

Structure and Function of Skin

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What we'll talk about...

- Structural and functional layers of the skin
- Mechanisms to protect against ultraviolet light, foreign organisms and chemical and desiccation
- Associated structures of the skin: hair, sweat glands, sensory structures

Skin is the largest organ in the body and has five primary functions.

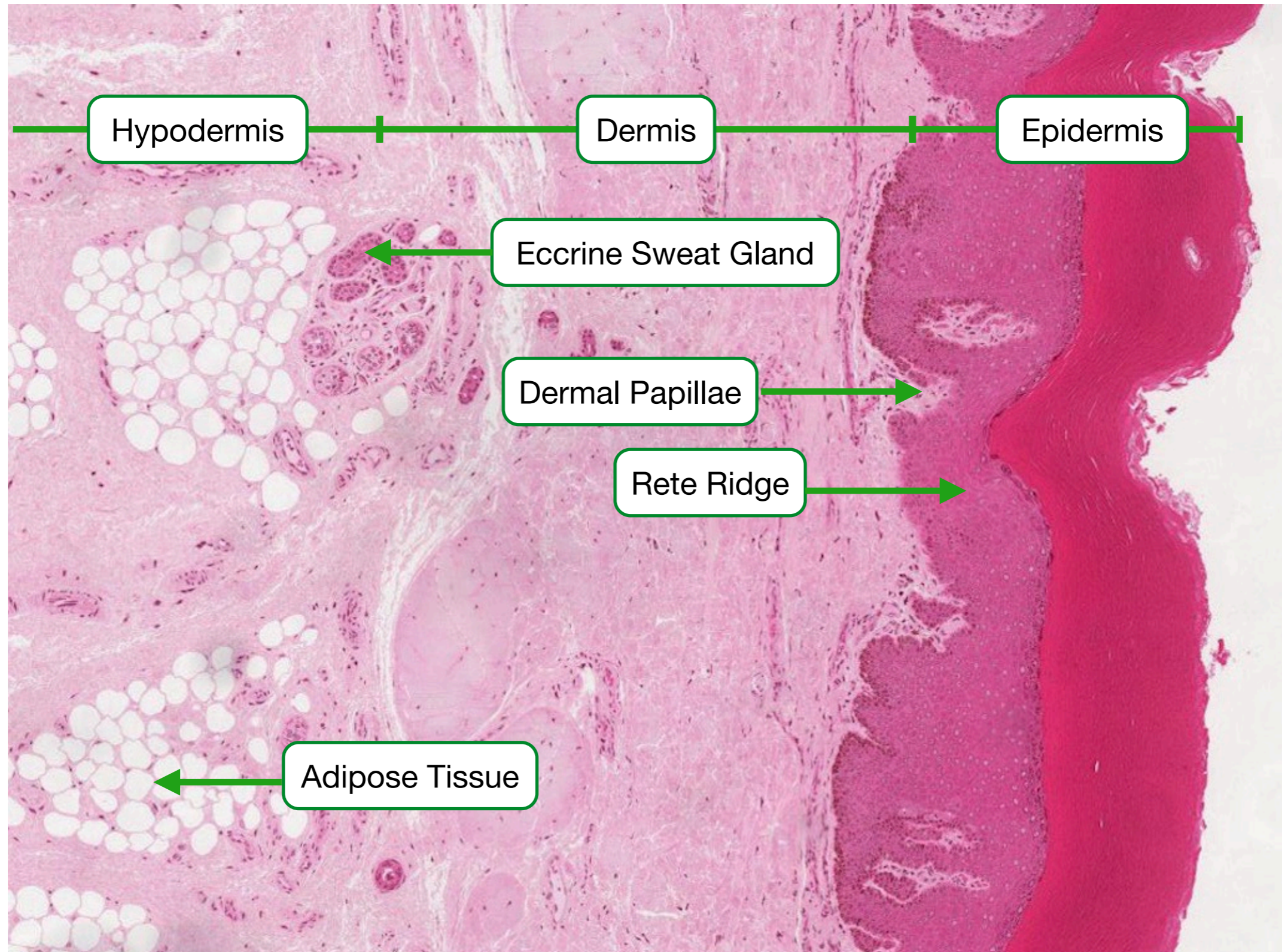
- Protection
- Homeostasis of Body Temperature
- Physical Sensation
- Metabolism
- Sexual Attraction

Skin protects the body from external impacts and internal loss.

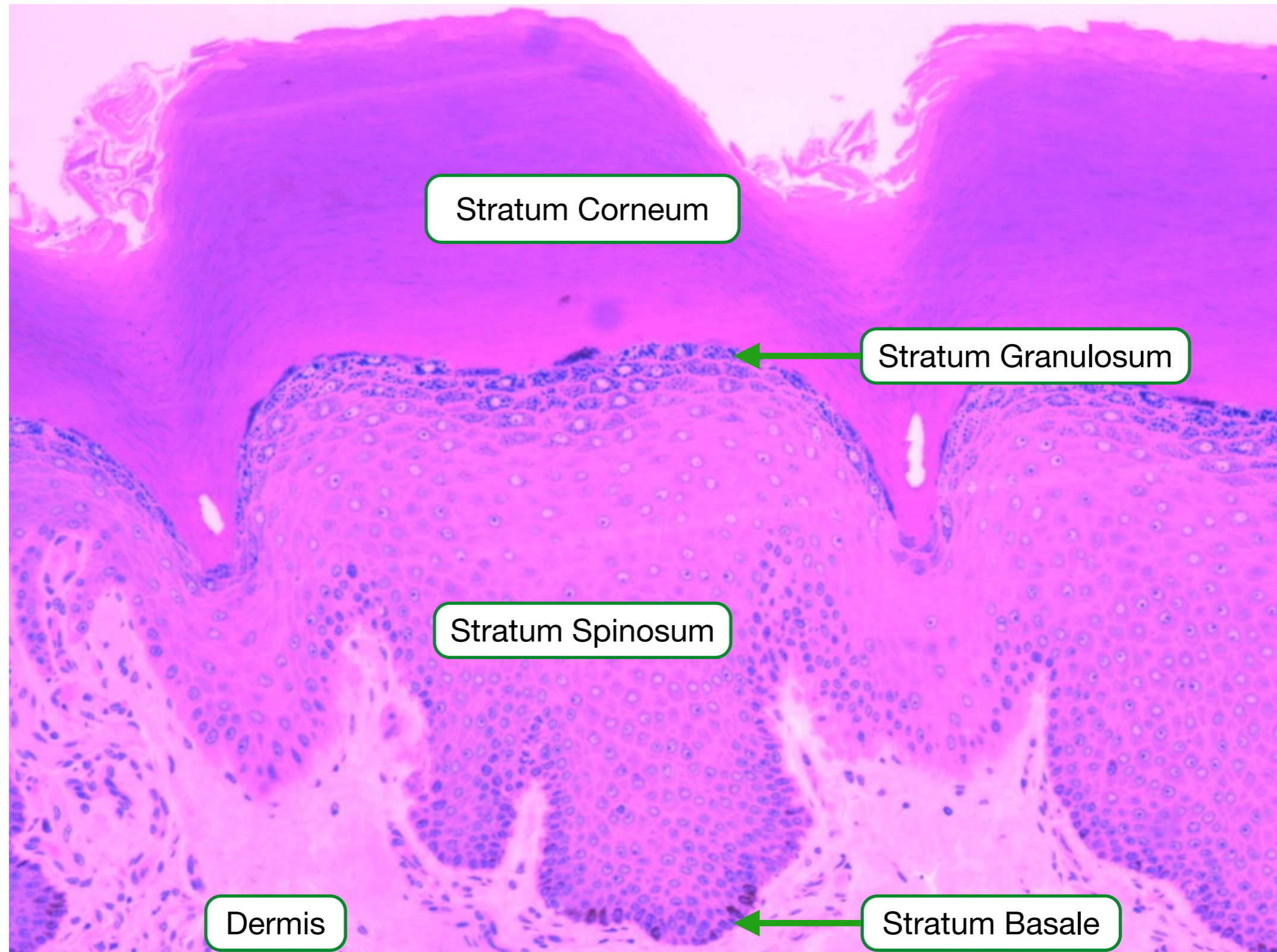
- Ultraviolet light
- Foreign organisms and chemicals
- Desiccation
- Mechanical forces

