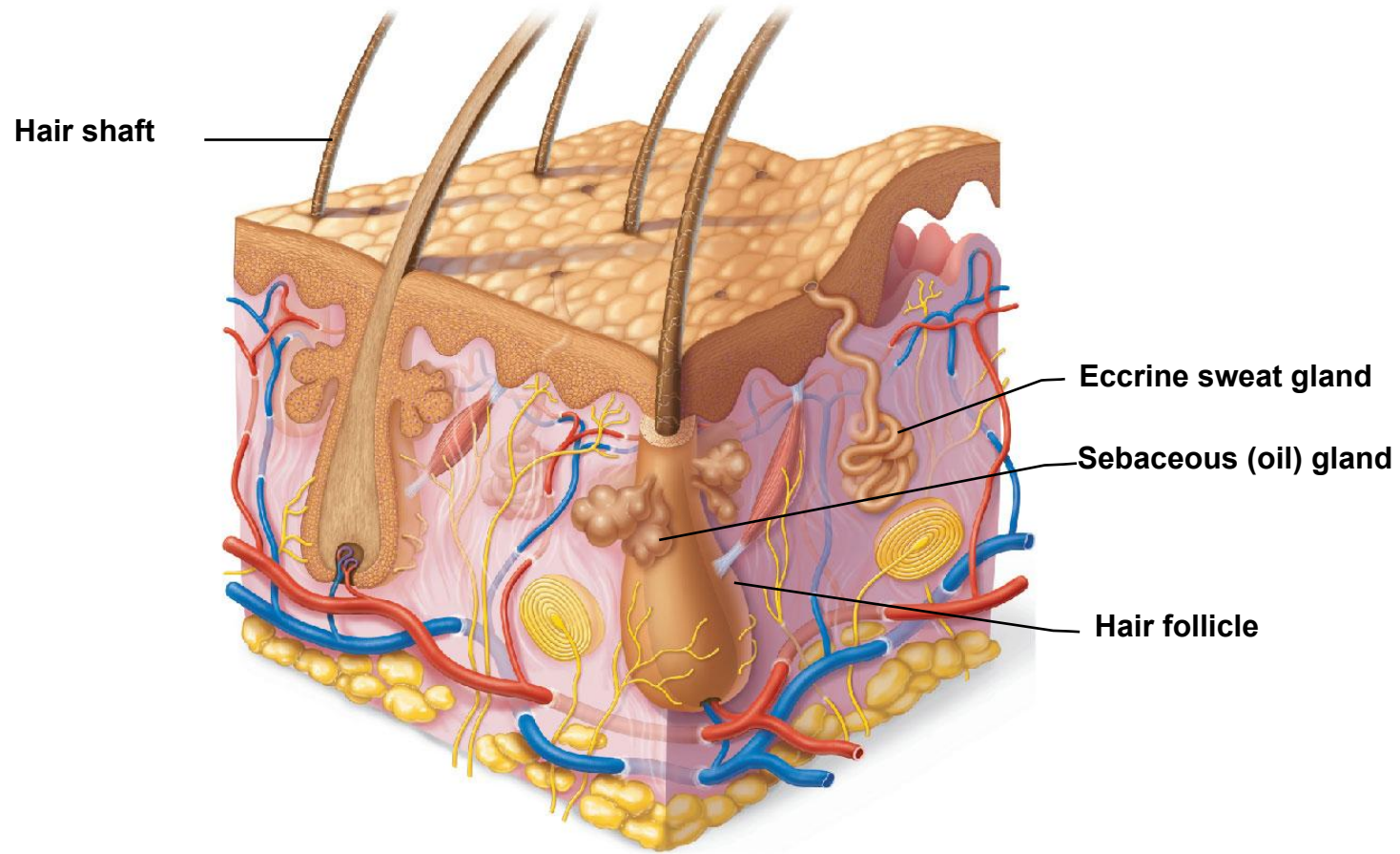


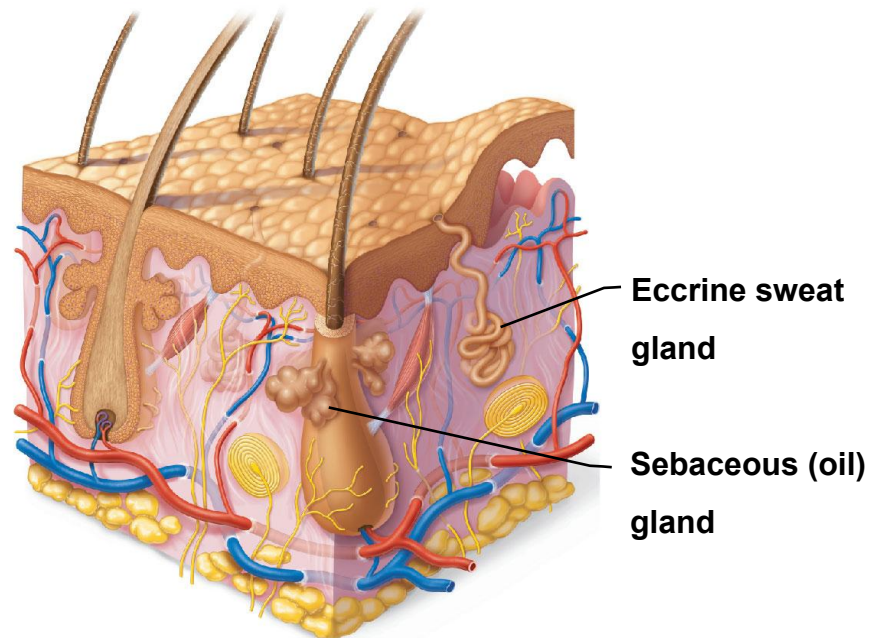
Cutaneous Glands

- The skin contains both cutaneous **sweat** and **oil** glands.



