

The first statement is false; the second statement is true

Sensory receptors can be classified in terms of the type of energy that they **transduce** (e.g., *photoreceptors transduce light, mechanoreceptors transduce displacement and force*) or according to the source of the **input** (e.g., *exteroceptors signal external events, proprioceptors signal the position of the body part with respect to space or another body part*).

Central pathways are usually named by their origin and termination or for the type of information conveyed. The **motor neuron** is the only means of communication between the CNS and effectors, like muscles and glands. It is often referred to as “**the final common pathway**” as it is the only way for the CNS to express its operations as behavior. **Note:** The term **pathway** is similar to tract but is generally used to suggest a particular function (e.g., *the auditory pathway; a series of neuron-to-neuron links, across several synapses, that convey and process auditory information*).

Sensory receptors include **exteroceptors**, **interoceptors**, and **proprioceptors**. **Stimuli** are environmental events that excite sensory receptors, **responses** are the effects of stimuli, and sensory **transduction** is the process by which stimuli are detected. **Note:** **Interoceptors** (*aka, visceroreceptors*) are associated with the viscera or organs and provide information about the internal environment. For example, **mechanoreceptors** detect distension of the gut and fullness of the bladder.

All receptors are linked to sensory neurons. When a receptor responds to a stimulus, a signal is sent along the sensory neuron to the CNS (*brain or spinal cord*). Within the CNS, the stimulus is identified, and if a response is required to maintain homeostasis, signals are sent to effectors along motor neurons.



Notes

1. **Adaptation**, a change in the way that a receptor responds to sequential or prolonged stimulation, is a characteristic property of sensory receptors that makes them better suited to signal particular kinds of sensory information.
2. **Free nerve endings** respond to itch, movement, pain, and temperature. Examples include nociceptors (*detect painful stimuli*), Merkel disks, and root hair plexuses.
3. **Proprioceptors** are found in the joints, muscles, and tendons.
4. Each spinal reflex is elicited by the activation of one or more classes of sensory receptors. Muscle stretch receptors (**muscle spindles**) and **Golgi tendon organs** are important receptors for both spinal reflexes and as a source of the proprioceptive information that gives us an awareness of our limbs and helps guide voluntary movement.
5. The **PNS** includes primary afferent neurons and the sensory receptors that they innervate, somatic motor neurons, and autonomic neurons.