



# Shain Lab / Confocal Microscopy July 6 – Aug 25

Sophia Hannaford

# My Project

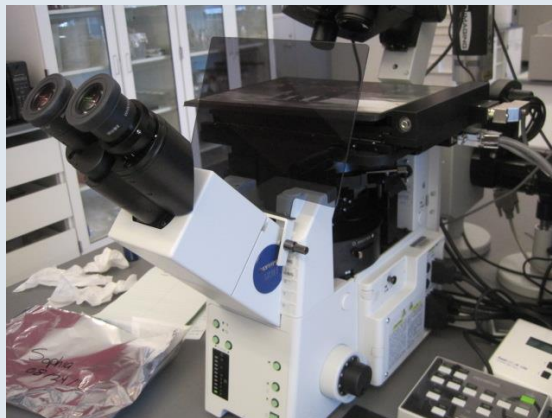
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- ▶ Image human tissue slices. From control and from Alzheimer's diagnosed tissue
  - ▶ Is there a difference in the structure, density, # of branches of the vasculature?
- ▶ To pave the way for an application for a grant
- ▶ Practiced on rat and monkey tissue until human tissue arrived

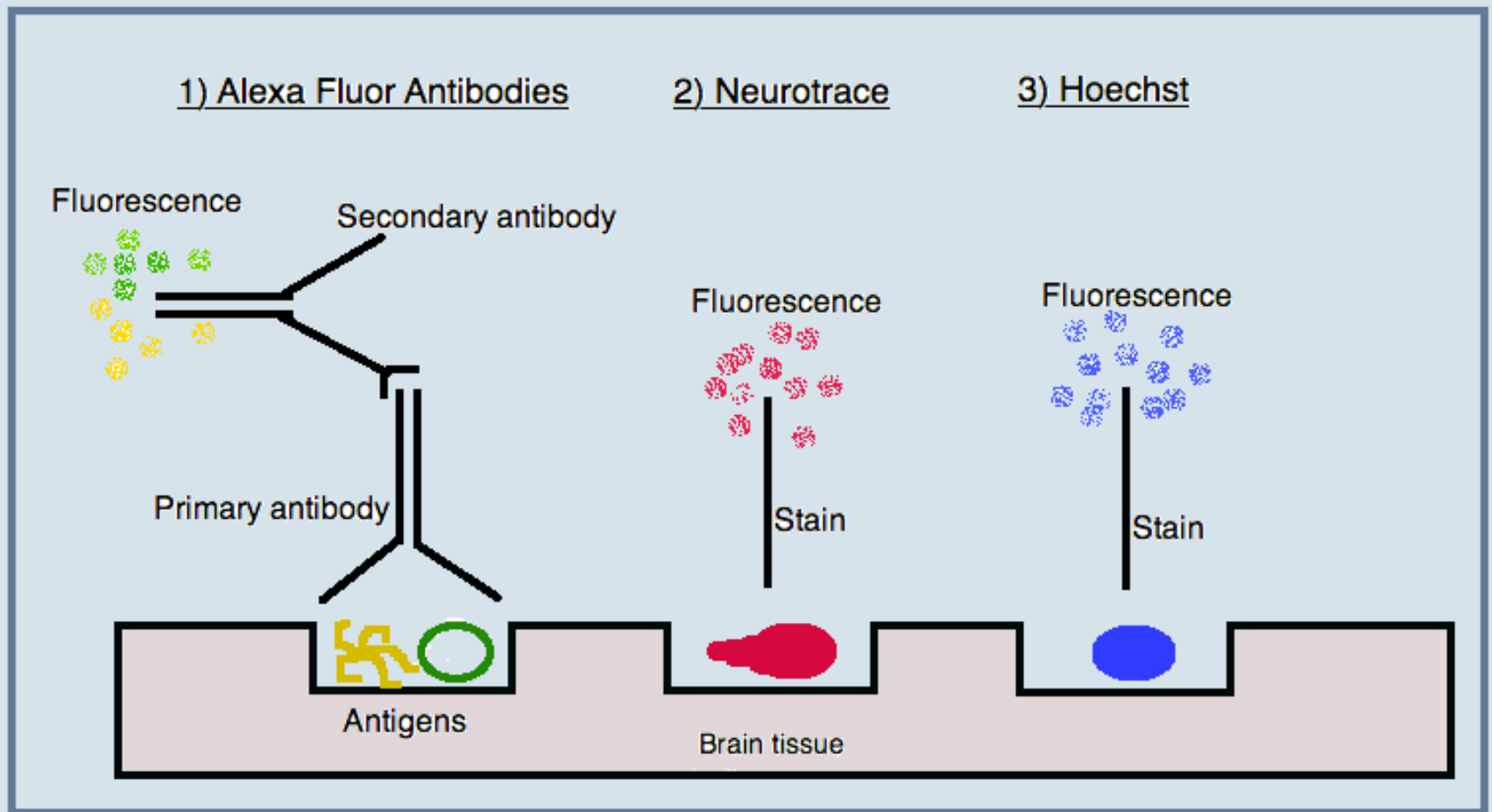


