

Download ITK-SNAP

Go to the ITK-SNAP website using the following link:

<http://www.itksnap.org>

Once there you can click on the DOWNLOADS link at the upper right hand corner of the page to download a version that is appropriate for your computer. We recommend that you download and install the **stable version** of the software for the derivation of stereotaxic coordinates.

Using ITK-SNAP to view Ratlas-LH

ITK-SNAP is useful for the segmentation of magnetic resonance images and other types of 2D and 3D images. There are help pages and tutorials available online for the use of ITK-SNAP for the segmentation of images. In this document there is a short guide on the use of ITK-SNAP to find stereotaxic coordinates in Ratlas-LH whilst using the atlas delineations adapted from the Waxholm Space (WHS) Atlas of the Sprague Dawley Rat Brain (Papp EA, Leergaard TB, Calabrese E, et al. (2014) Waxholm Space atlas of the Sprague Dawley rat brain. *Neuroimage* 97: 374-386)

1) Make sure that you have the following files saved on your computer:

Ratlas-LH.nii.gz
Ratlas-LH_Atlas.nii.gz
Ratlas-LH_delineations.label

2) Start ITK-SNAP by double clicking the icon.

3) Click on the File dropdown menu and select *Open main image ...* (**Figure 1**)

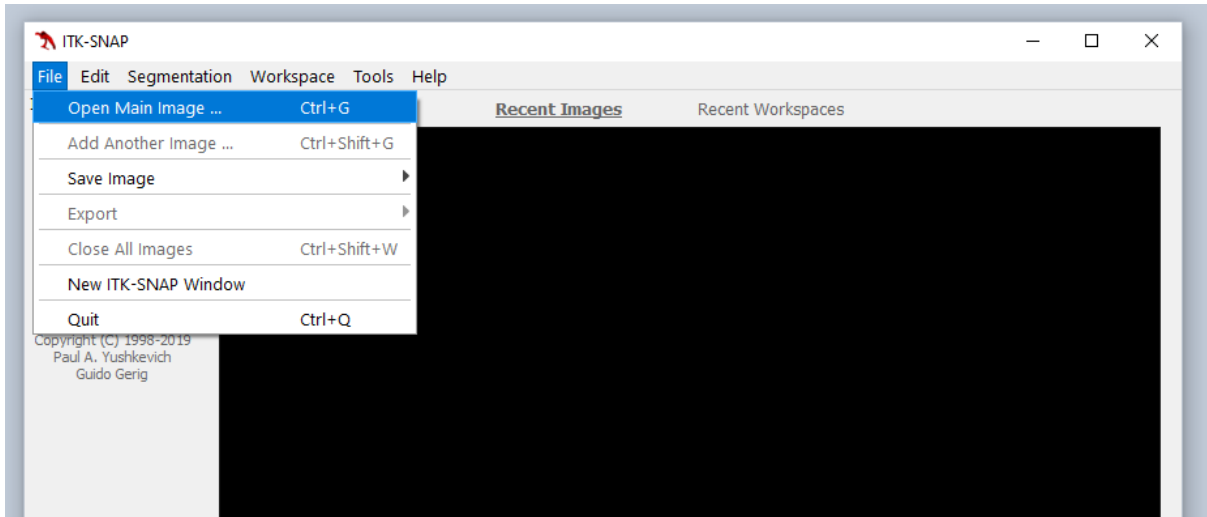


Figure 1 Starting the file navigation window

4) Select browse so that you can navigate to the folder where Ratlas-LH has been stored

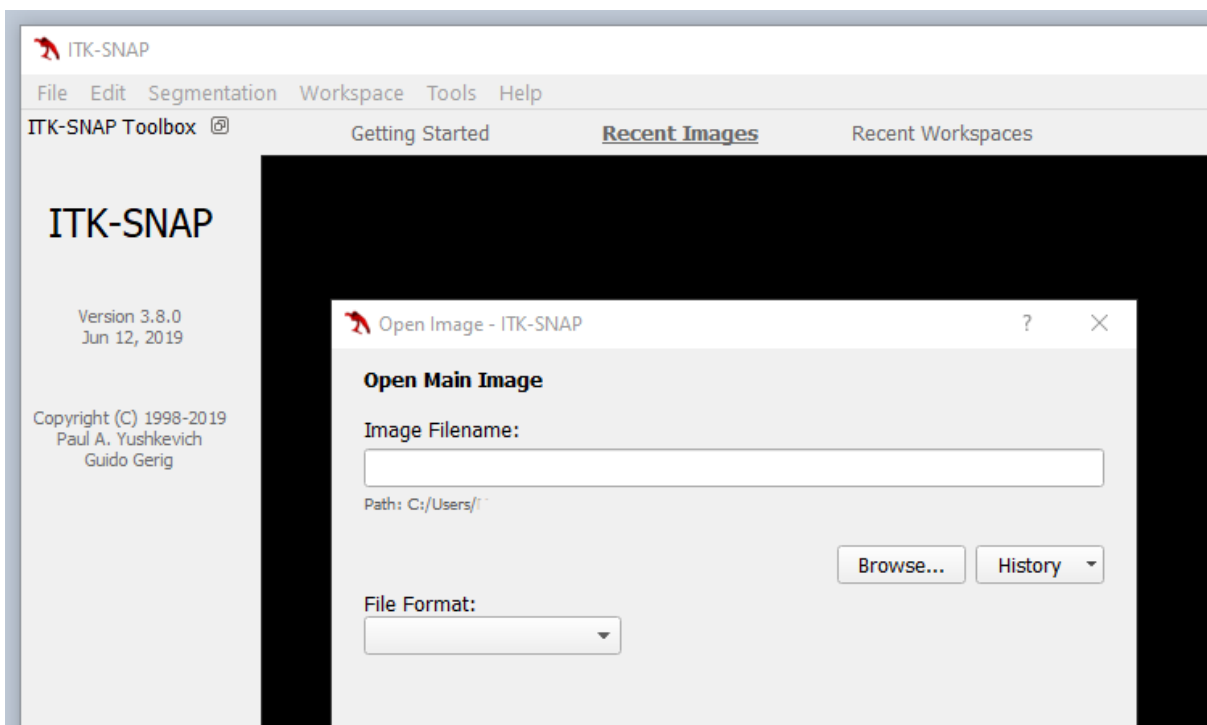


Figure 2 Using the search selection window

5) Double click on the listing of Ratlas-LH to open it.

