



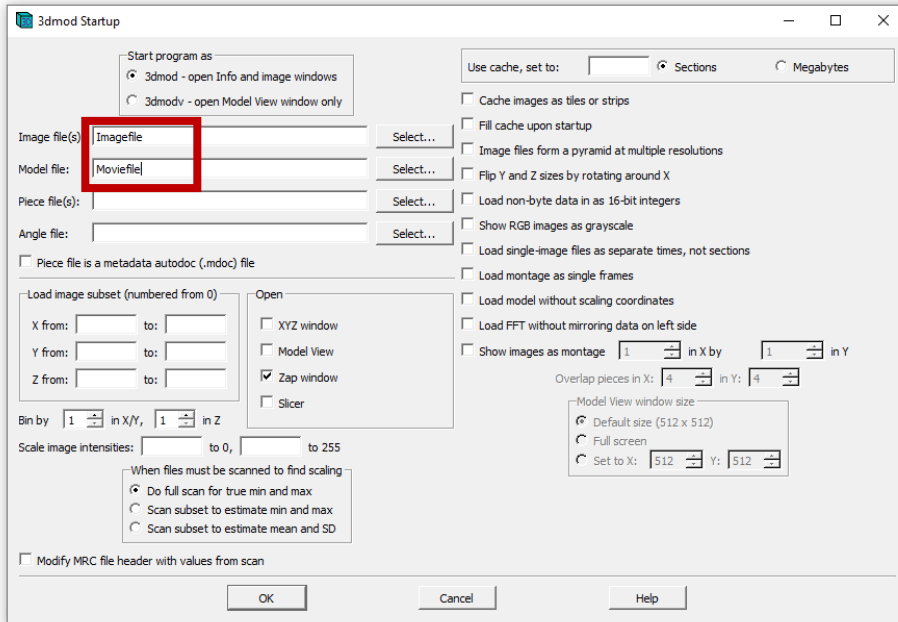
# Advanced movie making in 3dmod



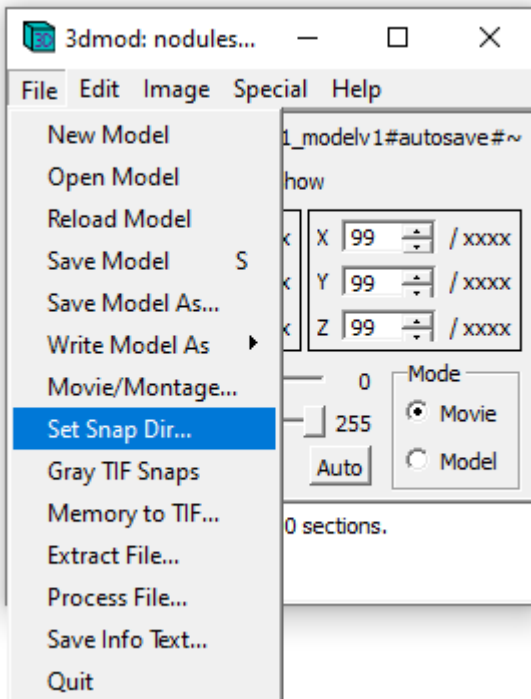
If you have NOT made movies of your data using 3dmod before, we advise you to first follow the tutorial: “Making Movies of 3D Models using IMOD”, to help you understand the basic principles of making movies in 3dmod.

## Producing a “mixed” series of model and zap images

1. Open 3dmod, select your image file and model file. Click OK.



2. In the main 3dmod window, select the directory you want the “snaps” (images) to go to.

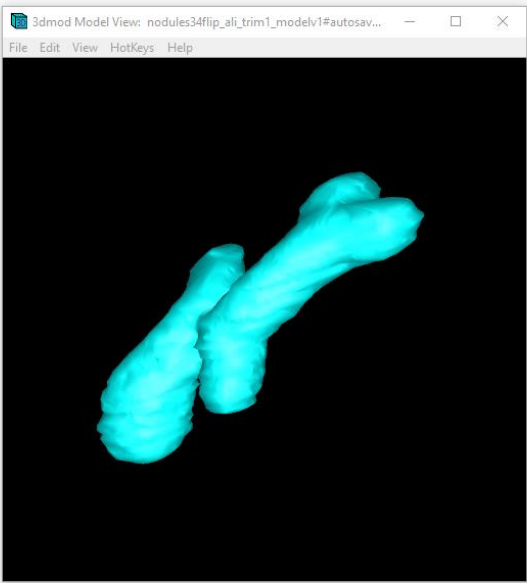
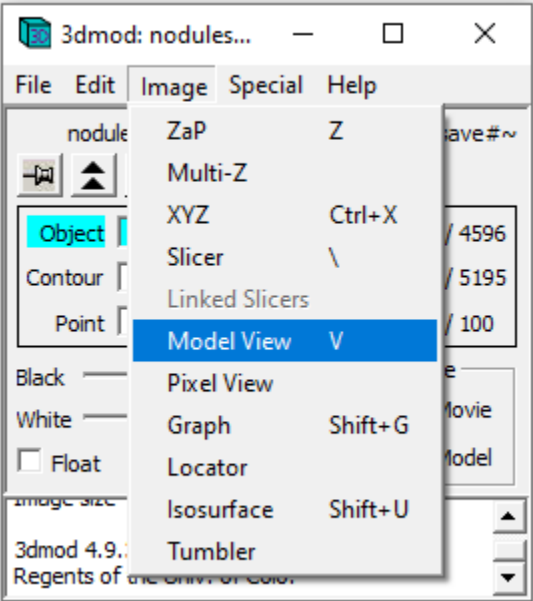