Structure of Skin

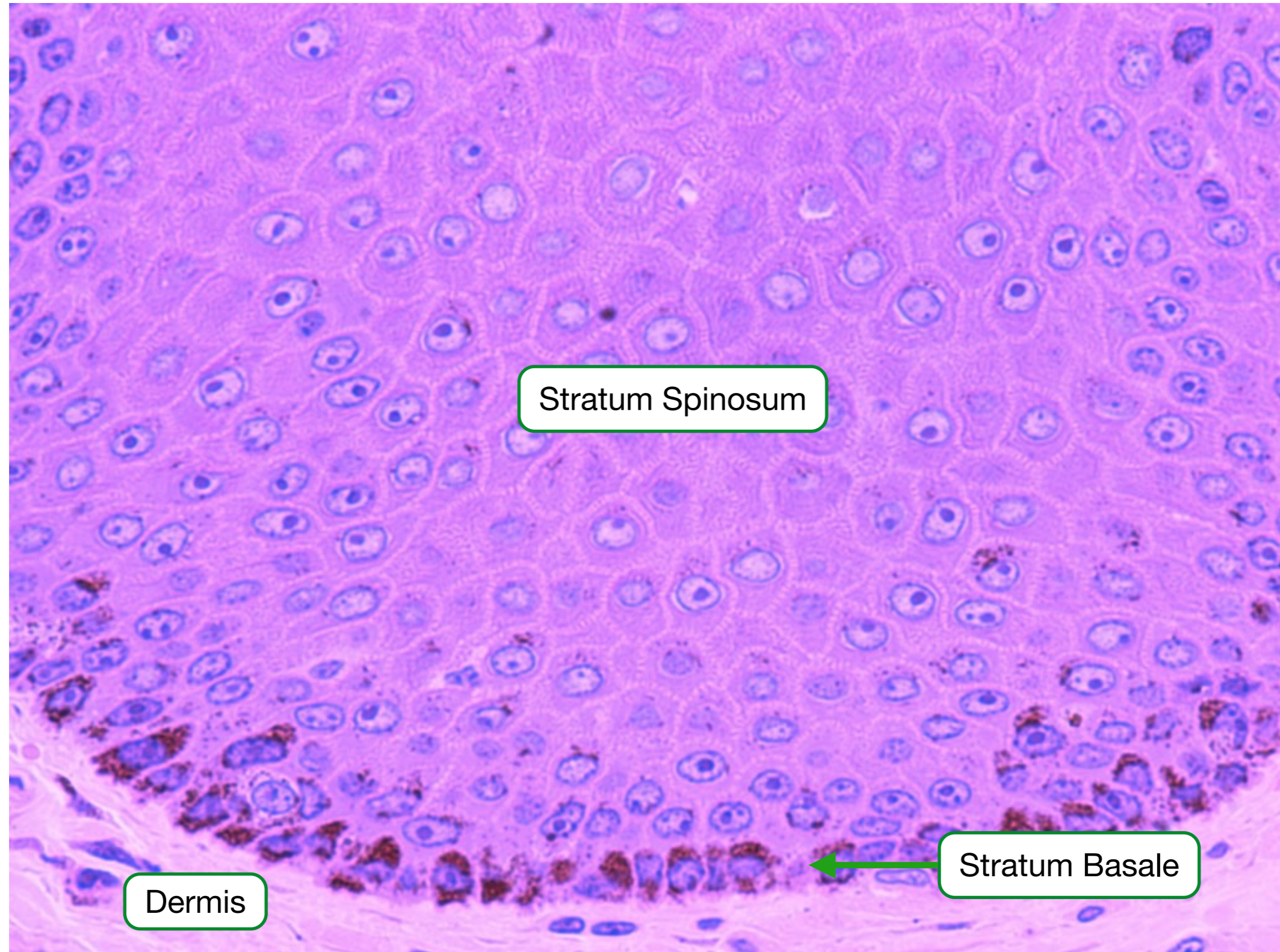
Skin comprises three structural and functional layers.



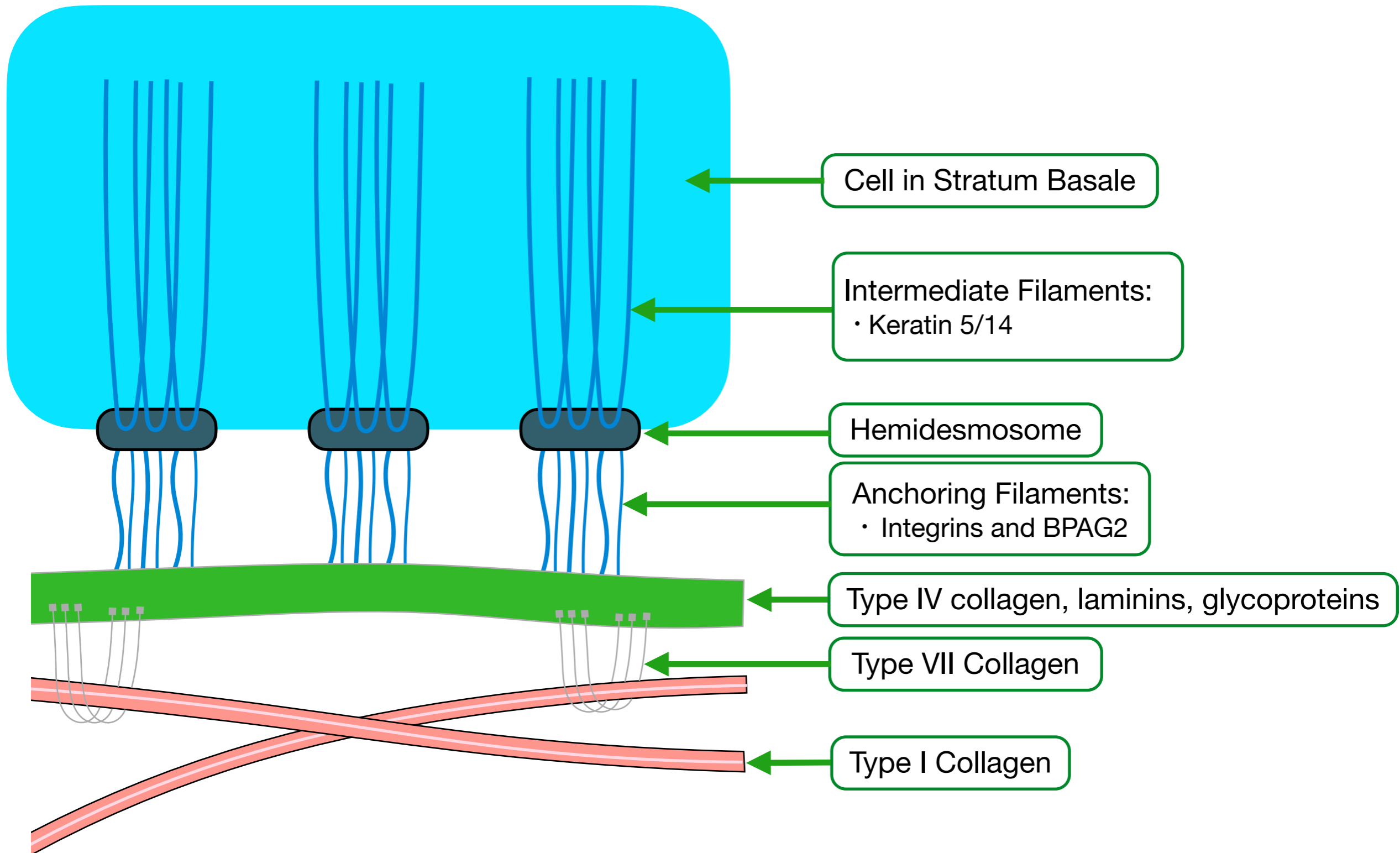
The epidermis is a self-renewing, stratified squamous epithelium.



