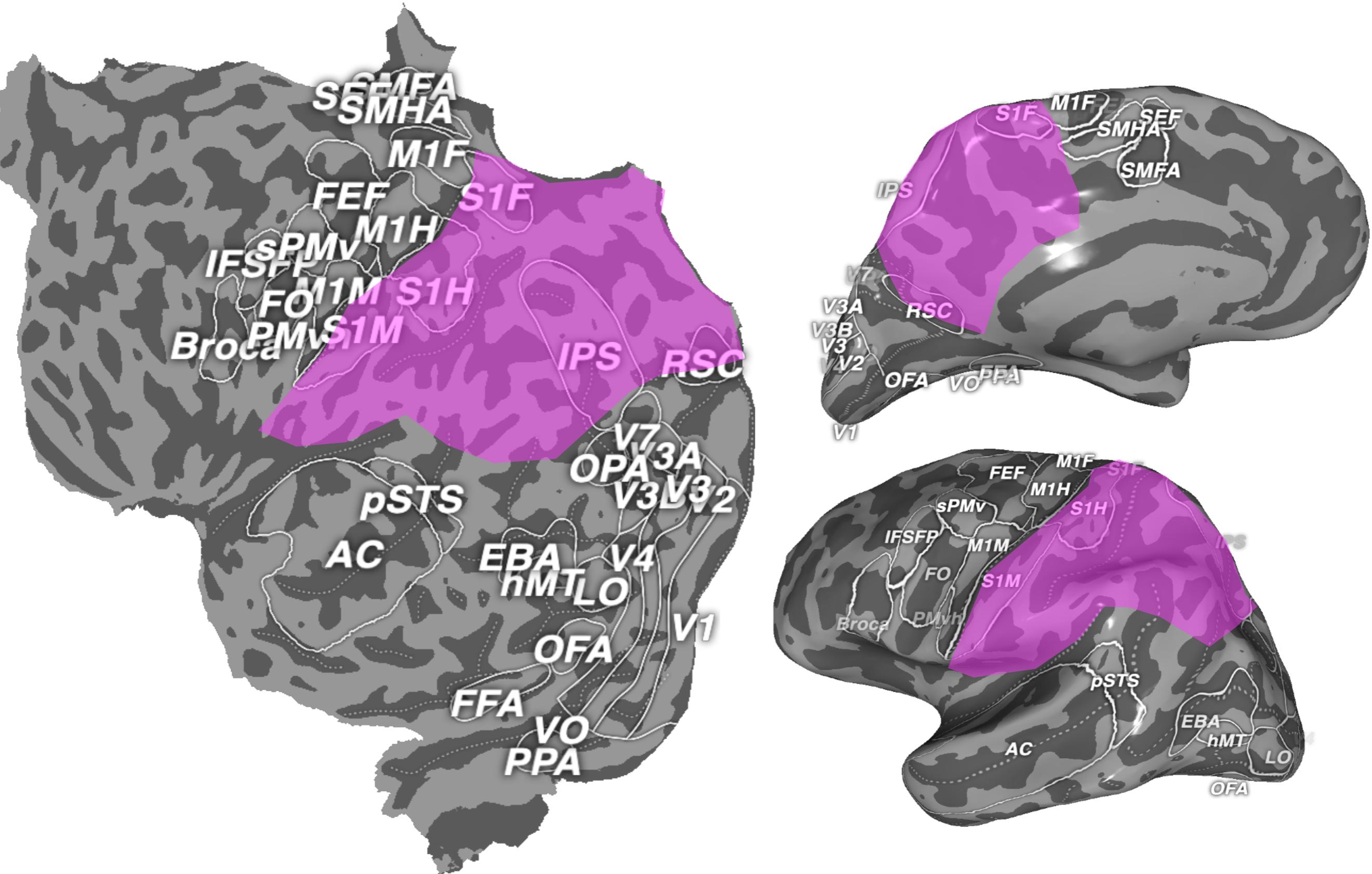


MAPPING HUMAN CORTEX

Prof. Alexander Huth