**File > Set Snap Dir...**

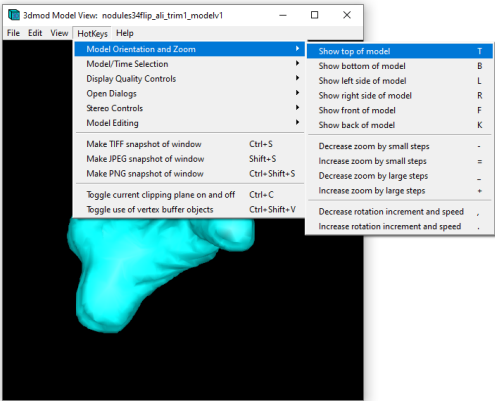
**Create a folder just for the movie snaps.**  
Call it “Movie Snaps” or something similar.

Then:  
**Select Folder**

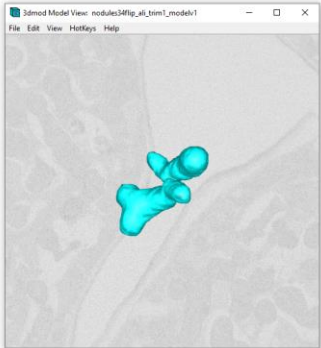
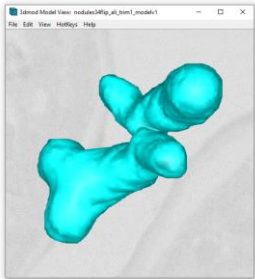
3. Open model view: Image > Model View (or just V)



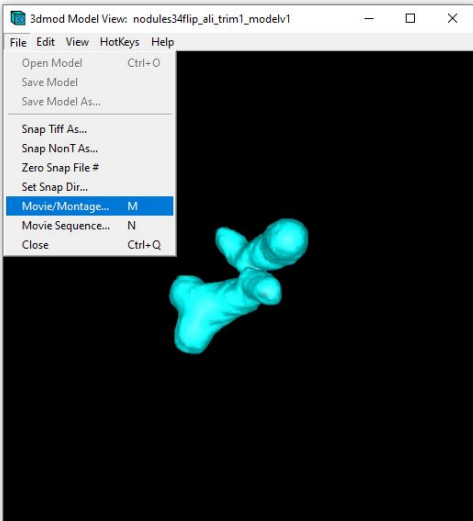
4. Press T to show the top of the model (or use HotKeys menu)



5. Press Z (to show the image) and zoom out to a comfortable zoom factor for both data and model.



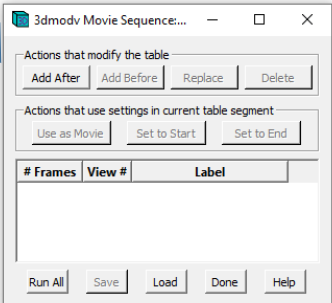
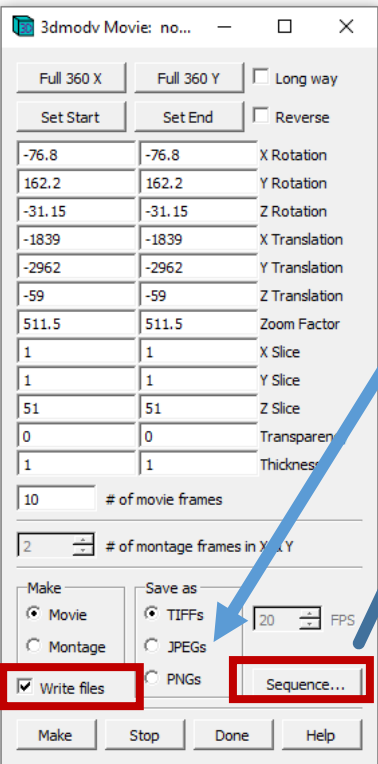
6. Tick Z (to hide image)  
Go to File > Movie/Montage  
(or just M)



