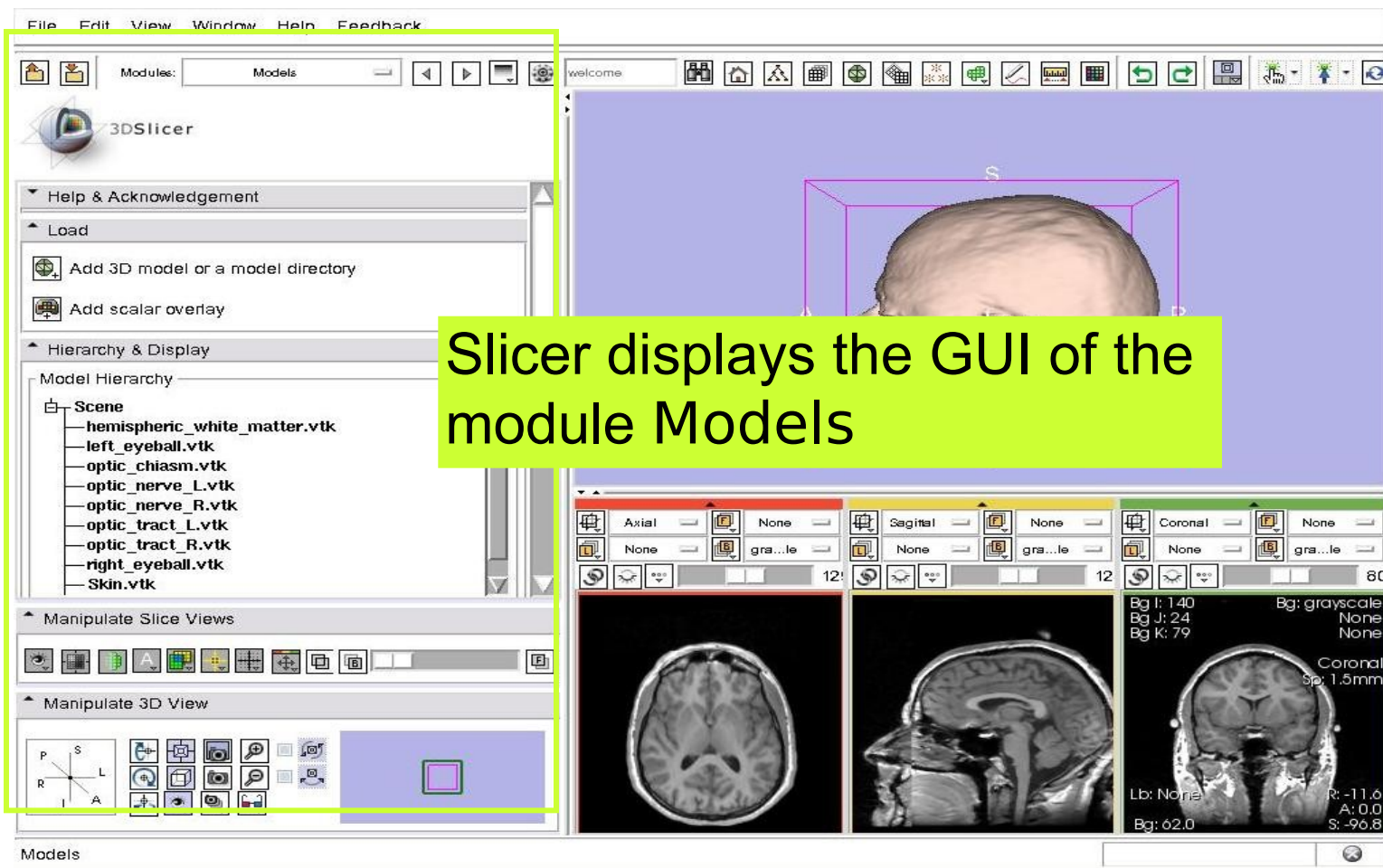


Loading a 3D Scene





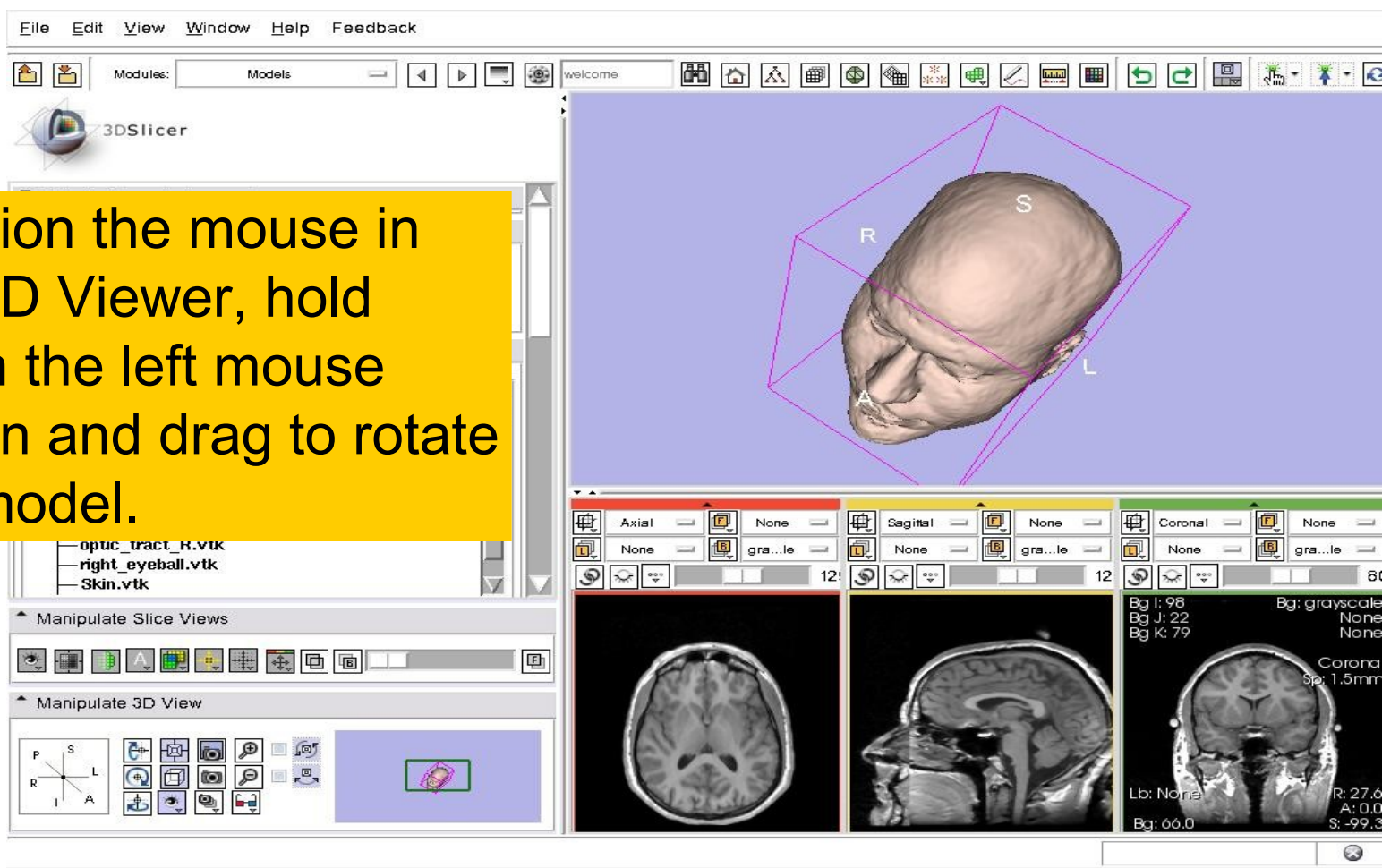
Loading a 3D Scene





3D Visualization

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

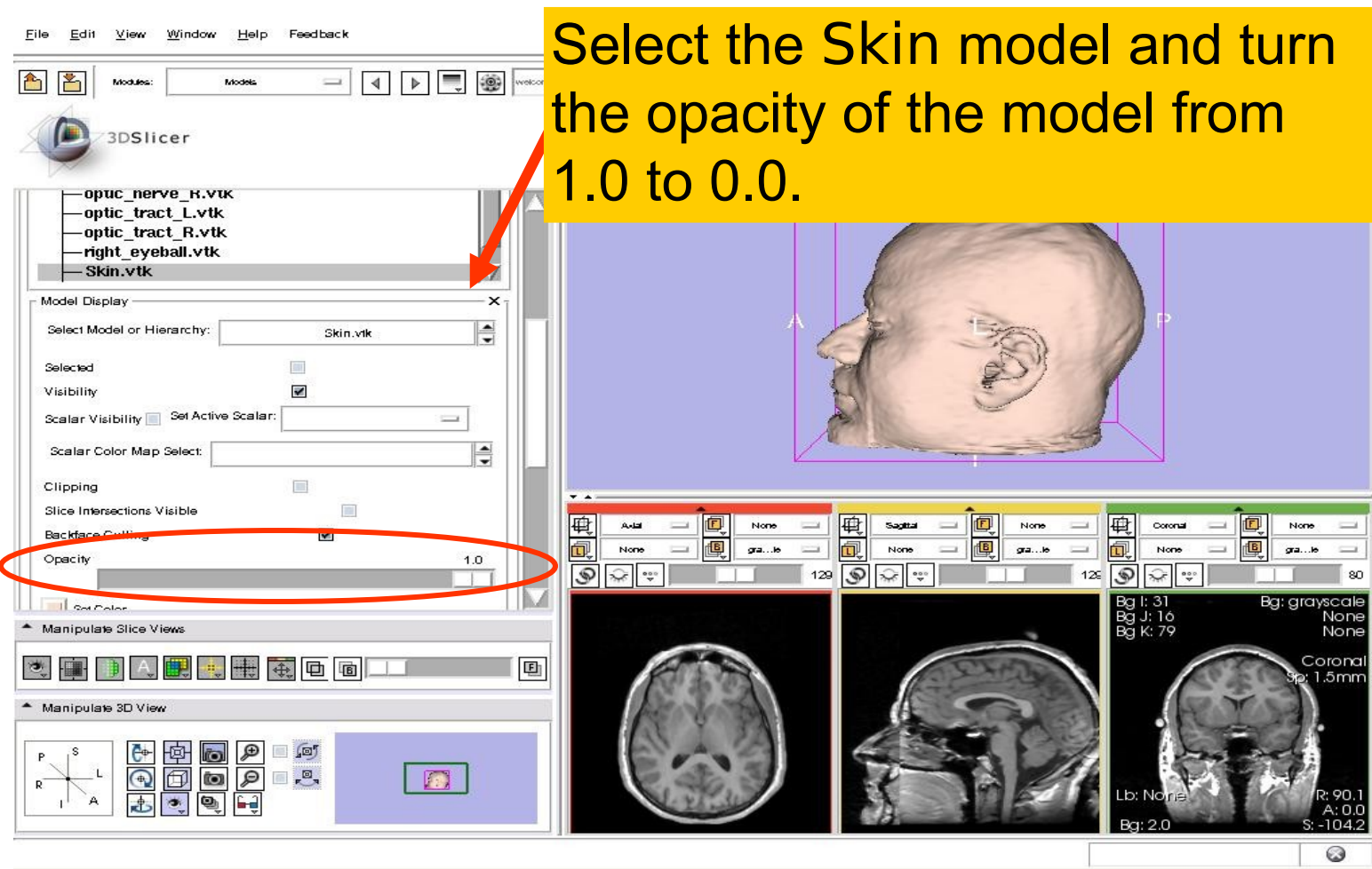




Click on the Slice Visibility icon to display the axial slice in the 3D Viewer

3D Visualization

