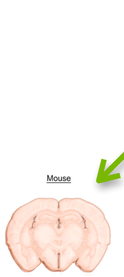
Data Challenges in Connectomics

Mouse brain: 70M neurons



~1cm³

How much image data is 1cm³ ? **~1EB**

Human brain: 80B neurons

~1000cm³

How much image data is 1000cm³ ? **~1000 EB** (6nm x 6nm x 40nm)

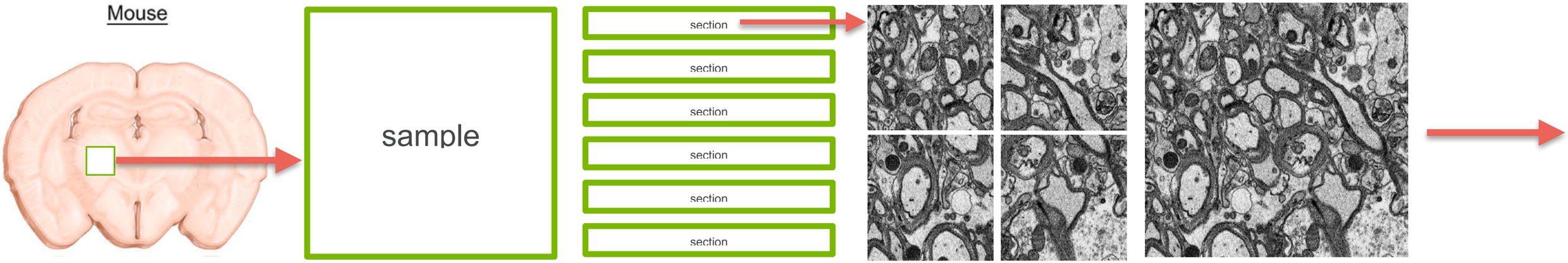
Reconstructed data will be much larger:

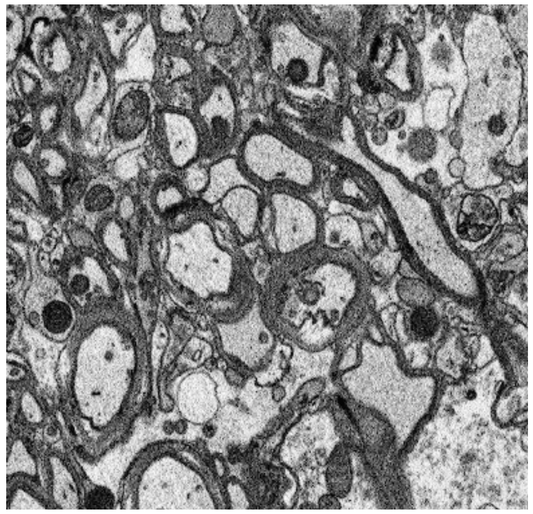
- Segmentation labels for each voxel
  - 4x voxel data
- 3D Mesh
- Skeleton

The structures are expected to be used to seed simulations to study flow in neurotransmitters, in better modeling the brain, among others.

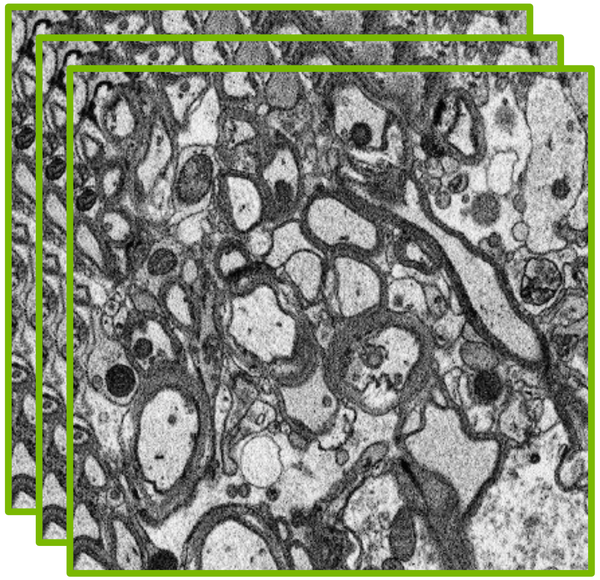
Connectomics Processing

Data from Gregg Wildenberg, Kasthuri Lab, UChicago

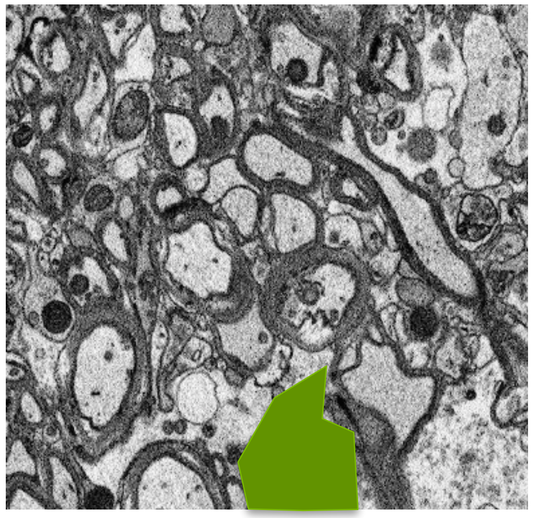




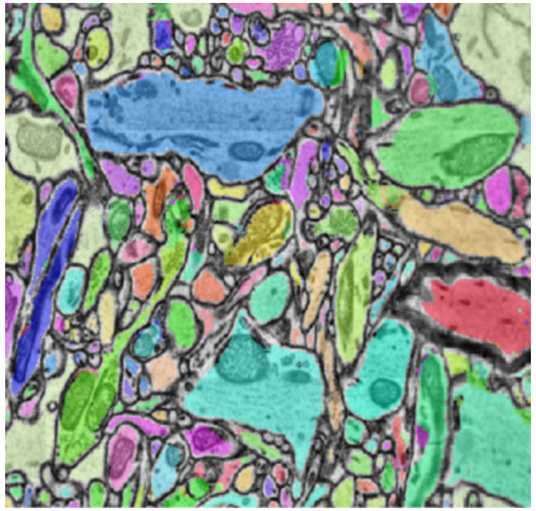
Sections stitched together



Align sections



Mask out non-target objects



Segment target objects