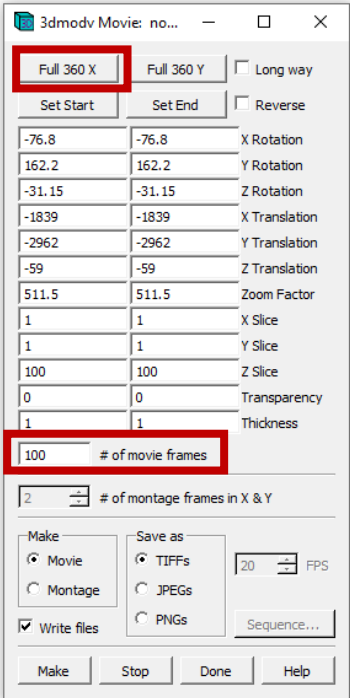
7. Tick **Write files**

8. Open the **Sequence** window

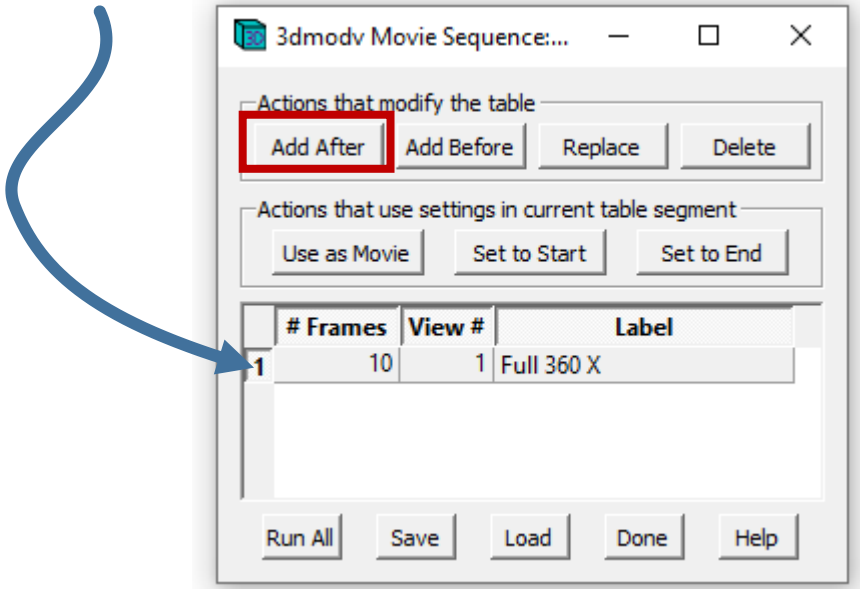
**TIP:** you might want to change the file type to JPEGs.



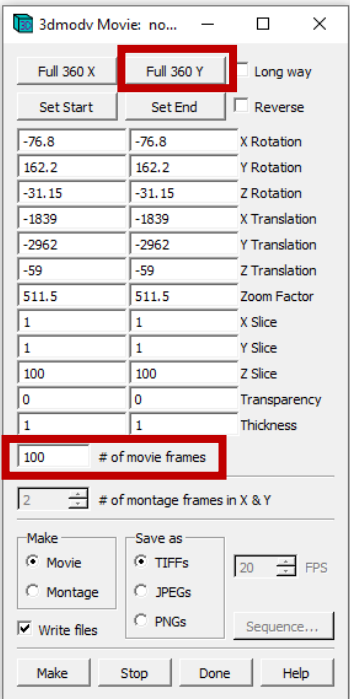
9. In the Movie/Montage window, change the # of movie frames to match the number of z stacks you want to use, then click on **Full 360 X**.



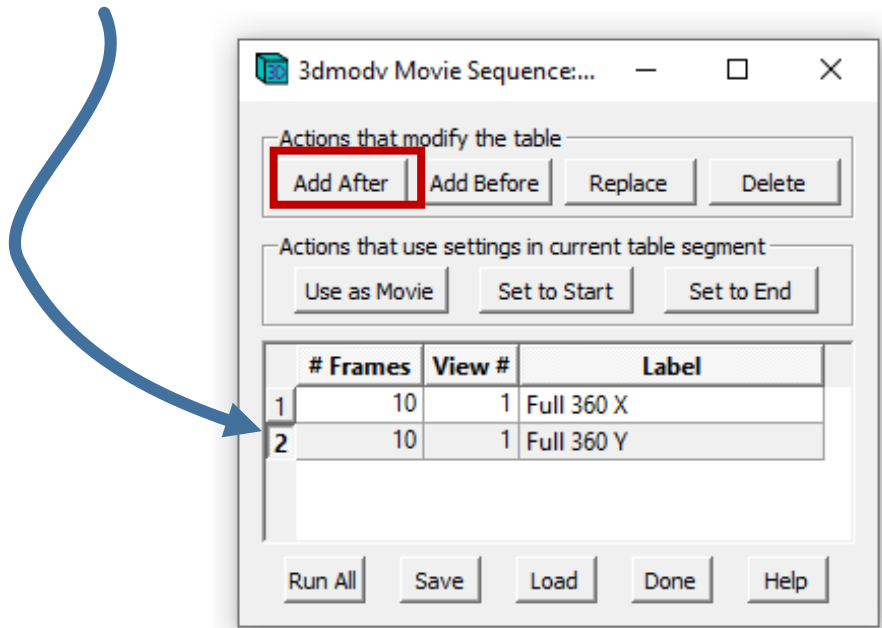
15. In the Sequence window, click **Add After**. A number 1 should appear in the column on the left showing the number of Frames of 1 view each, with **Full 360 X** as a Label.