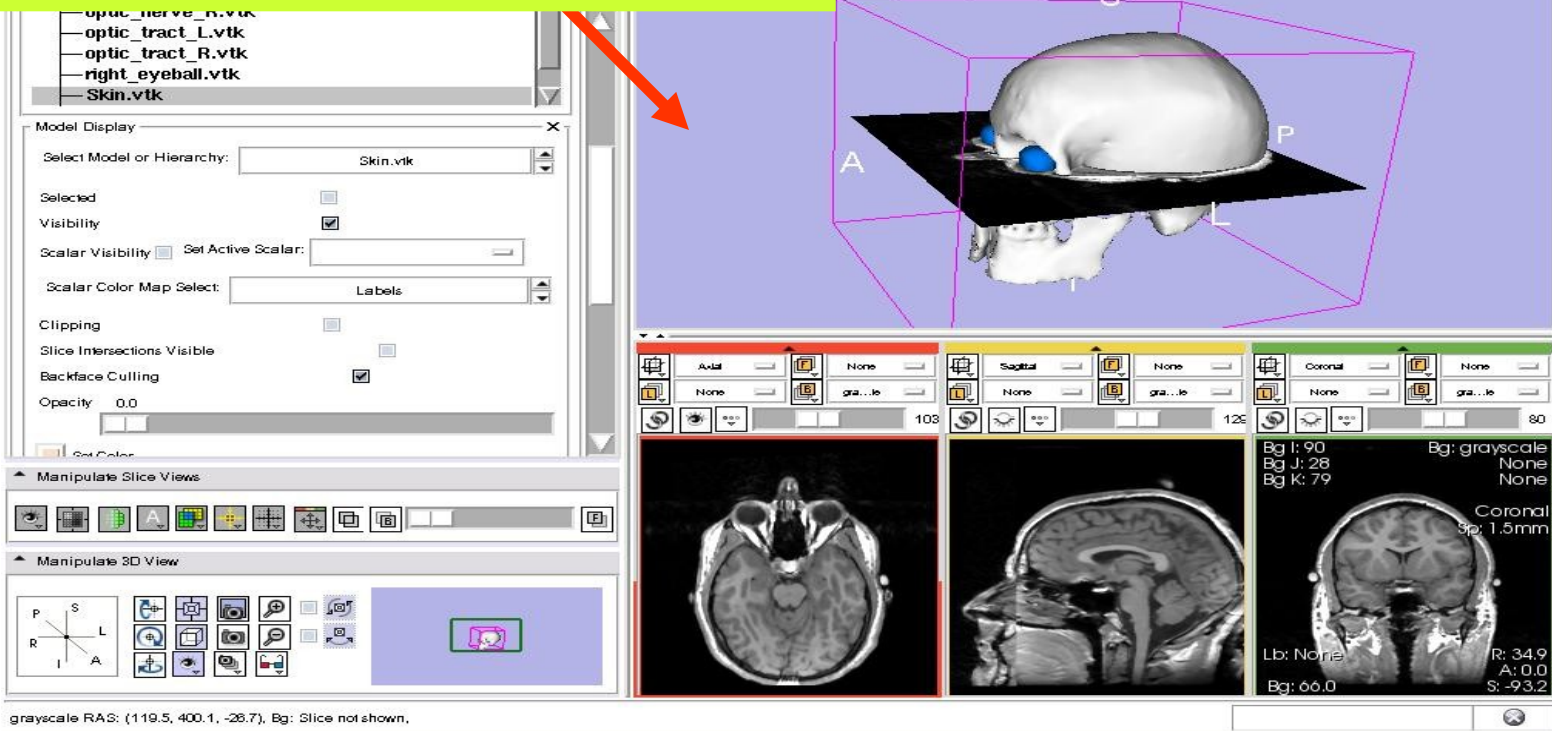
Select the Skin model and turn the opacity of the model from 1.0 to 0.0.



The screenshot shows the 3DSlicer interface. On the left, the 'Model Display' panel is open, showing a list of models: 'opuc_nerve_R.vtk', 'optic_tract_L.vtk', 'optic_tract_R.vtk', 'right_eyeball.vtk', and 'Skin.vtk'. The 'Skin.vtk' model is selected. Below the list, the 'Opacity' slider is highlighted with a red circle and a red arrow pointing to it. The slider is currently set to 1.0. The main 3D view shows a 3D model of a head. Below the 3D view, there are three slice views: Axial, Sagittal, and Coronal. The Coronal slice view is selected, showing a cross-section of the head. The 'Opacity' slider is currently set to 1.0.

