



The Human Body
in Health and Illness

Barbara Herlihy

Chapter 13:
Sensory System

Lesson 13.1 Objectives

- State the functions of the sensory system.
- Define the five types of sensory receptors.
- Describe the four components involved in the perception of a sensation.
- Describe the five general senses.

Sensory System

- Sensory system allows us to experience the world
 - External information
 - Internal information

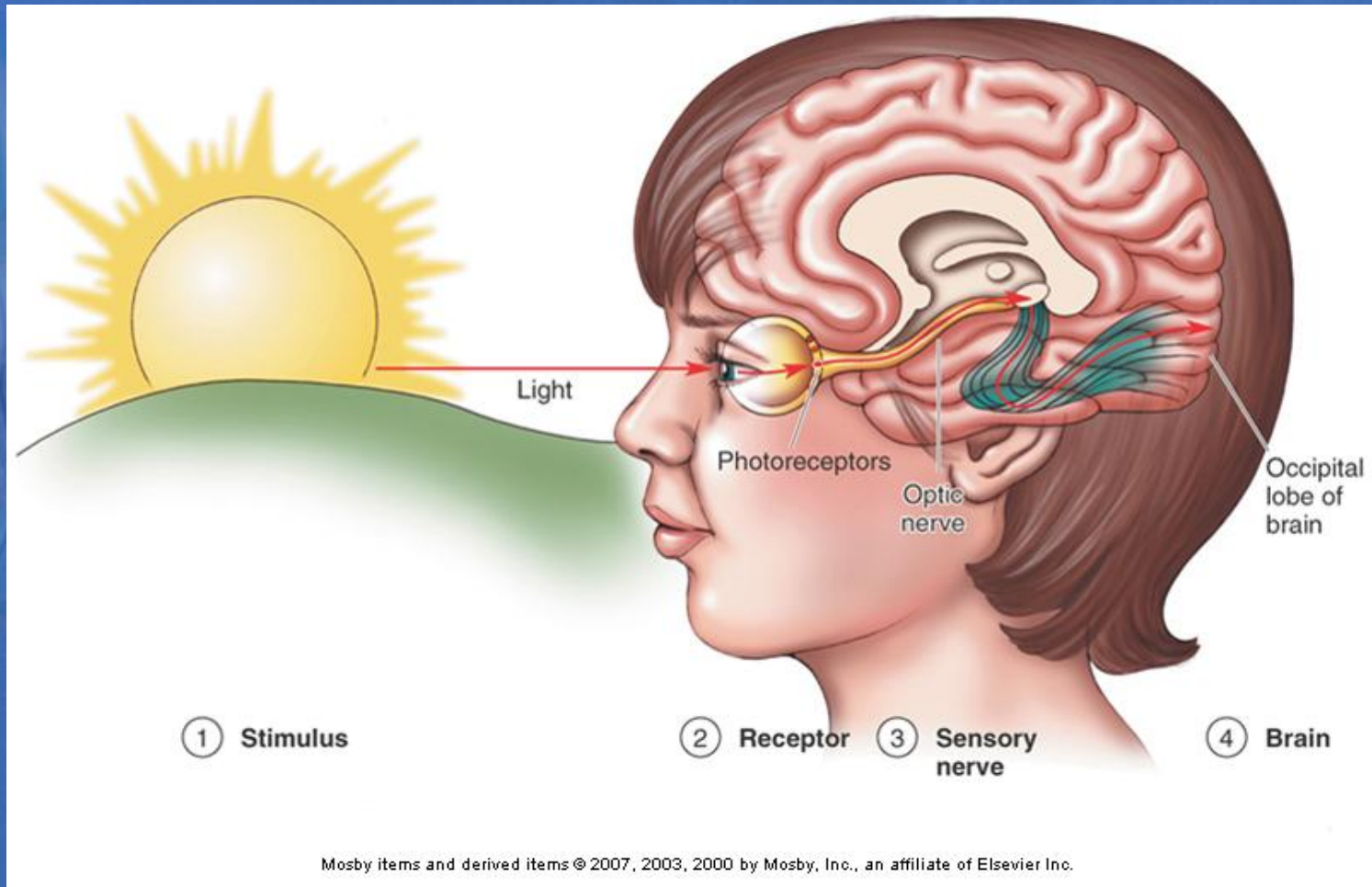
Receptors and Sensation