10. In the Movie/Montage window, click on **Full 360 Y**.

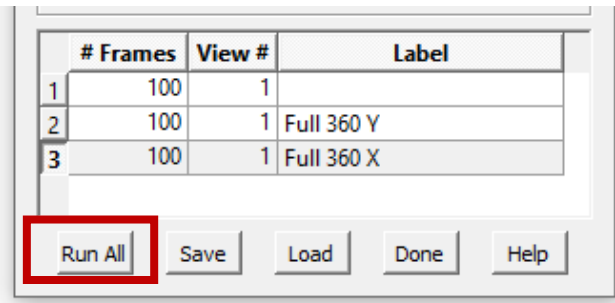


13. In the Sequence window, click **Add After**. A number 2 should appear in the column on the left showing the number of Frames of 1 view each, with **Full 360 Y** as a Label.

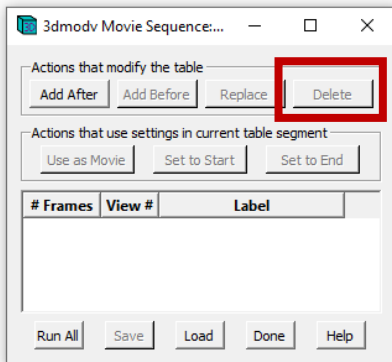


11. In the Sequence window, click **Run All**.

Now check that the image sequence was saved in the folder you set as Snap Directory. If the folder is empty, make sure you did **step 2**, and **Write files is ticked**, then repeat Run All.

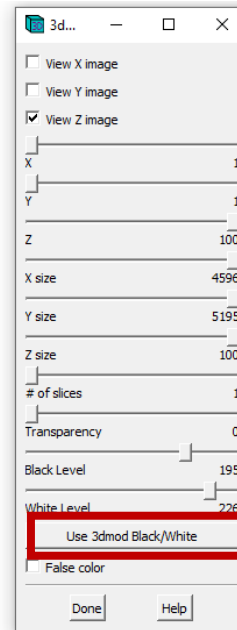
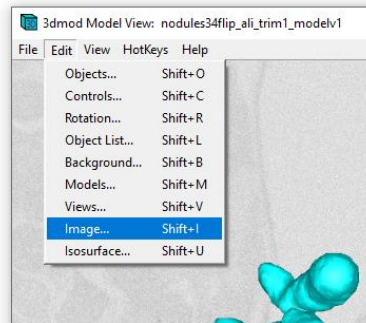


12. Clear the Sequence window by deleting both movie schedules

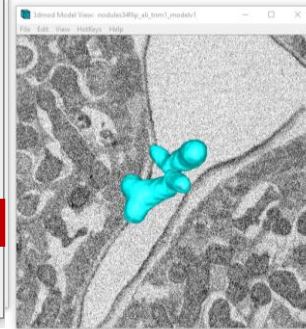


13. Press **Z** to overlay the image on the model.

Go to **Edit > Image**

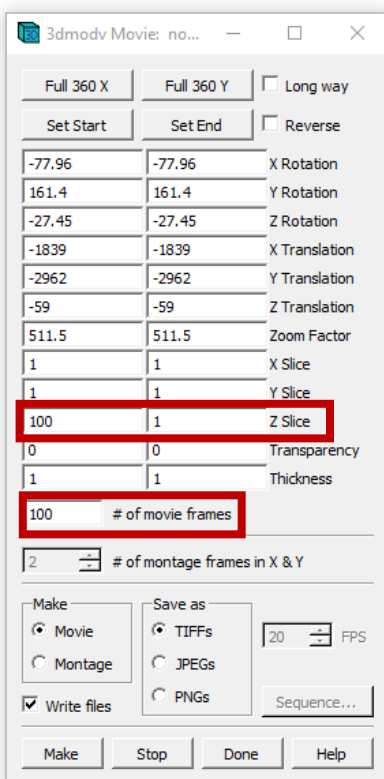


Click on “**Use 3dmod Black/White**” (to change the image brightness/contrast to match the original data)



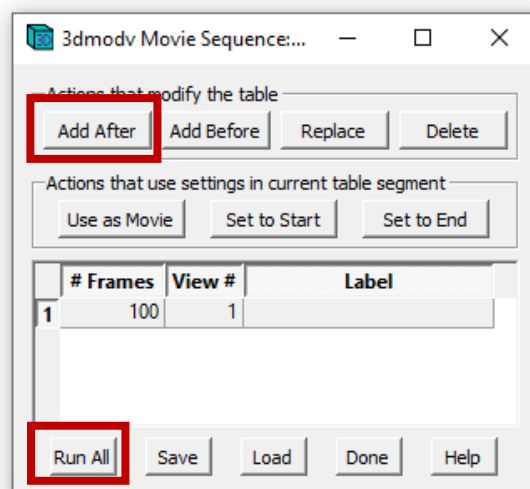
**Suggestion:** use higher resolution for better quality videos!  
You can always compress them later.

