3D Multimodal Co-Registration of the Macaque Brain

DREW FREYBERGER

DUKE UNIVERSITY: SOMMER LAB

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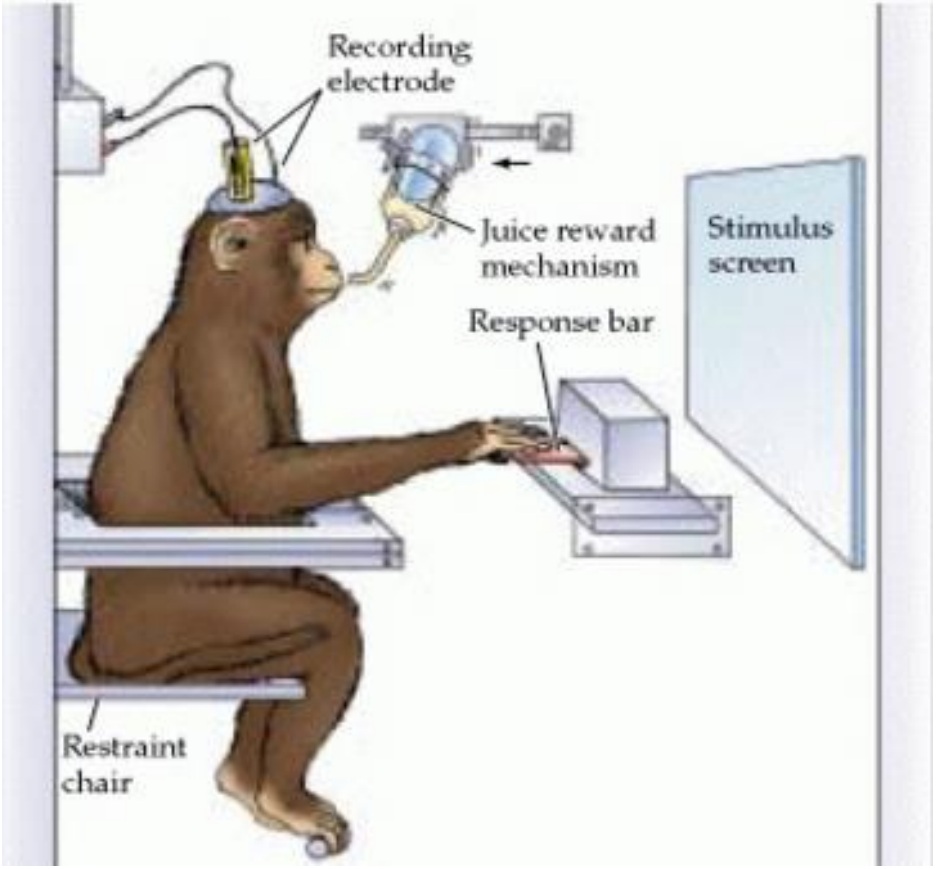
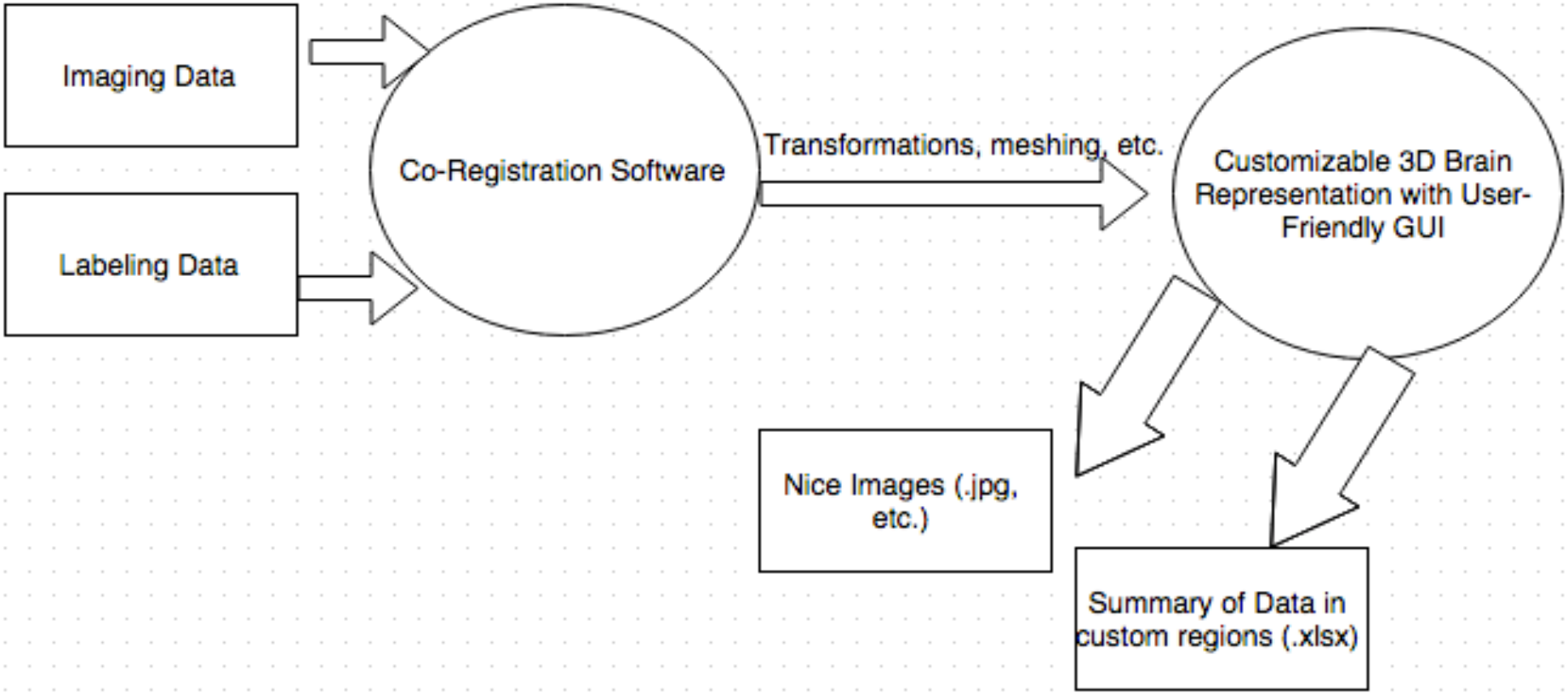
Sommer Lab: Electrophysiological Recordings in the Cerebellum