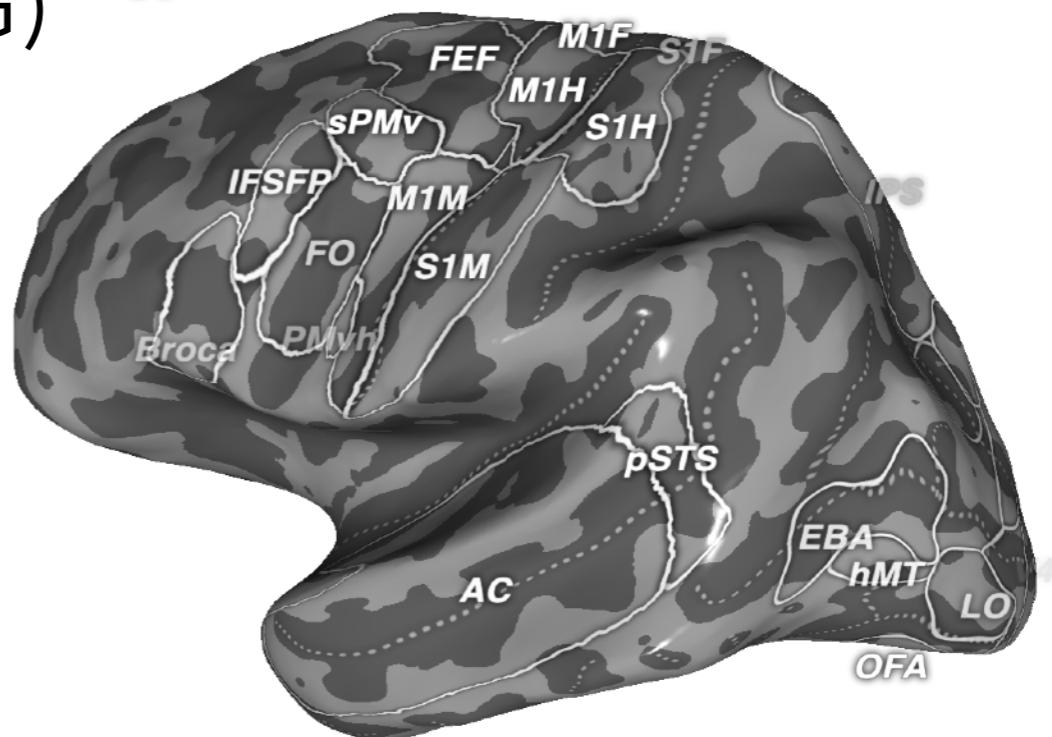
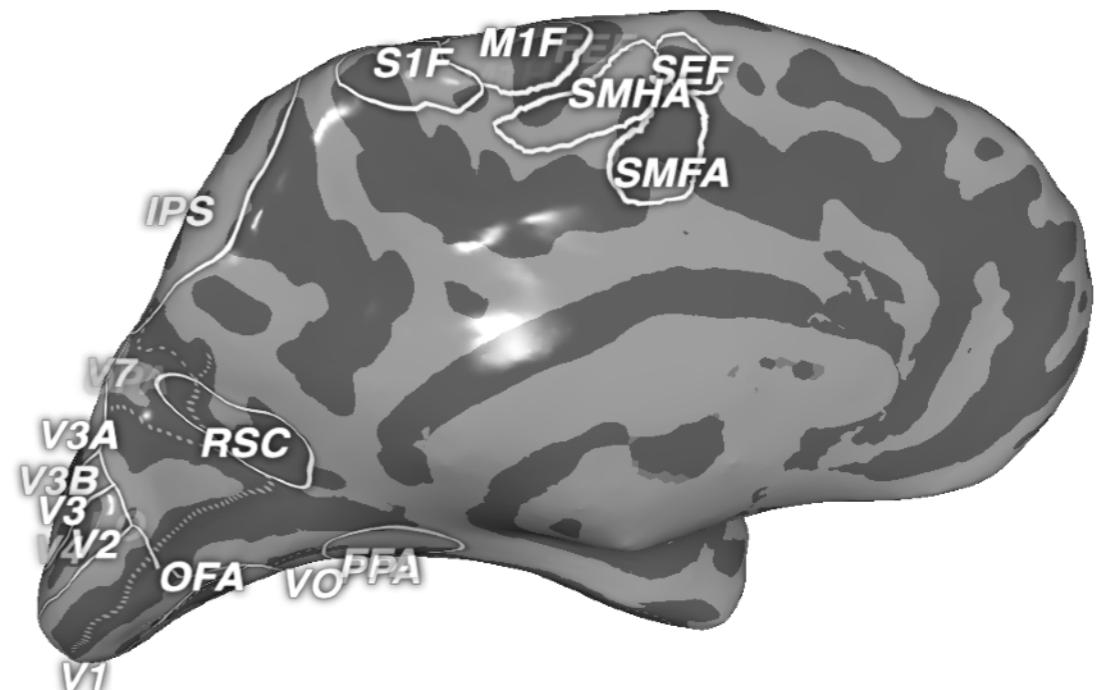
10.8.2020

