

AP PSYCHOLOGY

# NEUROPLASTICITY & TOOLS OF DISCOVERY

UNIT 1: BIOLOGICAL BASES OF BEHAVIOR

# Biopsychology

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**A field of study that  
examines how our brains  
and biology affect our  
thoughts and behaviors**

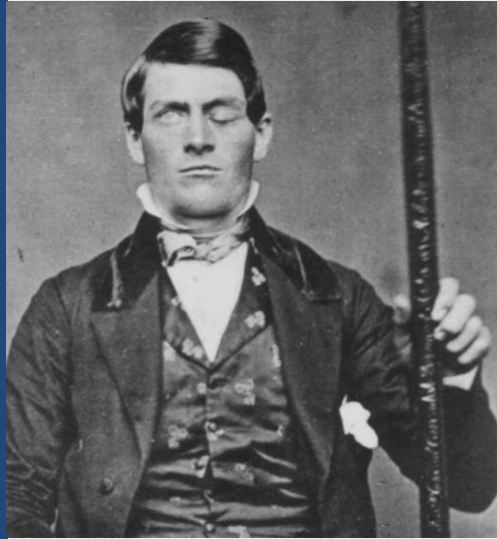
**Environmental influence on the brain across the lifespan**

A close-up photograph of a human hand holding a human brain. The hand is cupped around the brain, with fingers visible on the left and right sides. The brain is positioned in the center of the hand, showing its characteristic gyri and sulci. The entire image is overlaid with a semi-transparent orange filter. The background of the slide is a solid orange color.