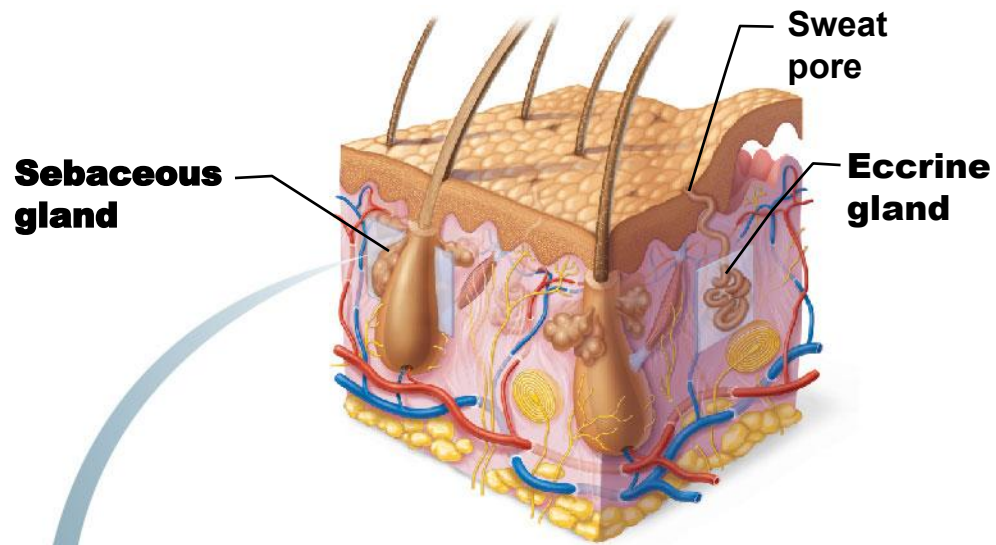
Cutaneous Glands

- Cutaneous glands are all **exocrine** glands
 - Release their **secretions** to the skin surface via **ducts**
- Two groups of cutaneous glands:
 - **Sebaceous (oil)** glands
 - **Sweat** glands
- Formed by the epidermal cells of the **stratum basale**
 - Push into the deeper skin regions and ultimately reside almost entirely in the **dermis**



Sebaceous (Oil) Glands

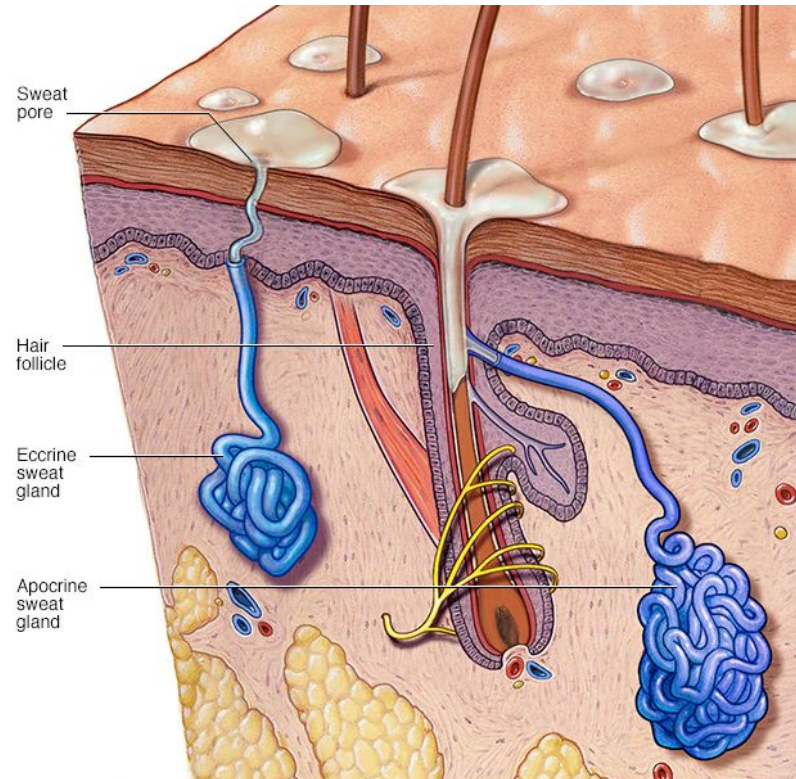
- Sebaceous (oil) glands
 - Located all over the skin EXCEPT for **palms** of the hands and **soles** of the feet
 - Produce **sebum (oil)**
 - ✓ **Mixture** of oily substances and fragmented cells
 - ✓ **Lubricant** that keeps the skin soft and moist
 - ✓ **Prevents** hair from becoming brittle
 - ✓ **Kills bacteria** preventing infection of the skin
 - Most have ducts that **empty into hair follicles**; others open directly onto skin surface
 - Glands are **activated at puberty**



(a) Photomicrograph of a sectioned sebaceous gland (100×)