13. In the Movie/Montage window, click **Set Start**, then **Set end**, to remove the rotation settings.



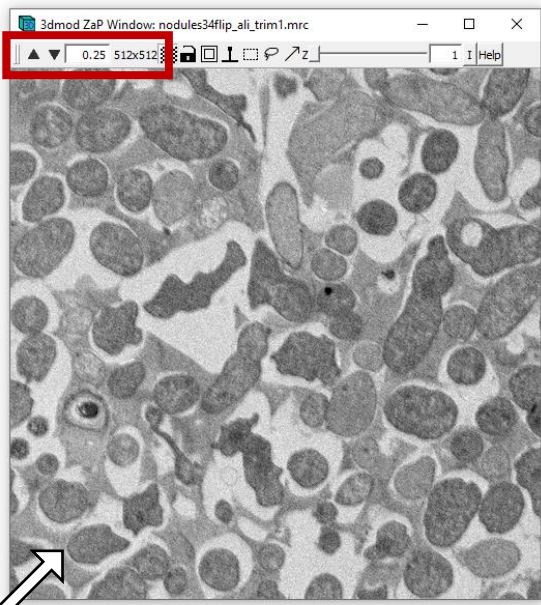
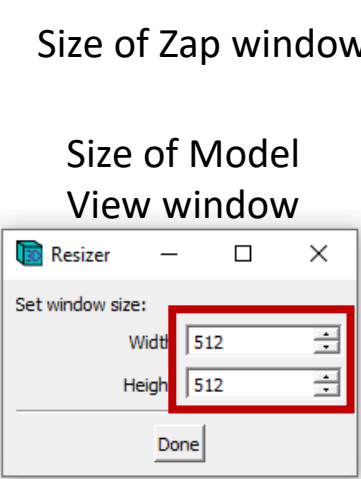
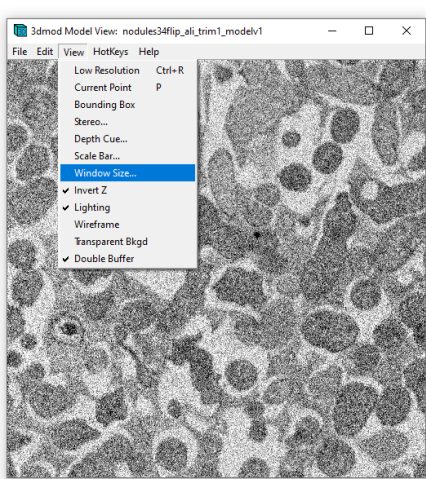
14. **Set Start** to a **Z slice** where your model is fully visible, and **Set End** to a **Z slice** where your model is not yet visible.

15. In the Sequence window, click “**Add After**”. Then **Run All**. (see yellow box in step 11).



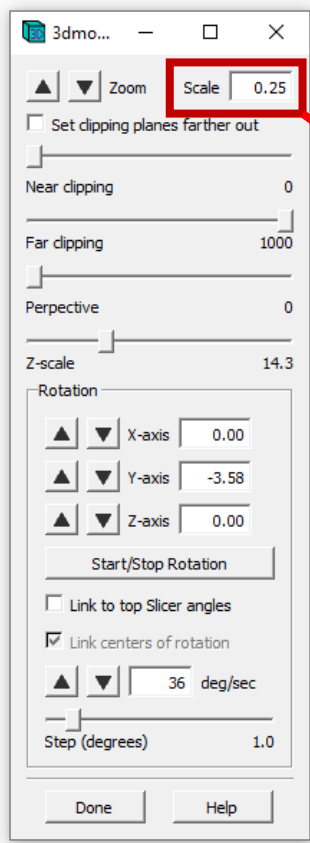
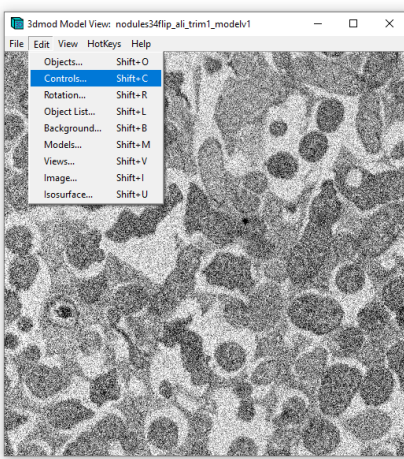


16. Go to View > Window size. This will bring out the size of your Model View window. Now **resize** your Zap window to **match** the Model View one.

