28a A&P - Integumentary System

28a A&P - Integumentary System Class Outline

5 minutes	Attendance, Breath of Arrival, and Reminders
10 minutes	Lecture: AOIs Serratus Anterior
25 minutes	Lecture: Integumentary System
15 minutes	Active study skills:
60 minutes	Total

28a A&P - Integumentary System
Class Reminders

In Class 28b:

- Full SOAP notes with date, first and last names. Signatures and dates on intake form

Quizzes:

- 30a Kinesiology Quiz
  - Supraspinatus, infraspinatus, teres minor, subscapularis, pec minor, & serratus anterior
- 31a Quiz (18a, 20a/b, 21b, 23a, 24a/b, 25a, 26a, 27a, 28a, 29a/b, 30a/b)

Assignments:

- 30a Review Questions
  - Packet A: 141-158 Internship evaluated full SOAP notes with date, first and last names. Signatures and dates on intake form

Preparation for upcoming classes:

- 29a Pathology: Integumentary System
  - Packet E: 59-64
- 29b Kinesiology: AOIs of glenohumeral and scapulothoracic joint muscles
- 33b Chair Massage: **This class cannot be made up in the make-up room.** To schedule a sit-in, please contact the Student Administrator.

Classroom Rules

Punctuality - everybody's time is precious

- Be ready to learn at the start of class; we'll have you out of here on time
- Tardiness: arriving late, returning late after breaks, leaving during class, leaving early

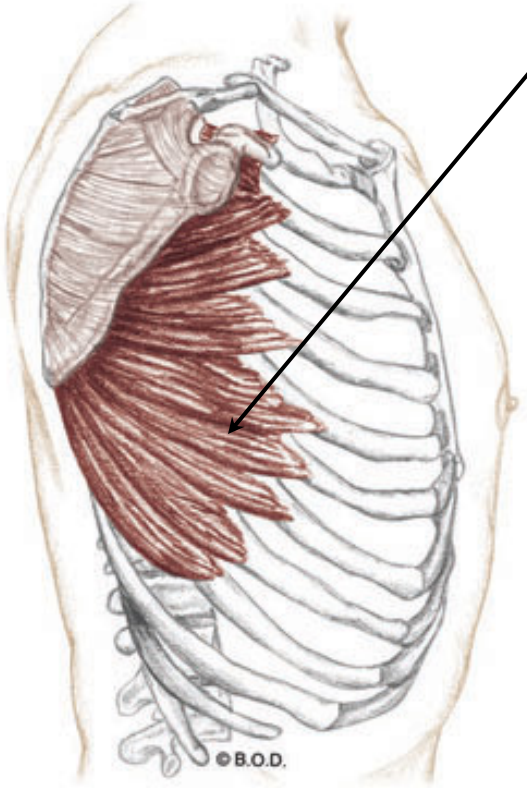
The following are not allowed:

- Bare feet
- Side talking
- Lying down
- Inappropriate clothing
- Food or drink except water
- Phones that are visible in the classroom, bathrooms, or internship

You will receive one verbal warning, then you'll have to leave the room.

Serratus Anterior

Trail Guide, Page 86



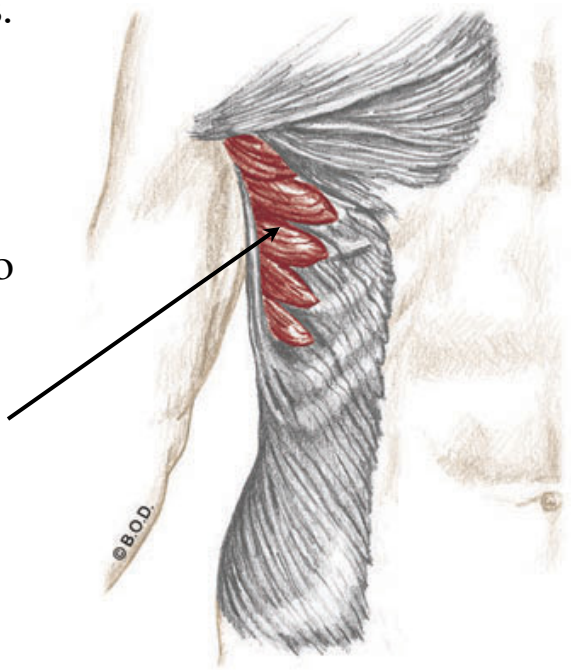
Lateral View

Serratus Anterior always seems to be well-developed in super heroes.

It lies along the posterior and lateral rib cage.

Most of serratus anterior is deep to the scapula with its insertion on the medial border of the scapula.

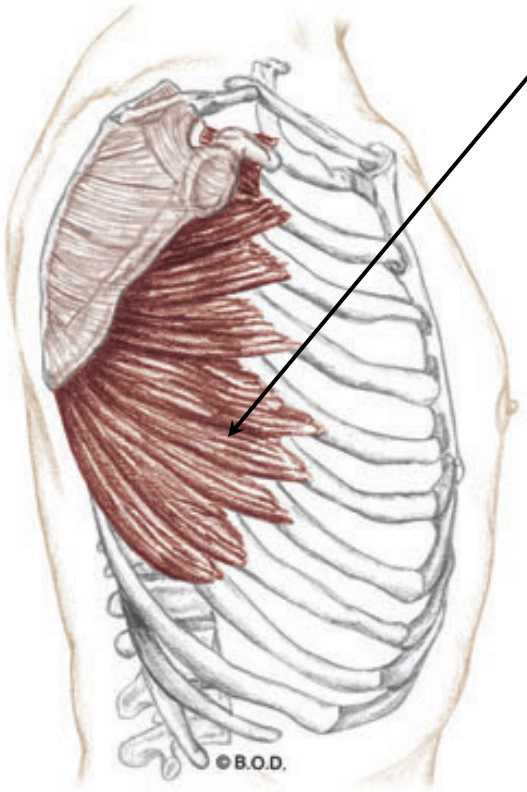
Serratus anterior, what does it do?



Anterior View

Serratus Anterior

Trail Guide, Page 86



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Most of serratus anterior is deep to the scapula with its insertion on the medial border of the scapula.

Serratus anterior, what does it do?

Serratus Anterior, page 86

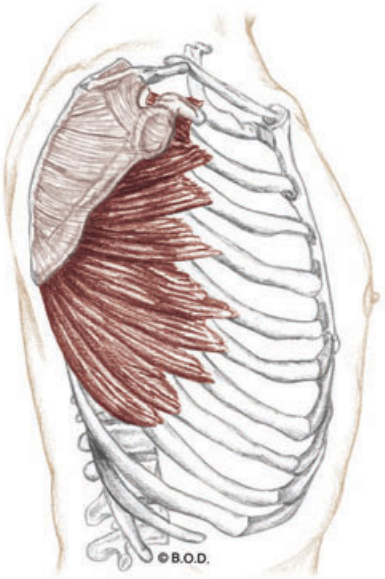
A Abduct the scapula (scapulothoracic joint)

Upwardly rotate the scapula (S/T joint)

Depress the scapula (S/T joint)