# Plasticity

**The brain's ability to change and adapt as a result of experience.**

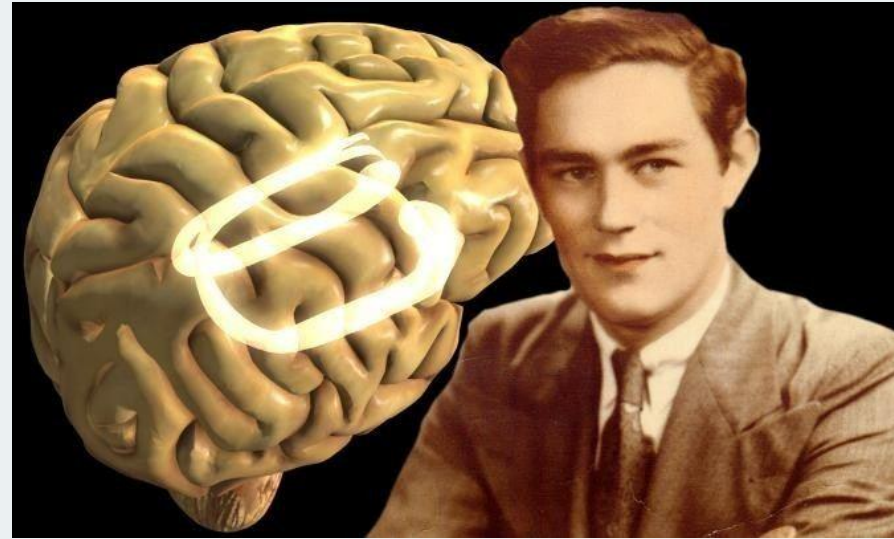
# CASE STUDIES



**Phineas Gage**

1823-1860

Prefrontal cortex



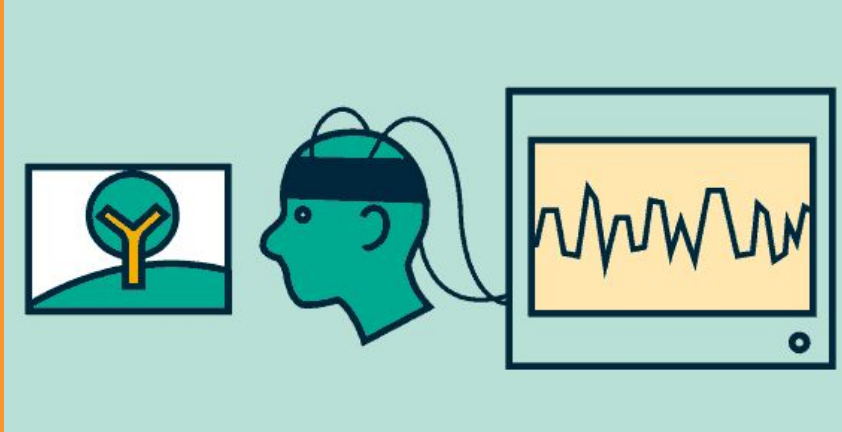
**Henry Molaison-“HM”**

1926-2008

Hippocampus

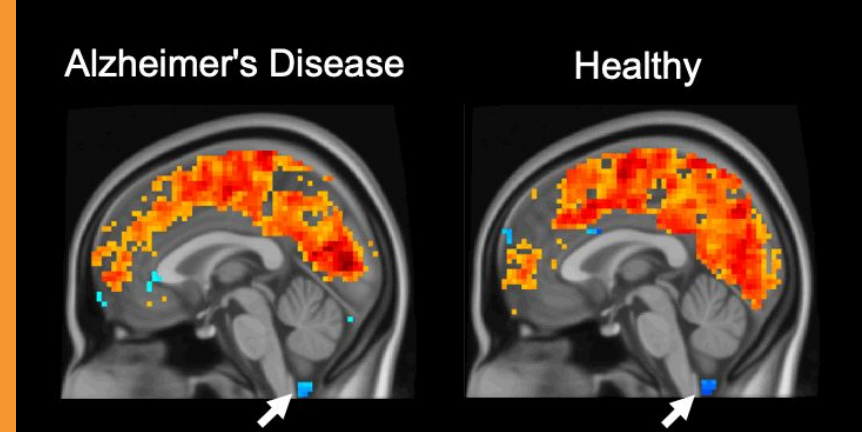
# IMAGING TECHNIQUES

## EEG



Electrical activity  
Function  
Sleep stages

## fMRI



Oxygen consumption  
Structure AND function  
Levels of activity

# LESIONING

Disruption of or damage

Due to:

- Injury

- Disease

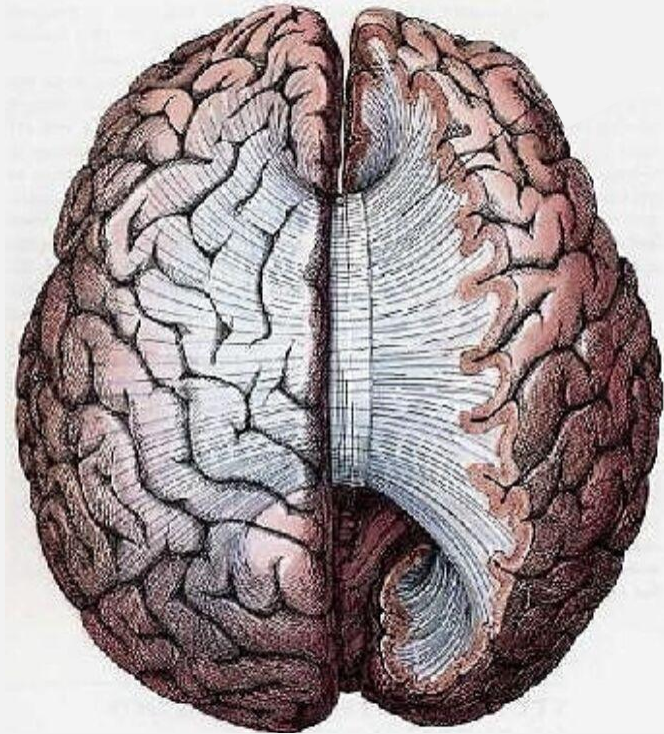
- Surgery

- Drugs

- Stimulation

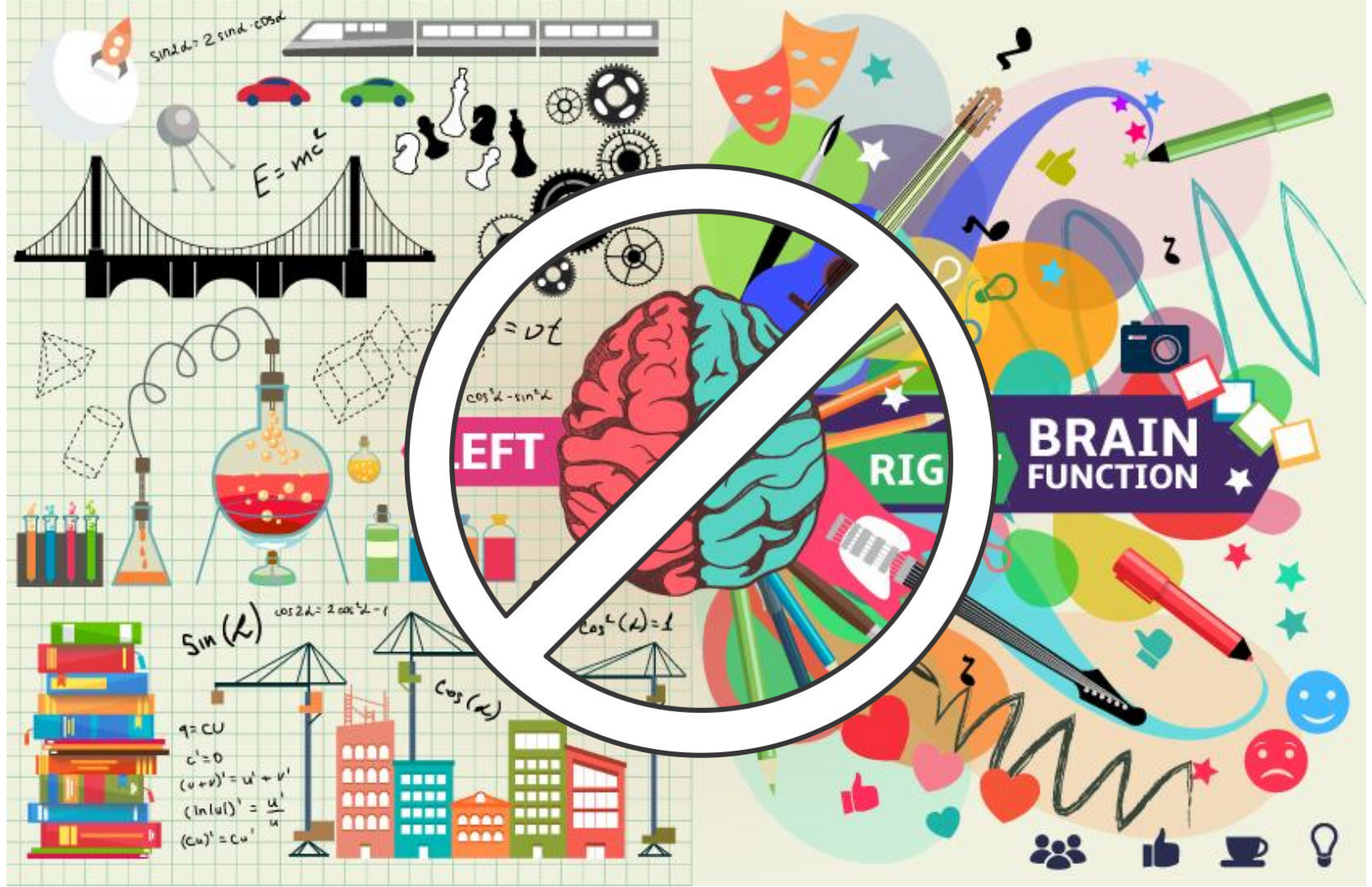






# Split-Brain Research

**Corpus callosum**



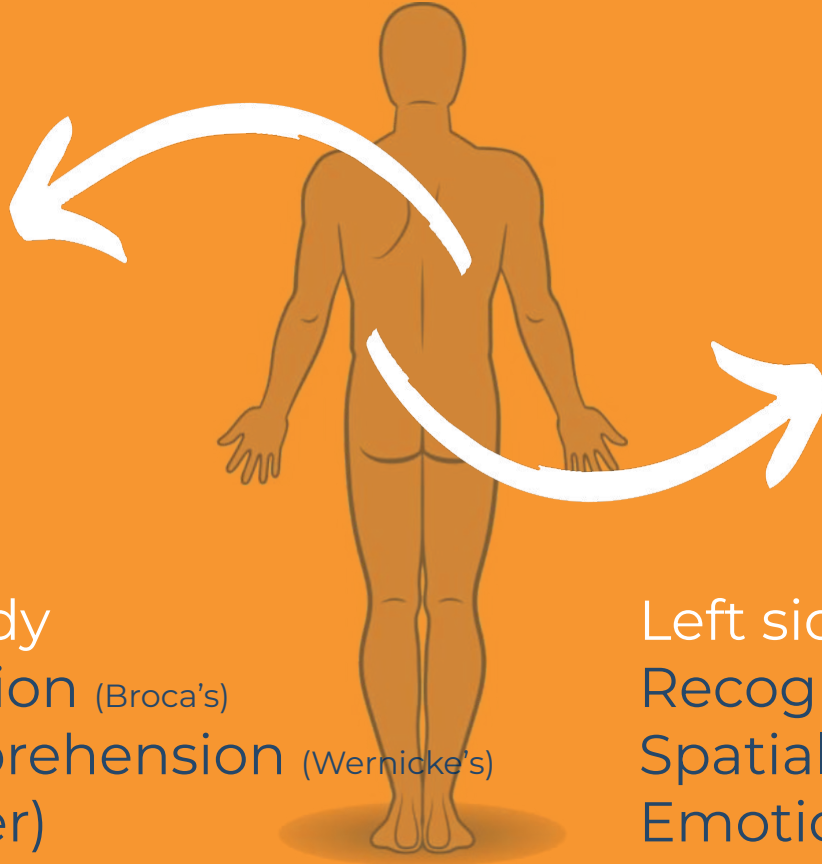


# CONTRALATERAL HEMISPHERIC ORGANIZATION & CORTEX SPECIALIZATION

LEFT  
HEMISPHERE



Right side of body  
Speech production (Broca's)  
Language comprehension (Wernicke's)  
Logic (interpreter)



RIGHT  
HEMISPHERE



Left side of body  
Recognizing faces  
Spatial reasoning (2D/3D)  
Emotions      Art/Music