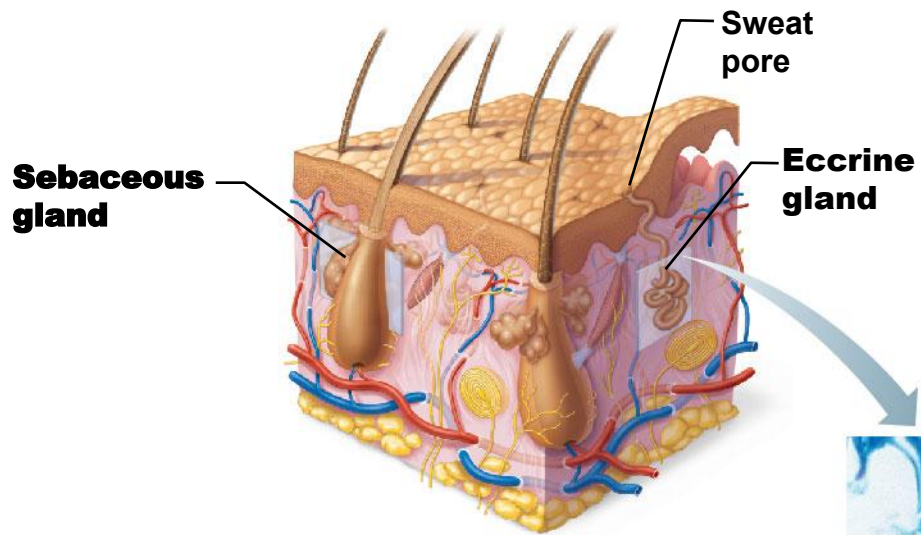
Sweat (Sudoriferous) Glands

- Sweat (**sudoriferous**) glands
 - Widely distributed in skin
 - More than **2.5 million per person**
- Two types of sudoriferous glands
 - **Eccrine** glands
 - **Apocrine** glands



Sweat (Sudoriferous) Glands

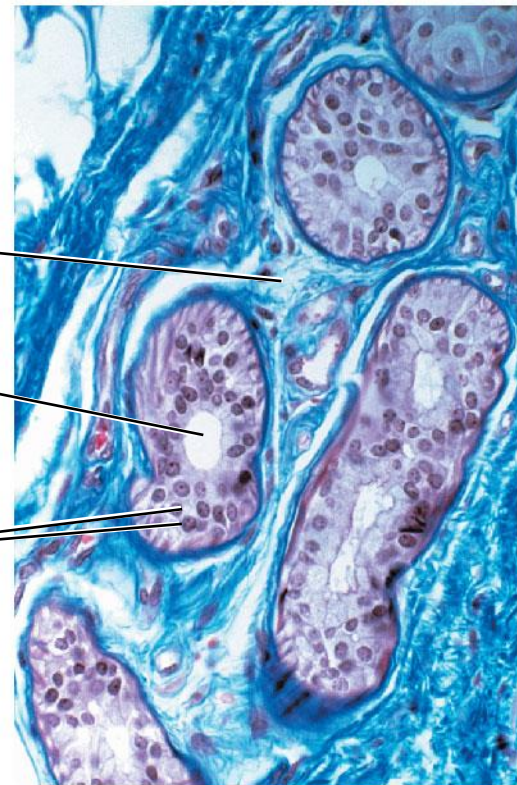
- Eccrine glands
 - Open via duct to **sweat pores on the skin's surface**
 - Produce **acidic** sweat
 - ✓ Clear secretion with **pH of 4-6**
 - ✓ **Water plus salts, vitamin C, traces of metabolic waste, and lactic acid**
 - ✓ **Inhibits** growth of bacteria
 - Function in **body temperature regulation**
 - ✓ Supplied with **nerve endings** that cause them to secrete sweat when body temperature is too high
 - Far more numerous and found all over the body