Hold the medial border of the scapula against the rib cage

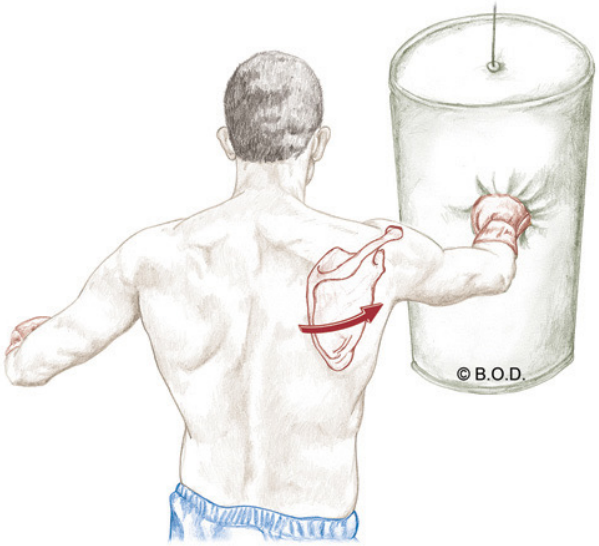
With the scapula fixed:
May act to elevate the thorax during forced inhalation



Lateral View

O External surfaces of upper eight or nine ribs

I Anterior surface of medial border of the scapula



Serratus Anterior, page 86

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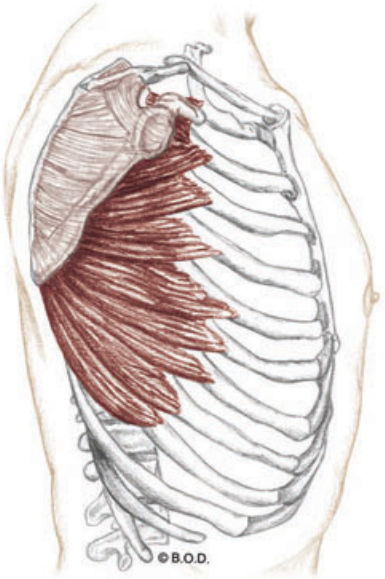

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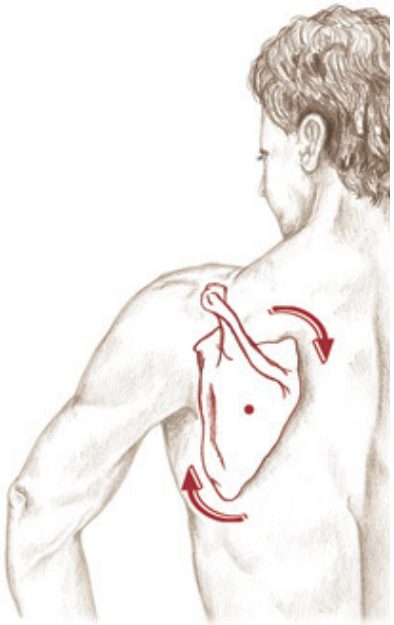

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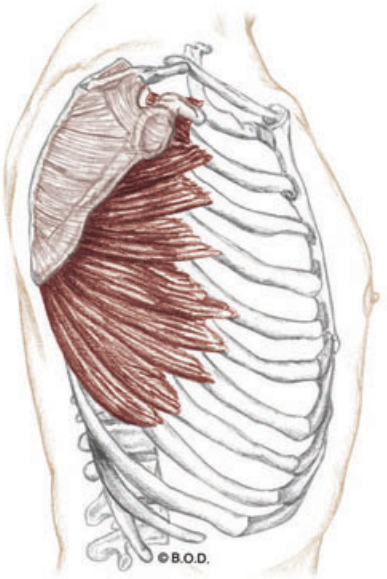

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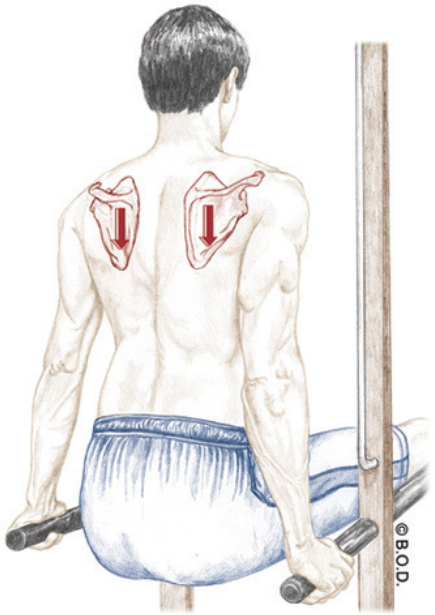

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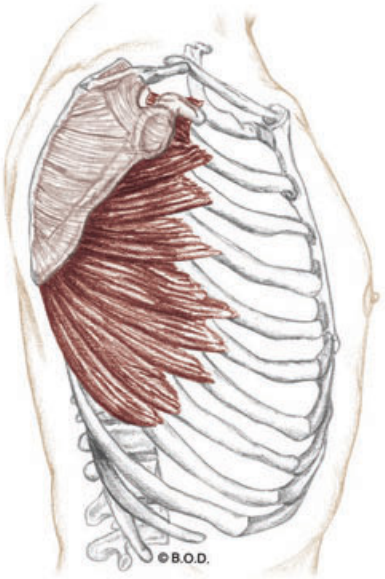

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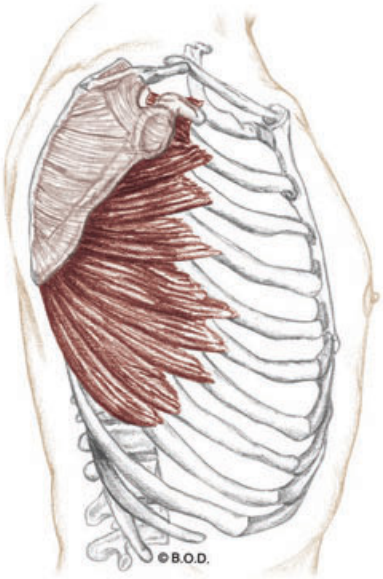

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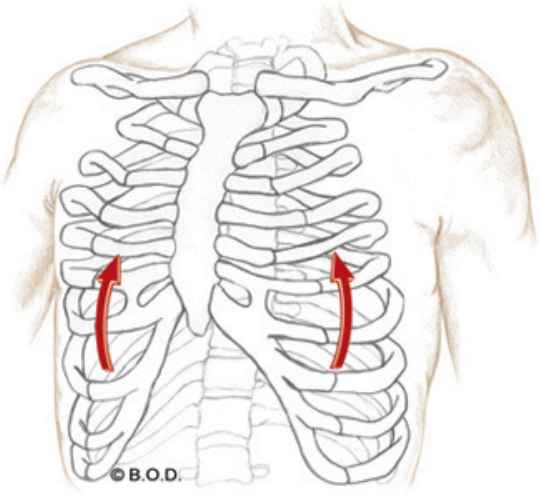

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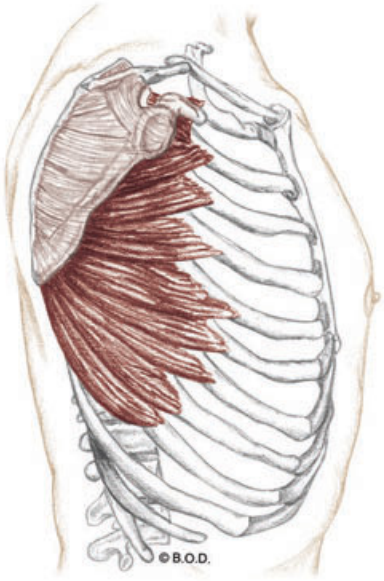

