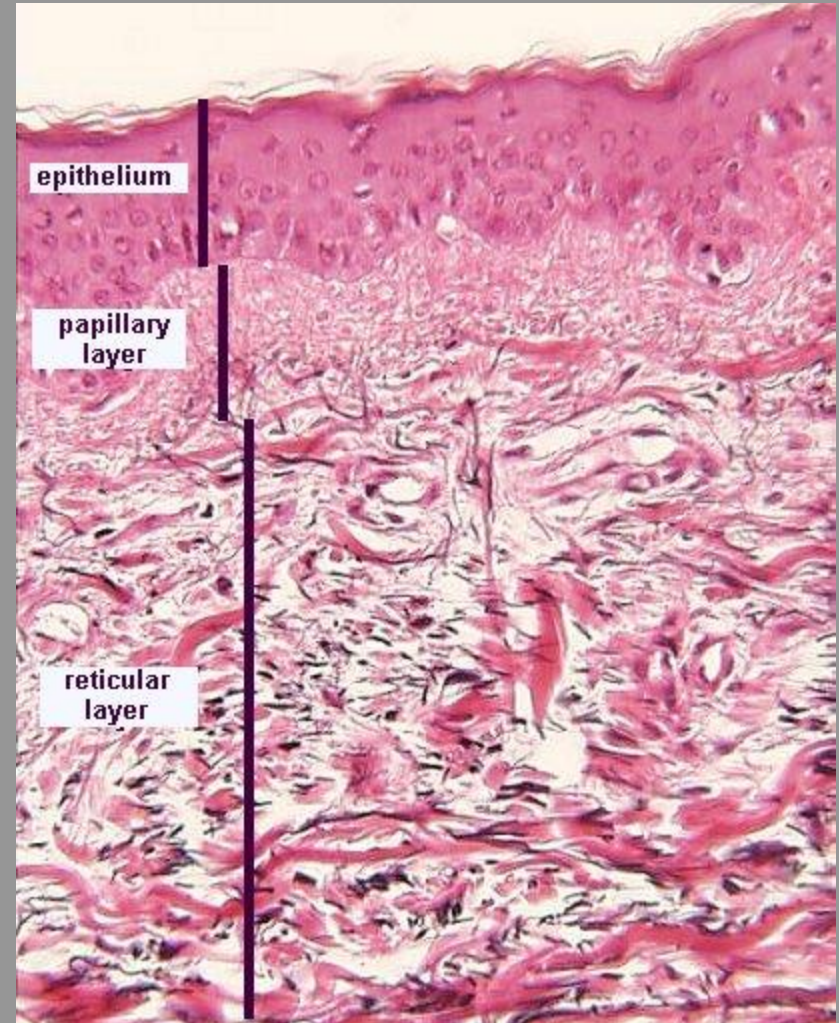


The Dermis

- 2nd major skin region.
- Strong, flexible connective tissue
- Binds the entire body together like a stocking
- Your “hide” and corresponds to animal hides used to make leather products
- Richly supplied with nerve fibers, blood vessels, and lymphatic vessels
- Major portions of hair follicles and oil/sweat glands (derived from epidermis) reside here

