

Exam 5

EC answer= grinch

### Key Neurotransmitters

- **Acetylcholine (Ach)**
  - o rapidly destroyed by Ach-esterase
  - o Cognition, behavior, glands, and organs
- **Biogenic amines**
  - o Dopamine— issues with parkinsons
  - o Norepinephrine
  - o Serotonin
    - Impacts mood and behavior
  - o Histamine
    - During spring when pollen is out this activates nose
  - o Brainstem and hypothalamus
  - o Consciousness(histamines), mood(serotonin), endocrine regulation (histamine,dopamine)
- **Amino Acids:** some excitatory; others inhibitory
- **Neuropeptides:** 2+ aa's; endocrines and paracrines

### Nervous System

- Central → Brain/ S.C -----→ Peripheral--→ efferent & afferent
- Efferent PNS → autonomic (automatic, something that happens on its own) -→ and Somatic (can think about and change—skeletal muscles)—conscious thought and activity → Sympathetic --→ Parasympathetic
  - o **Autonomic/Somatic**
    - Both send signals from CNS to effector cells
    - **FIGURE 6-46**

	Neuron	Innervates	Result
Somatic	one	Skeletal muscle	EXCITES—can only tell when muscles can contract
Autonomic	two	Smooth muscles, cardiac muscles, glands, GI neurons	Excites & inhibit

### Autonomic Nervous System

- Purpose: regulate automatic, visceral responses
- Method
  - Two opposing systems (gas/brakes)
  - Sympathetic vs. Parasympathetic
- Most effectors innervated by both
- Cluster of cells - ganglia (not nucleus) b/c cell body has to be outside CNS
- Preganglionic (cell body in CNS, always receives stimulus) vs. postganglionic (always talks to effector) neuron

### Parasympathetic vs. Sympathetic

\*\*\*\*Why do these ganglion have to be in two locations?

Function		Ganglion Location	Pre neurotransmitter	Post neurotransmitter
Sympathetic	Fight or flight (gas)	Spinal cord	ACh	-Norepinephrine -Epinephrine
Parasympathetic	Rest or regroup (brake)	Effector Organ	ACh	ACh

- o Sympathetic subcategory
  - Adrenal medulla (inner part of adrenal gland)d
    - Ganglion that releases to plasma
    - Epinephrine and norepinephrine (aka adrenaline)
    - Distant organs

#### Parasympathetic vs. Sym **FIGURE 6-44**

- **Contract Pupil**
  - o Decrease cardiac output
  - o Contract Bronchioles
  - o Increase gut motility
- **Dilate Pupil**
  - o Increase cardiac output
  - o Relax bronchioles
  - o Lower gut motility

#### Sensory Nervous System

- Purpose: detect and relay info about environment around you to the CNS
- Stimulus → receptor → afferent neuron(s)
- Stimuli
  - o Pressure, temperature, light, sound , chemical
- Receptor
  - o Afferent axon terminal(s) or specialized cells