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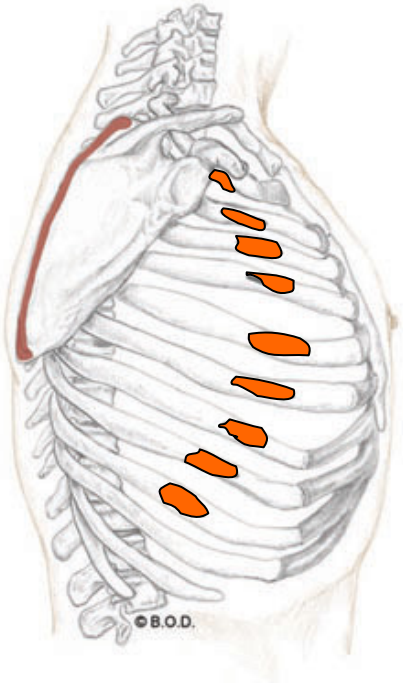

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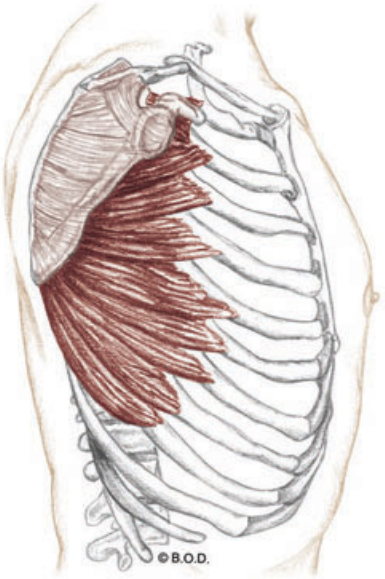

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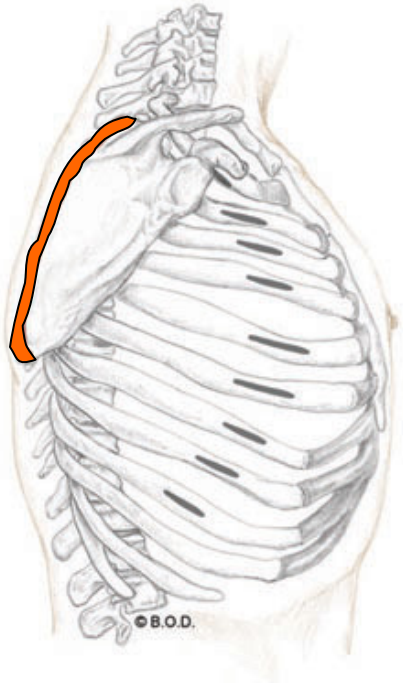
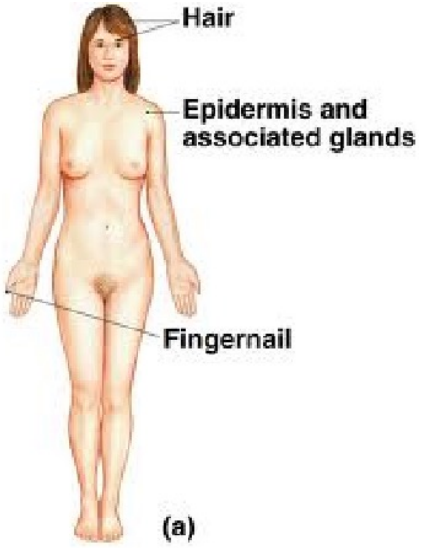


28a A&P - Integumentary System
E-55

Introduction

The integumentary system includes the skin and its appendages such as hair, nails, and glands that produce __oil__ or __sweat__.



Introduction

The skin houses more than half a million sensory receptors of pressure, pain, heat, cold, movement, and vibration.

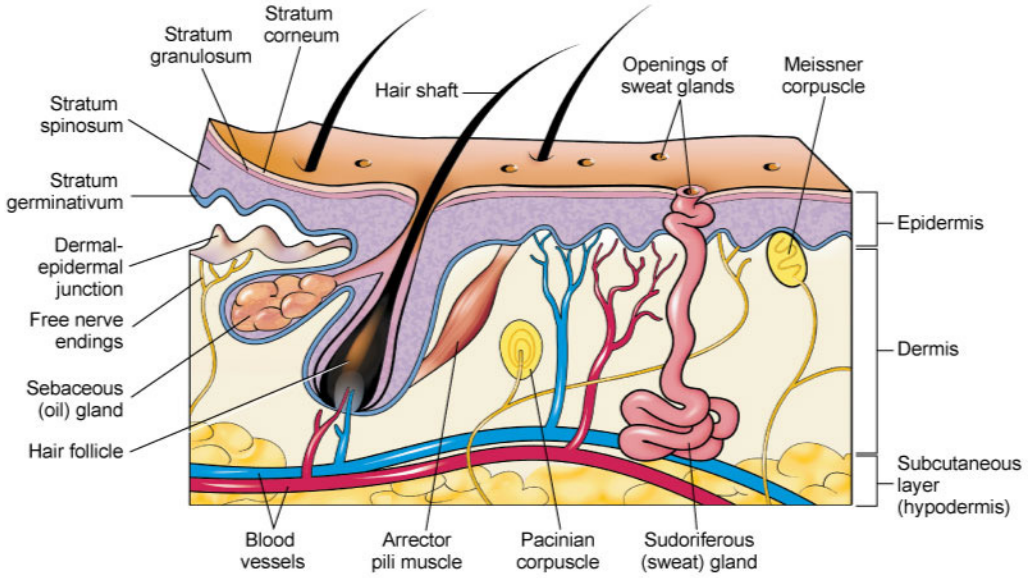


Fig. 22-1. Microscopic view of the skin.

Introduction

Skin is composed mostly of connective tissue underneath a layer of epithelial tissue.

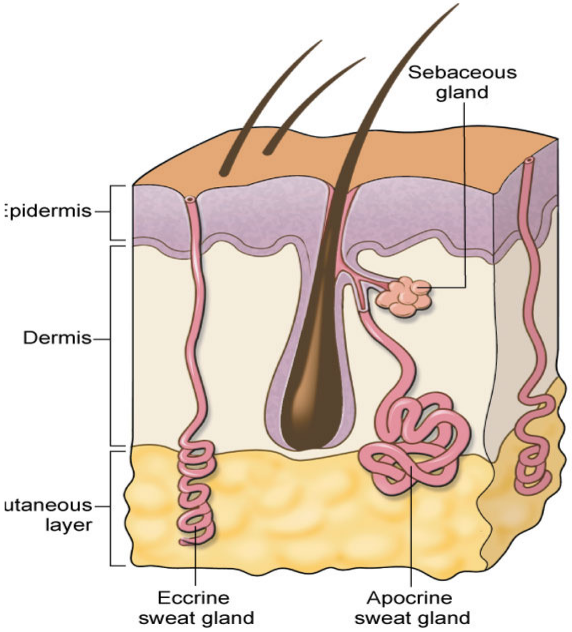


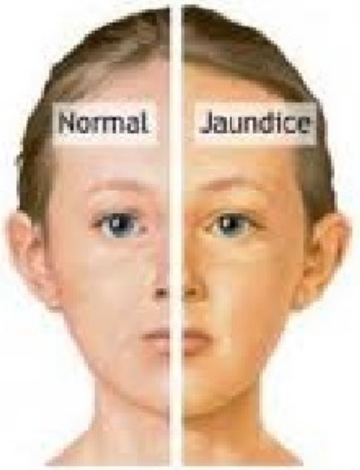
Fig. 22-3. Eccrine and apocrine skin glands.