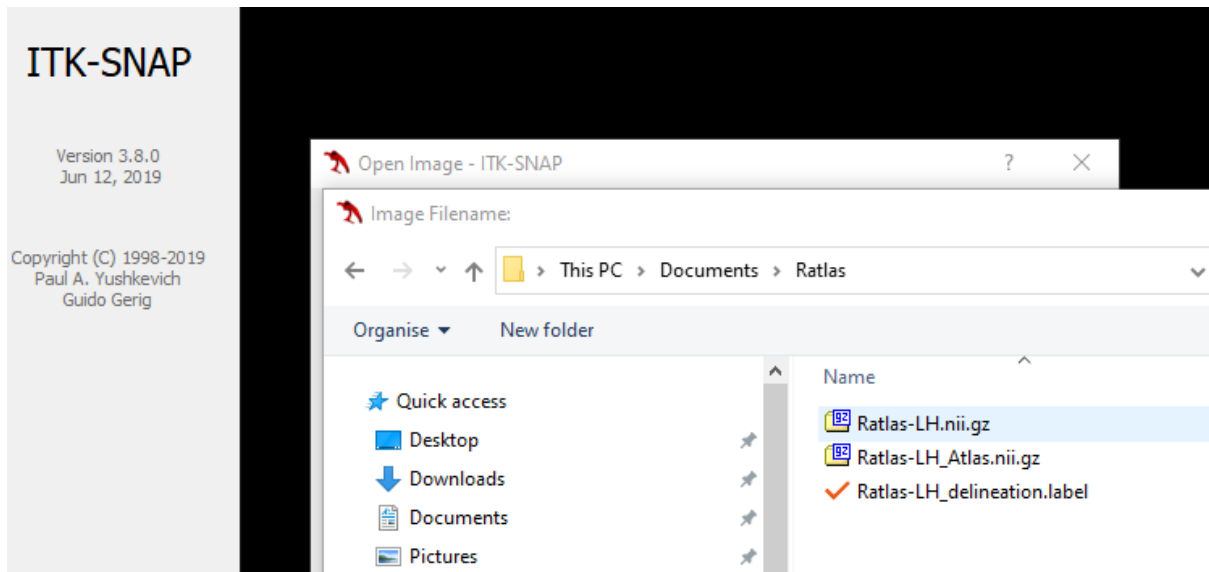


Figure 3 Opening Ratlas-LH

6) Select Next from the Open Main Image window, see Fig 4.

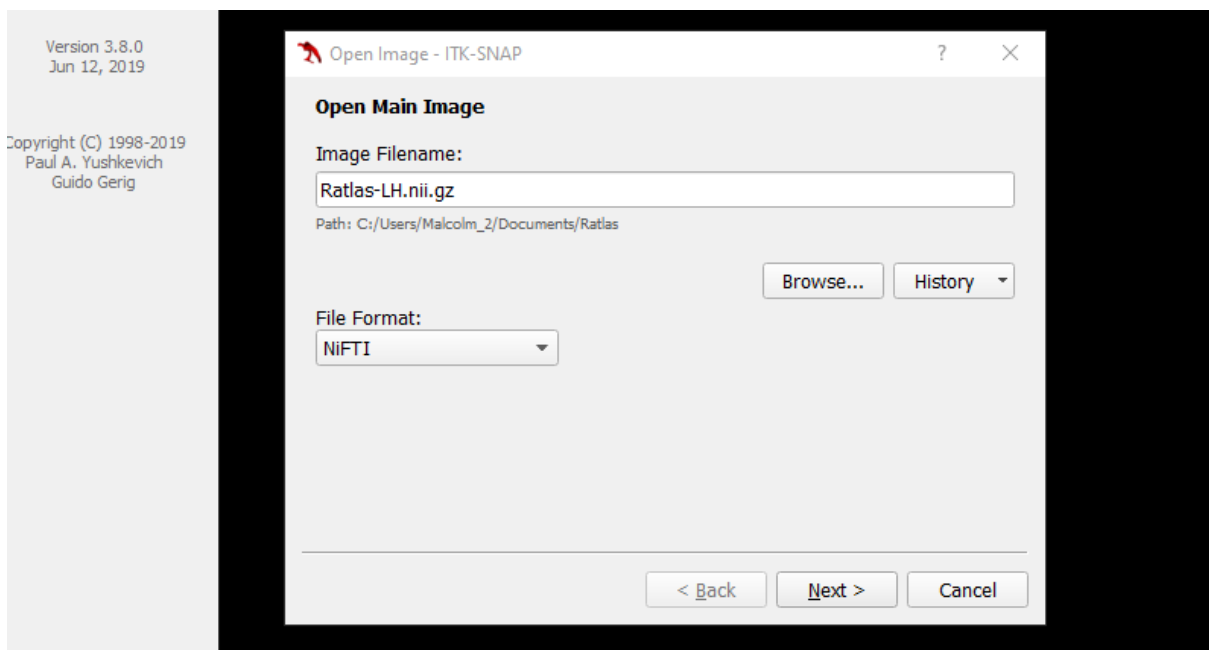


Figure 4 Confirming the file selection

7) The image summary window will open (see Fig 5) and give a warning about loss of precision. However, this is not important when using ITK-SNAP to find stereotaxic coordinates in Ratlas-LH. Select Finish to complete the opening process.