PARIETAL CORTEX



PARIETAL SUBDIVISIONS

- * Intraparietal sulcus (IPS)
- * Precuneus (PrCu)
- * Inferior parietal lobule
 - * Supramarginal gyrus (SMG)
 - * Angular Gyrus (AG)
- * Parietal operculum
- * Somatosensory cortex



WHAT DOES IT DO?

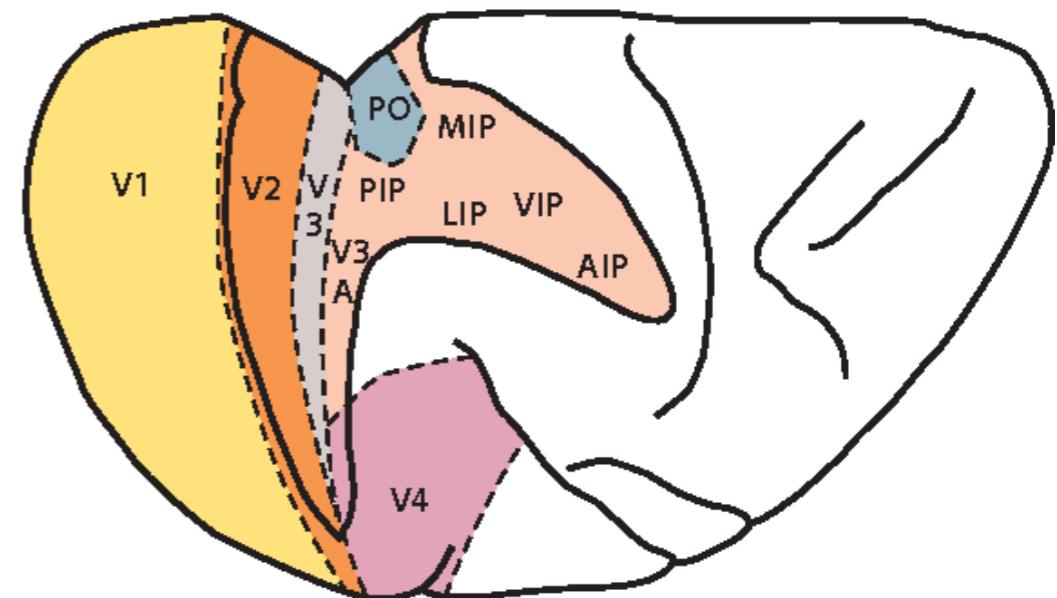
- * Touch?
- * Attention?
- * Spatial awareness?
- * Math?
- * ... **consciousness?**

WHAT DOES IT DO?