Introduction

No other body system is more easily exposed to infections, disease, pollution, or injury than the skin.

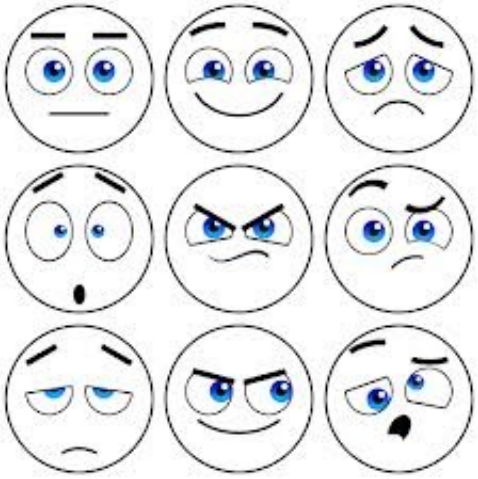
Introduction

The appearance of the skin reflects our ____physiology____ including information about a person's nutrition, hygiene habits, circulation, age, immunity, genetics, and environmental factors.



Introduction

Skin also mirrors our _____emotional_____ self through muscular expression and neurological impulses.



Anatomy

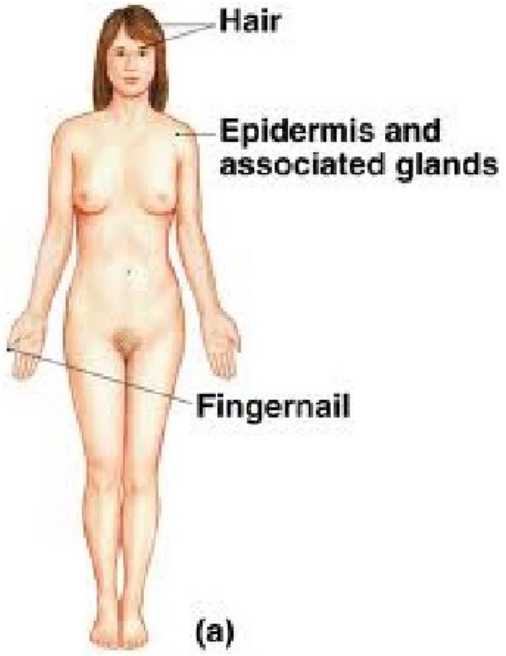
Anatomy

Skin

Hair

Nails

Skin Glands



Fun Facts

Skin covers 22 square feet and weighs 9 lbs.

A piece of skin the size of a quarter contains:

- 3 million cells
- 100 sweat glands
- 50 nerve endings
- 3 feet of blood vessels

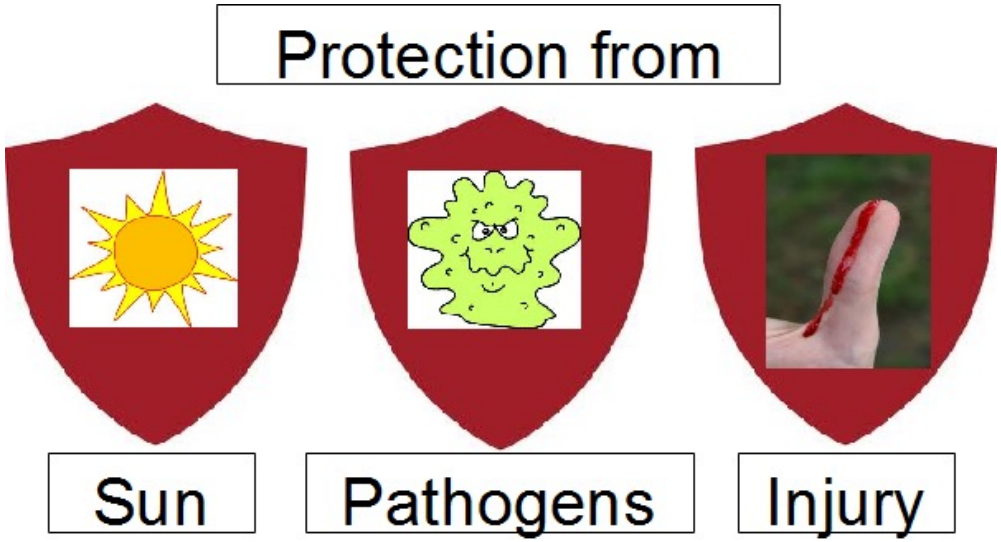
Fingertips have 700 touch receptors on a 2 square millimeters of surface area

That is this big: 

Physiology

Physiology

Protection Physical, biologic, and chemical barrier.



Physiology

Absorption Fat -soluble molecules and vitamins, steroids, resins of plants such as poison ivy and poison oak, and salts of heavy metals.

Physiology

Sensation Extension of the ___nervous___ system. Receives stimuli such as pressure, pain, and temperature.

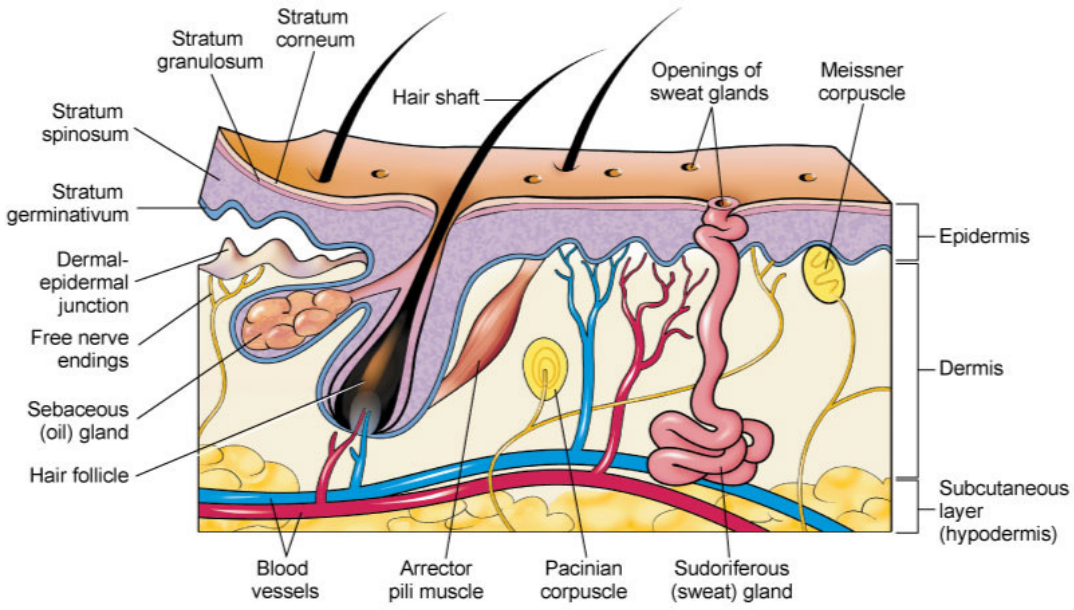
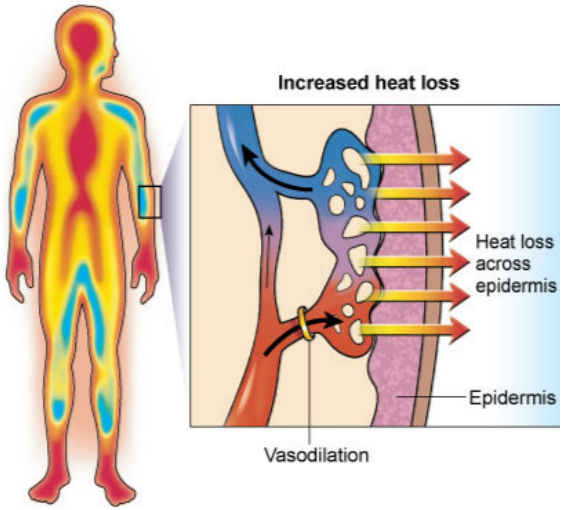


Fig. 22-1. Microscopic view of the skin.