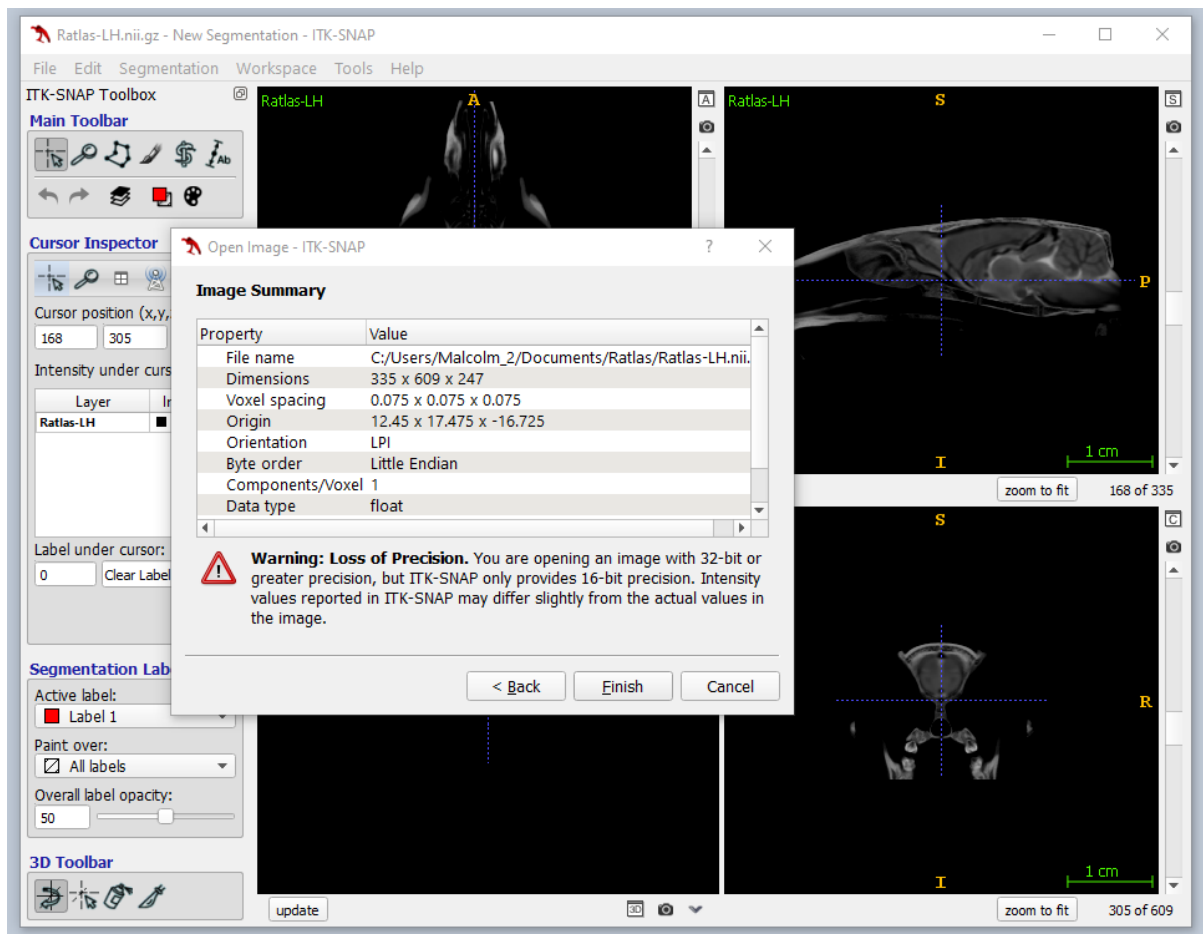


Figure 5 Completing the opening process for Ratlas-LH

8) At this point you may wish to use the command Control-J (in PC) or command-J (in Mac) to auto-correct the image contrast and make Ratlas-LH appear a little brighter in the display window.

9) Load the atlas delineations by selecting Segmentation, Open segmentation. See figure 6.

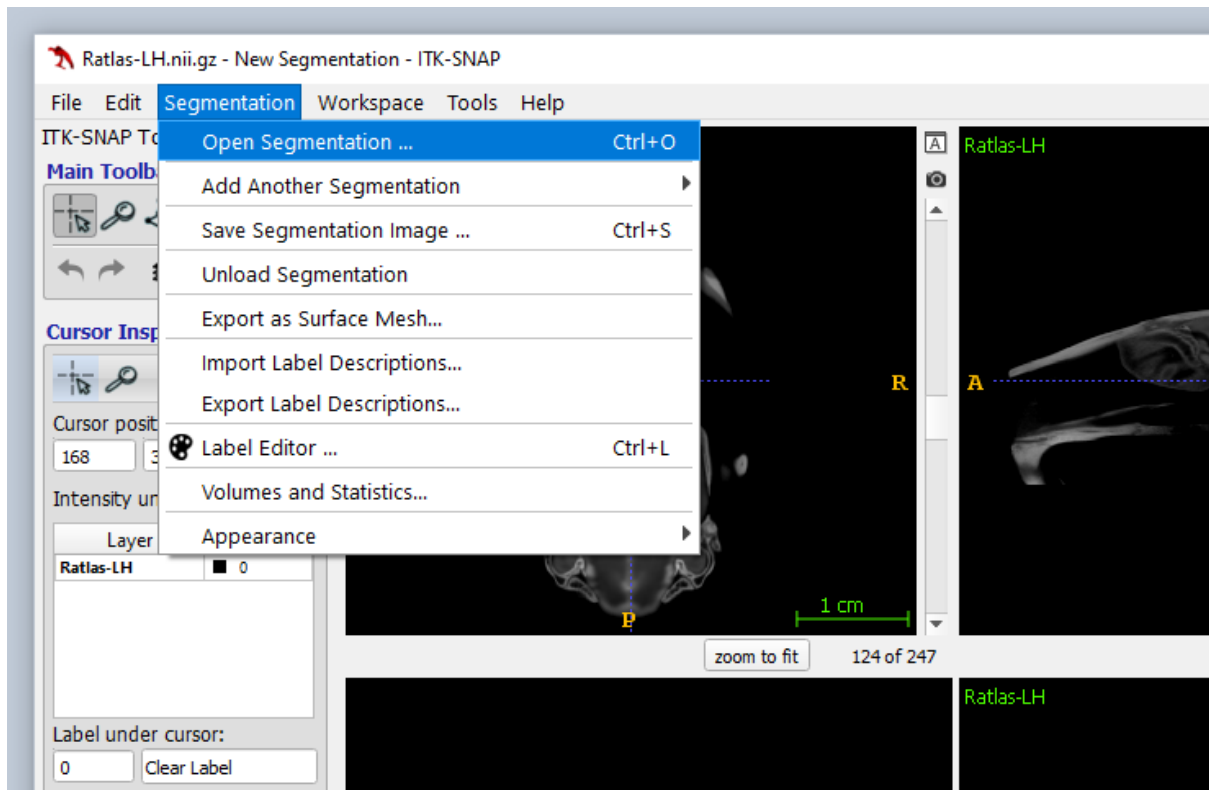


Figure 6 Starting the process of opening the atlas delineations for Ratlas-LH.

10) Select browse to navigate to the appropriate directory and select Ratlas-LH_delineations.nii.gz (See Fig 7) and then use the select the Next button and the Finish button to complete the opening process.