# Slicing, IHC and Imaging Process

- ▶ Cut sections of brain with Vibratome blade to 80 $\mu$ m
- ▶ Day 1 of Immunohistochemistry
- ▶ Day 2 of immunohistochemistry
- ▶ Day 3 of immunohistochemistry
- ▶ Mount slices onto slides
- ▶ Image



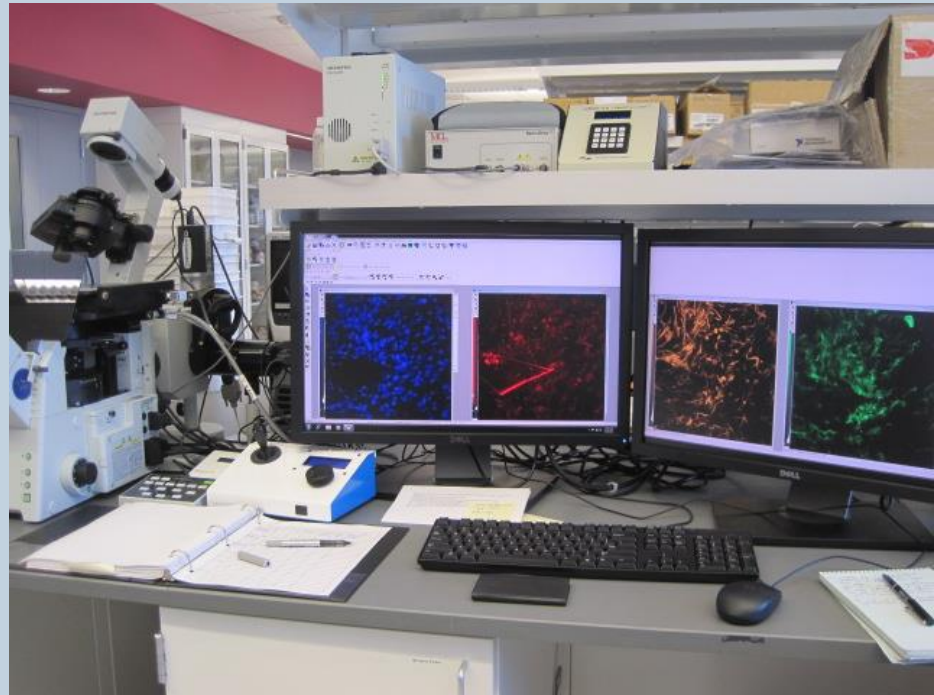
# Immunohistochemistry



# Confocal microscopy

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- ▶ To image tissue that is thicker than the focal plane
- ▶ Produces 3D images
- ▶ Image mostly in 4 channels:
  - ▶ DAPI
  - ▶ CY5
  - ▶ TRITC
  - ▶ GFP