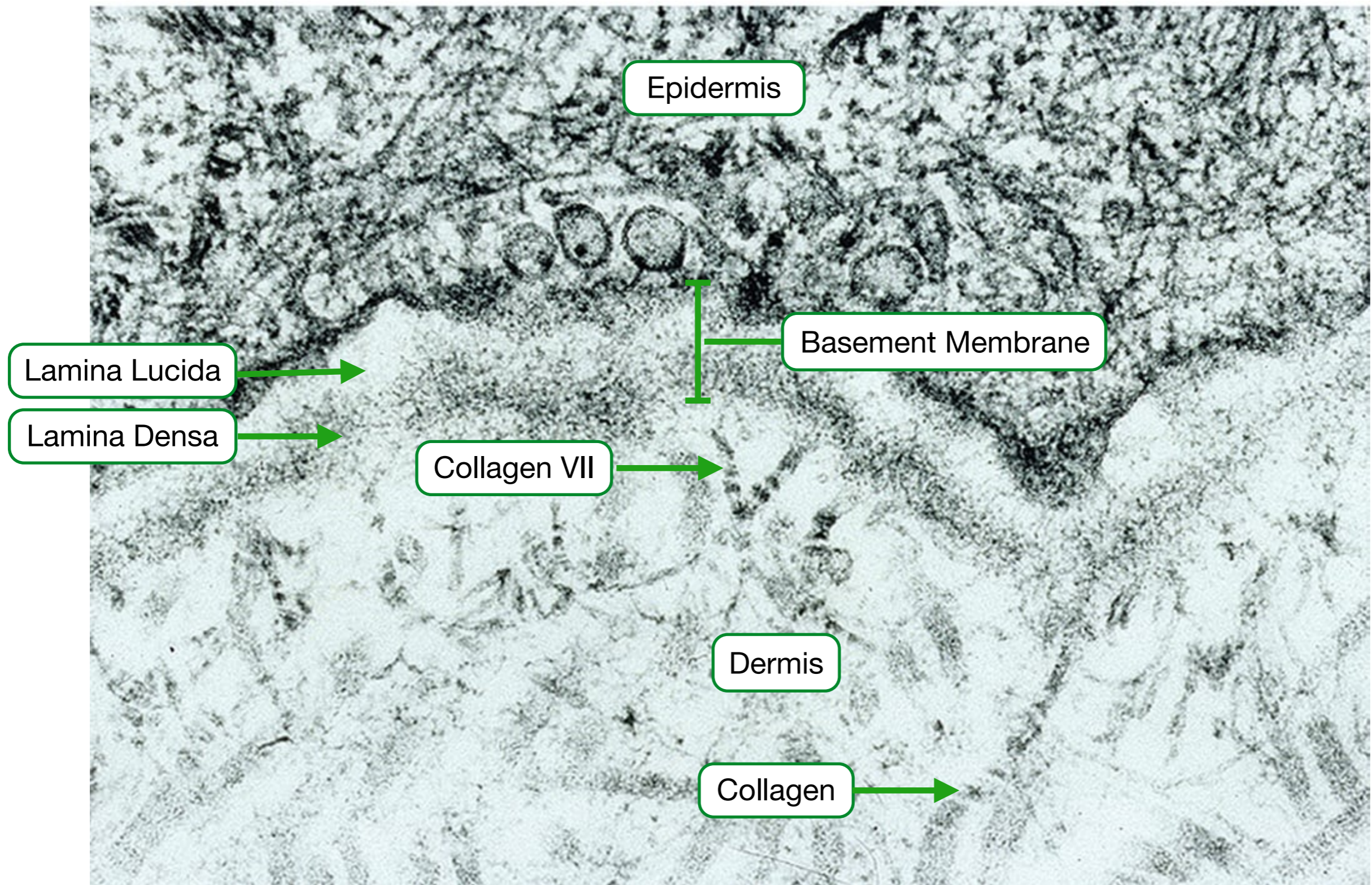
Cells in the spinosum appear spiny due to strong desmosome attachments.



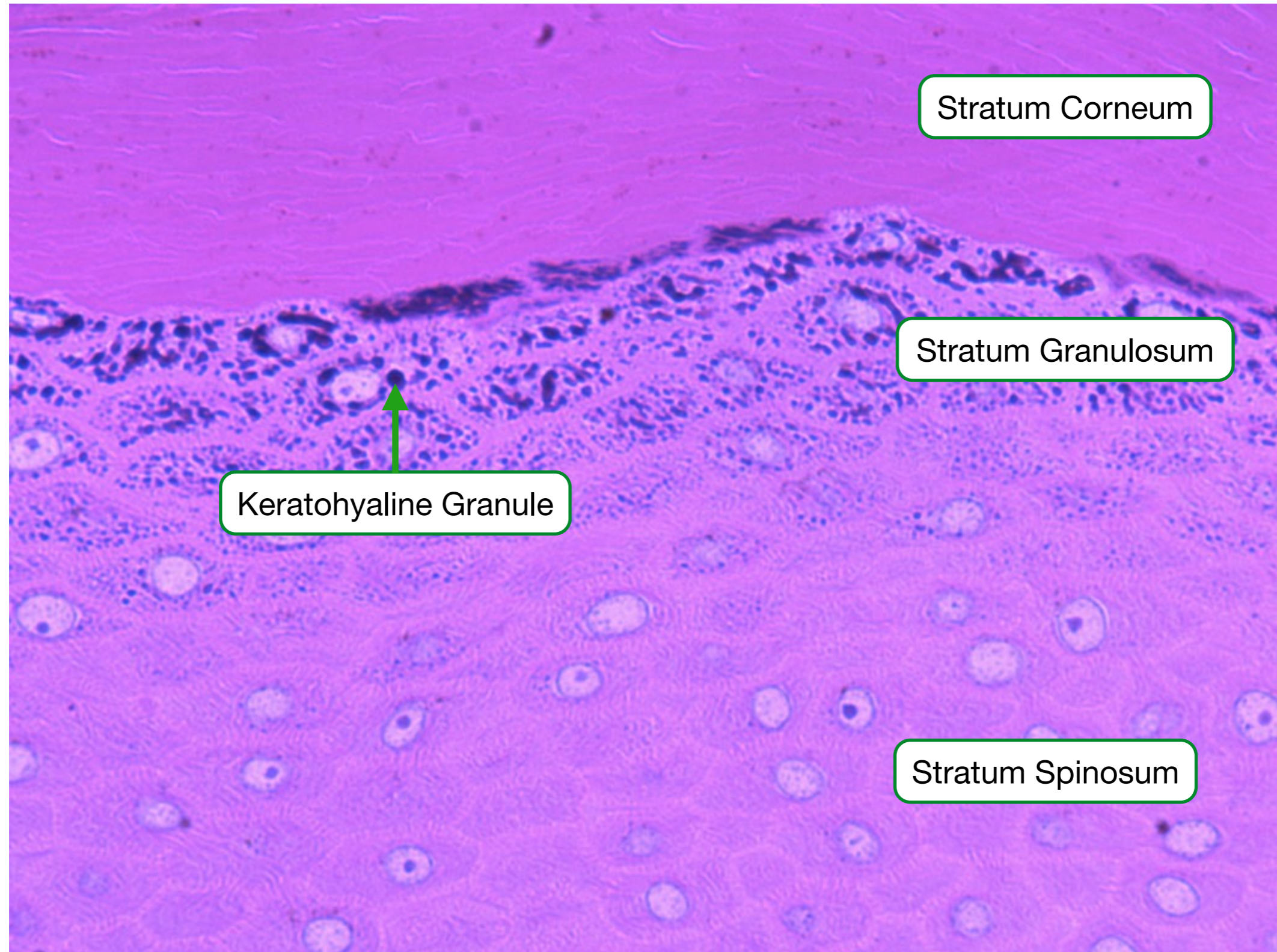
Several proteins link the epidermis to basement membrane and dermis.