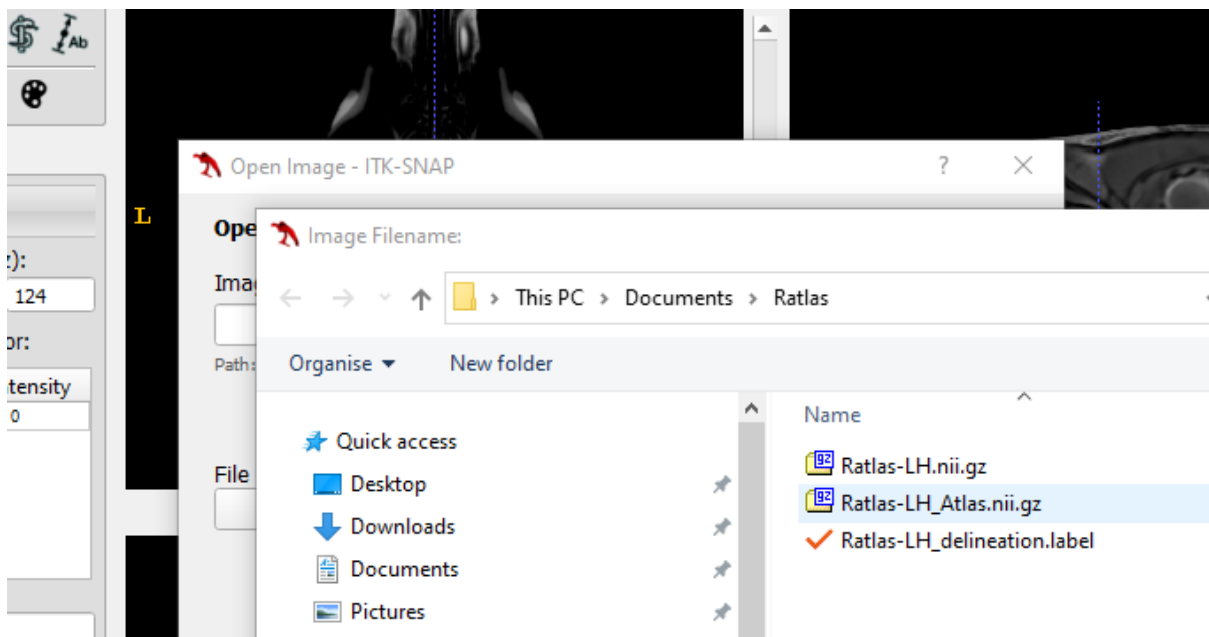


Figure 7 Selecting the atlas dataset for Ratlas-LH.

11) The atlas delineations should be displayed over the Ratlas-LH template (see **Fig. 8**).

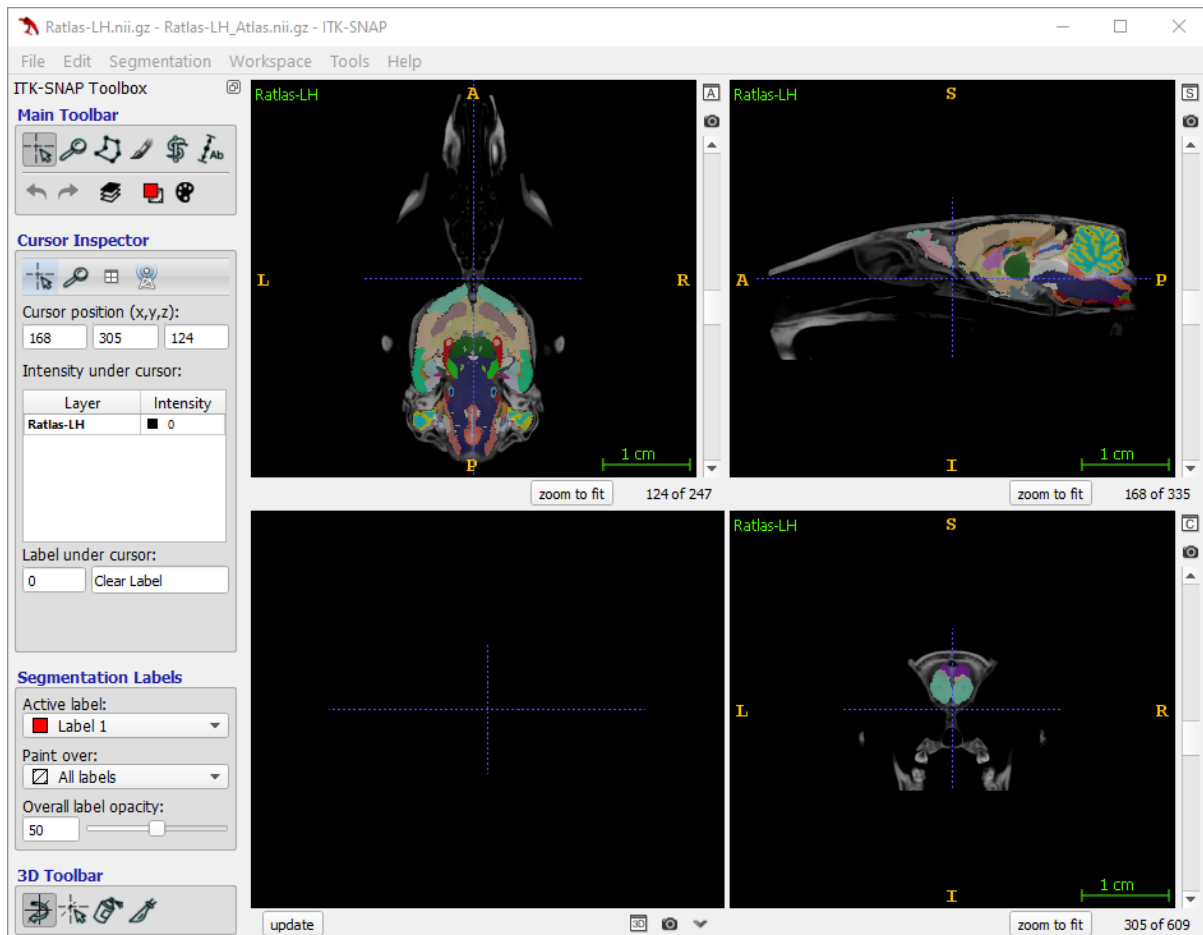


Figure 8 The atlas areas displayed on Ratlas-LH

12) Import the label descriptions using the Segmentation dropdown menu (**Fig 9**), navigating to the correct folder and selecting Ratlas-LH_delineations.label (see **Fig 10**).

