1. Brain
   1. Brainstem
      1. Medulla – swallowing, breathing, heart rate. Most vital functions
      2. Reticular formations – controls sleep, arousal, attention
         1. When you’re asleep and dreaming it’s your reticular formation that produces those visual images at night
      3. Thalamus – sensory relay station
         1. Everything that hits your sense (see, hear, touch, etc) first goes to your thalamus then it will send it to the appropriate part of your cortex
         2. Example
            1. Vision

Retina -> thalamus -> visual cortex

* + - 1. It’s thought of as grand central station
    1. Limbic system
       1. Examples
          1. Only fully developed in males
          2. Humans have a hunger drive, we aren’t going to eat just because we have food in front of us
          3. Humans have a sex drive, we wouldn’t procreate if we didn’t have it

We aren’t going to mate just because there is someone of the opposite sex in front of us

* + - * 1. Fish & reptiles

Their behaviors in life are fixed

When it’s time to mate they mate

* + - 1. Amygdala
         1. Aggression center
         2. If you stimulate the amygdala it can cause extreme anger
         3. If the amygdala is damaged you may have the opposite effect and not have fear or anger
      2. Hippocampus
         1. Plays a role in forming new memories

This is not where memories are stored

Memories are stored everywhere

Structure that’s responsible for learning new information

H.M.

A young man who suffered from very severe epilepsy

They surgically removed his hippocampus

No more seizures

He no longer could no longer form new memories, anterograde amnesia

He lived day to day, he would have to guess his age. He knows it’s not 1953, but he doesn’t know what year it is.

Anterograde amnesia

Unable to form new memories

They can learn things at an unconscious level

* + - 1. Hypothalamus
         1. Emotion
         2. Basic Drives
         3. Reward Center

When stimulated produces strong feelings of pleasure

This part of the brain may be linked to addiction

There may be some problem or deficiency in the reward center

This may cause the individual to seek that for the missing pleasure

* + 1. Cortex
       1. Supports higher level functions
       2. Cerebral Cortex
          1. Contralateral opposite side
          2. Left hemisphere controls right side of body
          3. Right hemisphere controls left side of body
       3. Frontal
          1. Motor cortex

Responsible for handling voluntary movements (walking, hand motions, etc)

* + - * 1. Prefrontal cortex

Very front part of frontal lobe

Personality, control, planning, thinking through certain steps

This is the part of the brain that was damaged in phineas gage

This is the part that allows us to lead a mature life

Alcohol effects this area lots

This is the last area to develop, which isn’t fully developed until 20-25 years of age

Extensive alcohol abuse when young can permanently damage this part of the brain

* + - * 1. Broca’s area – language production

Your ability to speak

Those who suffer damage in broca’s area can maybe understand language but not produce words, maybe sounds but not words.

* + - 1. Temporal
         1. Auditory cortex

If you suffer damage here it can cause deafness

An infection, tumor, stroke, etc can cause damage to the brain

If a doctor stimulates this during surgery the patient will report hearing sounds like doorbells, chimes, etc

* + - * 1. Wernicke’s area – language comprehension

They may lose the ability to understand speech

What they say doesn’t make sense

* + - 1. Parietal
         1. Sensory cortex

If stimulated they may report tingling feeling

There is more space in your brain that are devoted to parts of your body that are more sensitive

* + - 1. Occiptal
         1. Visual cortex

If stimulated during surgery you’ll see random flickering images

You can become blind by damage

* 1. Hemispheric specialization
     1. Left hemisphere vs. right hemisphere
        1. Left
           1. Verbal activity

Reading, writing, speaking, etc

* + - 1. Right
         1. Non-verbal activity

Imagery, spacial tasks(recognizing faces), detect emotion

* + 1. Aphasias – severe language impairment
    2. Agnosia – object recognition/spatial disorientation