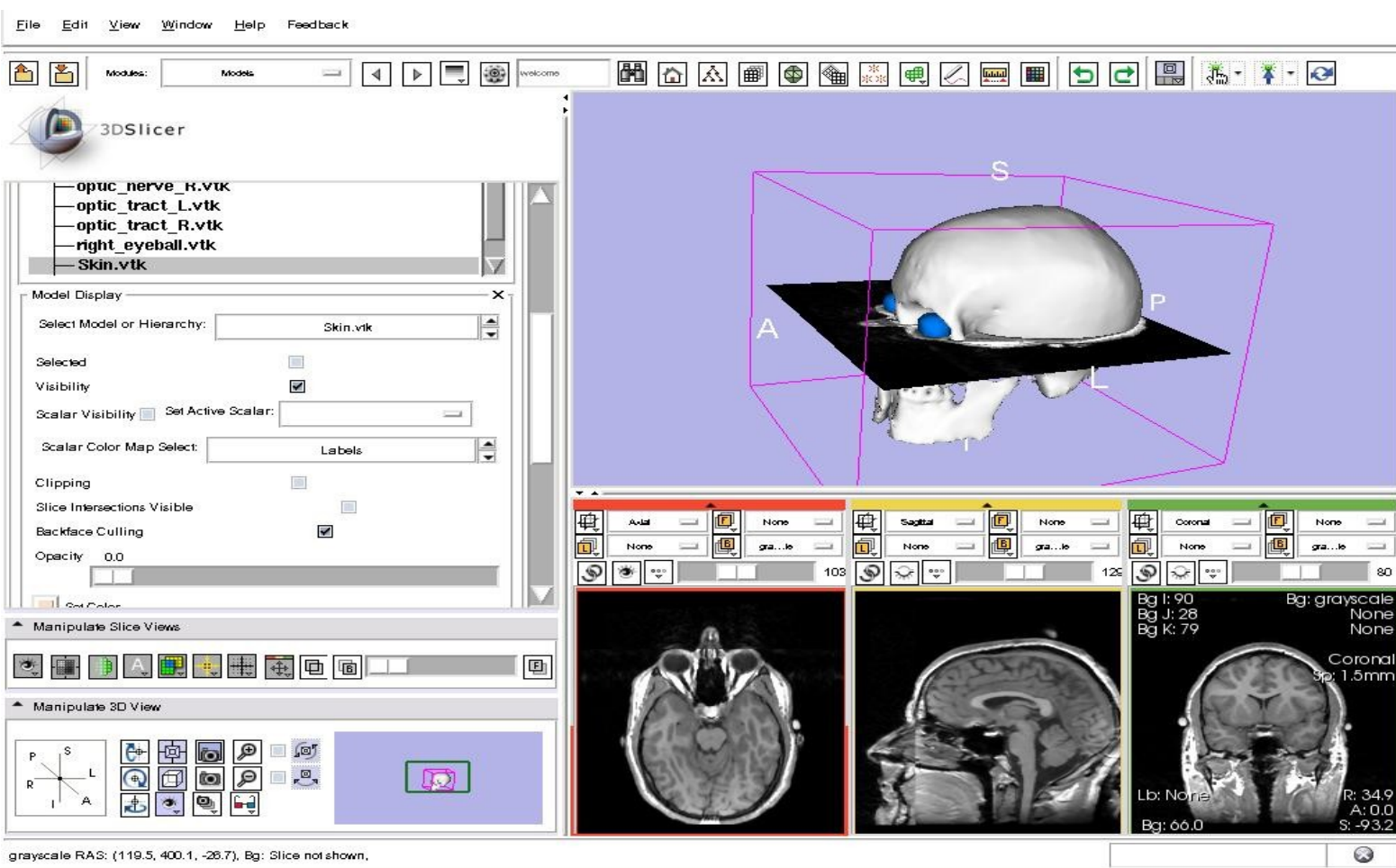
3D Visualization

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



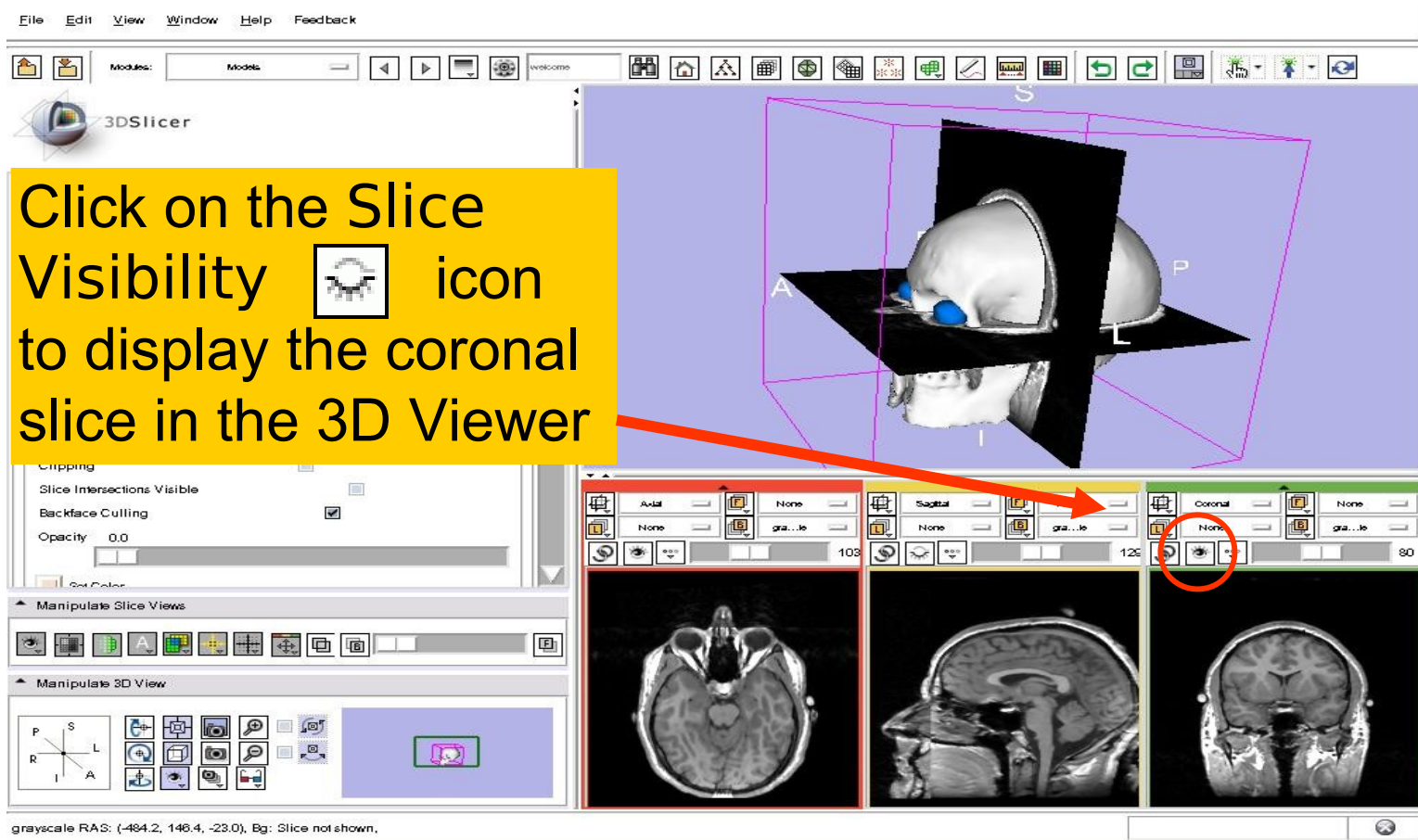


3D Visualization

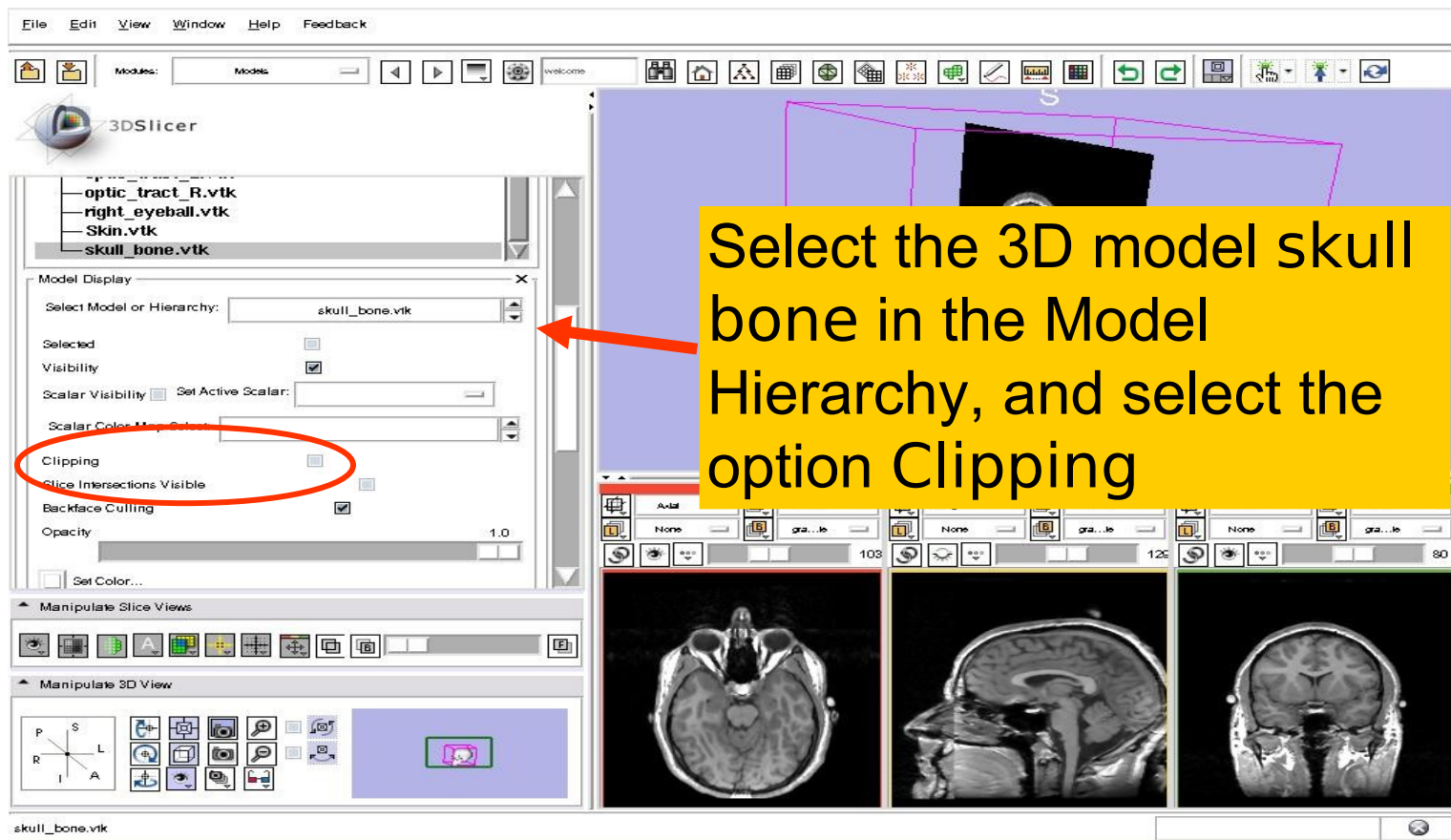