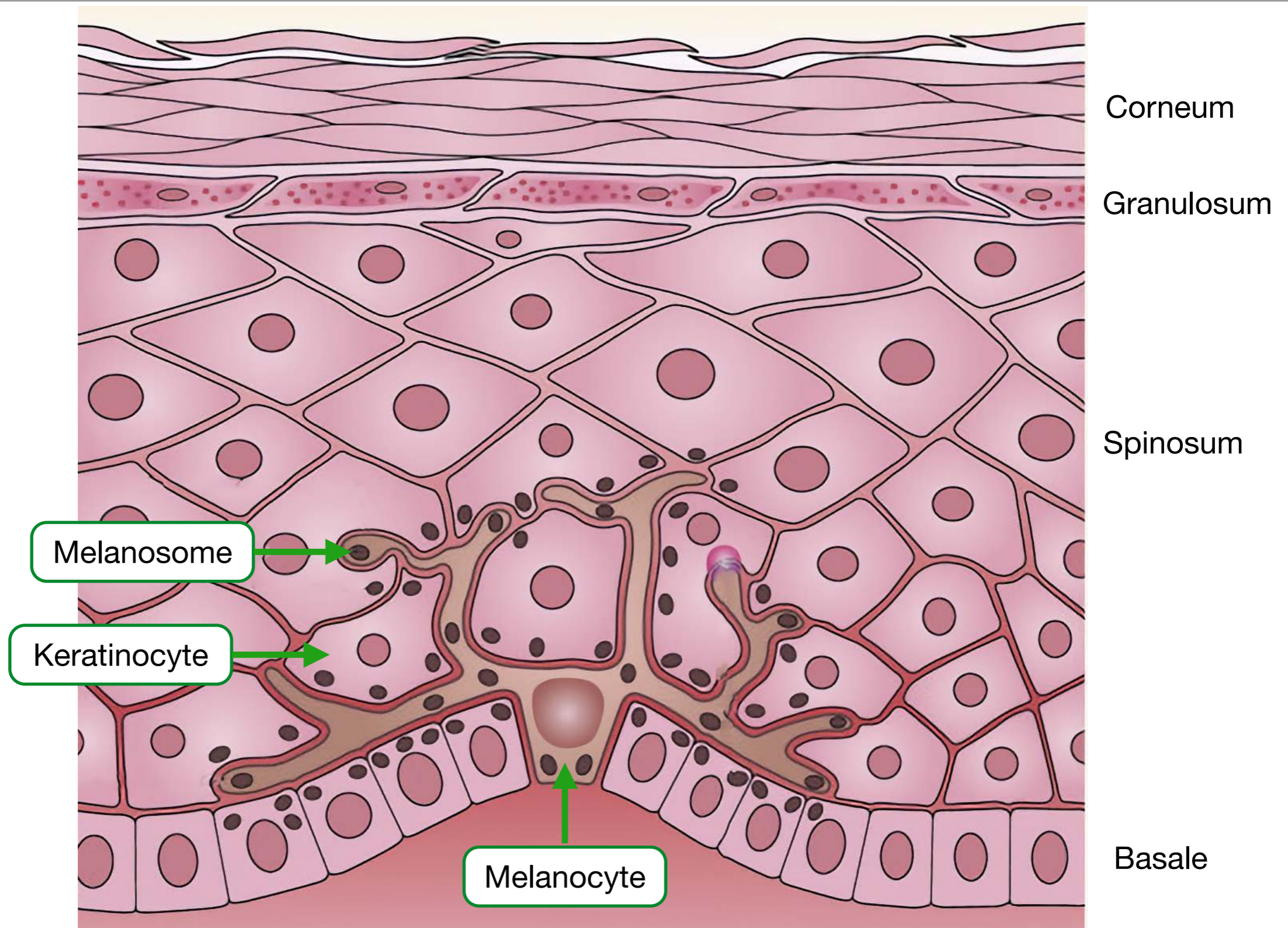
Electron micrographs reveal the structures that link epidermis to dermis.



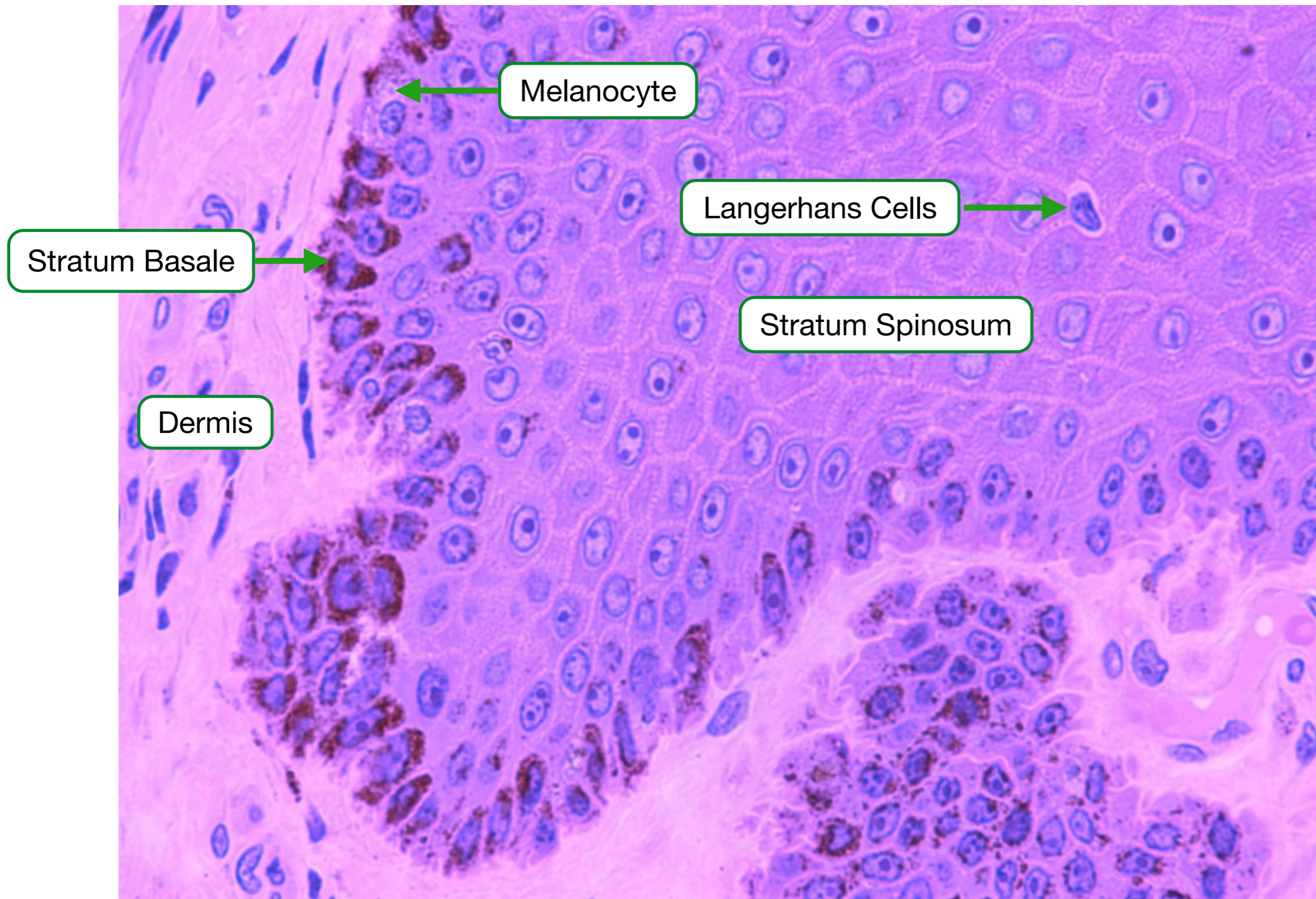
Cells in the granulosum contain large granules and the corneum consists of layers of keratin and lipid.



