

# Psychology 1010 Tuesday 9/9

First Exam next Tuesday.

## Methods of understanding the brain:

**Phrenology** – Bumps on the brain correspond to certain personality traits. Divided the brain into personality traits. Simplistic view of understanding the brain.

**Brain Damage** – We can know about the functions of certain systems by determining what is lacking when they are damaged.

**Electrical Stimulation** – Electroencephalograph (EEG) monitors brain activity during waking and sleeping.

### Brain Scans and Imaging :

- Computed Tomography (CT) allows us to visualize internal structures by creating a 3D representation with X-rays.

- Magnetic Resonant imaging (MRI) measure the release of energy from water in biological tissues while functional MRI (fMRI) uses oxygenated blood to measure activity.

- Positron Emission Tomography (PET) measures the use of radioactive glucose like molecules

- Trans Magnetic Stimulation (TMS) can enhance or interrupt brain function.

### Challenges with Brain Scans:

- The colors are arbitrary and imposed by researchers.

- The pictures you see is one image subtracted from another.

- Likelihood of chance findings is large.

**Do we only use 10% of our brain?** No! We use much more than this.

**Localization of Function** – Activation of brain areas that are active during a specific task above baseline.

**Lateralization** – Cognitive function that relies more on one side of the brain than the other. There is not necessarily right brained or right brained correlation between being artsy or liking math. Look at split brained patients.

## Who Are we?

we are a product of genetics (Nature) and our environment (nurture).

## Biological Material:

**Chromosomes:** Threads inside a cell's nucleus that carry genetic information humans have 46 chromosomes (23 pairs), two of which are sex-linked

**Genes:** Genetic material transmitted from our parents made up of deoxyribonucleic acid (DNA). DNA stores all of the information necessary to “build” and individual

**Genotype:** The set of genes transmitted from our parents to us ( the gene paris themselves)

**Phenotype:** set of observable traits (brown hair, green eyes).

Gene Expression via phenotypes depends on the combinations of dominant and recessive genes.

**Heritability:** percentage of the variability in a trait across individuals that is due to genes.

**Everyday life:** Height has between 70-80% heritability, meaning that between 70 and 80% of the differences among individual's height is due to genetics.

**Reaction Range:** The extent to which genes set limits on how much a trait can change in response to environments.

#### **How we study behavioral genetic:**

**Family Studies:** Examines the extent to which a characteristic "runs in the family"

**Twin Studies:** Examines differences between identical (monozygotic) and fraternal (dizygotic) twins

**Adoption Studies:** Examines how traits vary in individuals raised away from biological relatives.

Correction from previous lecture. Axon and Soma, Synapse, Action potential goes through dendrites.