- Goal is to understand neuronal circuits of the brain
  - Learn how individual areas process signals
  - Learn how multiple areas interact to cause cognition
- Record at the single neuron level



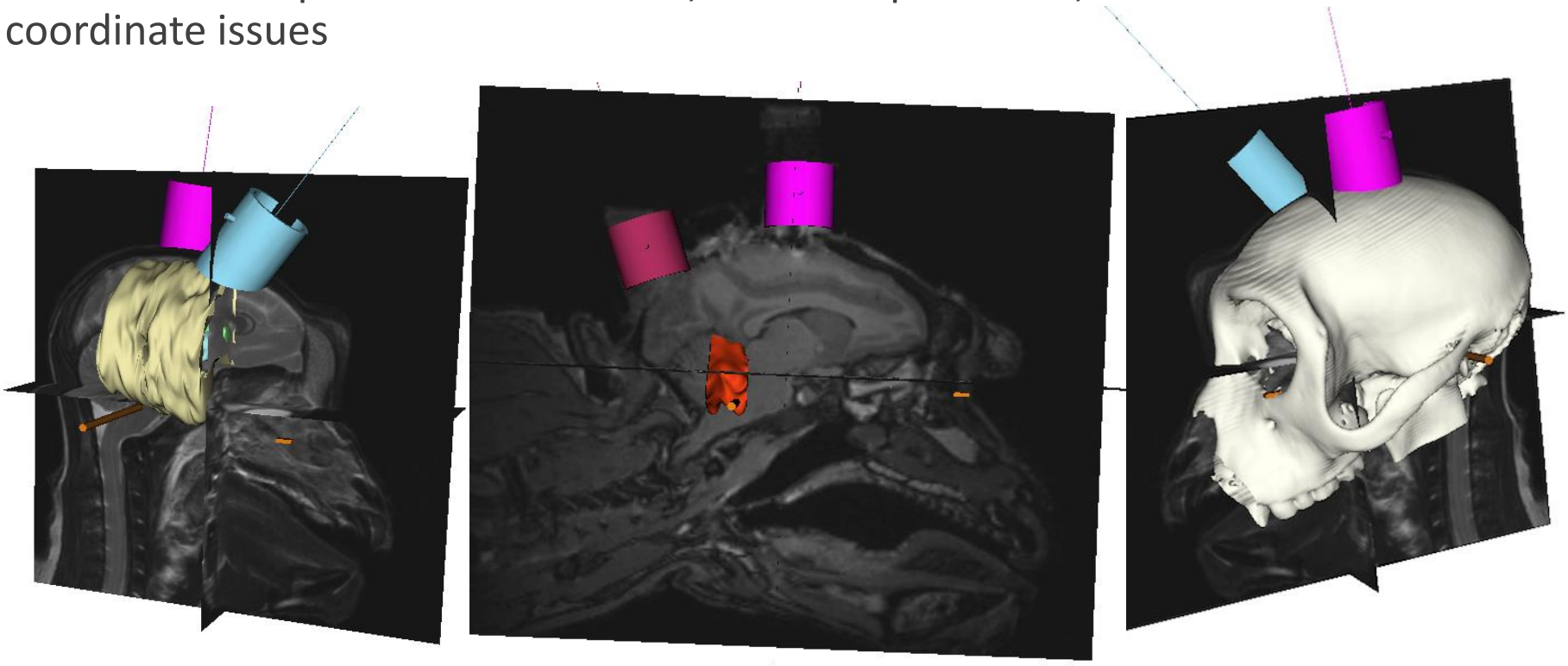
Project Goal:

Create a procedure for the lab to use to visualize recording sites

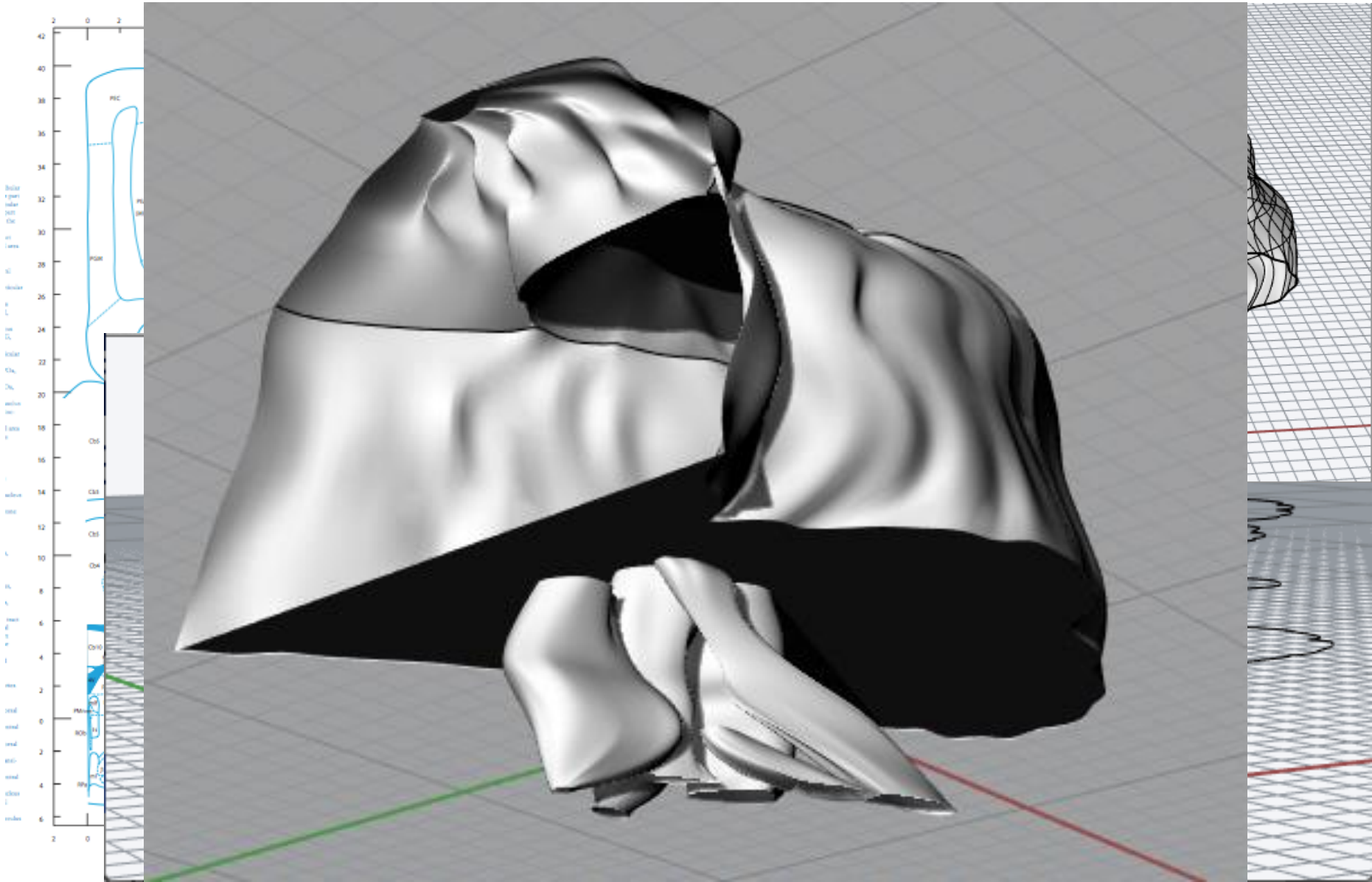


MonkeyCicerone Software

- Developed by University of Minnesota
- Co-registers MRI, CT, 3D atlas, MER data, chamber location, and DBS electrodes with VTA predictions
- Limitations: no posterior cerebellum, DICOM input issues, and chamber rotation coordinate issues



3D Posterior Cerebellum Creation



Fixing DICOM Input Issue and Chamber Rotation Coordinates Issue

```
function sort_asf29_cd(realtopdir,dest_folder_str)
