

Functions of the Nervous System

- The nervous system is a fast-acting control system that responds to internal and external stimuli.
- 1. Sensory input—gathering information**
 - Sensory receptors monitor changes, called *stimuli*, occurring inside and outside the body
 - 2. Integration**
 - Nervous system processes and interprets sensory input and decides whether action is needed
 - 3. Motor output**
 - A response, or effect, activates muscles or glands

Organization of the Nervous System

- The nervous system is divided into several divisions, some of which are further divided based on **function**.
- The nervous system is first divided into the **central and peripheral divisions**
 - These are also called the **Central Nervous System (CNS)** and the **Peripheral Nervous System (PNS)**

Organization of the Nervous System

- **Central Nervous System (CNS)**
 - Includes the brain and spinal cord
 - Function
 - Interprets incoming sensory information
 - Integration; command center
 - Issues outgoing instructions

Organization of the Nervous System

- **Peripheral Nervous System (PNS)**

- Nerves extending from the brain and spinal cord
 - **Spinal nerves**—carry impulses to and from the spinal cord
 - **Cranial nerves**—carry impulses to and from the brain
- Functions
 - Serve as communication lines among sensory organs, the brain and spinal cord, and glands or muscles

Organization of the Nervous System

- The Peripheral Nervous System (PNS) is further divided into the **motor division and the sensory division.**
- **The sensory division (afferent)**
 - Nerve fibers that carry information to the central nervous system
- **The motor division (efferent)**
 - Nerve fibers that carry impulses away from the central nervous system organs to effector organs (muscles and glands)

Organization of the Nervous System

- The motor (efferent) division is subdivided into the **somatic and autonomic nervous system**.
 - **Somatic nervous system = voluntary**
 - Consciously (voluntarily) controls skeletal muscles
 - **Autonomic nervous system = involuntary**
 - Automatically controls smooth and cardiac muscles and glands

Organization of the Nervous System

- The autonomic nervous system is subdivided into the **sympathetic nervous system** and the **parasympathetic nervous system**.
 - **Sympathetic nervous system = “fight or flight”**
 - Functions under stressed or emergency conditions
 - **Parasympathetic nervous system = “rest and digest”**
 - Functions under everyday normal, relaxed conditions