- Receptor: specialized area of a sensory neuron that detects a specific stimulus
- Five types of sensory receptors:
 - Chemoreceptors
 - Pain receptors (nociceptors)
 - Thermoreceptors
 - Mechanoreceptors
 - Photoreceptors

Receptors and Sensation (cont'd.)

- Sensation: conscious awareness of incoming sensory information
- Four components of sensation perception:
 - Stimulus
 - Receptor
 - Sensory nerve
 - Special area of the brain

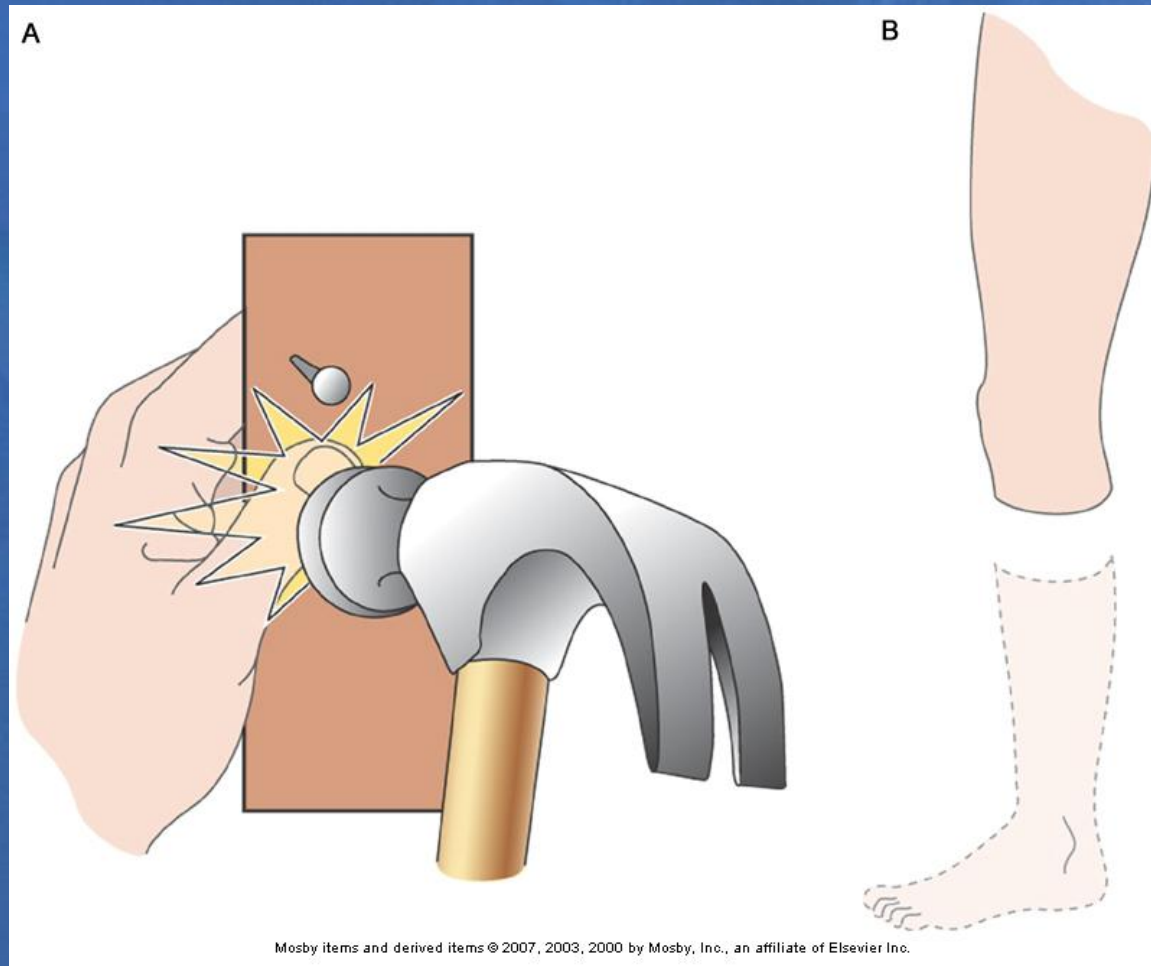
Receptors and Sensation (cont'd.)