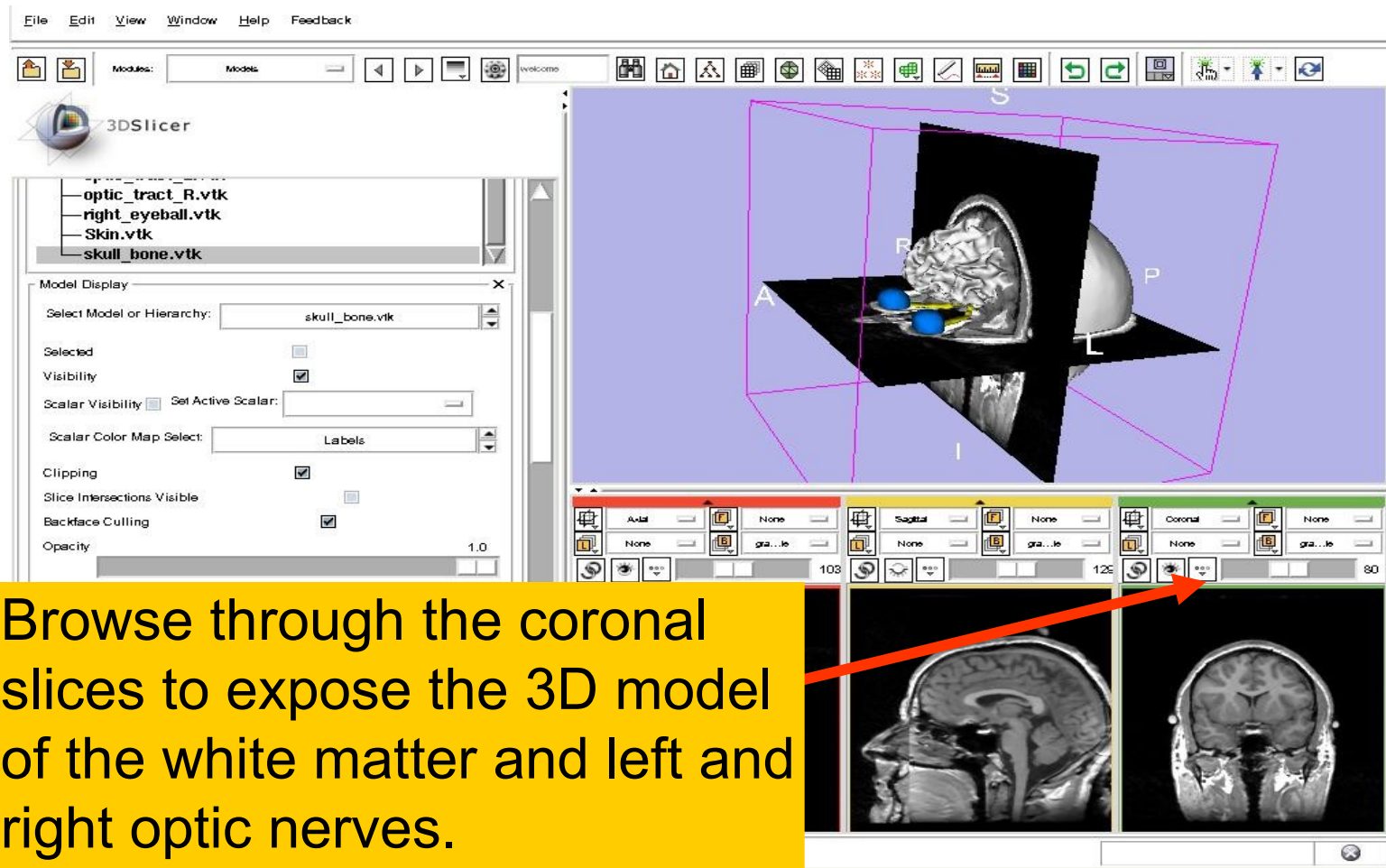
3D Visualization



3D Visualization

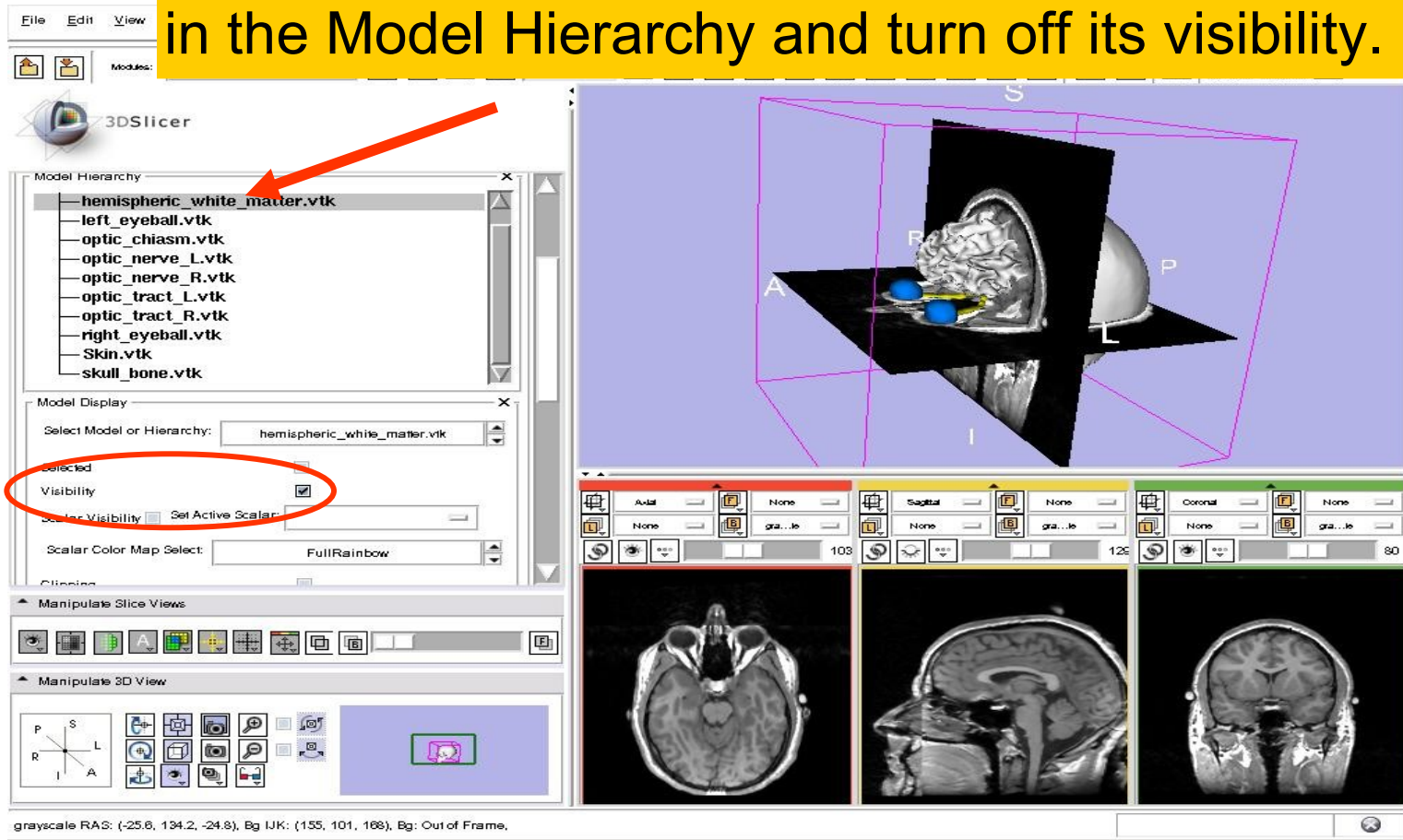


3D Visualization



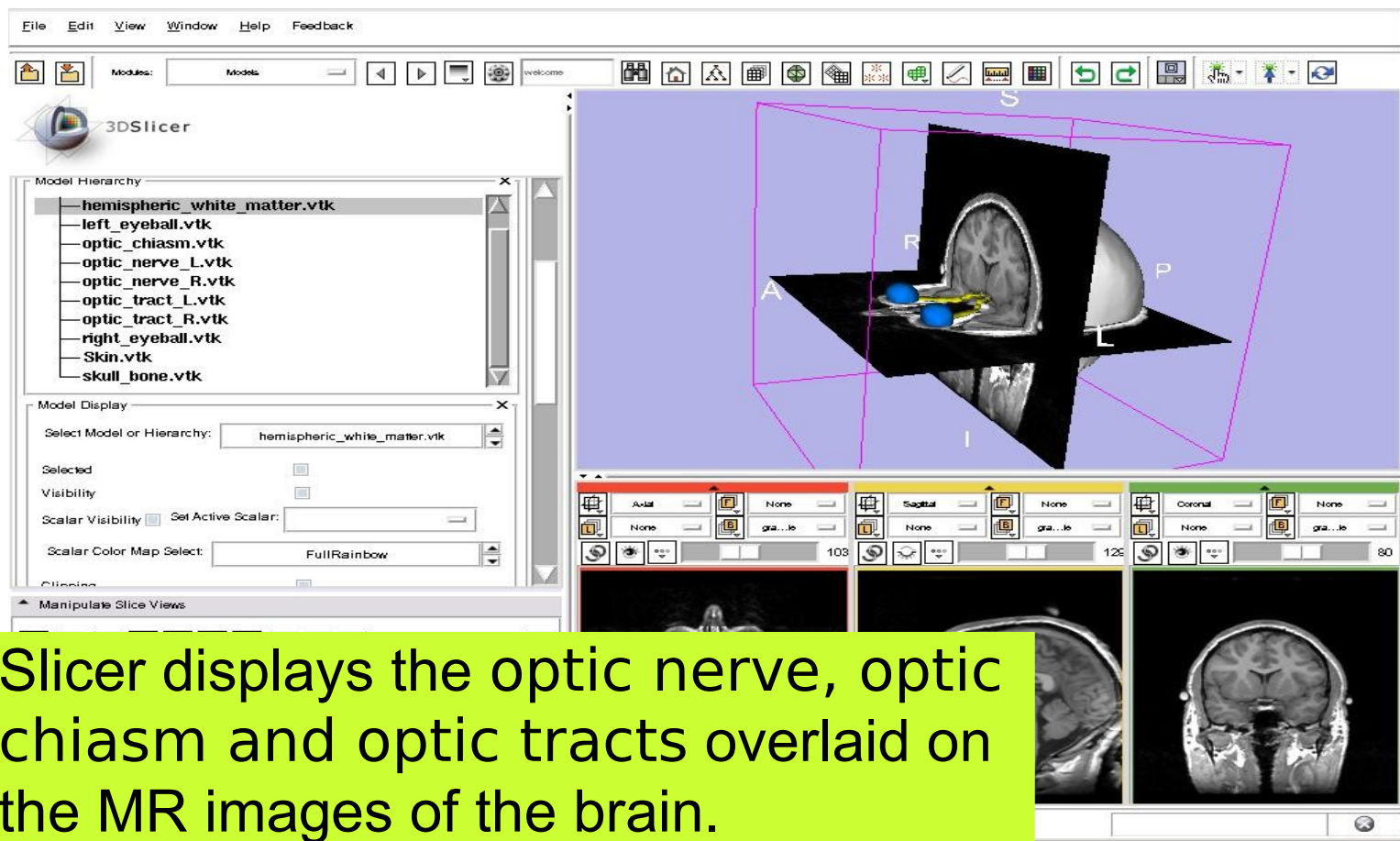
3D Visualization