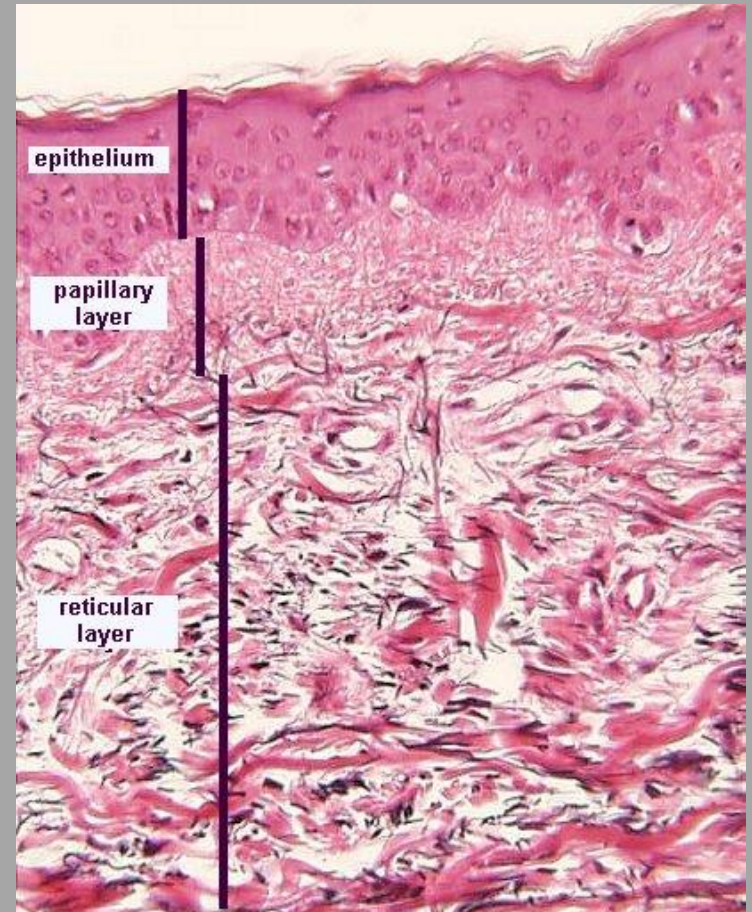
The Dermis – Papillary Layer

- Superficial layer
- Areolar C.T.
- Thin layer
- Composed of (areolar) connective tissue



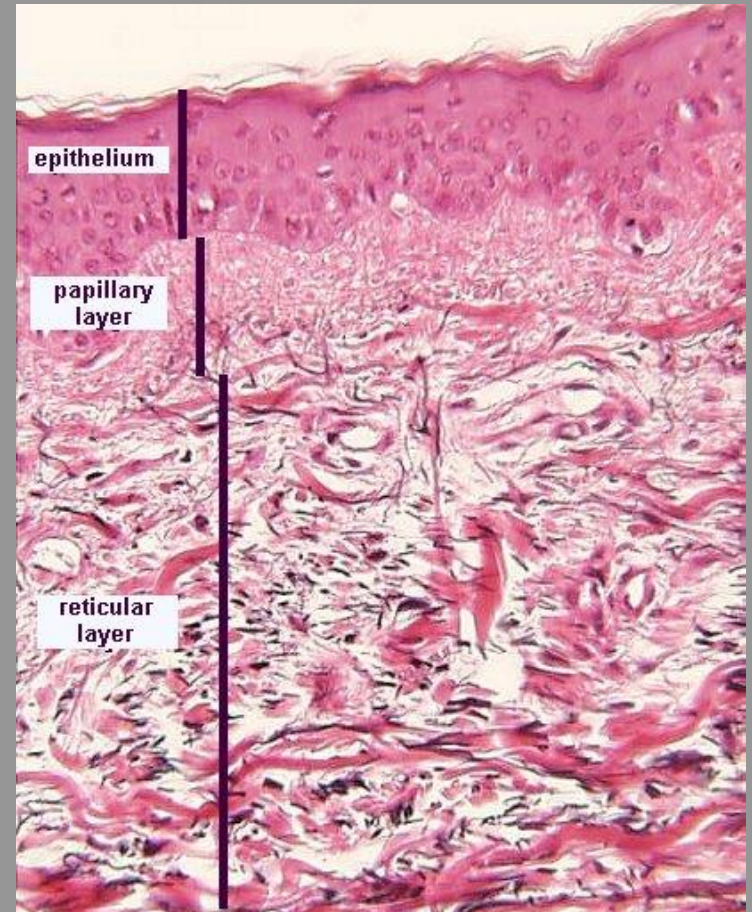
The Dermis – Papillary Layer

- Superior surface has peg-like projections called **dermal papillae**.
 - Increase surface area where epidermal cells receive oxygen and nutrients from dermal capillaries