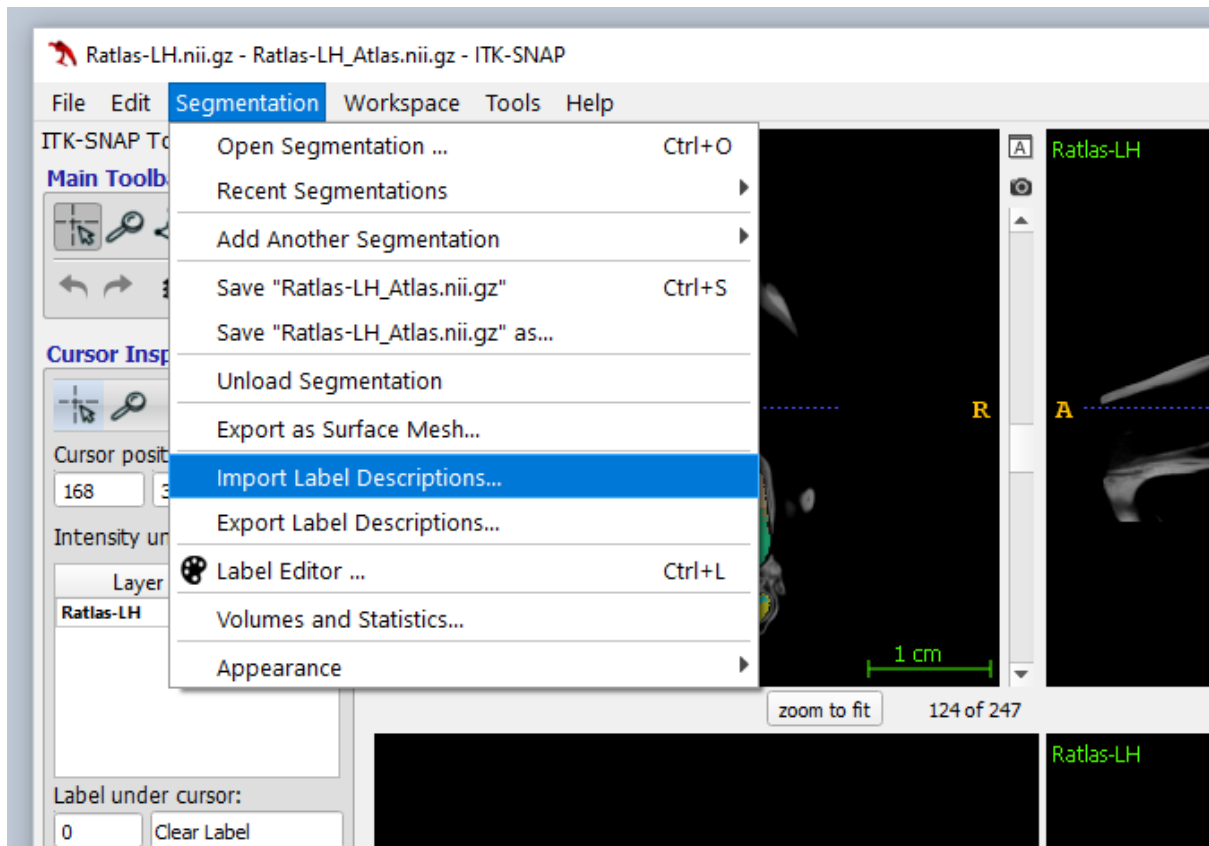


Figure 9 Starting the process to import the label descriptions for Ratlas-LH

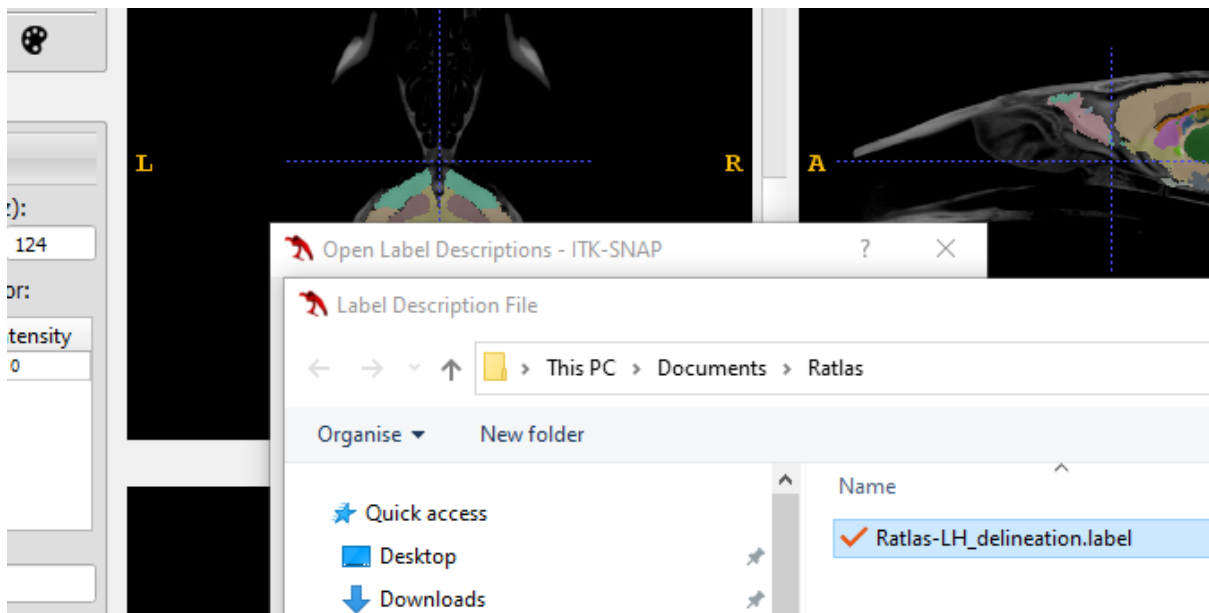


Figure 10 File selection for the atlas labels for Rtalas-LH.

13) After the labels have been loaded the label number and the name of the area under the crosshairs can be seen on the left hand side of the display window that has been highlighted by the red oval in **Fig 11**.