Physiology

Body temperature regulation As blood moves to the skin's surface and blood vessels dilate, heat is discharged. Heat can be dissipated through the evaporation of sweat produced by sweat glands.



Physiology

Waste regulation Eliminating wastes through __sweating__.

Physiology

Vitamin D synthesis Molecules in the skin are converted to vitamin D by the __UV__ rays in sunlight (with a little help from liver and kidney enzymes).

Physiology

Immunity Langerhans cells trigger immunologic reactions.

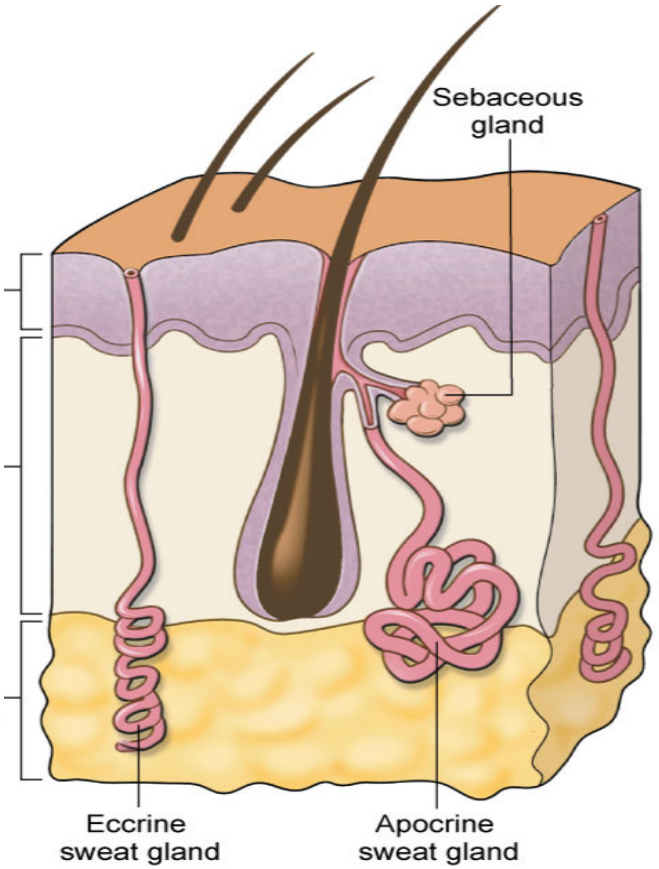
Regions of the Skin

Regions of the Skin

Epidermis

Dermis

Subcutaneous layer



Epidermis

Epidermis Outer region of the skin. Composed of epithelial cells.

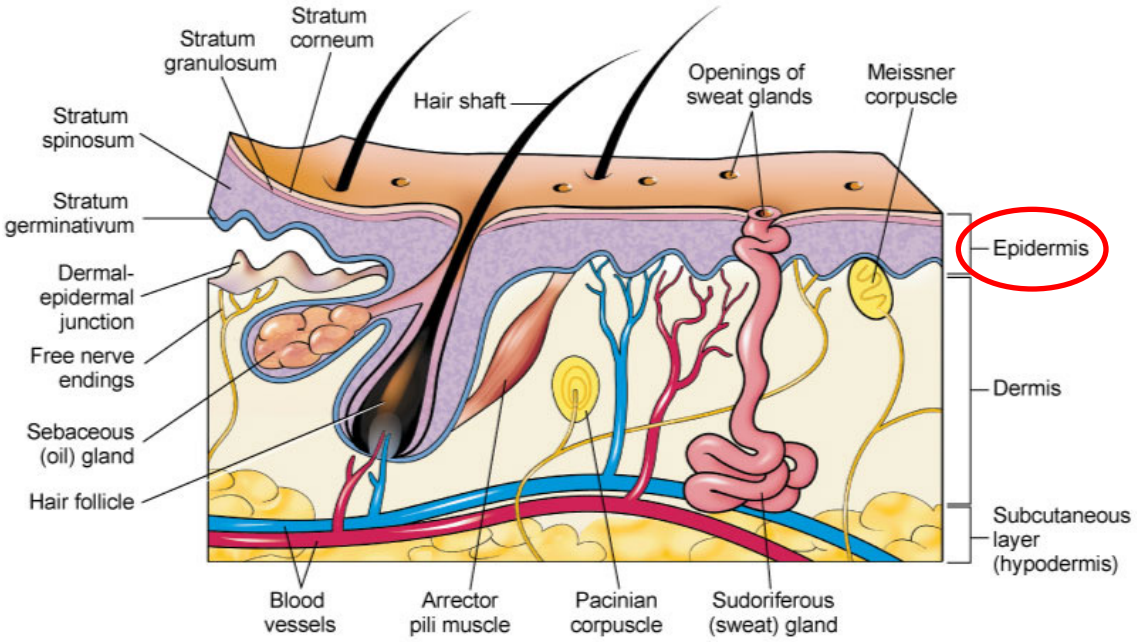


Fig. 22-1. Microscopic view of the skin.

Epidermis

Keratinocyte Epidermal cell that produces __keratin__, a protein that waterproofs the skin.

Epidermis

Melanocyte Epidermal cell that produces melanin, a pigment that contributes to skin color and decreases the amount of ultraviolet light that can penetrate into the deeper layers of the skin.

Epidermis

Langerhans cell Epidermal cell that triggers immunologic reactions.

Langerhans cells may also be referred to as **dendritic cells**.

Epidermis

Epidermal Layers (from deepest to most superficial):

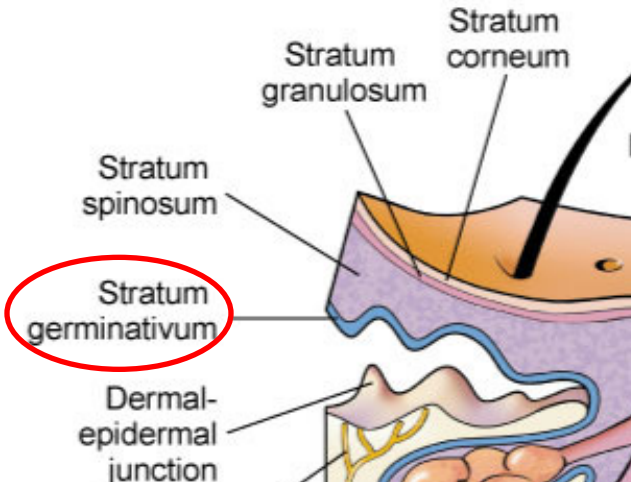
- Stratum germinativum
- Stratum spinosum
- Stratum granulosum
- Stratum lucidum
- Stratum corneum

Epidermis

Stratum germinativum Deepest epidermal layer.

