# Types of Skin Receptors

The sensory receptors in the skin are:

- **cutaneous mechanoreceptors**
  - Ruffini's end organ (Heat)
  - End-bulbs of Krause (Cold)
  - Meissner's corpuscle (changes in texture, slow vibrations)
  - Pacinian corpuscle (deep pressure, fast vibrations)
  - Merkel's disc (sustained touch and pressure)
  - Free nerve endings
- thermoreceptor
- nociceptor
- bulboid corpuscles
- chemoreceptor

With the above-mentioned receptor types the skin can sense the modalities touch, pressure, vibration, temperature and pain. The modalities and their receptors are partly overlapping, and are innervated by different kinds of fiber types.

**Cutaneous receptors**

| Modality | Type | Fiber type |
|---|---|---|
| **Touch** | Rapidly adapting cutaneous mechanoreceptors (Meissner corpuscle end-organs<br>Pacinian corpuscle end-organs<br>hair follicle receptors<br>some free nerve endings) | Aβ fibers |
| **Touch & pressure** | Slowly adapting cutaneous mechanoreceptors (Merkel and Ruffini corpuscle end-organs<br>some free nerve endings) | Aβ fibers (Merkel and Ruffini's), Aδ fibers (free nerve endings) |
| **Vibration** | Meissners and Pacinian corpuscle end-organs | Aβ fibers |
| **Temperature** | Thermoreceptors | Aδ fibers (cold receptors)<br>C fibers (warmth receptors) |
| **Pain & Itch** | Free nerve ending nociceptors | Aδ fibers (Nociceptors of neospinothalamic tract)<br>C fibers (Nociceptors of paleospinothalamic tract) |

# Morphology

Cutaneous receptors are at the ends of afferent neurons. They are usually encapsulated in elaborate cellular corpuscles. Generally, they are linked to collagen-fibre networks within the capsule. Ion channels are situated near these networks.

In sensory transduction, the afferent nerves transmit through a series of synapses in the central nervous system, first in the spinal cord or trigeminal nucleus, depending on the dermatomic area concerned. One pathway then proceeds to the ventrobasal portion of the thalamus, and then on to the somatosensory cortex.[2]