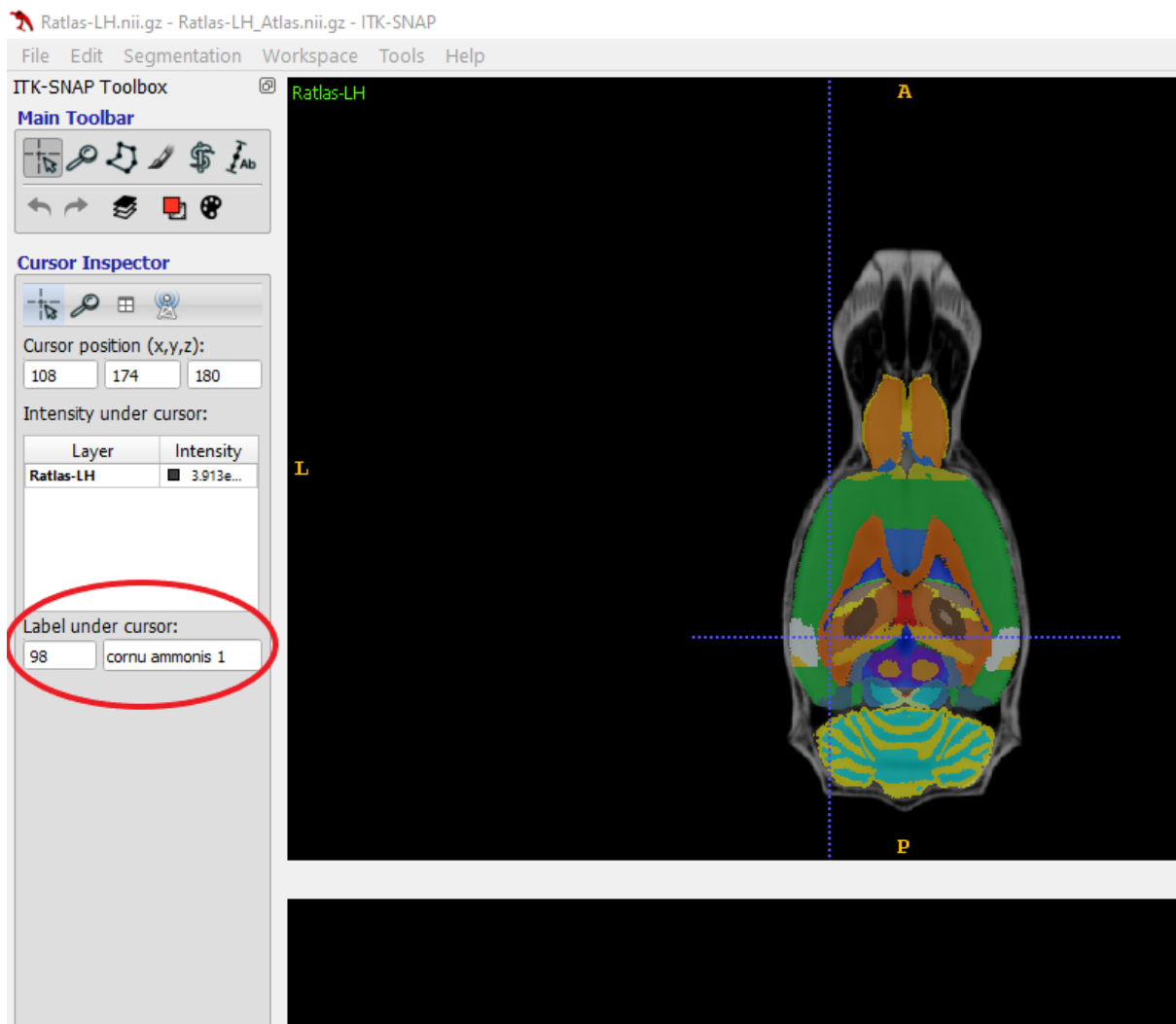


Figure 11 Reading the label descriptions for Ratlas-LH

14) Users may find it useful to adjust the opacity of the delineation labels in Ratlas-LH. This can be done using a slider bar that is highlighted by the red oval in **Fig 12**.