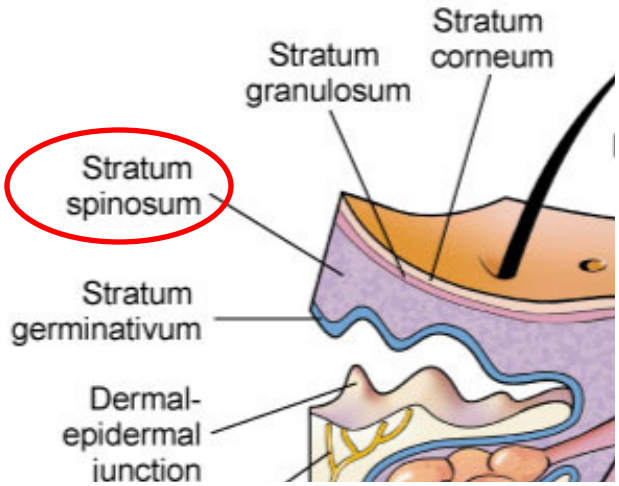
Through cell division it generates all of the other layers.

Contains Merkel cells and pressure receptors.



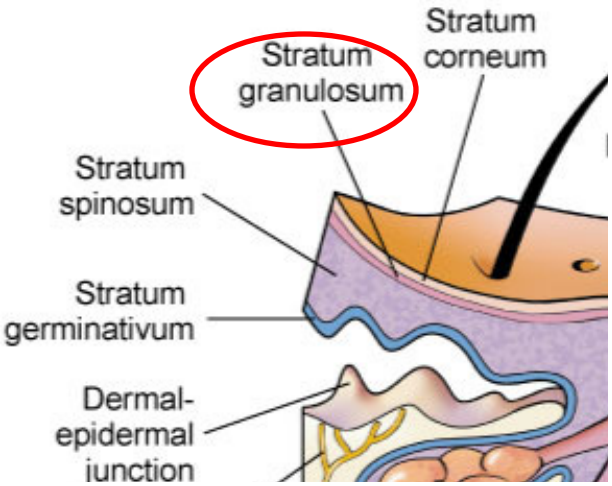
Epidermis

Stratum spinosum Bonding and transitional epidermal layer between germinativum and granulosum.



Epidermis

Stratum granulosum Epidermal layer containing an accumulation of keratin granules.

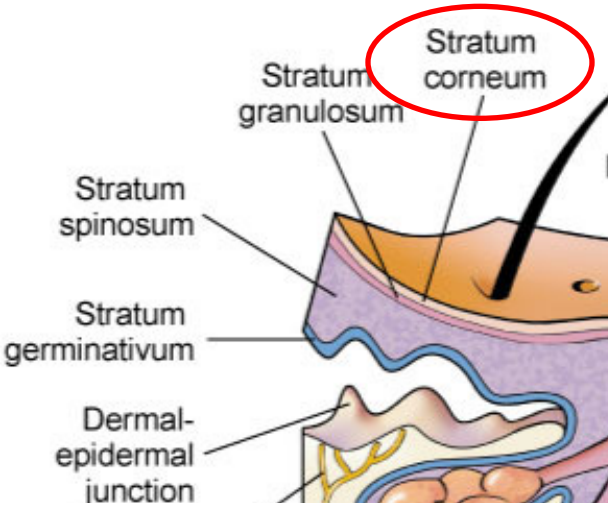


Epidermis

Stratum lucidum Translucent epidermal layer only found in the __thick__ skin of palms and soles.

Epidermis

Stratum corneum Outermost epidermal layer where cells are completely keratinized, not __living__, and ready to be sloughed off.



Fun Facts

It takes 21-27 days for cells created in the stratum germinativum to develop and push upward through each of the other layers eventually dying and sloughing off!

Dermis

Dermis

Dermis (AKA: corium, hide, true skin) Inner region of the skin. Contains blood vessels, sensory ____nerve____ receptors, hair follicles, muscles, sweat and oil glands, and connective tissue.

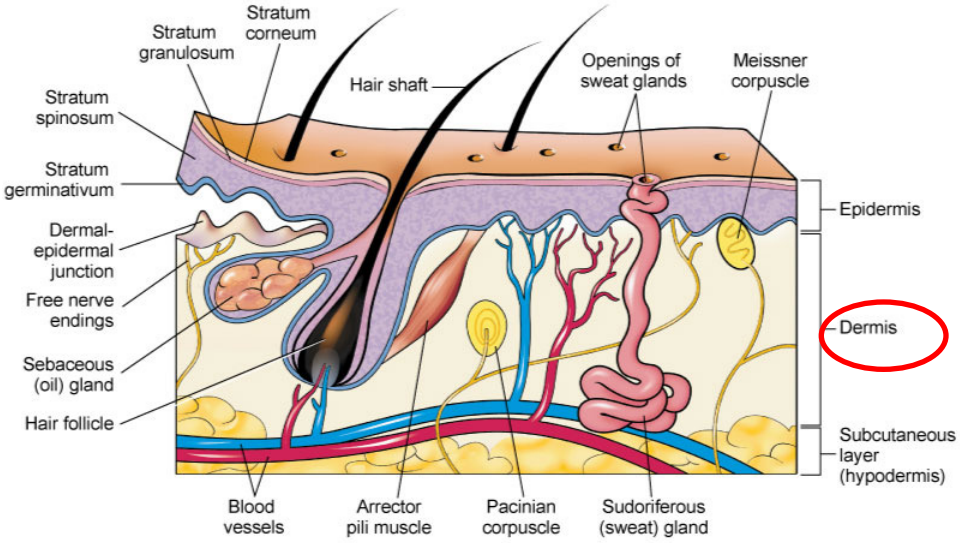


Fig. 22-1. Microscopic view of the skin.

Dermis

Scar A dense collection of new connective tissue that forms as the result of an injury to the dermis.

Subcutaneous Layer

Subcutaneous Layer

Subcutaneous layer (AKA: hypodermis or superficial fascia) Layer beneath the dermis but not a true layer of skin. Consists of loose connective tissue, fat, and nerve receptors.