- * Touch? – somatosensory cortex
- * Attention? – *intraparietal sulcus*
- * Spatial awareness? – ditto
- * Math? – ditto
- * ... **consciousness?** – precuneus?

INTRAPARIETAL SULCUS

- * IPS is divided into (at least) 4 well-studied subregions: LIP, VIP, MIP, & AIP
- * Each IPS subregion seems to represent **a map** of the space around your body



*top-down view of macaque
right hemisphere*

INTRAPARIETAL SULCUS

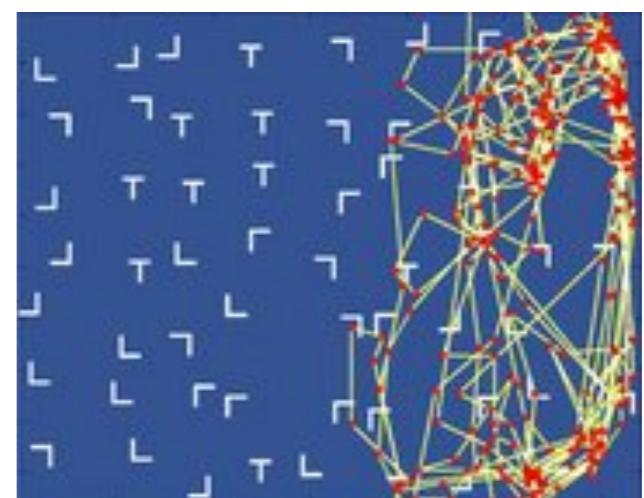
- * **Lateral intraparietal area (LIP)** represents *things of interest* in *retinotopic coordinates*
- * **Ventral intraparietal area (VIP)** represents things of interest in *head-centered coordinates*
- * **Medial intraparietal area (MIP)** represents things of interest in *mouth-centered coordinates*
- * **Anterior intraparietal area (AIP)** represents things of interest in *hand- (or “reach-”) centered coordinates*

HEMINEGLECT

- * Damage to the IPS/IPL (particularly right hemisphere) can cause **hemineglect**, a condition where patients are unable to attend to or process information coming from one side of the world