Dermal connective tissue

Eccrine gland duct

Secretory cells



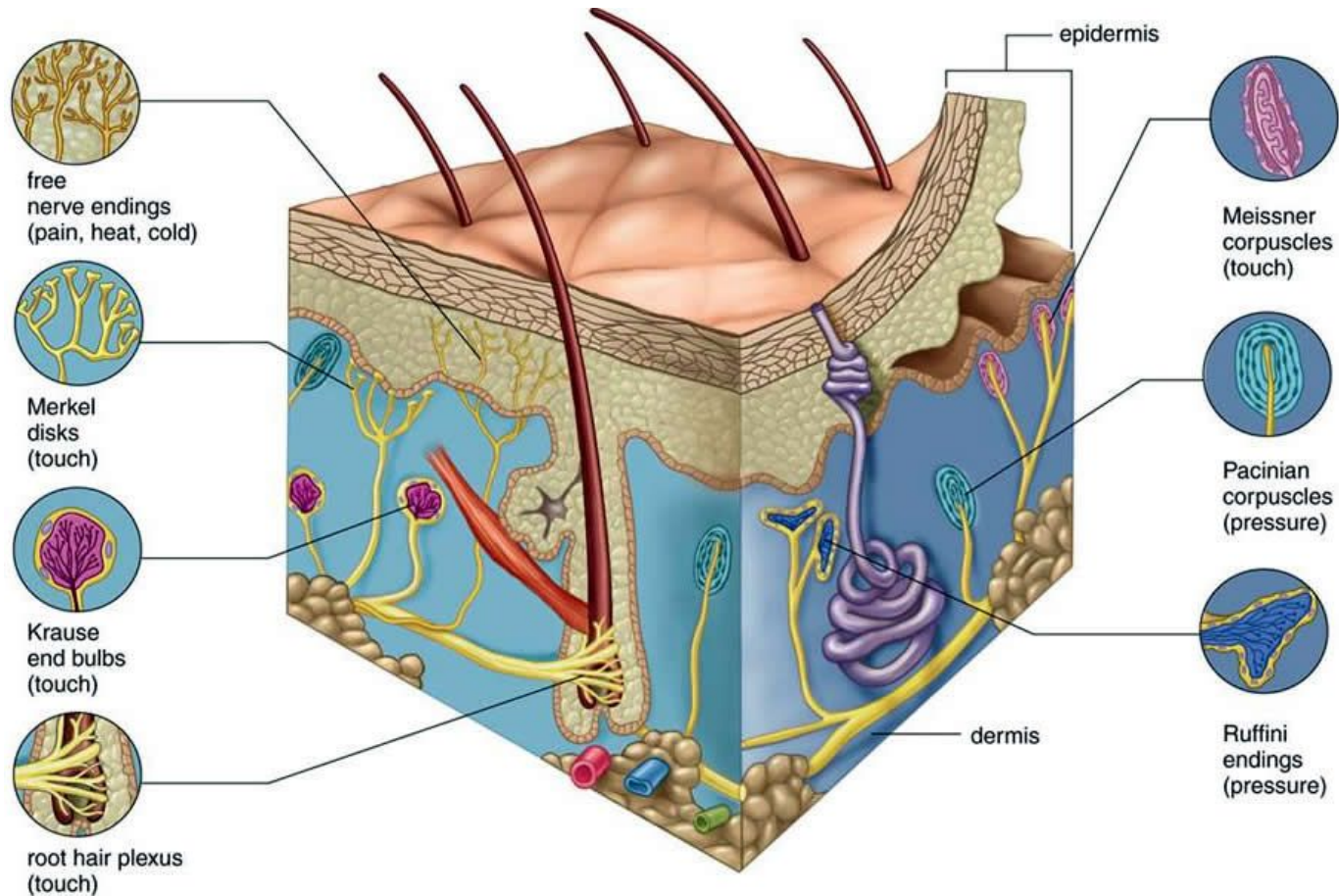
(b) Photomicrograph of a sectioned eccrine gland (205×)

Sweat (Sudoriferous) Glands

- Apocrine glands
 - Ducts empty into **hair follicles in the armpit and genitals**
 - Begin to function at **puberty**
 - Release sweat that also contains **fatty acids and proteins** (milky or yellowish color)
 - Play a minimal role in **body temperature regulation**
 - May act as **sexual scent** glands
 - **Activated by nerve fibers** during pain and stress and sexual arousal