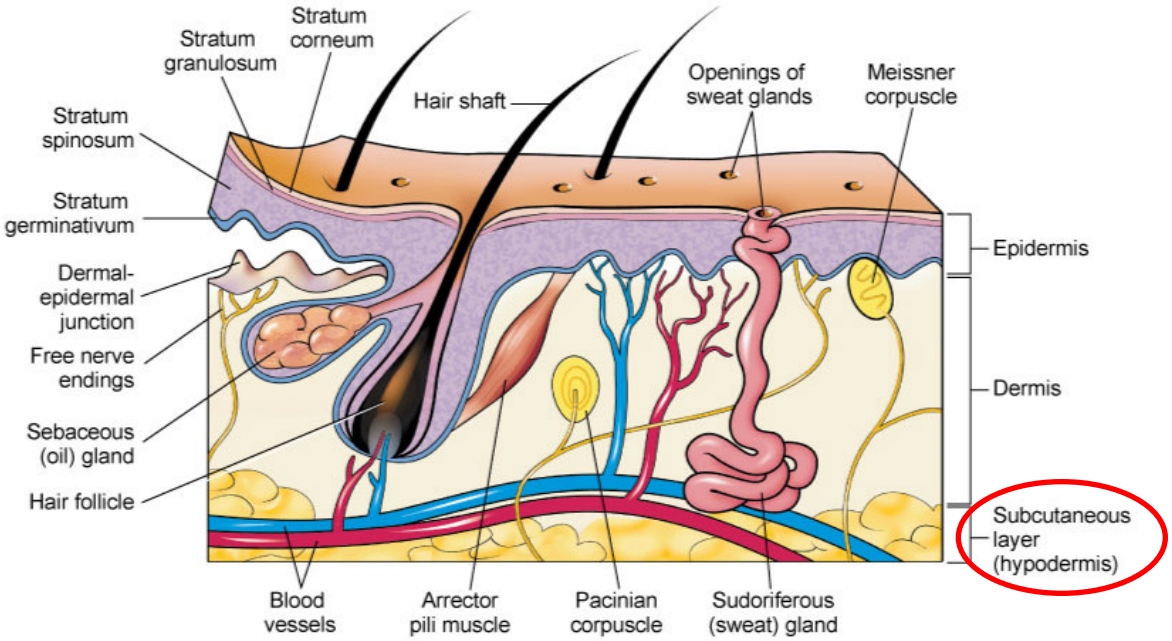
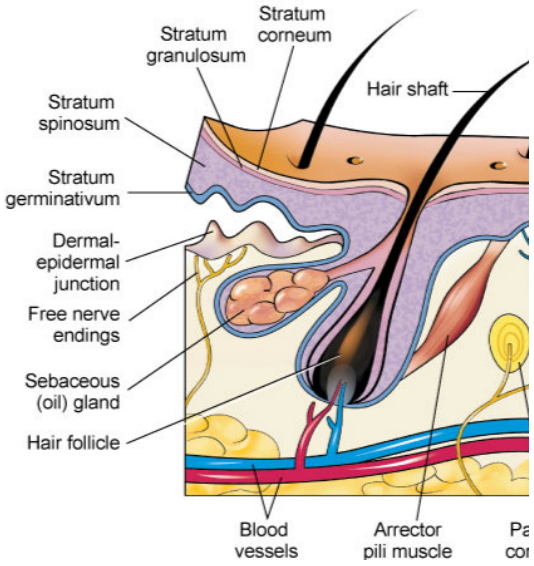


Fig. 22-1. Microscopic view of the skin.

Hair

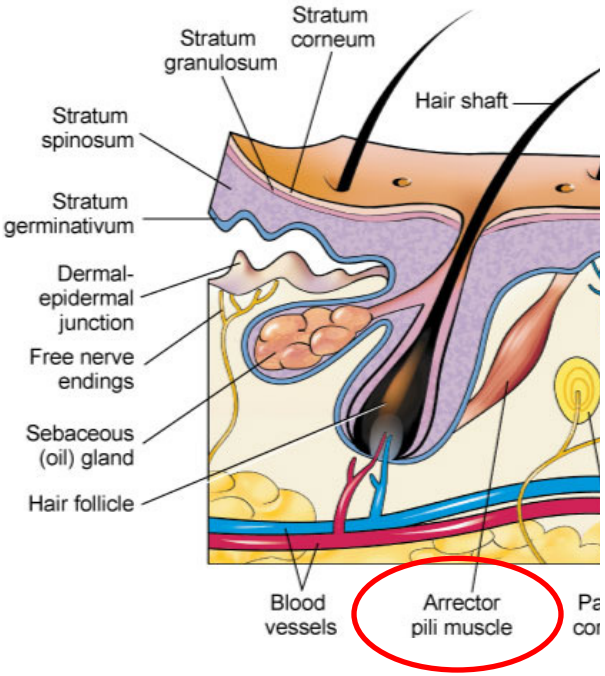
Hair

Hair Composed of keratinized ____filaments____ arising from pouch-like follicles located in the dermis. Protects the scalp from injury and UV radiation. Protects the eyes, nose, and ears from foreign particles.



Hair

Arrector pili Tiny ____muscles____ attached to hair follicles that contract to pull the hair upright.



Fun Facts

- Straight hair has a shaft that is round.

- Wavy hair has a shaft that is oval.

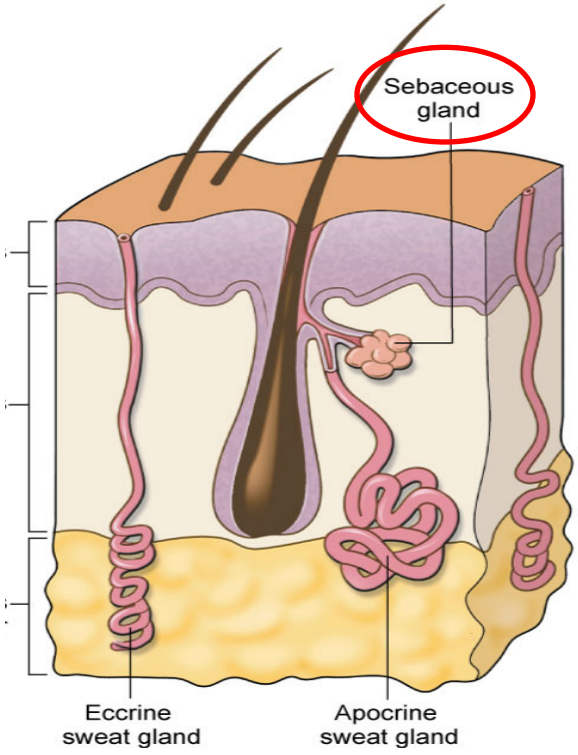
- Curly or kinky hair has a shaft that is flat.

- Fine hair does not have a medulla (inner core).
- White hair is lacking pigment in the medulla.

Skin Glands

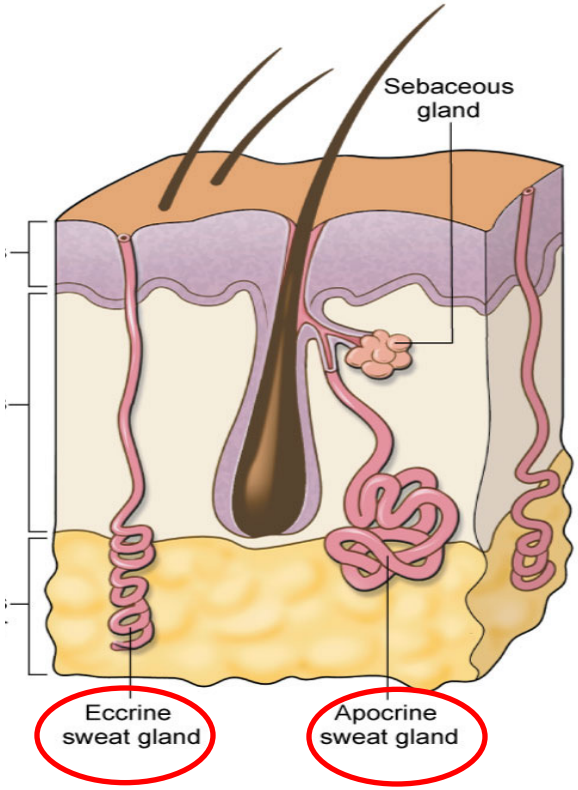
Skin Glands

Sebaceous gland Skin gland that secretes ____sebum____ (oil) to lubricate both the hair and the epidermis.



Skin Glands

Sudoriferous gland Skin gland that secretes ____sweat____ in response to excess heat. Types: eccrine (all over), apocrine (axilla, genitals).



Nails

Nails

Nail Compact keratinized ____cells____ that form the hard thin plates found on the distal surfaces of the fingers and toes. Protect the ends of fingers and toes. Used as tools for digging, scratching and manipulation of objects.