%Summary of this function goes here
```

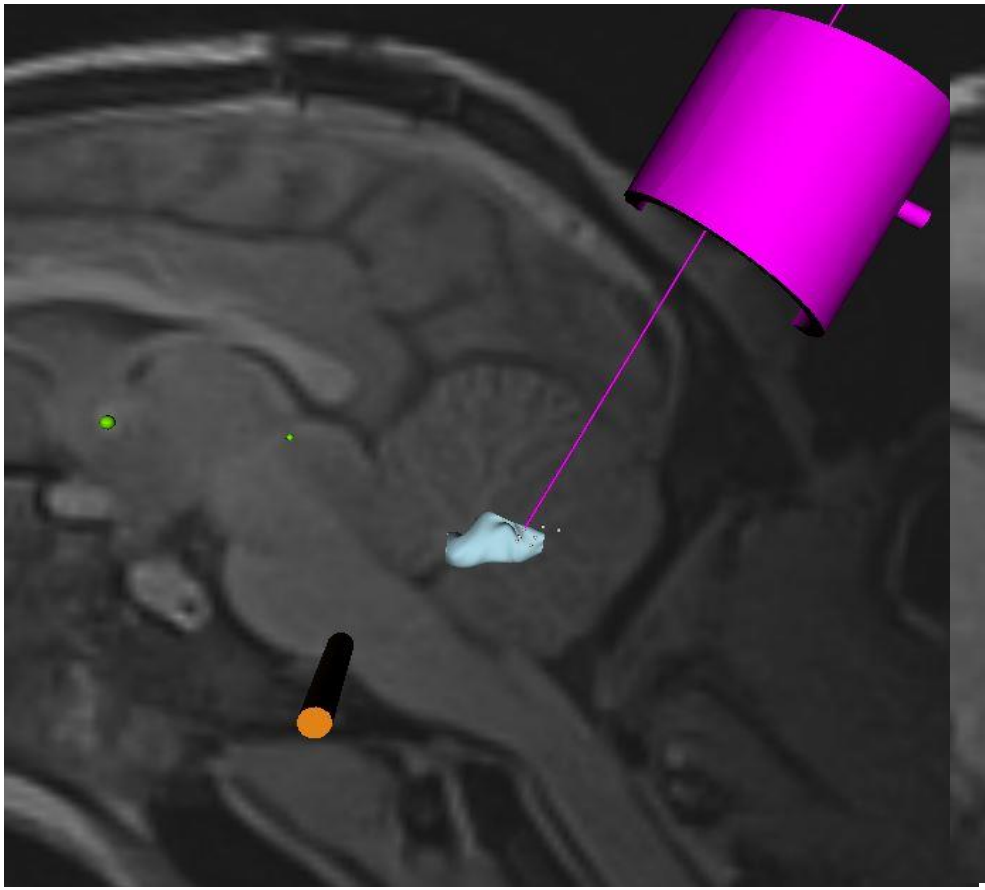
	A	B	C	D	E	F	G	H
1	Filename	Chamber Rotation	Monkey	Chamber Location	M-L	A-P	Theta	Hypotenuse
2	R83L4A0_19100	20	Rigel	L4A0	4	0	-20	4
3	R83L4A0_19400		Rigel	L4A0	4	0	0	4
4	R140L6A1_20160		Rigel	L6A1	6	1	9.4623222	6.08276253
5	R132M8A3_20100		Rigel	M8A3	-8	3	-20.55605	8.544003745
6	R81M3P5_15100		Rigel	M3P5	-3	-5	59.036243	5.830951895
7	R832M4P4_13000		Rigel	M4P4	-4	-4	45	5.656854249
8	R232L4A2_10000		Rigel	L4A2	4	2	26.565051	4.472135955