Receptors and Sensation (cont'd.)

- Characteristics of sensation:
 - Projection: process by which the brain, after receiving a sensation, refers that sensation back to its source
 - Adaptation: when sensory receptors are continuously stimulated, the receptors send fewer signals to the area of the brain that interprets that particular sensory information

Receptors and Sensation (cont'd.)

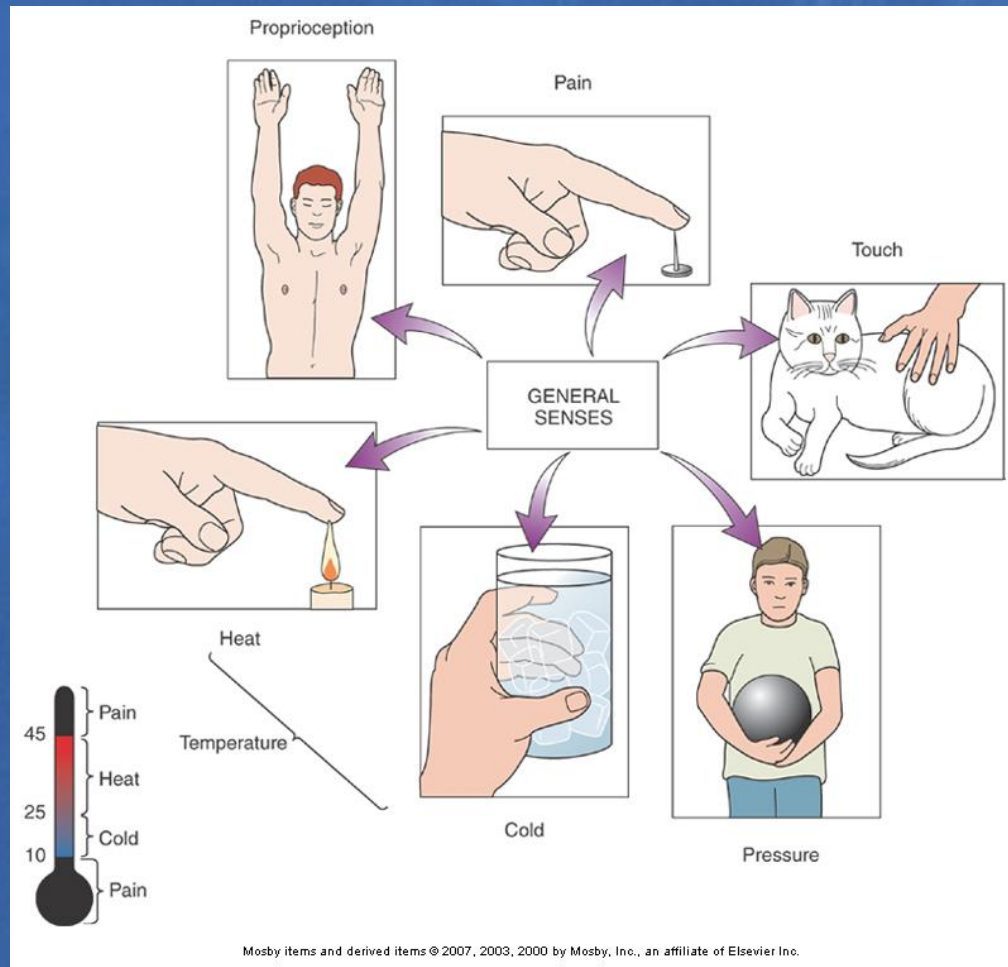


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The General Senses

- Five general senses:
 - Pain
 - Touch
 - Pressure
 - Temperature
 - Proprioception

The General Senses (cont'd.)