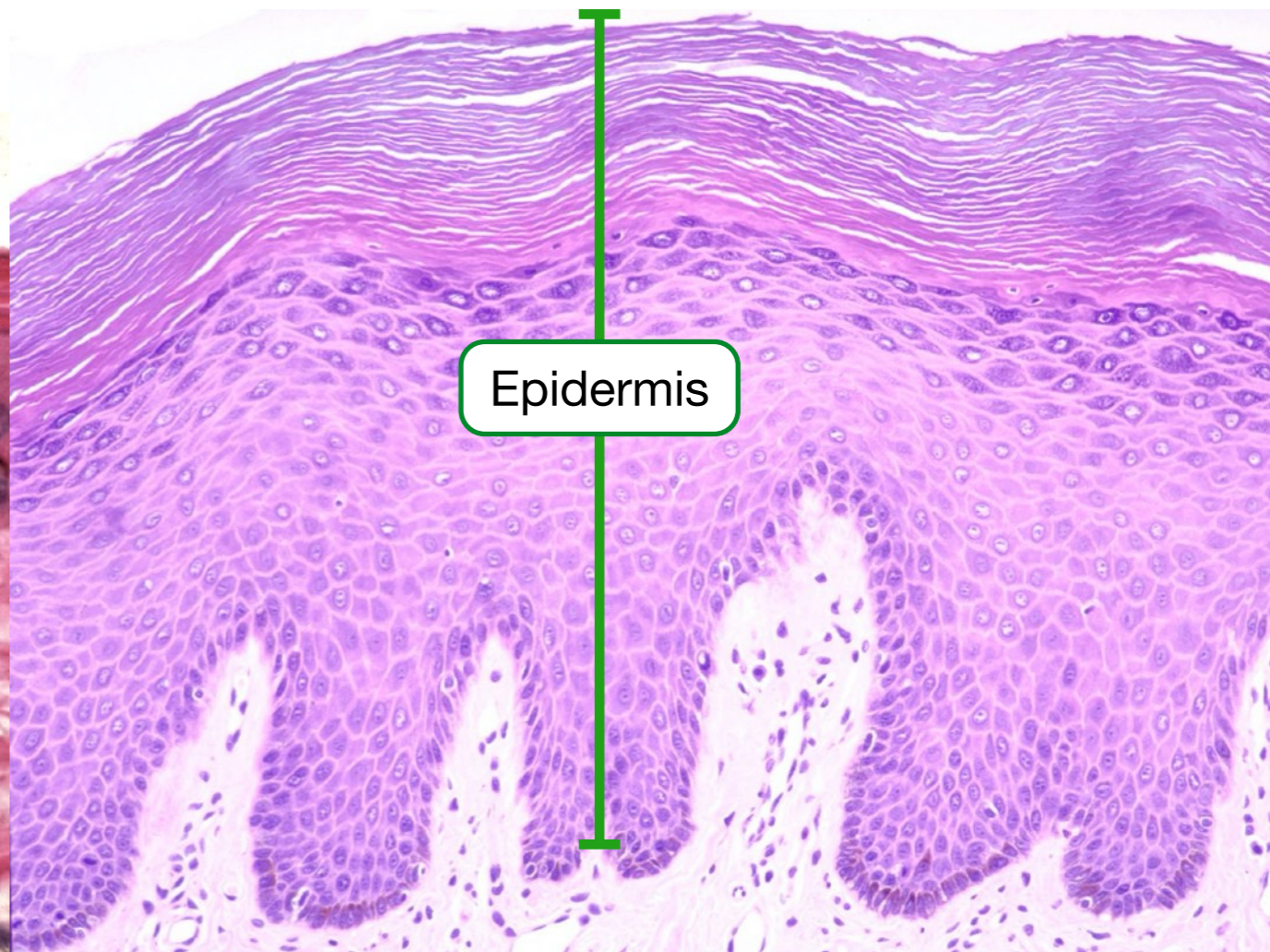
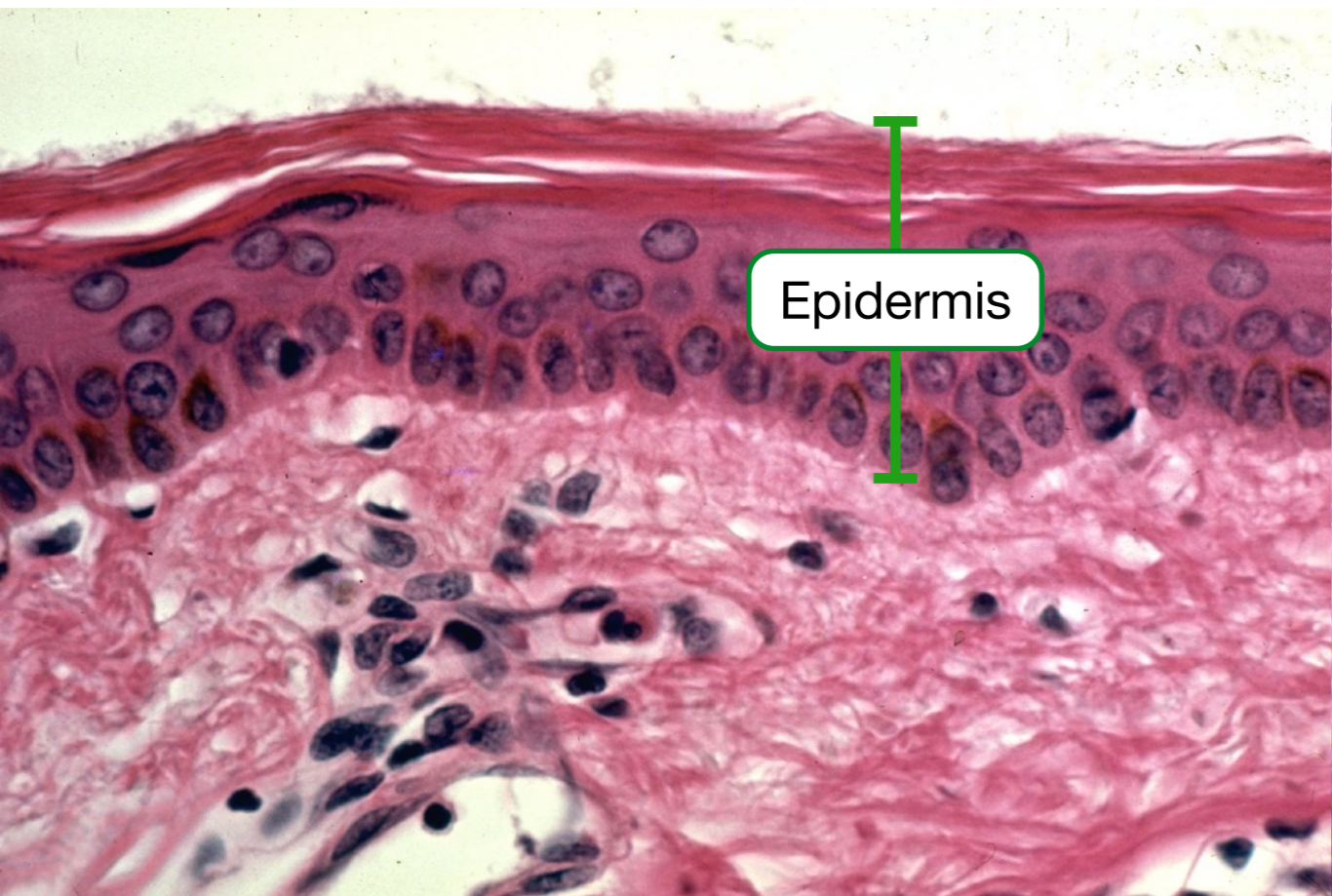
Melanocytes synthesize UV-adsorbent melanin and transfer it to keratinocytes.



Melanocytes appear pale in the basale and Langerhans cells sample antigen in the spinosum.

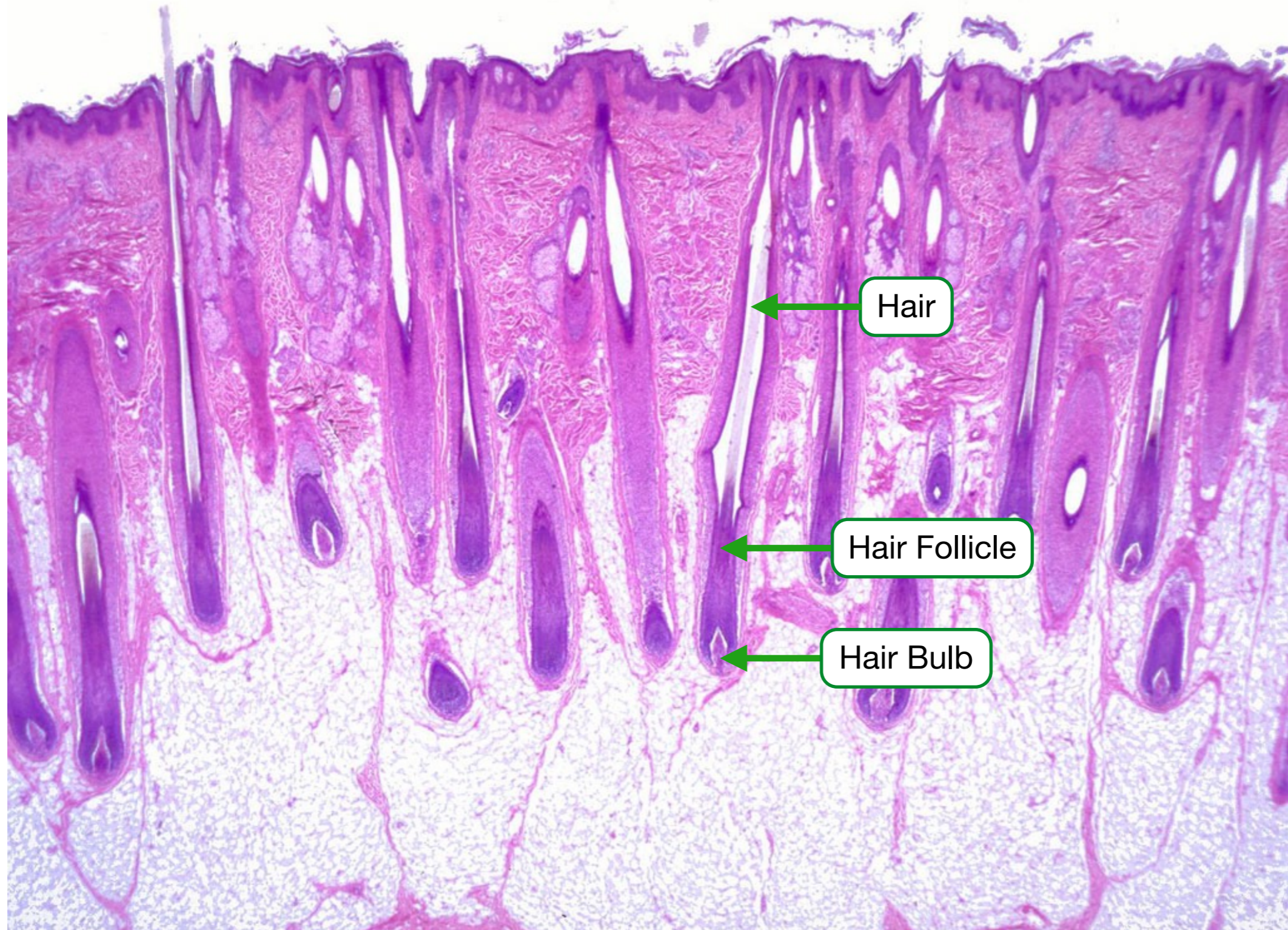


The thickness of epidermis varies across the body.