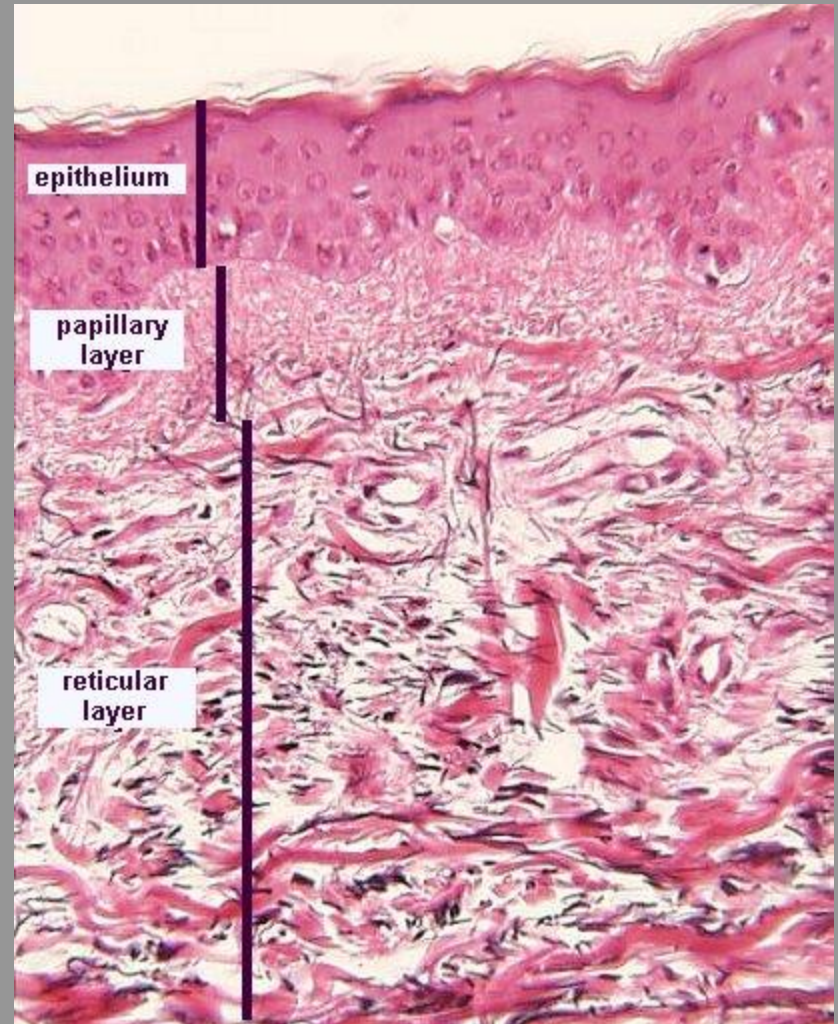
The Dermis – Papillary Layer

- On the palms of the hands and the soles of the feet, the dermal papillae lie on larger mounds called **dermal ridges** → these form the epidermal ridges (fingerprints)