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



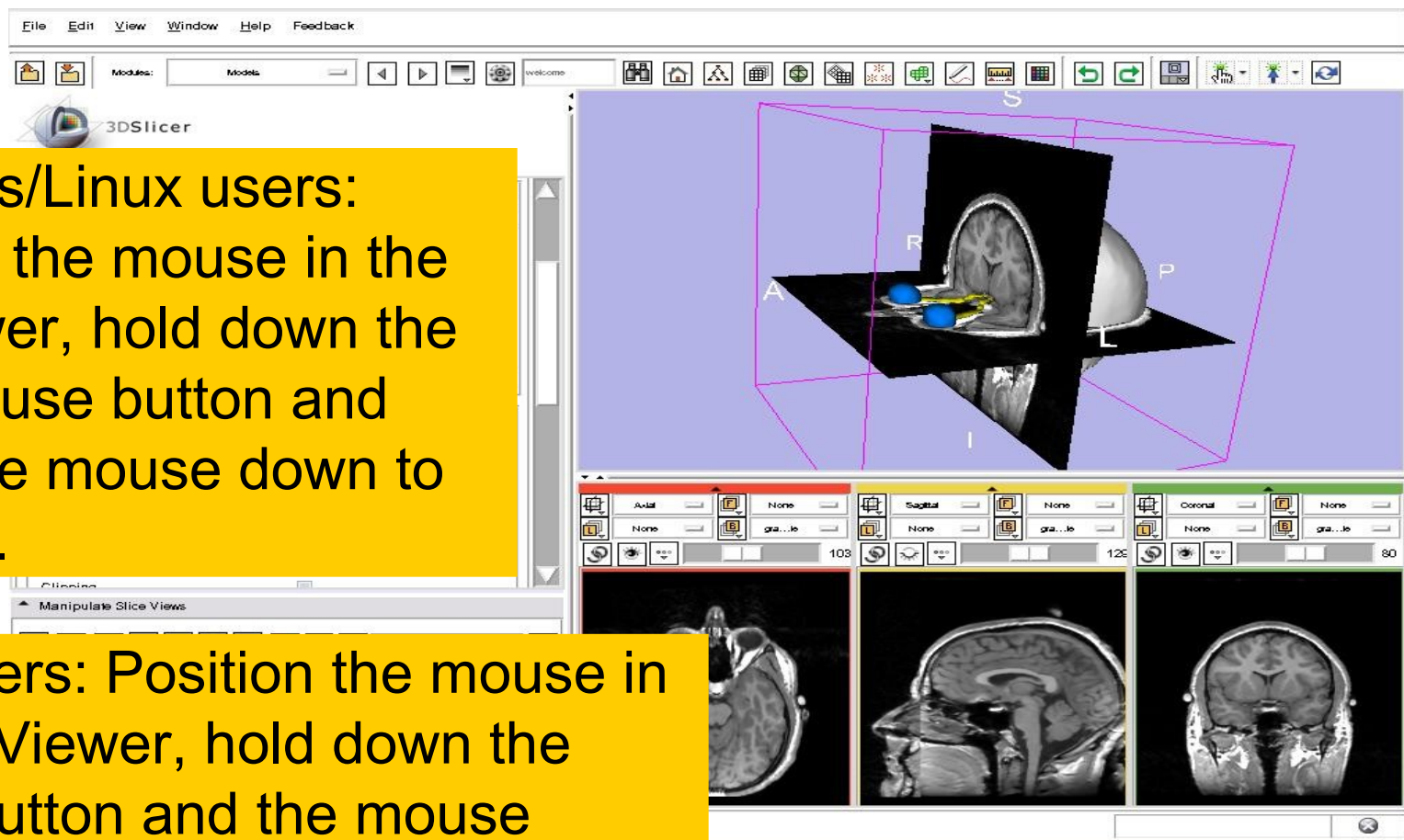


3D Visualization





3D Visualization



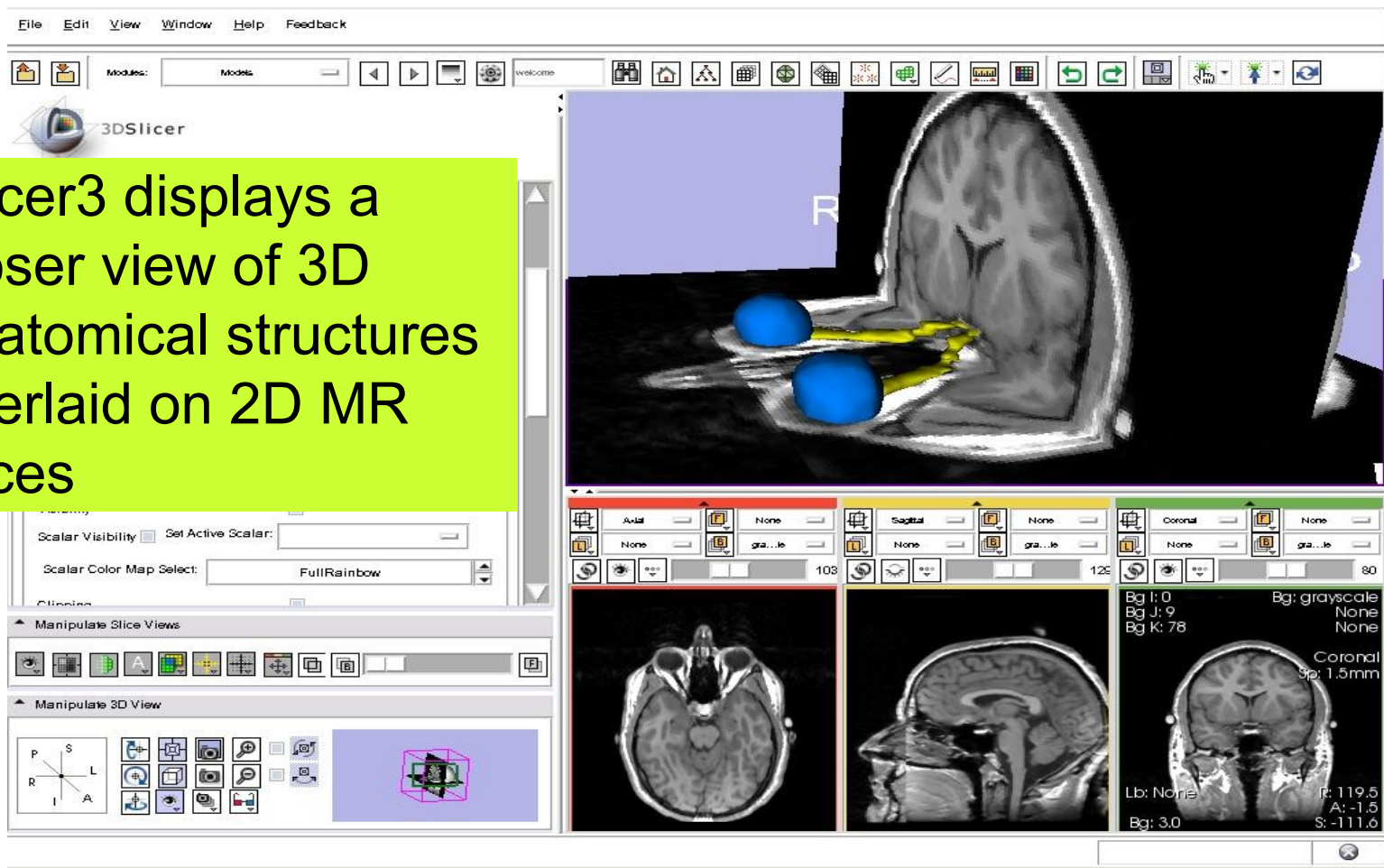
Windows/Linux users:
Position the mouse in the
