1. Neuroanatomy
	1. Neuroanatomy
		1. ​The study of the parts and functions of nerves
		2. Neurons
			1. ​individual nerve cells
	2. ​​Parts of the Neuron
		1. ​Dendrites
			1. ​root like parts of the cell
			2. stretch out from the cell body
			3. ​​grow to make synaptic connections with other neurons
		2. ​Cell body (soma)
			1. ​contains the nucleus and other parts of the cell necessary for its life
		3. ​Axon
			1. ​wire like structure ending in the terminal buttons
			2. extend from the cell body
		4. ​Myelin sheath
			1. ​a fatty covering around the axon of some neurons that speeds neural impulses
		5. ​Terminal buttons
			1. ​end buttons, terminal branches of axon, synaptic knobs
			2. branched end of the axon
			3. contains neurotransmitters
		6. ​Neurotransmitters
			1. ​chemicals contained in terminal buttons that enable neurons to communicate
		7. ​Synapse
			1. ​the space between the terminal buttons of one neuron and the dendrites of the next neuron
2. ​​​How a Neuron “Fires”
	1. ​Resting State
		1. ​Neuron has negative charge with positive ions surrounding the cell
	2. ​Steps
		1. ​Neuron is stimulated
			1. ​it releases neurotransmitters
		2. ​Neurotransmitters bind to receptor sites on the dendrites of the receiving neuron
		3. ​​If the threshold is reached, the cell membrane of the receiving neuron becomes permeable
			1. ​positive ions rush in
			2. action potential
		4. ​Axons release neurotransmitters to another neuron
	3. ​All-or-None Principle
		1. ​The neuron will fire completely or not at all
	4. ​Neurotransmitters
		1. ​Acetylcholine
			1. ​motor movement
			2. ​​lack → Alzheimer’s
		2. ​Dopamine
			1. ​motor movement and alertness
			2. lack → Parkinson’s disease
			3. too much → schizophrenia
		3. ​Endorphins
			1. ​pain control
			2. involved in addiction
		4. ​Serotonin
			1. ​mood control
			2. lack → clinical depression
3. ​​​Nervous System
	1. ​Afferent Neurons (Sensory Neurons)
		1. ​Take information from the senses to the brain
	2. ​Interneurons
		1. ​Send information to elsewhere in the brain or to efferent neurons
	3. ​Efferent (Motor) Neurons
		1. ​Take information from the brain to the rest of the body
	4. ​Central Nervous System (CNS)
		1. ​Consists of the brain and the spinal cord
			1. ​​​spinal cord- a bundle of nerves
	5. ​​Peripheral Nervous System (PNS)
		1. ​All nerves not encased in bone
		2. ​Somatic
			1. ​controls voluntary muscle movements
		3. ​Autonomic
			1. ​controls responses to stress
			2. sympathetic arouses
			3. parasympathetic calms
		4. ​Our pain reflexes help prevent us from harming ourselves
4. ​​Brain
	1. ​Ways to Study it
		1. ​Accidents
			1. ​studying the effects
		2. ​Lesions
			1. ​the removal or destruction of part of the brain
			2. studying the effects
		3. ​Electroencephalogram (EEG)
			1. ​detects brain waves
			2. examines brain waves in different stages of consciousness, especially                                          sleep
		4. ​Computerized Axial Tomography (CAT) Scan
			1. ​sophisticated x-ray
			2. shows brain structure
			3. uses x-ray cameras to get a 3-D picture
		5. ​Magnetic Resonance Imaging (MRI)
			1. ​shows brain structure
			2. ​​uses magnetic fields to measure the density and location of brain                                                 material
			3. no radiation
			4. more detailed than a CAT scan
		6. ​Positron Emission Tomography (PET) Scan
			1. ​shows how much of a certain chemical parts of the brain are using
			2. measures which parts of the brain are most active during certain tasks
		7. ​Functional MRI
			1. ​ties brain structure to brain activity during cognitive tasks
			2. combines elements of MRI and PET
	2. ​​Brain Structure and Function
		1. ​Hindbrain
			1. ​controls basic biological functions that keep us alive
			2. medulla
				1. controls blood pressure, heart rate, and breathing
			3. ​pons
				1. ​controls facial expressions
				2. connects the hindbrain with the rest of the brain
			4. ​cerebellum
				1. ​“little brain”
				2. coordinates muscle movement
				3. on the bottom of the brain
		2. ​​Midbrain
			1. ​coordinates simple movements with sensory information
			2. integrates sensory information and muscle movements
			3. reticular formation
				1. ​​​controls general body arousal and the ability to focus our attention
		3. ​​Forebrain
			1. ​controls thought and reason
			2. thalamus
				1. ​receives sensory signals coming up the spinal cord and sends them to other forebrain areas
			3. ​hypothalamus
				1. ​controls hunger, sexual arousal, thirst, and the endocrine system
			4. ​amygdala
				1. ​vital for emotion
			5. ​hippocampus
				1. ​vital for memory and retaining new information
	3. ​​​Cerebral Cortex
		1. ​Gray wrinkled surface of the brain
			1. ​the wrinkles are called fissures
				1. ​increase available surface area
		2. ​​Hemispheres
			1. ​contralateral control
				1. ​left hemisphere- right half of body
				2. right hemisphere- left half
			2. ​brain lateralization (hemispheric specialization)
				1. ​the specialization of function in each hemisphere
			3. ​split brain patients
				1. ​the corpus collosum has been cut to treat severe epilepsy
				2. can’t orally report information presented to only the right hemisphere of the brain
		3. ​​Association area
			1. ​any area of the cerebral cortex not associated with receiving sensory information or controlling muscle movements
		4. ​Frontal lobes
			1. ​prefrontal cortex
				1. ​at front of frontal lobe
				2. ​brain’s central executive
				3. foreseeing consequences, pursuing goals, and emotional control
			2. ​Broca’s area
				1. ​left hemisphere of frontal lobe
				2. controls the muscles involved in producing speech
			3. ​motor cortex
				1. ​at the back of the frontal lobe
				2. controls our voluntary movements
				3. top controls toes, bottom controls top of body
		5. ​​Parietal lobes
			1. ​sensory (somato-sensory) cortex
				1. ​right behind the motor cortex
				2. receives incoming touch sensations
				3. top receives information from the bottom of the body
		6. ​​Occipital lobes
			1. ​interprets messages from the eyes in the visual cortex
			2. messages in the left half of the retina go the to right visual cortex
		7. ​Temporal lobes
			1. ​process sound
			2. sound waves are processed by the ears and turned into neural impulses that temporal lobes interpret
	4. ​​Brain Plasticity
		1. ​Parts of the brain can adapt to perform other functions
		2. Because dendrites grow throughout our lives
		3. Younger brains are more plastic
5. ​​Endocrine System
	1. ​Adrenal Glands
		1. ​Produce adrenaline → “fight or flight” prep
	2. ​Ovaries and Testes
		1. ​Produce sex hormones
		2. May explain gender differences
	3. ​Controlled by the hypothalamus
6. ​Basic Genetic Concepts
	1. ​Twins
		1. ​Identical (monozygotic) twins
			1. ​effective psychological environment
				1. ​​​physical similarity in twins causes them to be treated the same way
	2. ​​​Chromosomal Abnormalities
		1. ​Turner’s Syndrome
			1. ​only single X chromosome
			2. ​​causes shortness, webbed necks, and different sexual development
		2. ​Klinefelter’s Syndrome
			1. ​XXY chromosome pattern
			2. causes minimal sexual development and extreme introversion
		3. ​Down’s Syndrome
			1. ​extra chromosome on 21st pair
			2. mental retardation