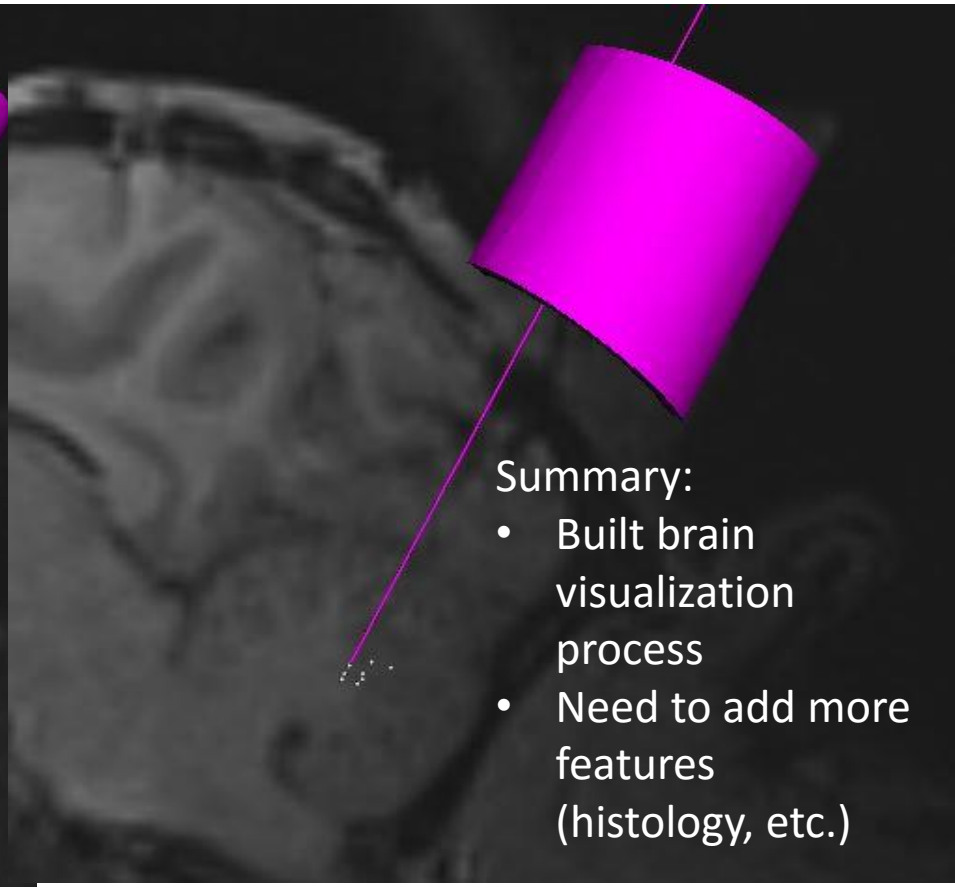
```
for stn=3:length(stdir)
```

I	J	K	L
ML Coordinate	AP Coordinate	Calibration (mm)	Depth (mm)
3.758770483	-1.368080573		19.1
4	0		19.4
6	1		20.16
8	-3		20.1
3	5		15.1
4	4		13
4	2		10

```
        end
    end
end
cd(now)
end
```

Results





Summary:

- Built brain visualization process
- Need to add more features (histology, etc.)