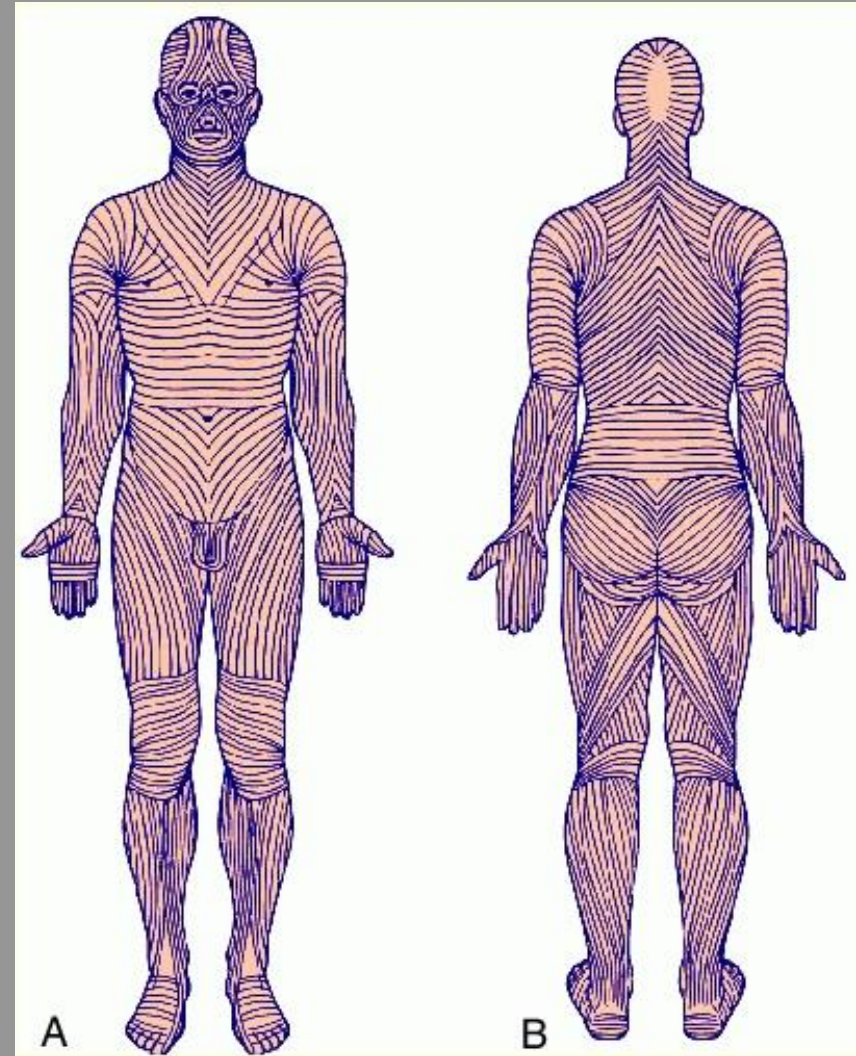
The Dermis – Reticular Layer

- Deep layer
- Accounts for 80% of dermal thickness.
- Composed of dense irregular connective tissue
- Responsible for the lines on your palms, wrist, etc.
- Stretch marks → extreme stretching of dermis to cause a tear



The Dermis – Reticular Layer

- **Cleavage or Tension Lines**
 - Collagen and elastic fibers at any one location are arranged in parallel bundles
 - Bundles are aligned to resist the applied forces
 - Clinical significance:
 - Parallel cut → cut will remain closed, heal faster, and less scarring
 - Perpendicular cut → cut will be pulled open, heal slower, more scarring



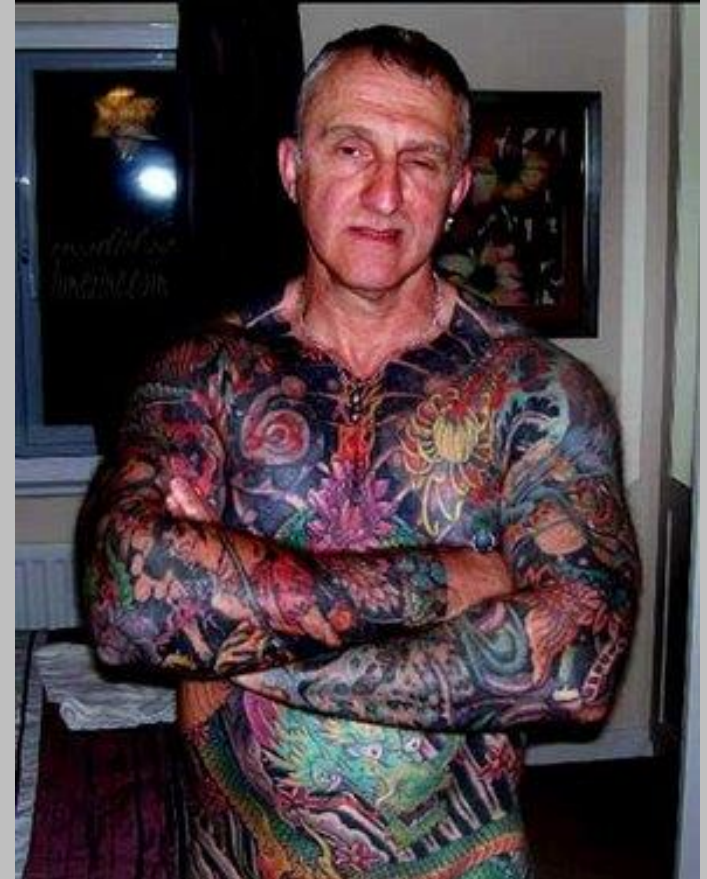
The Dermis – Reticular Layer

- Flexure Lines
 - Dermal folds that occur near joints, where the dermis is tightly secured to deeper structures
 - Skin can't slide easily to accommodate motion – so the fold occurs
 - Ex. Lines in your Palms.