Hoechst  
DAPI



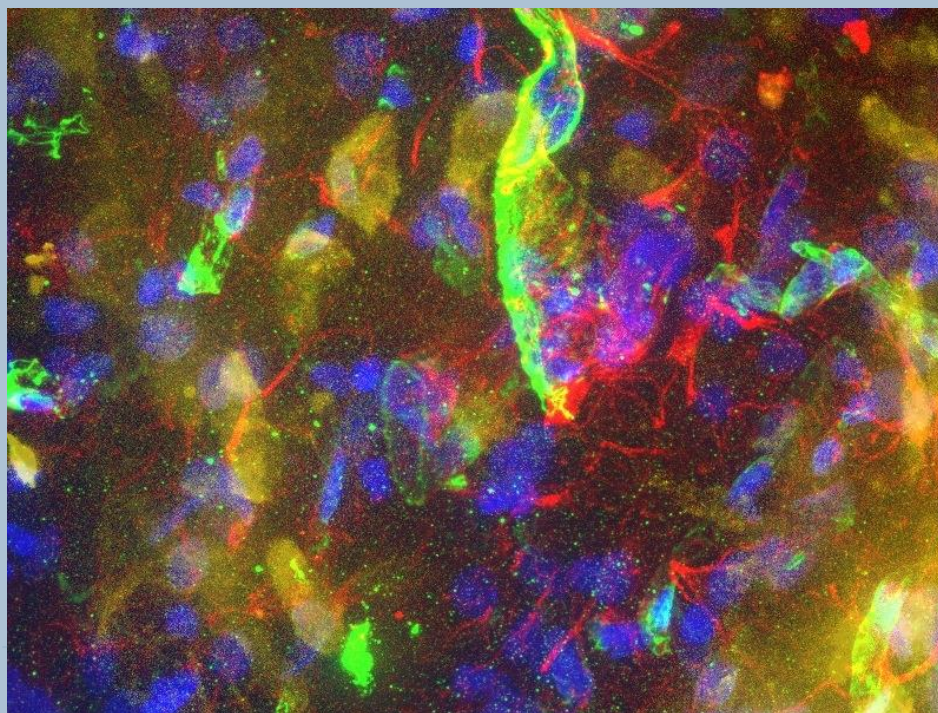
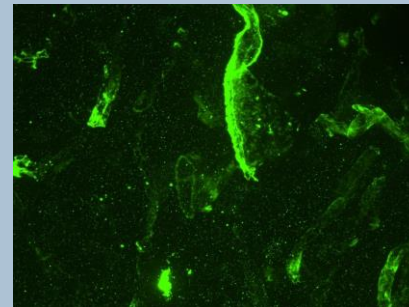
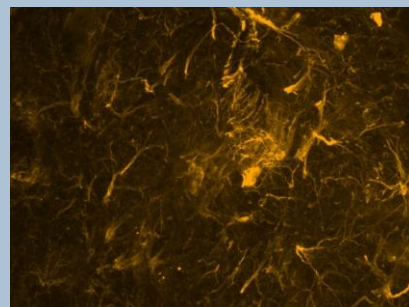
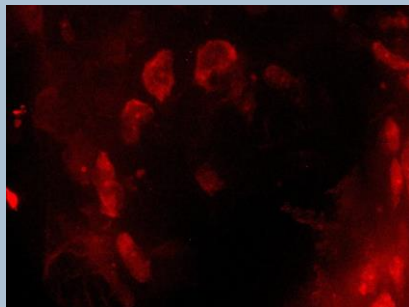
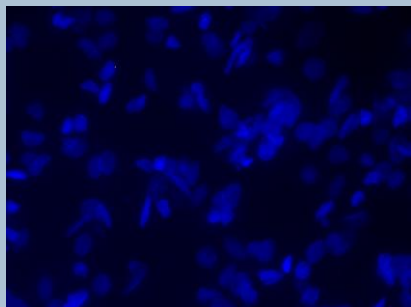
Neurotrace  
CY5