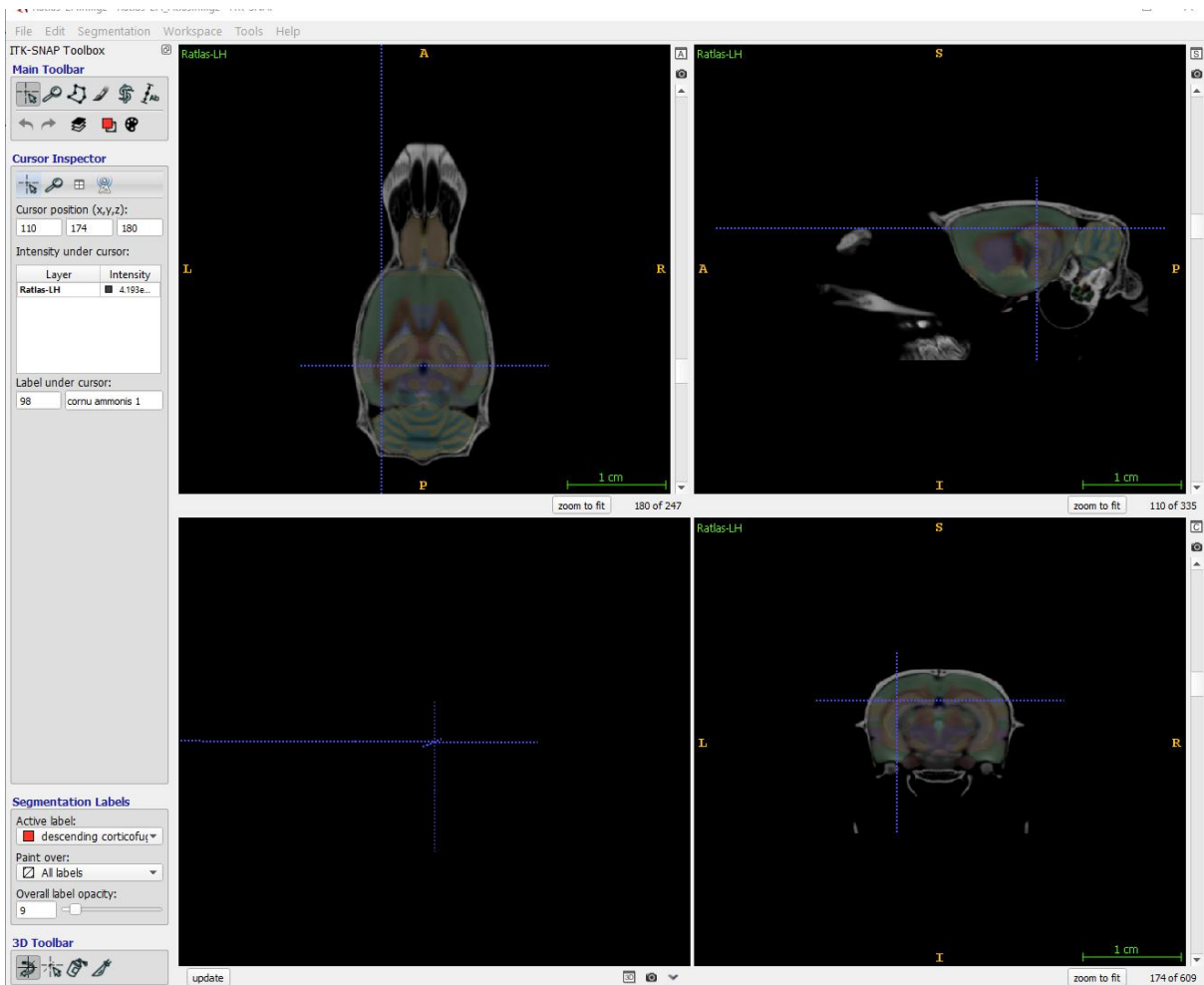


Figure 12 Ratlas-LH displayed with the atlas delineations overlaid with reduced opacity.

15) To find stereotaxic coordinates from Ratlas-LH, select Image information from the Tools dropdown menu (See fig 13).

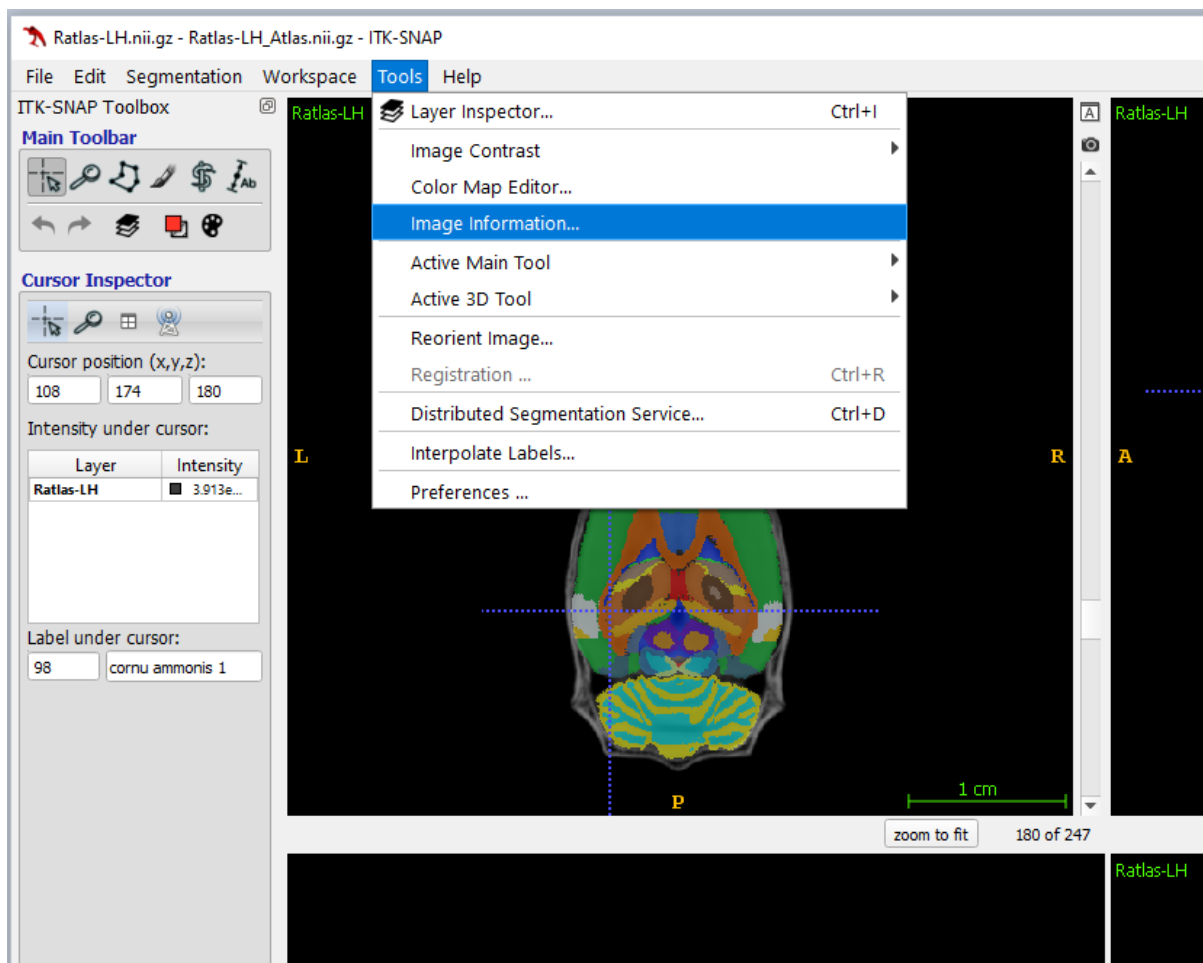


Figure 13 Opening the mage information window.

16) When the Image Information window is opened, users may find it convenient to have the display window maximised so that the image information window can be placed conveniently towards the lower left hand side whilst coordinates are derived. See **Fig 14**.