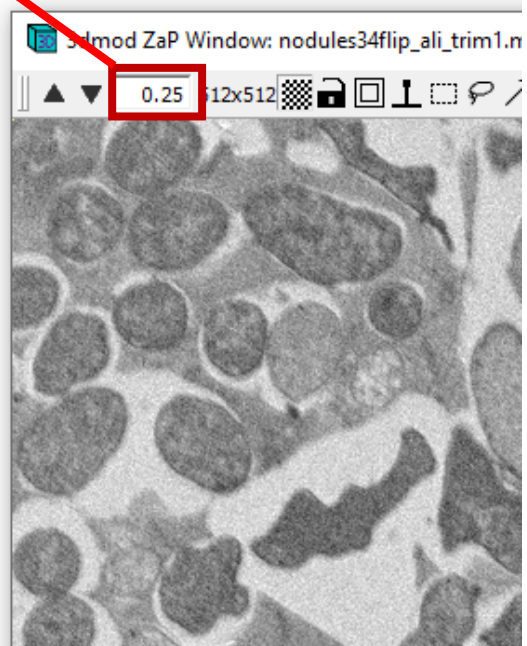


Resize

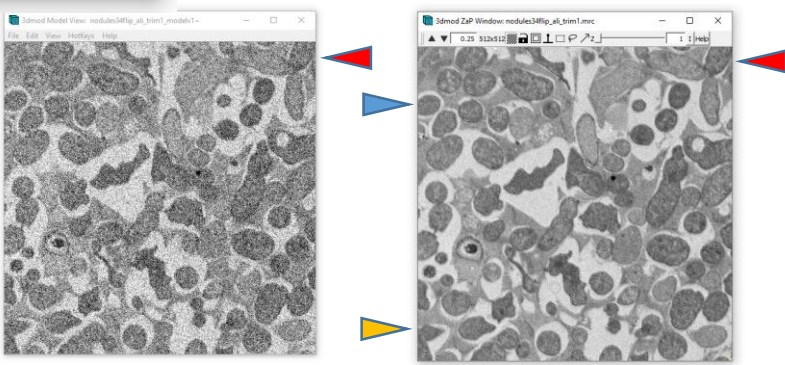
17. In Model View, go to Edit > Controls



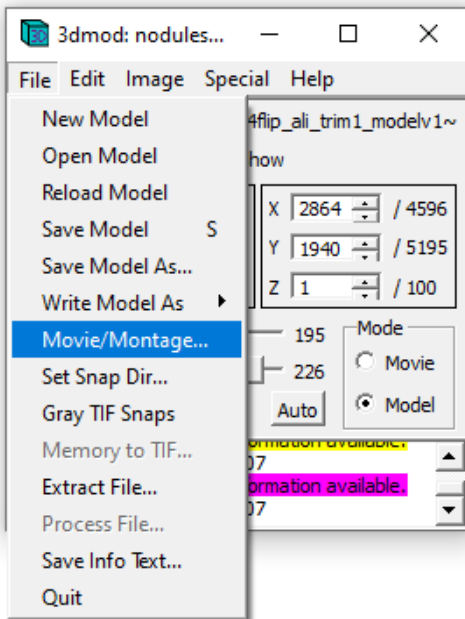
Match the **Zoom factor** of the Zap window to the **Scale** shown in the Controls window.



18. In the Zap window, hold the **right mouse button** to move the image to **match the Model View image as closely as possible** (look at the position of structures on the edges for guidance).



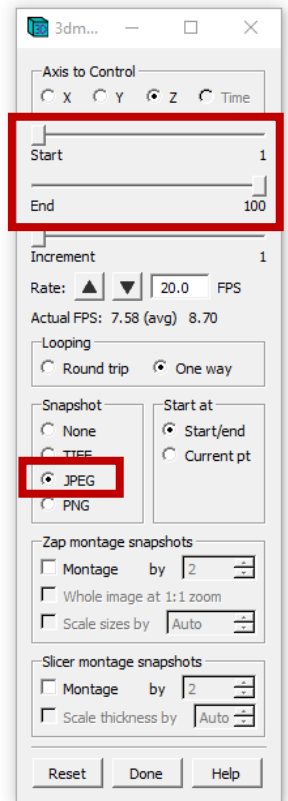
18. Go to File > Movie/Montage.



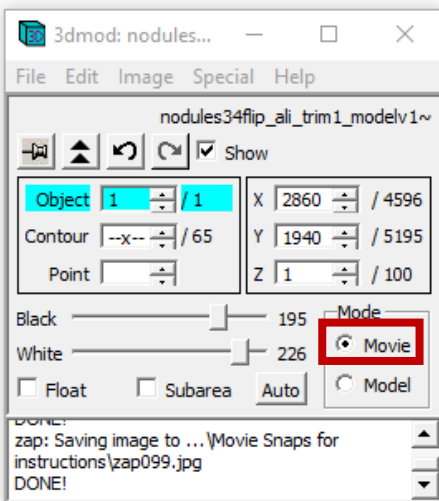
19. Set:

Z **Start** and **End** to match those used for the model.