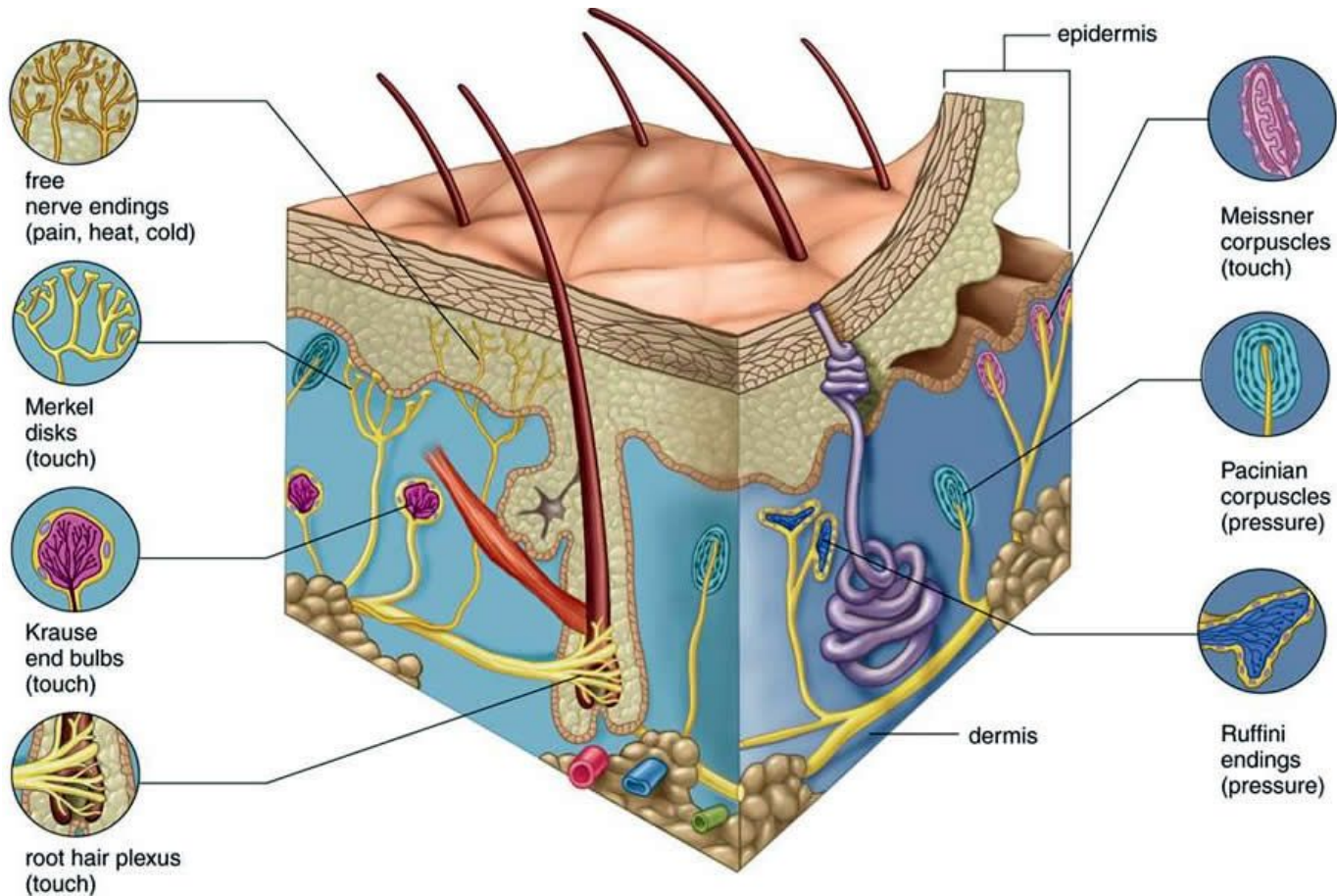
Sensory Receptors

- The skin is richly supplied with cutaneous **sensory receptors**, which are part of the **nervous system**
 - Respond to **stimuli** arising outside of the body



Sensory Receptors

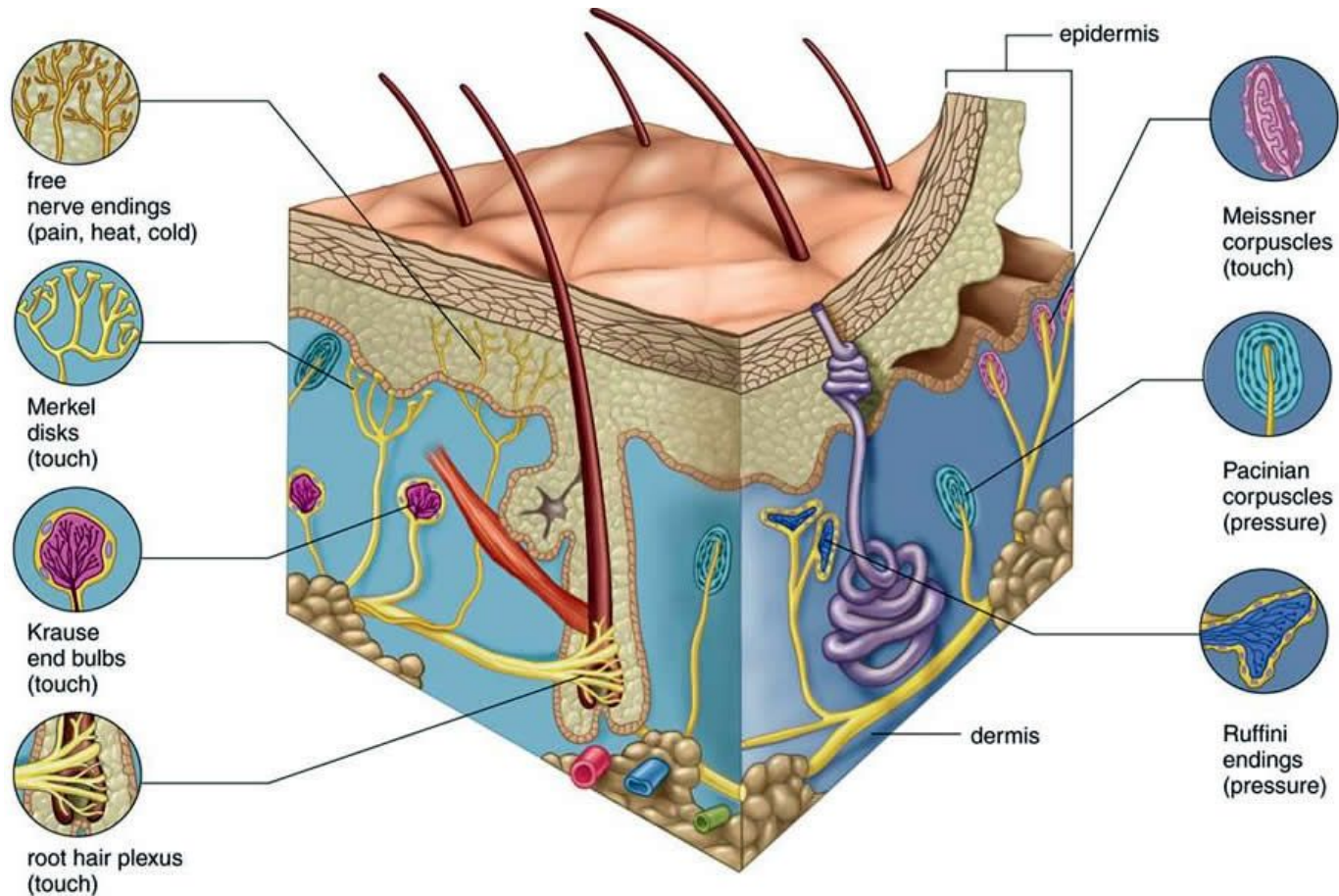
- **Free nerve endings**
 - Detect many types of sensations: **pain, light touch, and temperature**