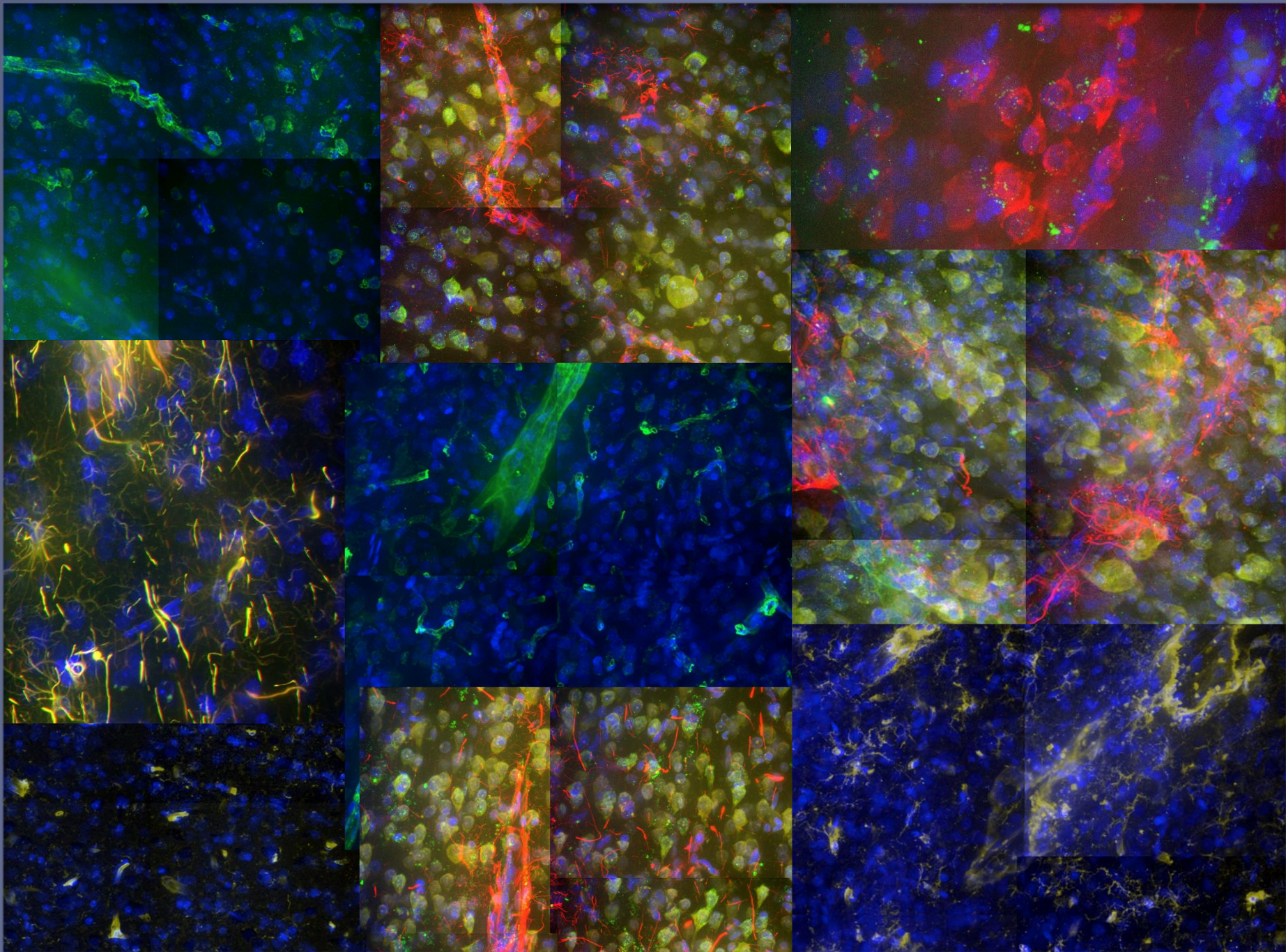
GFAP  
TRITC



Laminin  
GFP









# ImageJ

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Used to look at sections in 3D

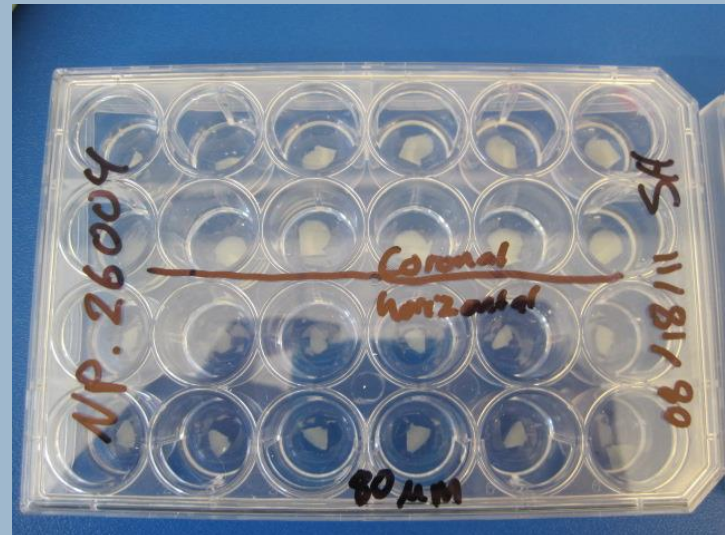
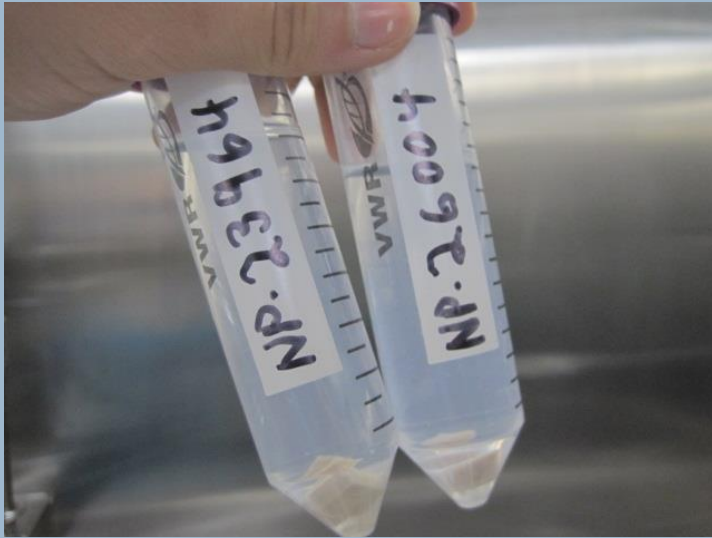
To see how well the antibodies and stains penetrated

