

THE NERVOUS SYSTEM: SPINAL CORD AND SPINAL NERVES

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ROLE OF THE NERVOUS SYSTEM

- Chief coordinating agency for all body systems
- Nerves carry messages from the brain and spinal cord to all parts of the body

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Divisions

- Central Nervous System
- Peripheral Nervous System
- Somatic Nervous System
- Autonomic Nervous System
 - Sympathetic Nervous System
 - Parasympathetic Nervous System
- Visceral Nervous System

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Central Nervous System

- (CNS) Brain and Spinal Cord

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Somatic Nervous System

- (SNS) includes all nerves controlling the muscular system and external sensory receptors

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Peripheral Nervous System

- (PNS) That portion of the nervous system that is outside the brain and spinal cord
 - 12 cranial nerves, the
 - Spinal nerves
 - Autonomic nerves (organs)

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Autonomic Nervous System

- Part of PNS consisting of motor neurons that control internal organs, heart, smooth muscle, intestine, bladder, reproductive organs
- Two subsystems
 - Sympathetic Nervous System (S/ANS) is involved in the fight or flight response
 - Parasympathetic Nervous System (PS/ANS) is involved in relaxation
- Subsystems operates in the reverse of each other other
 - Innervate the same organs
 - Act in opposition to maintain homeostasis

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HOW THE NERVOUS SYSTEM WORKS

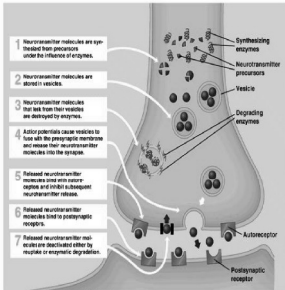
- Electrical impulses are sent along neuron fibers and transmitted from cell to cell at highly specialized functions

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NEUROTRANSMITTERS

- The Main Neurotransmitters
 - Epinephrine (Adrenaline)
 - Norepinephrine (Noradrenaline)
 - Acetylcholine (ACh)

Seven Processes in Neurotransmitter Action



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NEURONS

- Dendrites
- Axons
- Myelin Sheath
 - Schwann cells
 - Neurilemma
- Types
 - Sensory
 - Afferent
 - Motor (Efferent)
 - Interneurons

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THE AUTONOMIC NERVOUS SYSTEM

- Always at work
- Regulates the action of the glands, the smooth muscles of hollow organs and vessels, and the heart muscle
- Preganglionic Neuron
- Postganglionic Neuron
- Sympathetic Nervous System vs. Parasympathetic Nervous System

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SYMPATHETIC NERVOUS SYSTEM

- Responsible for up- and down-regulating many homeostatic mechanisms
- "Accelerator"
- Fight – Flight –Freeze
 - your sympathetic nervous system is called into action – it uses energy - your blood pressure increases, your heart beats faster, and digestion slows down.

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PARASYMPATHETIC NERVOUS SYSTEM

- Inhibits or opposes the physiological effects of the sympathetic nervous system, as in tending to stimulate digestive secretions, slow the heart, constrict the pupils, and dilate blood vessels.
- “Brake”

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Putting it all together



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