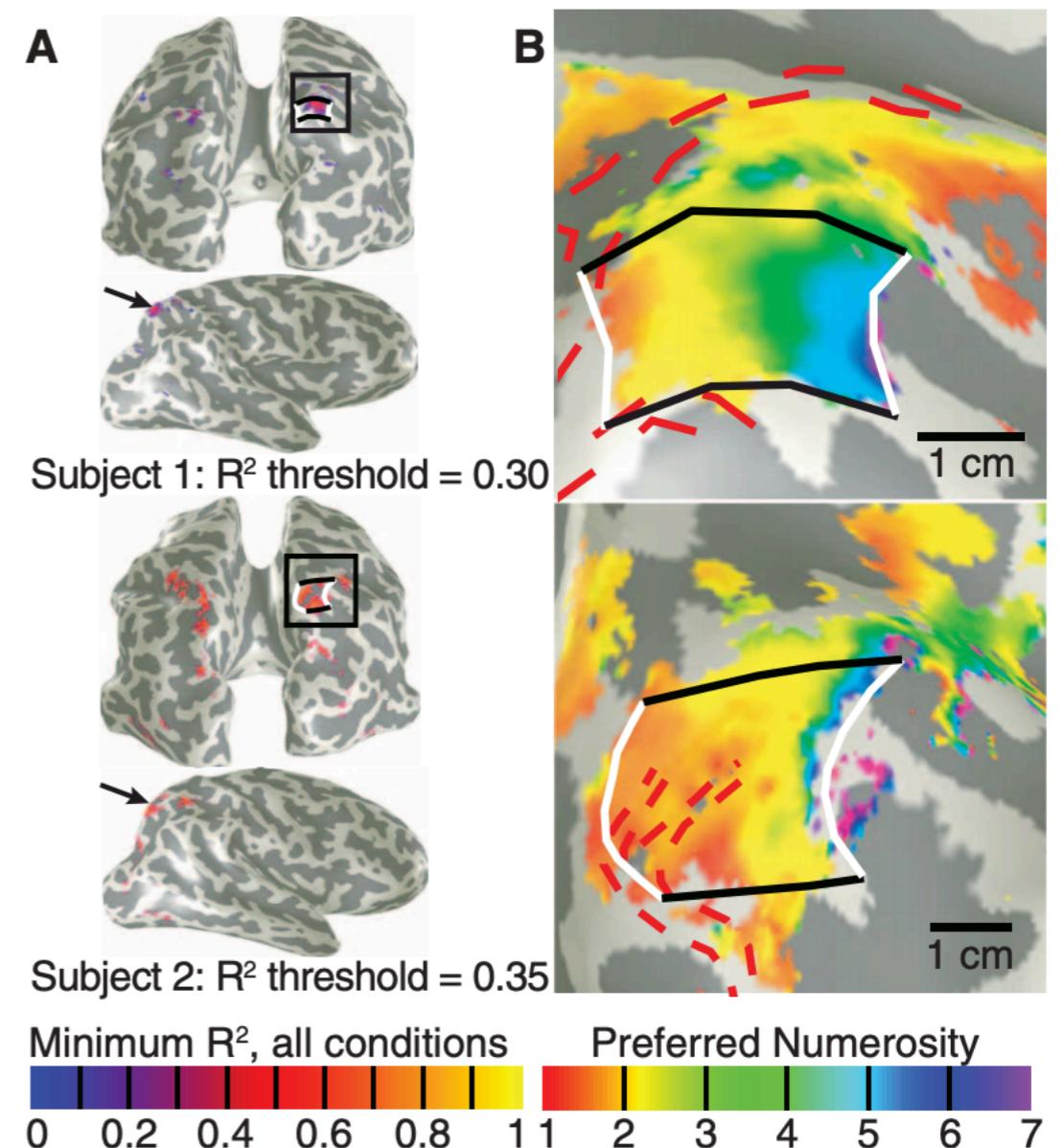
Hemineglect patient drawing of a clock



Eye movements of hemineglect patient searching for Ts among Ls

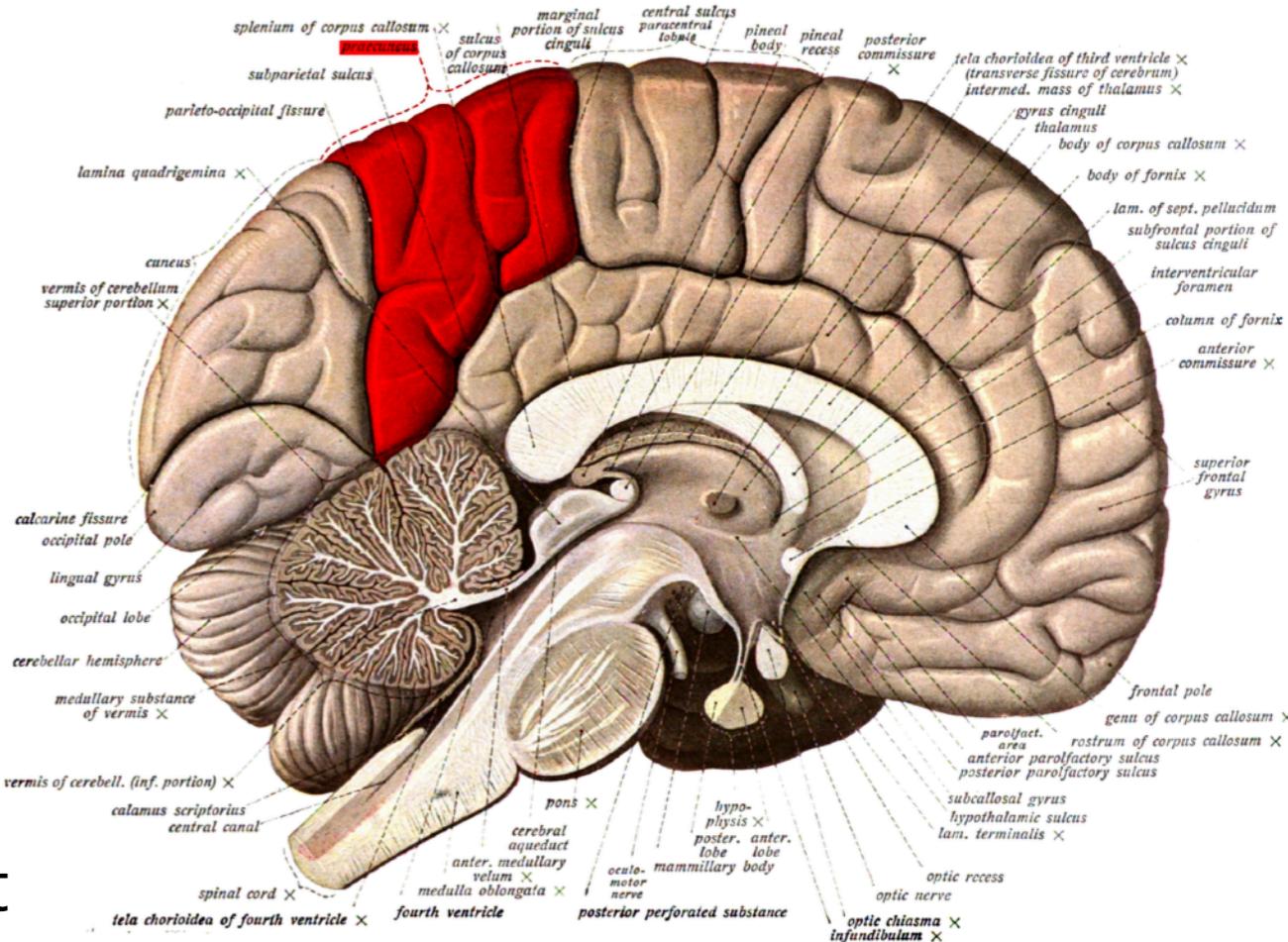
NUMEROSEITY

- * Posterior intraparietal areas contain maps of **numerosity**
- * Damage to this area seems to cause *acalculia*, a specific deficit in the ability to do math



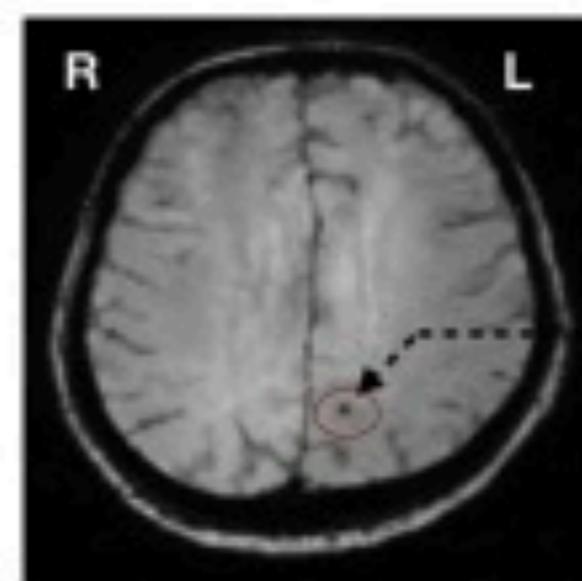
PRECUNEUS

- * It's part of the *default mode network* (later class)
 - * It's involved in memory retrieval, particularly autobiographical memory
 - * Damage to the precuneus (or associated areas) causes **alien limb syndrome**, the belief that parts of your body are controlled by someone else



PRECUNEUS

- * One case study of a patient with a small precuneus lesion found **kinetopsia** (delusion of motion), along with delusions of persecution and religious punishment
- * Fixed by ECT!



Lesion MNI coordinates:
 $X=-12, Y=-62, Z=30$

UNTIL

NEXT

TIME