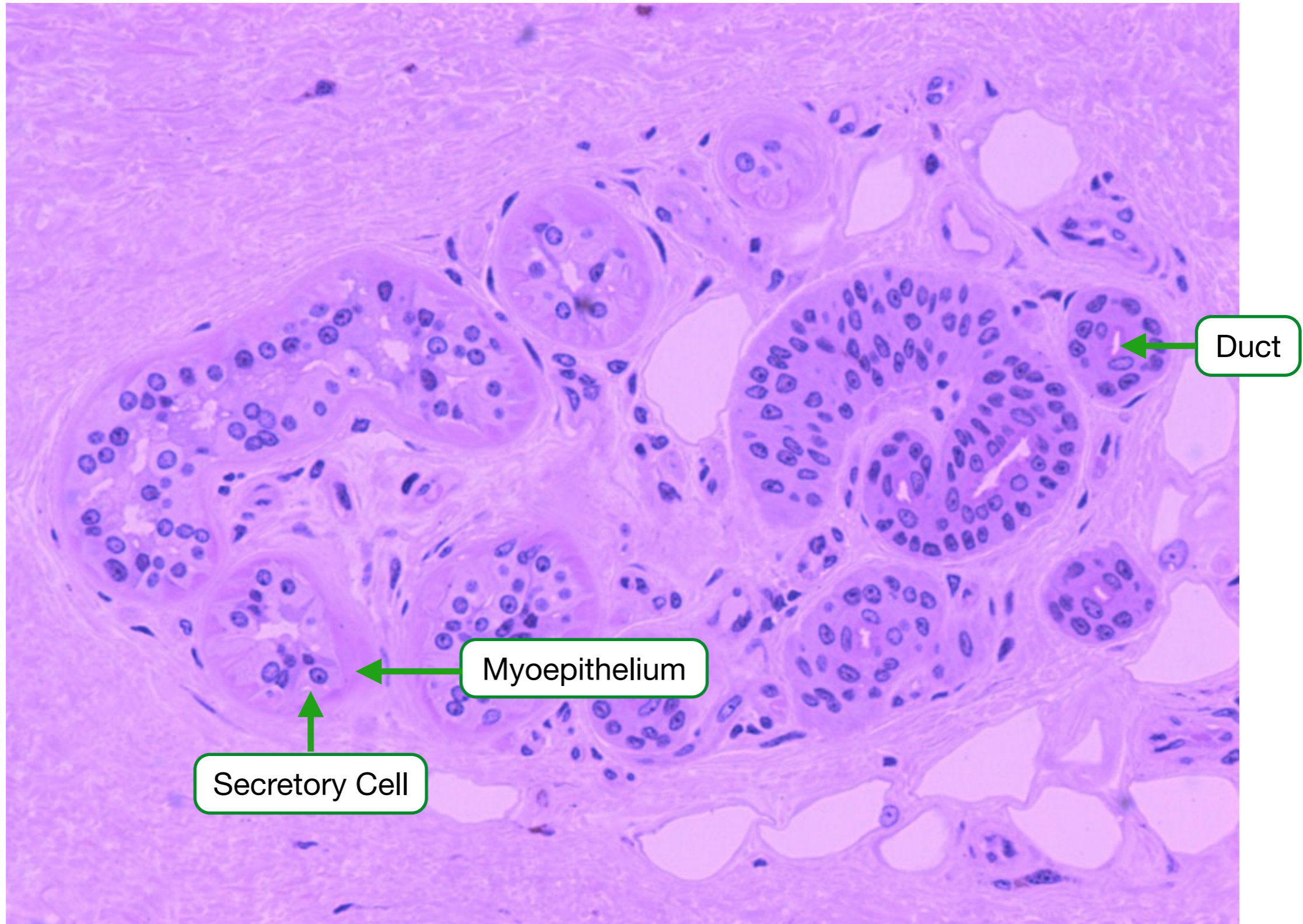


Special Structures in Skin

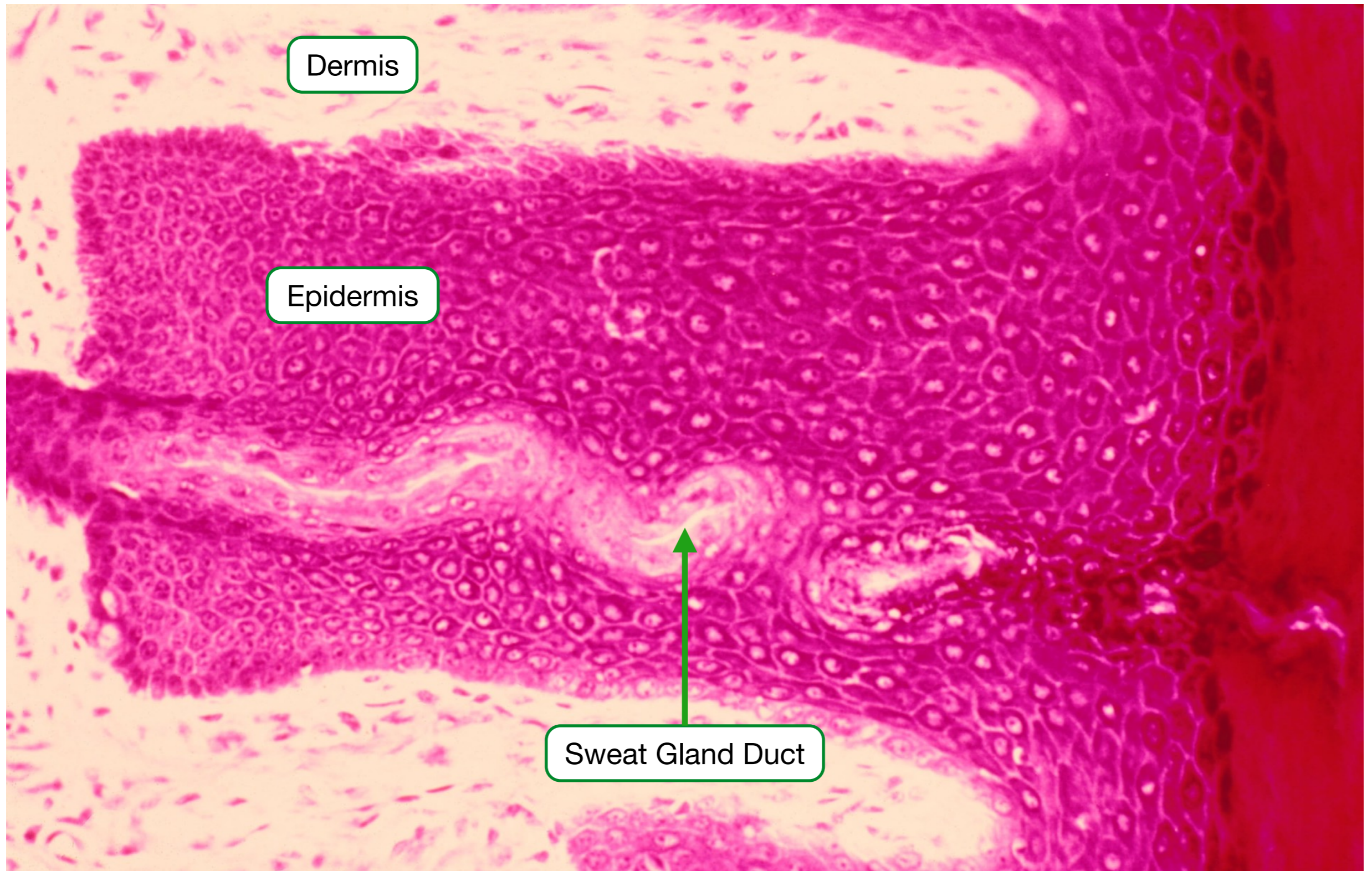
Hair is formed by the epidermis and provides protection from UV light and heat loss.