Sensory Receptors

● Merkel disks

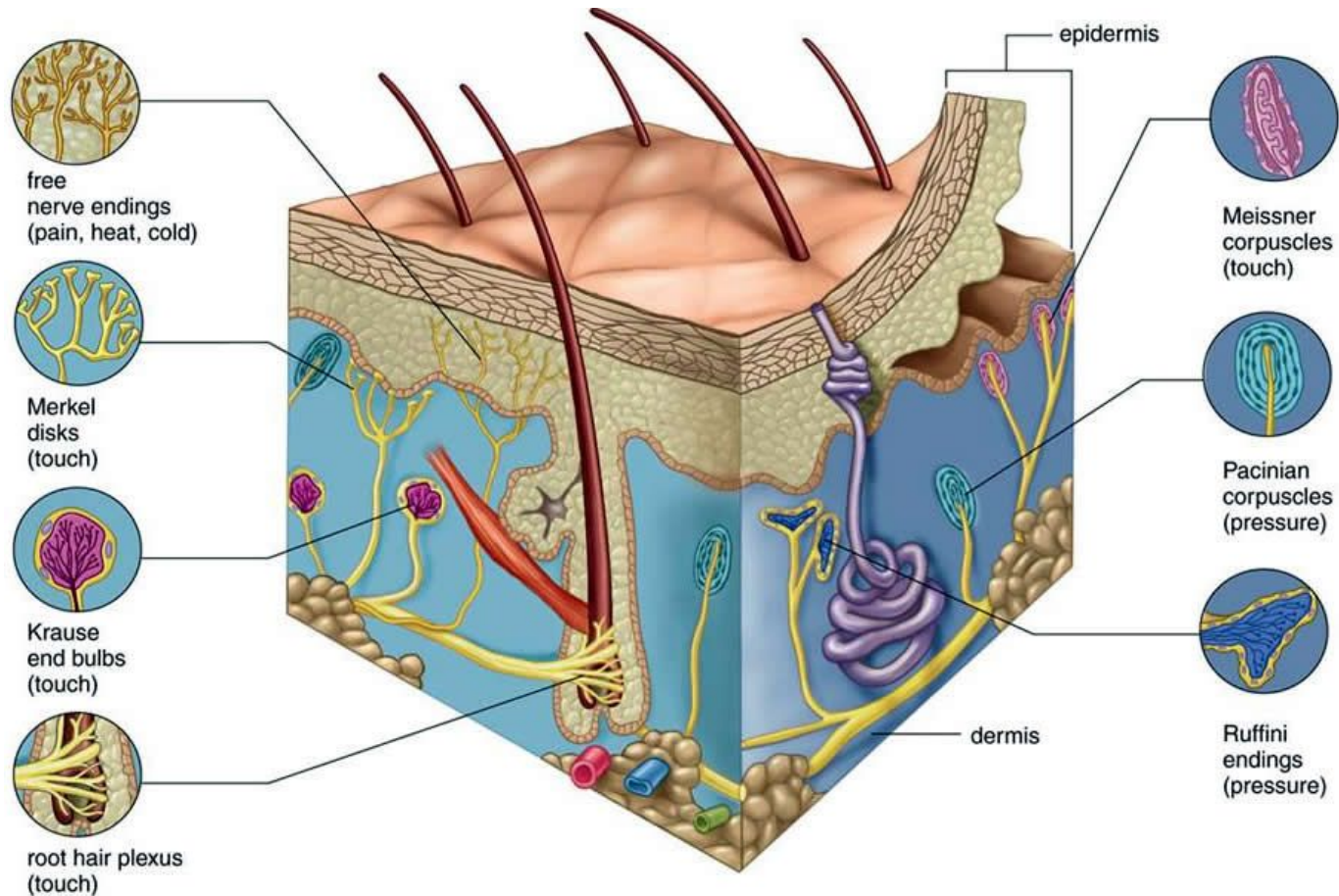
- Attach to Merkel cells in the **stratum basale**
- Detect **sustained touch and pressure**