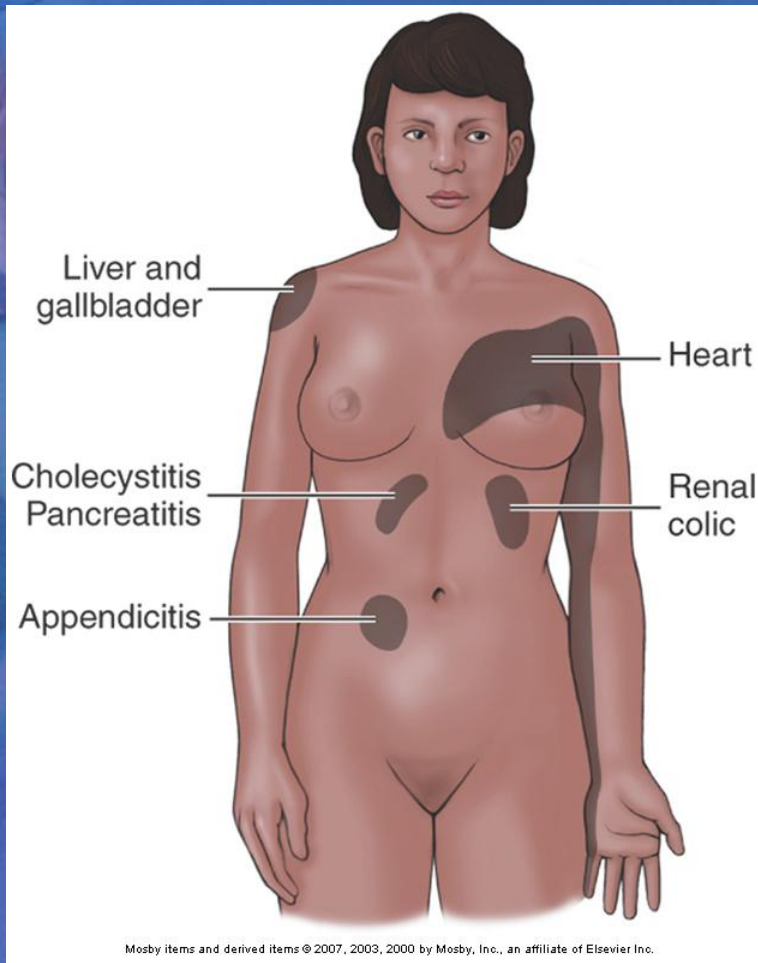


The General Senses (cont'd.)

- Pain receptors (nociceptors):
 - Consist of free nerve endings stimulated by tissue damage
 - Do not adapt; may continue to send signals after stimulus is removed
 - Widely distributed throughout the skin, visceral organs, and other internal tissues
 - Not present in nervous tissue of the brain

The General Senses (cont'd.)

Sites of referred pain



The General Senses (cont'd.)

- Touch and pressure receptors:
 - Mechanoreceptors; respond to forces that press, move, or deform tissue
 - Touch receptors are found mostly in the skin; also called tactile receptors
 - Pressure receptors are located in the skin, subcutaneous tissue, and deep tissue

The General Senses (cont'd.)

- Thermoreceptors (receptors of temperature):
 - Two types of thermoreceptors:
 - Cold receptors
 - Heat receptors
 - Found in free nerve endings and other specialized sensory cells beneath the skin
 - Scattered widely throughout the body
 - Both types display adaptation

The General Senses (cont'd.)

- Proprioception: sense of orientation or position
- Proprioceptors:
 - Located in muscles, tendons, joints, and inner ear
 - Sensory information about movement and position is sent to the parietal lobe
 - Sensory information pertaining to coordination of skeletal muscle activity is sent to the cerebellum