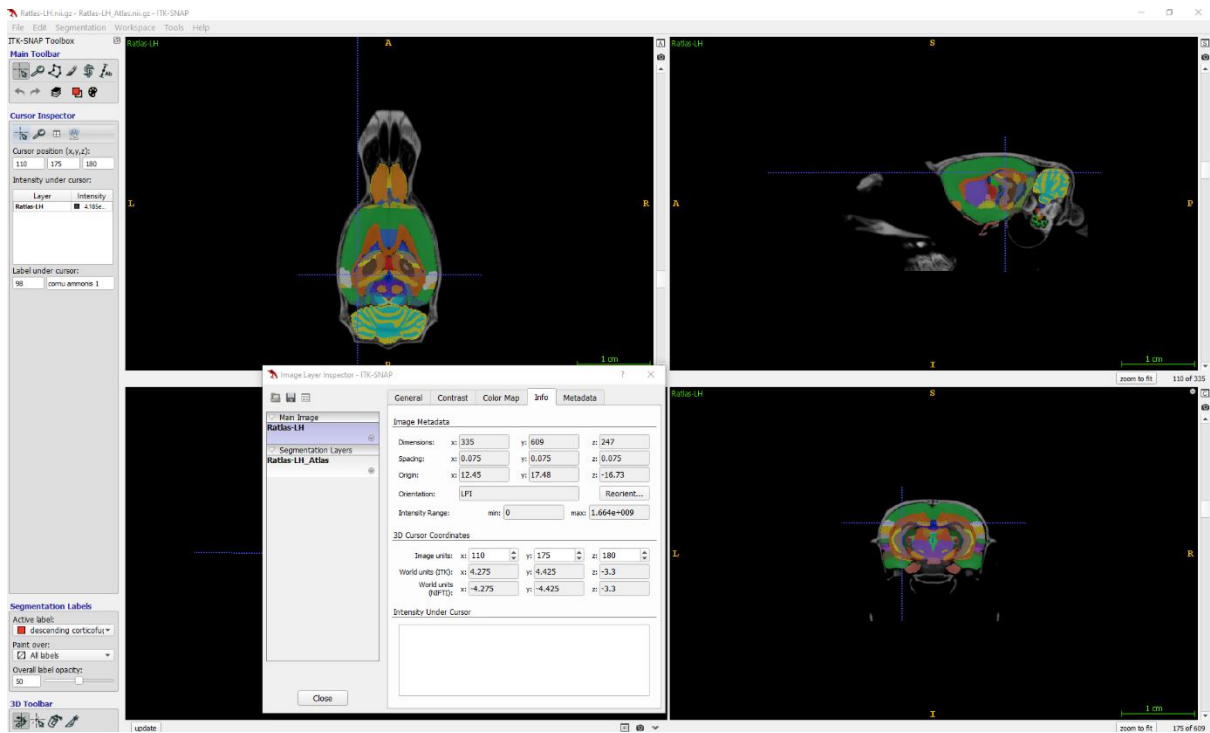


Figure 14 The full screen display of ITK-SNAP with the Image Information window opened.

17) Centre the blue crosshairs on the desired region making sure that they are in the correct location in all three planes. The coordinate values are read from the World units (NIFTI) display highlighted by the red box in **Fig 15**.

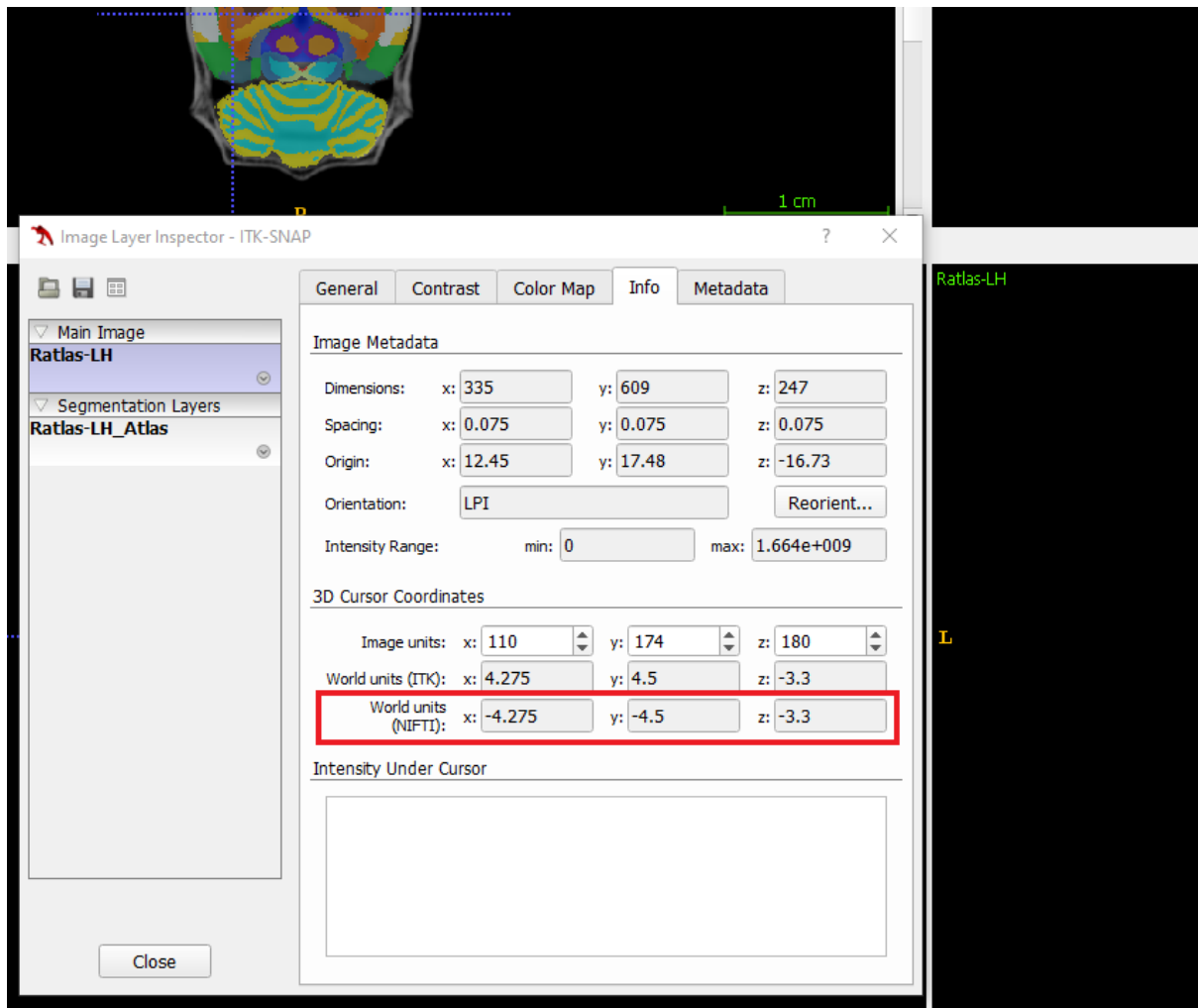


Figure 15 Obtaining the stereotaxic coordinates from Ratlas-LH displayed in ITK-SNAP.