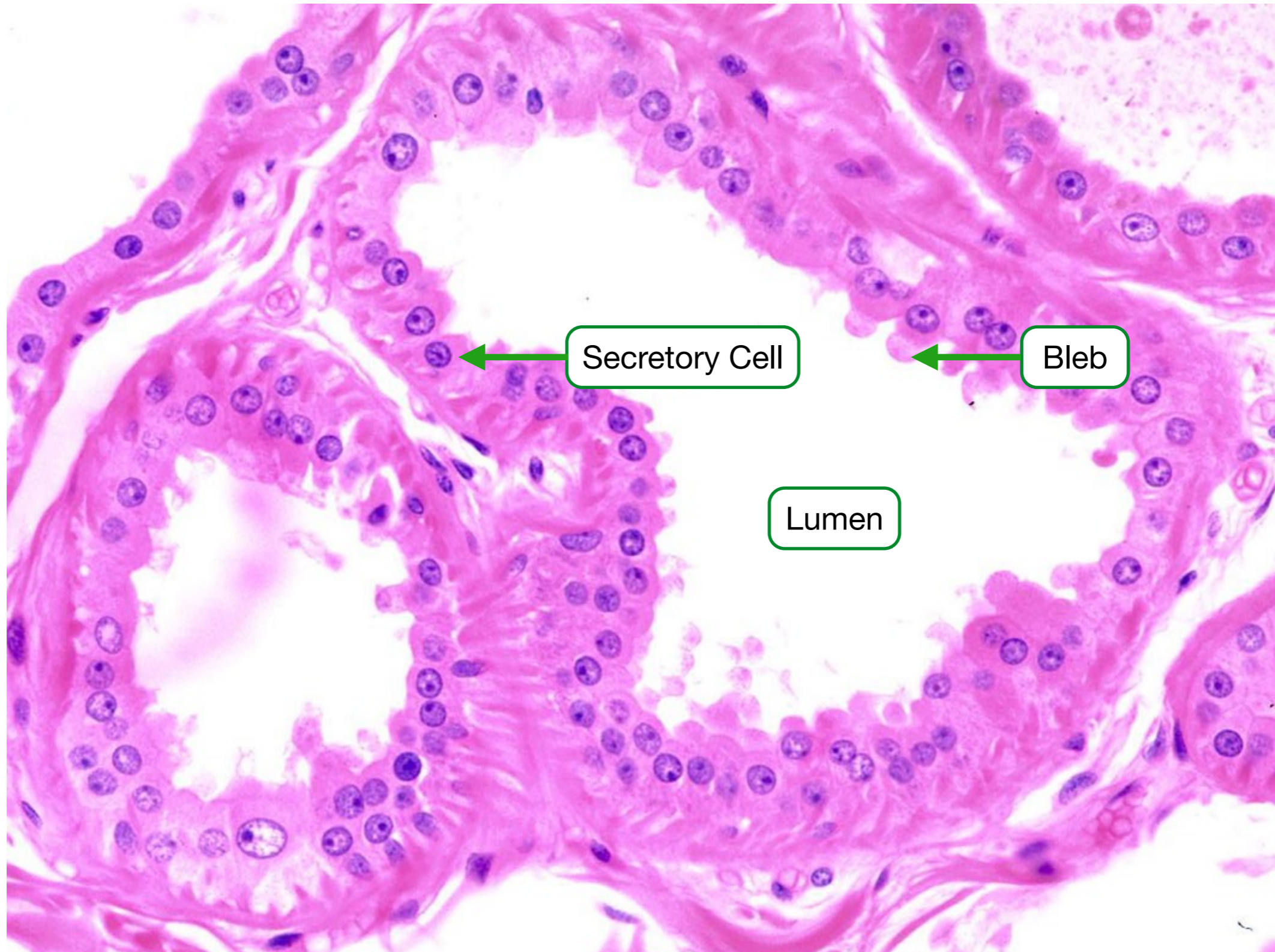
Eccrine sweat glands are coiled and release a hypotonic fluid on the surface of skin.



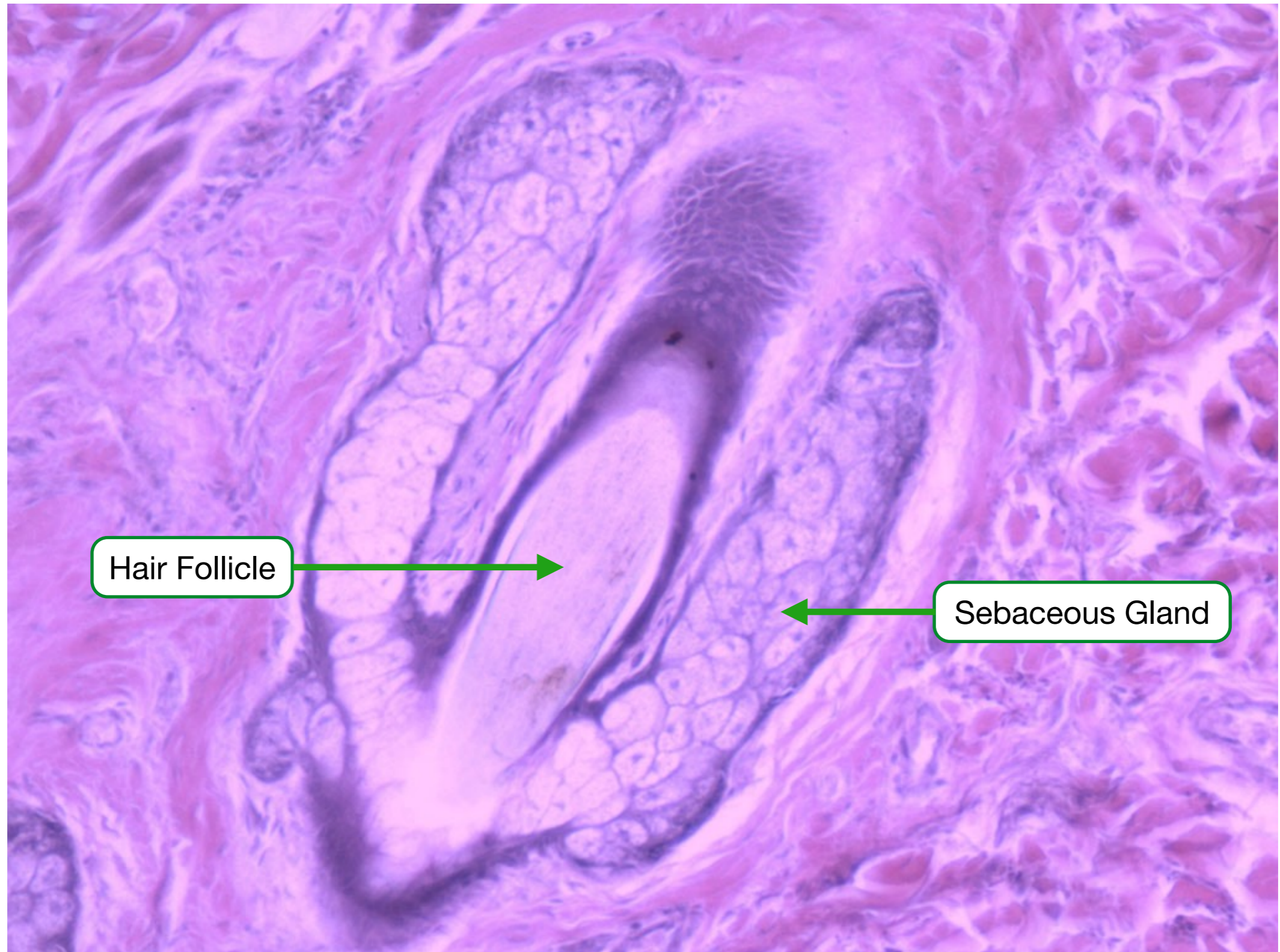
Ducts from eccrine sweat glands deposit hypotonic sweat on the surface of the epidermis.