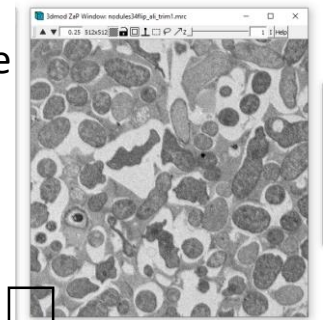
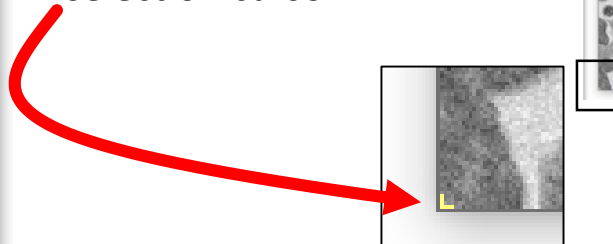
**Snapshot** format to the *same* used for model view images (eg. JPEG).



21. Keep Movie/Montage window open, and make sure 3dmod is on **Movie** mode.



22. Click with the right mouse button on the bottom left of the screen to “hide” the selection cursor.



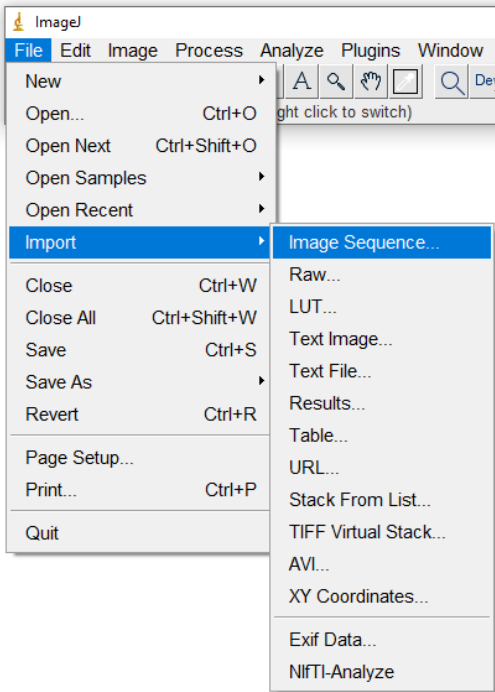
23. In the Zap window, move to the **Z position** that you set as the **Start** in **Movie/Montage**, then **click** anywhere on the image in the Zap window to start saving snaps. You should see activity appearing on the Movie/Montage window – this is an indication that it is saving snaps in the correct directory.

Now check that you have “zap” snaps saved in the folder you set as Snap Directory. This should be the same folder used for the “Model” snaps, and the Zap snaps should be immediately after the “modv” snaps. If the Zap snaps are not there, make sure you did **step 2**, and **then repeat step 23**.

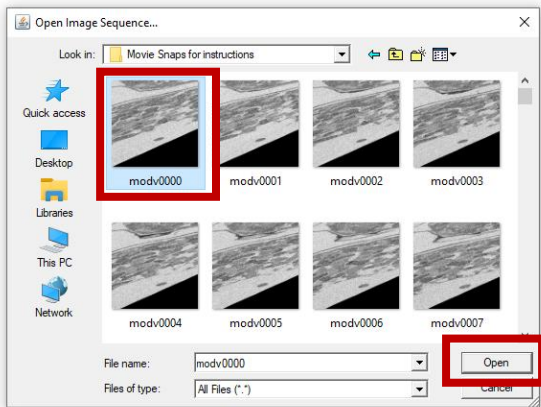
24. Open ImageJ (or Fiji) – or to download, go to <https://imagej.nih.gov/ij/>