Sensory Receptors

- **Meissner Corpuscle**

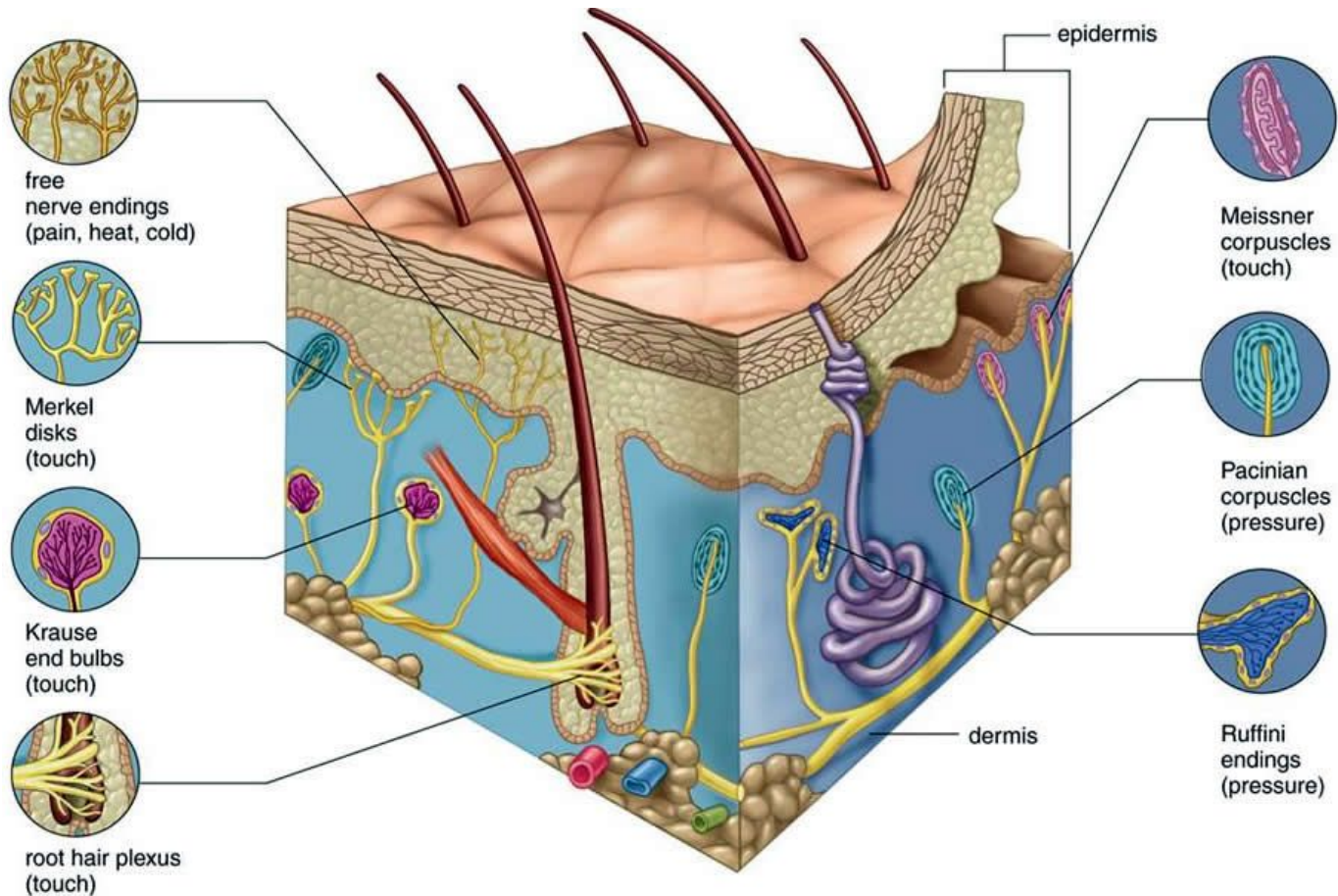
- Found in the **dermal papillae**
- Detects **changes in texture and slow vibrations**



Sensory Receptors

- **Lamellar (Pacinian) Corpuscle**

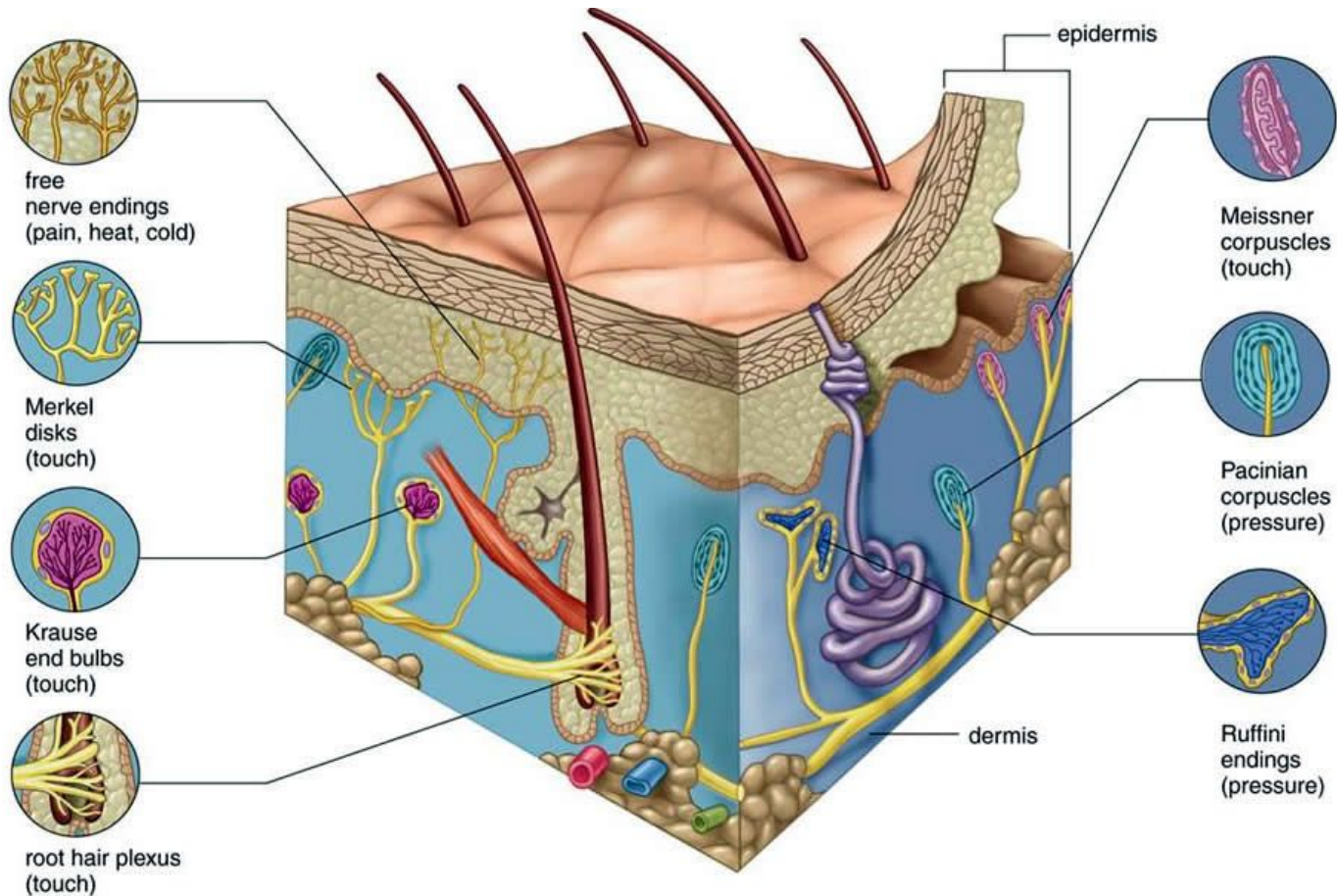
- Found in the **deeper dermis**
- Detects **deep pressure and fast vibrations**