Tattoos!

- Very fine needles inject inks into the dermis.
- The color is permanent because dermal cells aren't shed.
- To remove → a laser is used to shatter the ink molecules and then the immune system removes the debris.
- Before lasers → tattoo was scraped, frozen, or cut away!
OUCH!!



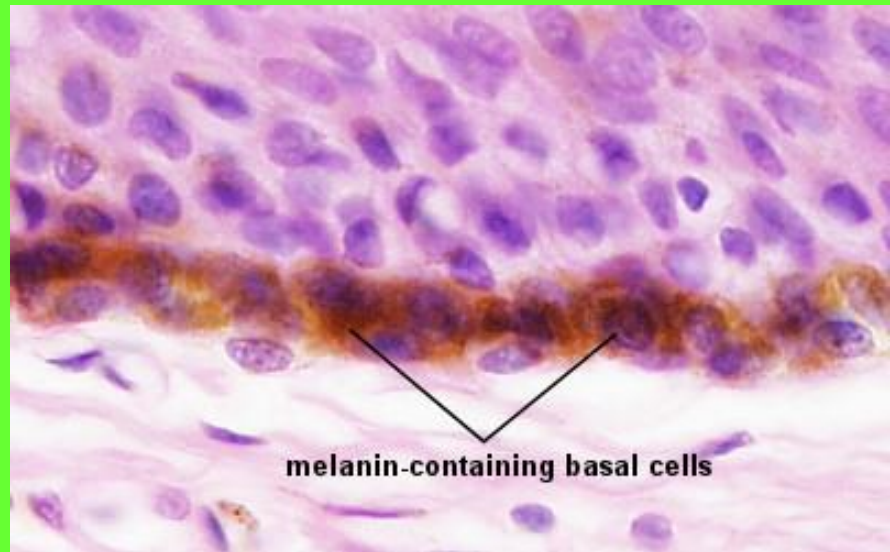
Skin Color



- Due to:
 1. Pigment composition and concentration
 2. Dermal blood supply
- Skin Color:
 - Skin comes in different colors!! 😊
 - Distribution of skin color is not random!
 - Darker skinned people live near the equator need most protection from the sun
 - Lighter skinned people live near the poles

Skin Color - Pigments

- Melanin
 - Color → Yellow → reddish brown → black
 - No matter how dark or light skinned a person is, they have about the same number of melanocytes!!



Albinism

- Mutant gene that makes melanin is inherited → melanocytes don't work correctly → individual has non-pigmented skin.
- Affects people of all races and many species of animals.



Skin Color - Carotene



- Orange-yellow pigment
- Located:
 - S. corneum of light-skinned individuals
 - Adipose tissue of hypodermis (gives fat its yellow color)
 - If eat too much → then skin can have an orange cast because the pigment will accumulate in adipose tissue
 - Orange colored vegetables
- Can be converted to vitamin A
 - Required for:
 - Normal maintenance of epithelia
 - Synthesis of photoreceptor for pigments in the eye

Jaundice

- Most often seen in newborns → yellowish skin
- Caused by blood incompatibility or immature liver → an accumulation of bilirubin in skin.
- Cured by → sunlight! Enables the body to break down the bilirubin.



Skin Color – Dermal Circulation

- Blood → contains pigment **hemoglobin**
 - Binds and transports oxygen
 - When oxygen is bound → bright red
 - When oxygen isn't bound → dark red
- Most apparent in lightly pigmented individuals
 - Lots of blood flow (inflammation) → bright red
 - When circulation is reduced → pale
 - Sustained reduction in circulation → very dark red (blue/purple)
 - Because Caucasian skin contains only small amounts of melanin, the epidermis is nearly transparent and allows hemoglobin's color to show through



Epidermis and Vitamin D₃

- Limited sun exposure is very beneficial!!
- Epidermal cells exposed to UV radiation
 - Vitamin D₃ is converted into calcitriol which is necessary for calcium (bones) and phosphorus (muscle contraction) absorption in the small intestine.
 - An inadequate supply of calcitriol leads to impaired bone maintenance and growth.