3D Viewer, hold down the
right mouse button and
move the mouse down to
zoom in.

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

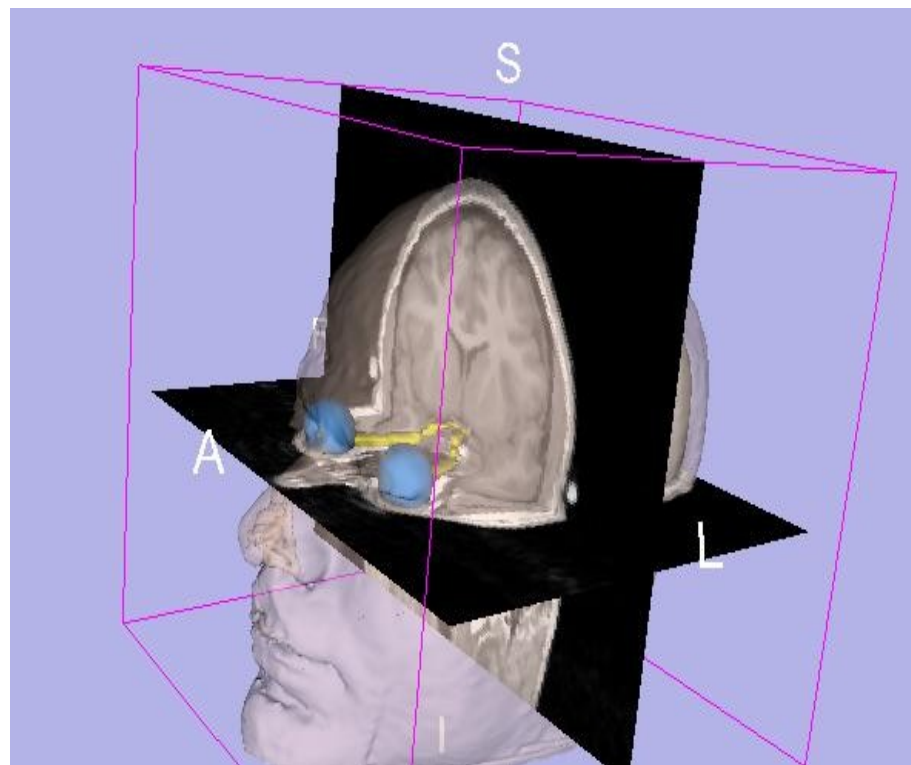
Slicer3 displays a closer view of 3D anatomical structures overlaid on 2D MR slices





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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Image Computing**

NIH U54EB005149



Neuroimage Analysis Center

NIH P41RR013218