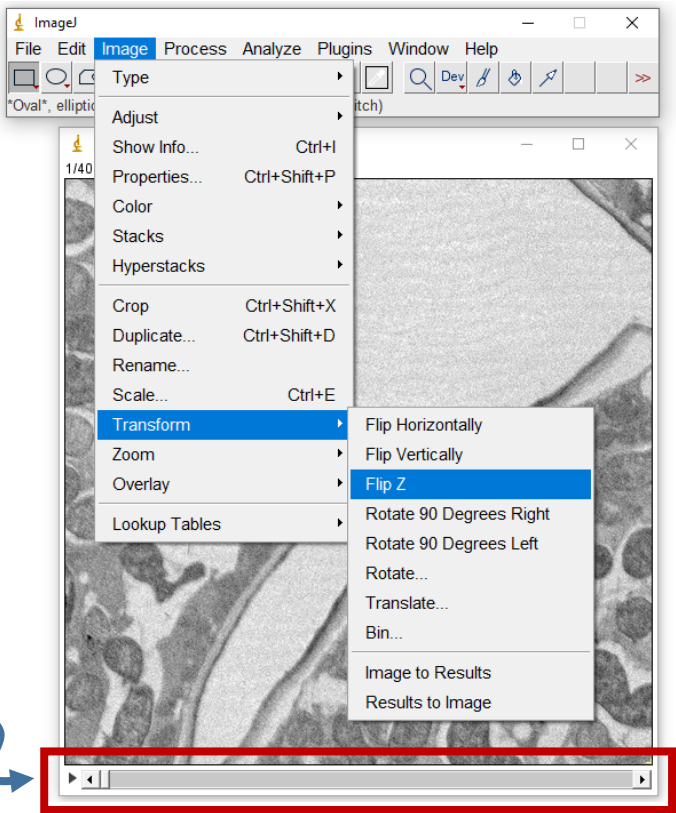
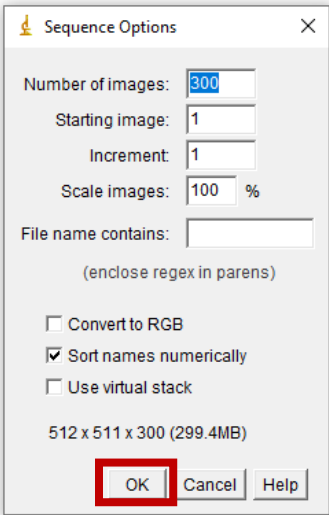
25. Go to File > Import > Image Sequence.



26. Go to the Movie Snaps folder, select the first file. Click Open



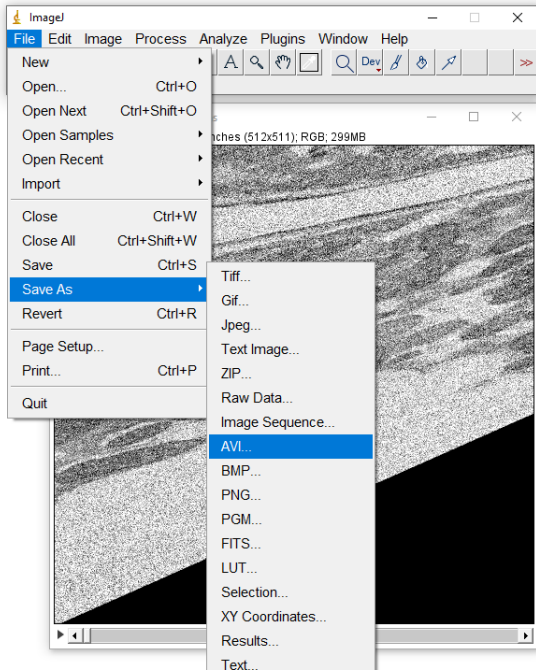
27. Click OK and wait for the full image sequence to be loaded.



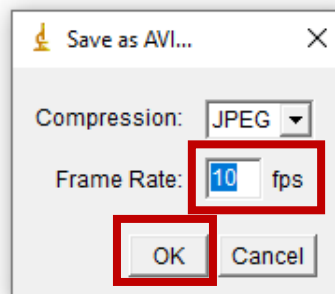
Press play ► to give you an idea of what the movie will look like.

Use the bar at the bottom of the image to check that the **zap** snaps are now at the start of the image sequence, rather than at the end.



28. Go to File > Save As > **AVI**

TIP: You might want to change the frame rate (some users prefer it slower than 20 fps).

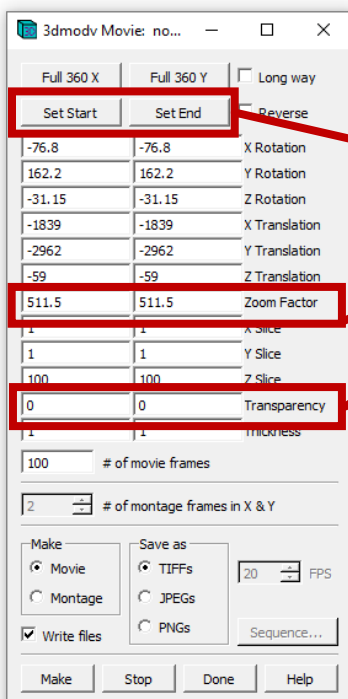
29. Click **OK**.30. Select the file name and destination folder and click **Save**.

ImageJ will then save an .avi movie file of your image sequence. **The end!**

To give you an idea of what you should obtain with this tutorial, watch the end product on:

<https://www.youtube.com/watch?v=OuGgcRtEFLc>

**TIP:** To convert the file to .mp4 and compress it, you can use the free software HandBrake - <https://handbrake.fr/>

**Feeling adventurous???**

You can position your model in the model view window at what you would like to be the start and end of a movement, then press **Set Start** and **Set End** to define these positions as start and end. Then click **Add After / Add Before** in the Movie Sequence window. This allows you to produce snaps for any sequence of movements of your model, which may even include changes in transparency and zoom factors!