Sensory Receptors

● Krause End Bulb

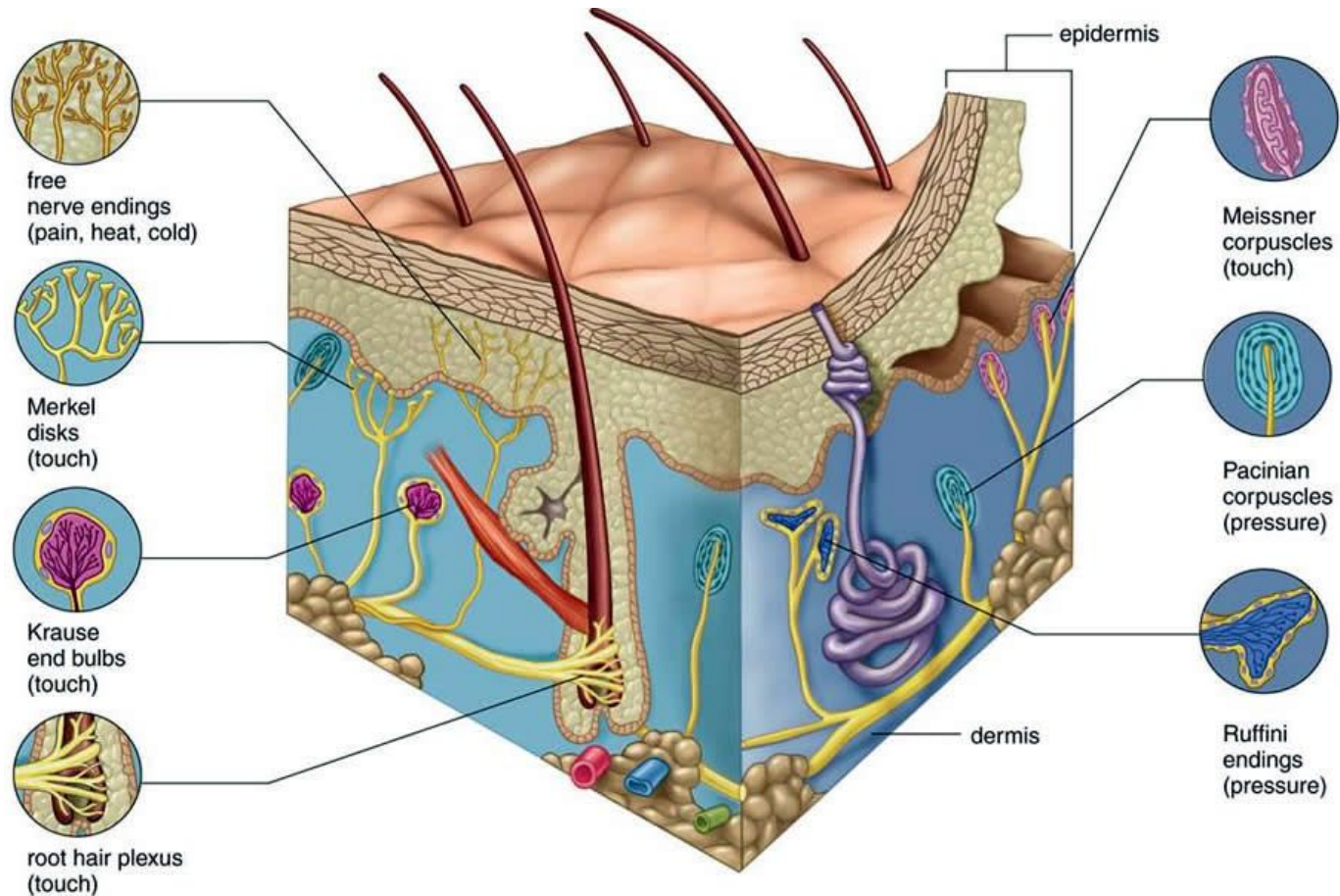
- Located only in the **eyes, lips, tongue, and genitals**
- Detects **cold temperatures**



Sensory Receptors

- **Ruffini Endings**

- Detects **sustained pressure and stretching**



Sensory Receptors

● Hair Follicle Receptors

- Found wrapped around the hair follicle below the sebaceous gland
- Detects **light touch and hair movement**

