

# General Sense Receptors

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From Touch to Pain



# Sensory Reception

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- A sensation is a sensory impulse that stimulates the CNS.
- The conscious awareness of a sensation is perception.
- In order to perceive a sensation, *four things must happen*:



# Sensory Reception (2)

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- In order to perceive a sensation, four things must happen:
  1. You must receive a stimulus.
  2. A receptor structure must respond to the stimulus by generating an action potential.
  3. The AP must make it to the brain.
  4. A part of the brain must understand that the impulse as a perception.



# Classification of Senses

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- Two main types of senses:
  1. Senses received over a wide area of the body are called general senses. Ex., touch, pressure, pain, heat, and cold.
  2. Senses that involve highly specialized sense organs are called special senses. Ex., vision, smell, taste, balance, and hearing.



# Classification of Receptors

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- Receptors are *classified on location*.
  1. Exteroceptors: near surface of the body. Ex., vision, taste, smell, hearing, touch, pressure, temperature, and pain.
  2. Enteroceptors: located in blood vessels and internal organs. Ex., hunger, thirst, fatigue, pressure, pain, and nausea.



# Classification of Receptors (2)

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- Receptors are classified on location.
3. Proprioceptors: located w/in joints, muscles, and tendons and transmit information regarding balance and body position.



# Classification of Receptors (3)

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- Receptors also classified on stimuli.
- 4. Photoreceptors: light
- 5. Mechanoreceptors: touch, pressure.
- 6. Thermoreceptors: temperature changes.
- 7. Chemoreceptors: taste, smell.
- 8. Baroreceptors: blood pressure.
- 9. Nociceptors: pain.



# Mechanoreceptors

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- There are two types of mechanoreceptors: touch receptors and pressure receptors.
- Let's take a close look at touch receptors.



# Touch Receptors

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- Touch receptors are found in the skin, mouth, nasal cavity, eyes, and digestive tract.
- They are not evenly distributed, most are located: tongue, lips, fingertips, parts of the face, skin of genitals.



# Touch Receptors (2)

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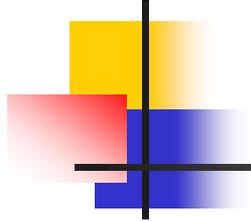
- Two general classes: crude touch and fine touch.
- Swallow an ice cube and you can test your crude touch sensors.
- Fine touch receptors are:



# Touch Receptors (3)

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- Fine touch receptors are:
  1. Meissner's corpuscles: most numerous in fingertips, palms, soles, tip of tongue, lips, eyelids, nipples, penis, and clitoris.
  2. Merkel's disks: on skin for fine touch.
  3. Free nerve endings: connected to hairs.
  4. End organ of Ruffini: deep in dermis.



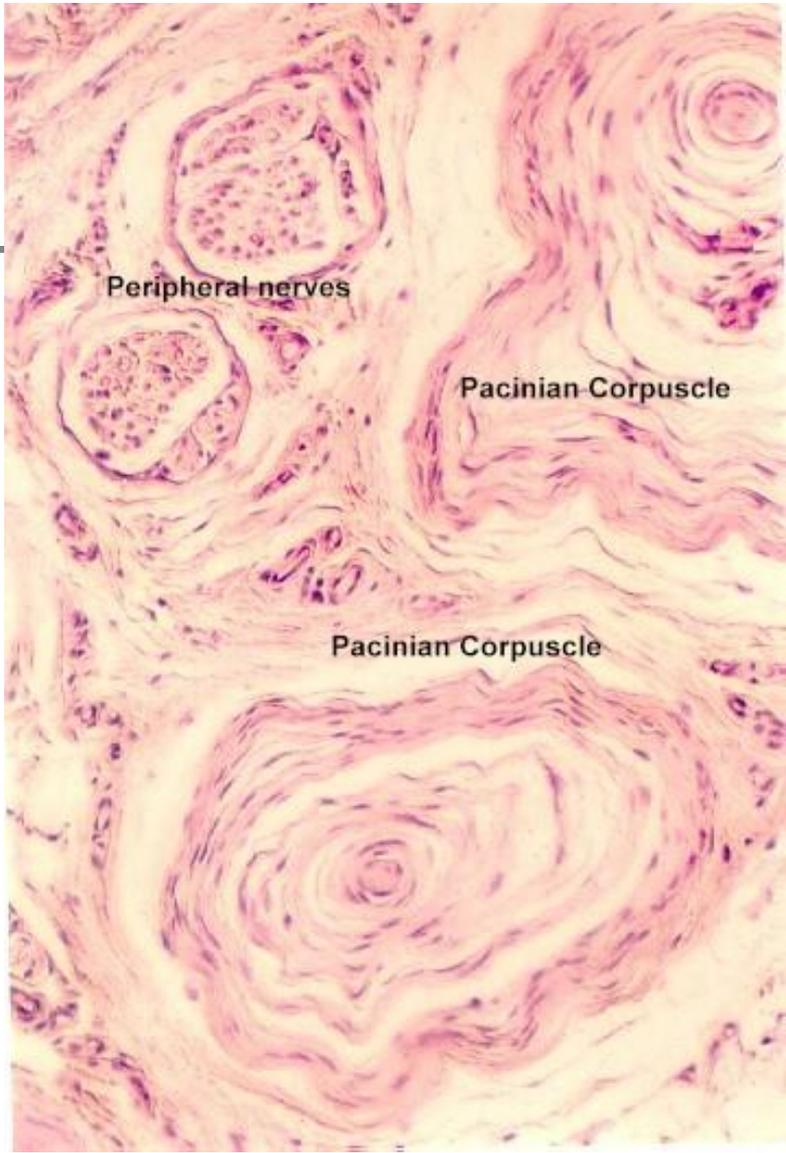
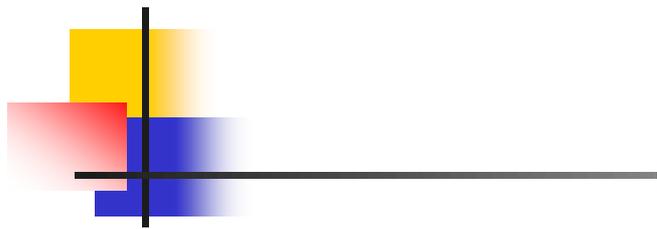
**Meissner's Corpuscle**



# Pressure Receptors

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- These receptors require deeper pressure than just light touch. The receptors are called pacinian corpuscles.



Peripheral nerves

Pacinian Corpuscle

Pacinian Corpuscle