Apocrine sweat glands are larger than eccrine glands and localized to certain regions of the body.

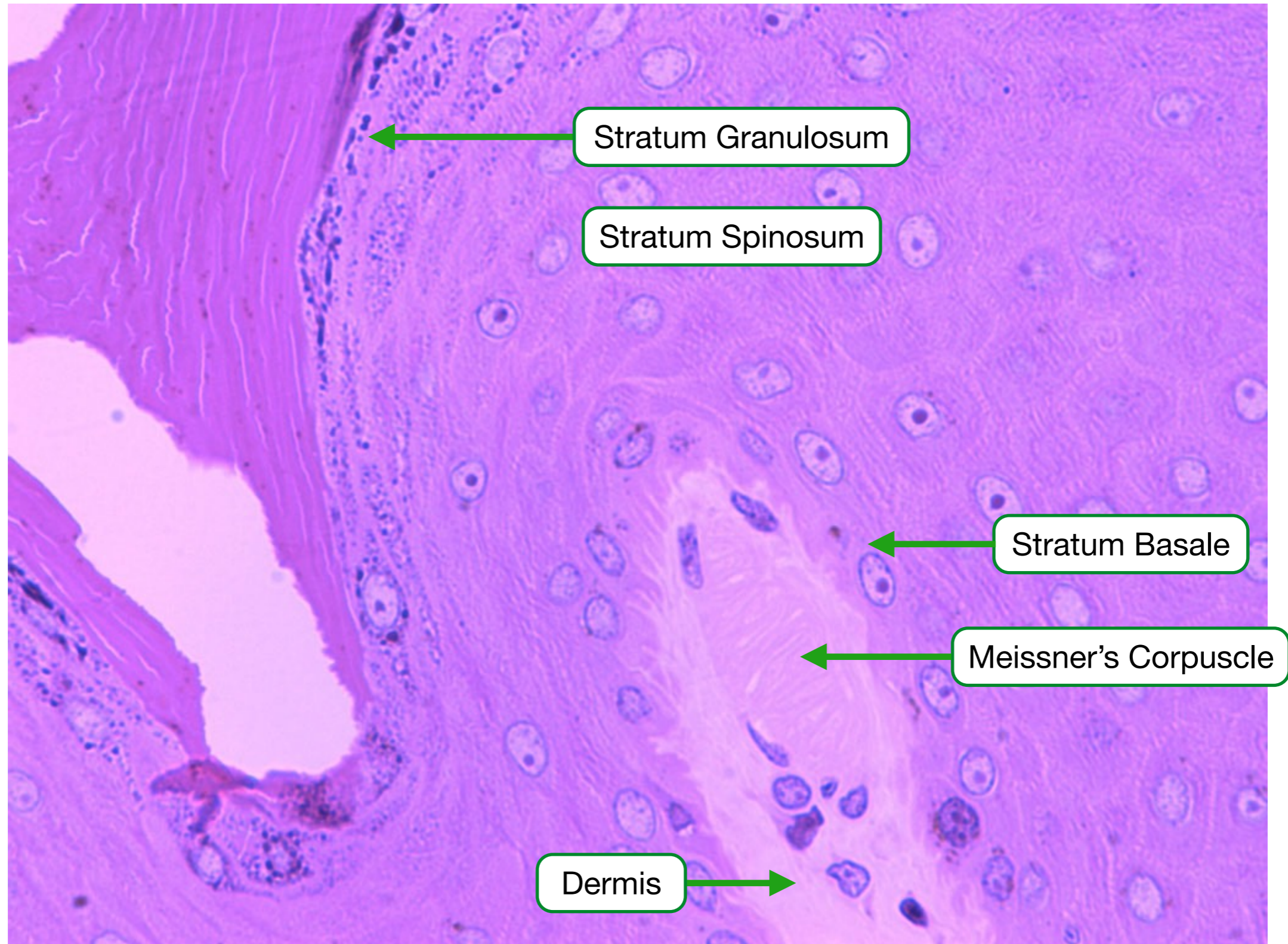


Sebaceous sweat glands produce an oily substance that protects hair.

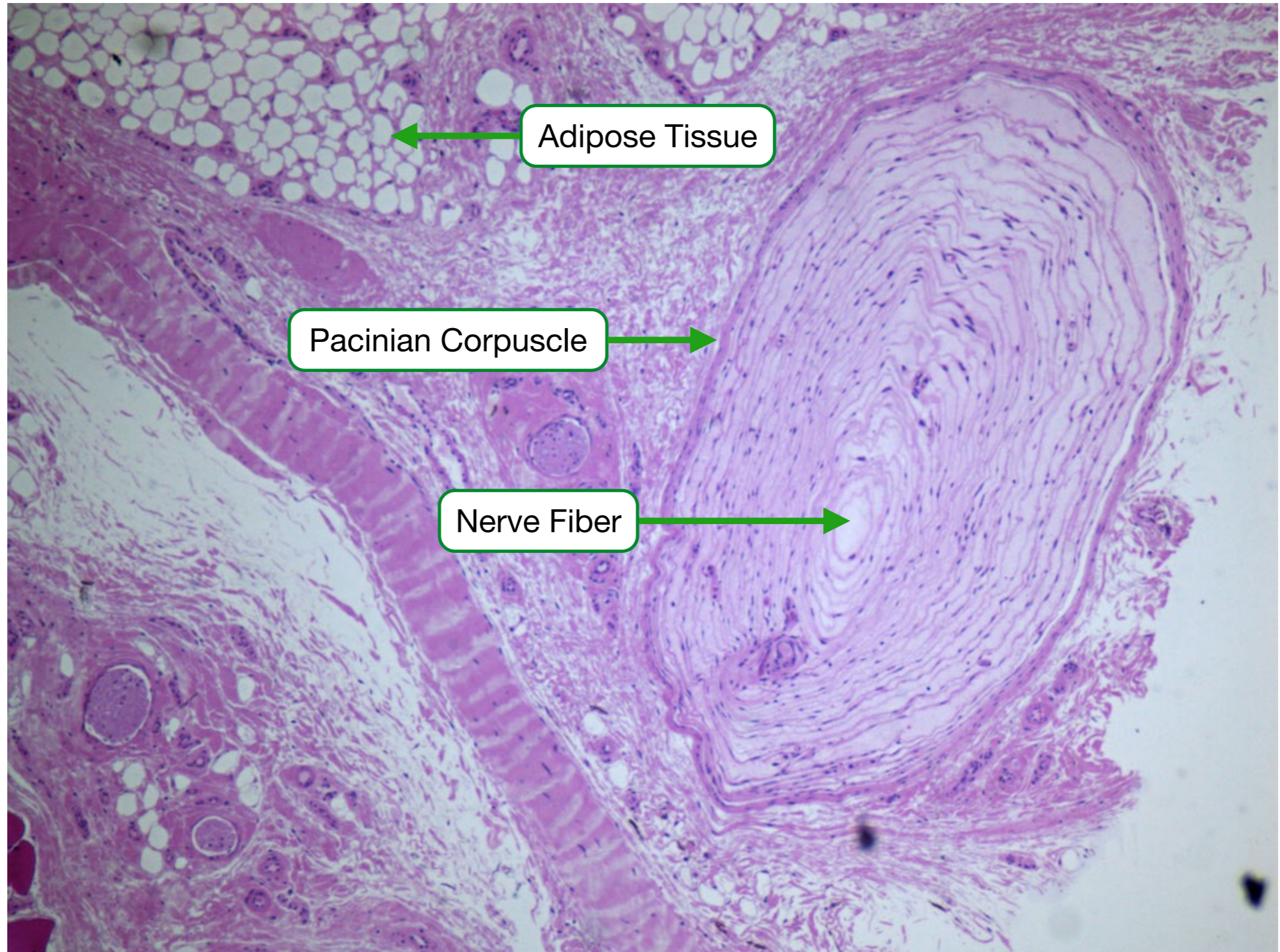


Sensory Structures of the Skin

Meissner's corpuscles are found in dermal ridges and are sensitive to light pressure.



Pacinian corpuscles are found in the hypodermis and are sensitive to deep pressure.



Take home messages...

- Skin comprises epidermis, dermis and hypodermis.
- Epidermis is a self-renewing epithelia of keratinocytes that migrate upward as they develop.
- Epidermis is divided into four structural and functional layers: basale, spinosum, granulosum and corneum.
- Melanocytes produce melanin which absorbs UV light.
- Accessory structures in the skin regulate body temperature and sense the environment,