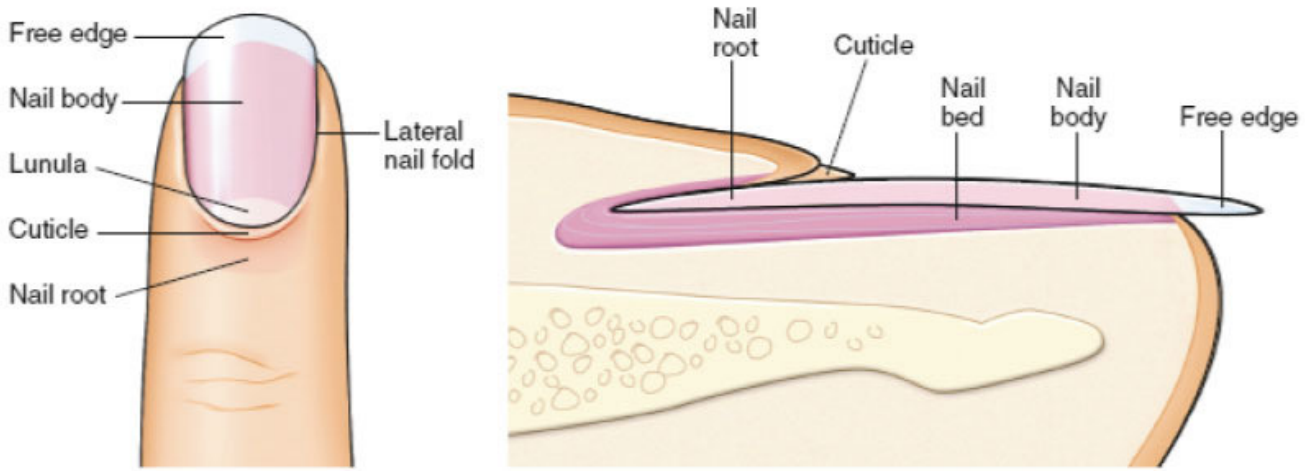


Fig. 22-4. Nail from above and in cross section.

Nervous System's Role in Touch

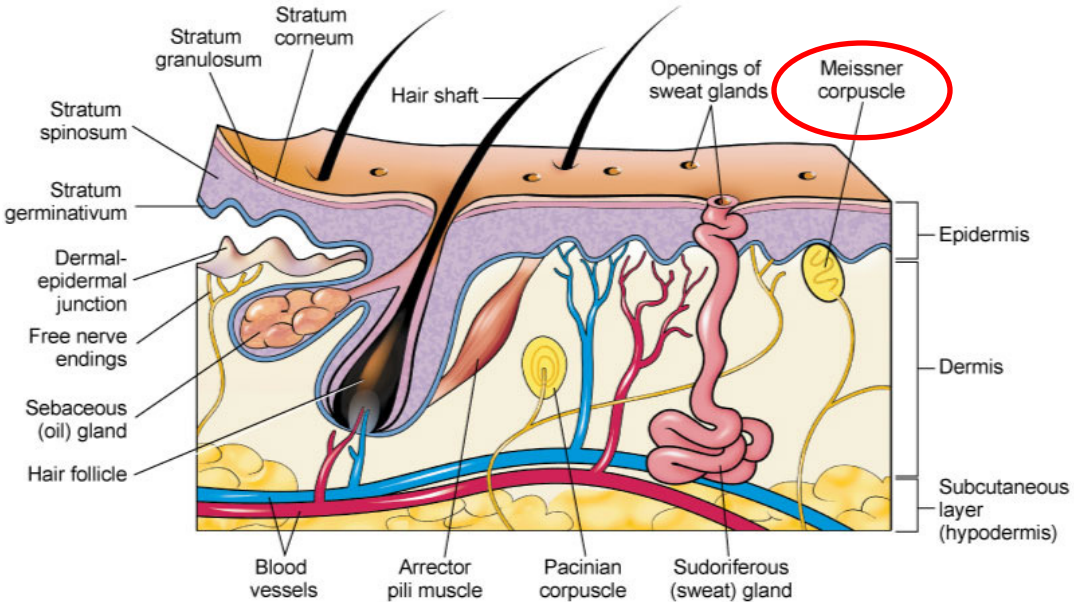
Nervous System's Role in Touch

Discriminative touch Touch that is subtle and can be easily located on the skin.

Crude touch Touch that is more easily identified, but is more difficult to locate on the skin.

Nervous System's Role in Touch

Meissner corpuscle (AKA: tactile corpuscle) Receptor that mediates sensations of discriminative touch such as _____light_____ versus deep pressure, as well as low-frequency vibration.

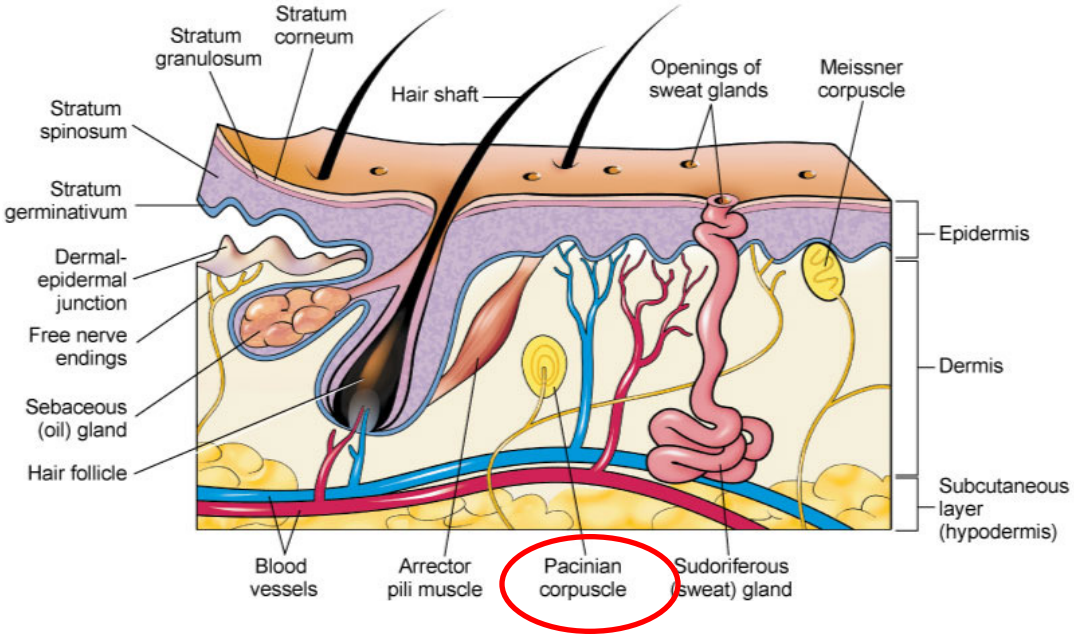


Nervous System's Role in Touch

Ruffini corpuscle Receptor that mediates deep or continuous pressure. They adapt slowly and permit the body to stay in contact with grasped objects. May also detect heat.

Nervous System's Role in Touch

Pacinian corpuscle Receptor that responds to crude and deep pressure, vibration, and stretch, and perceives ___proprioceptive___ information about joint positions.



Nervous System's Role in Touch

Krause end bulb Receptor involved in discriminatory touch and low-frequency vibration. May also detect cold.

Nervous System's Role in Touch

Merkel disk Receptor that responds to __light__ touch and discriminative touch.

Nervous System's Role in Touch

Hair root plexus (AKA: hair follicle receptor) Receptor that responds to light touch and __hair__ movement.

28a A&P - Integumentary System