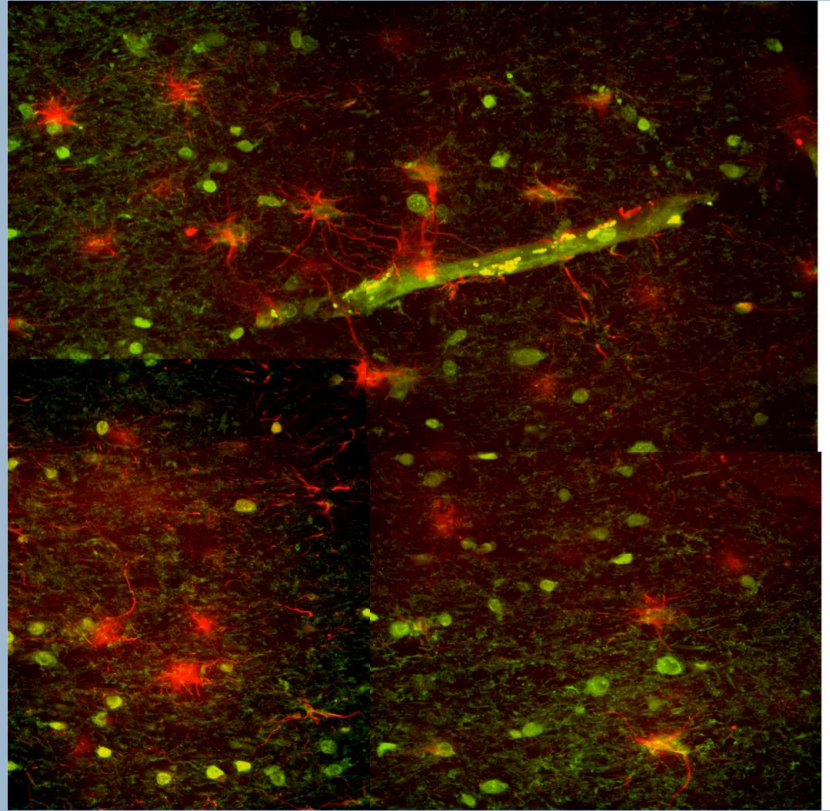
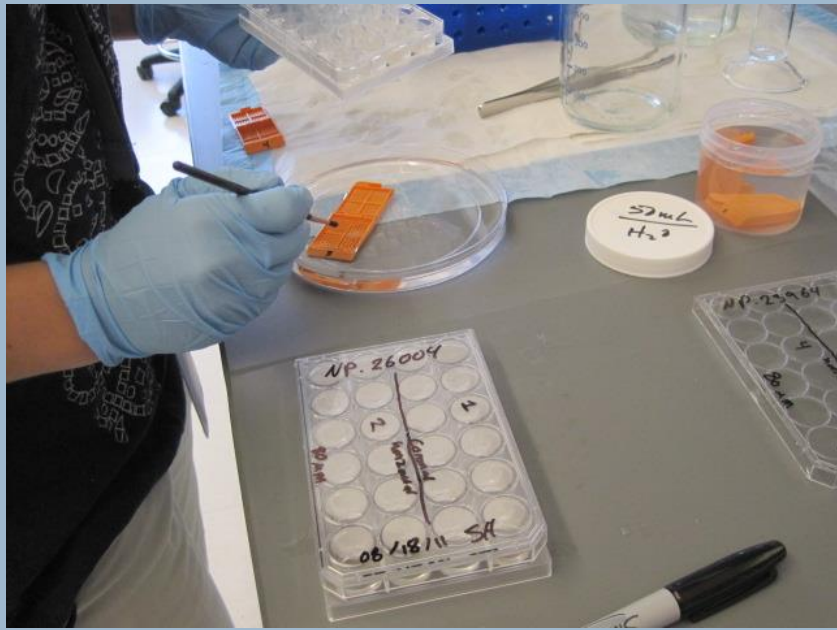
GIF





# Human Tissue







# Acknowledgements

A fluorescence microscopy image of neural tissue. The image shows a dense network of cells and fibers. Some structures are stained green, while others are stained blue. The green staining highlights specific cellular components, possibly axons or dendrites, while the blue staining highlights nuclei. The overall image has a dark background with bright green and blue spots and lines.

Summer Neuroscience Program

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