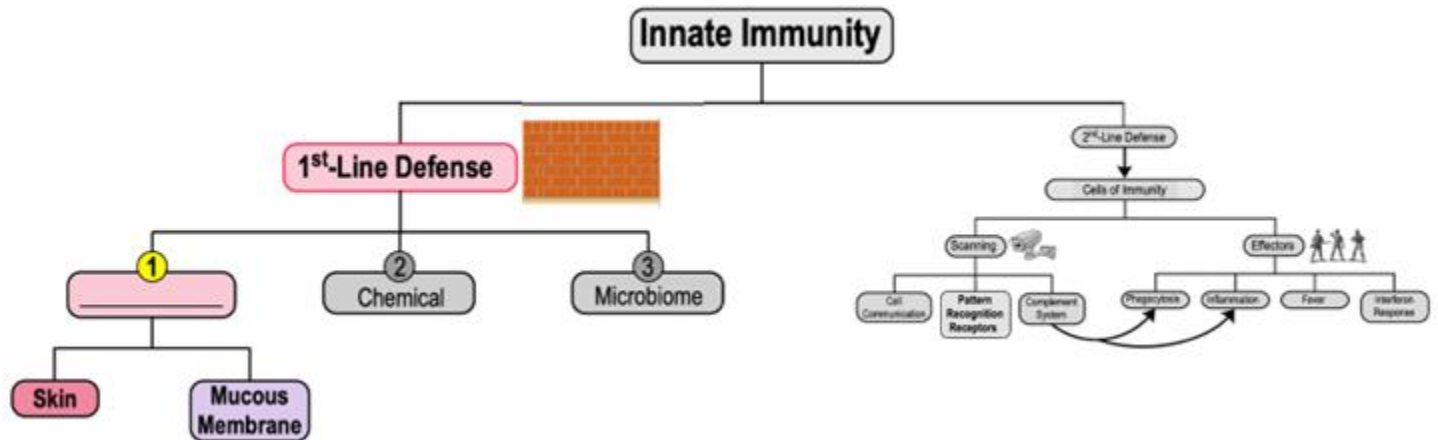


CONCEPT: PHYSICAL BARRIERS IN FIRST-LINE DEFENSE: SKIN

- There are ____ primary types of physical barriers of the first-line defense in innate immunity:

1) _____ & 2) _____ Membrane

- **Epithelial cells:** *tightly* packed skin cells that line the _____ of the body.



Skin

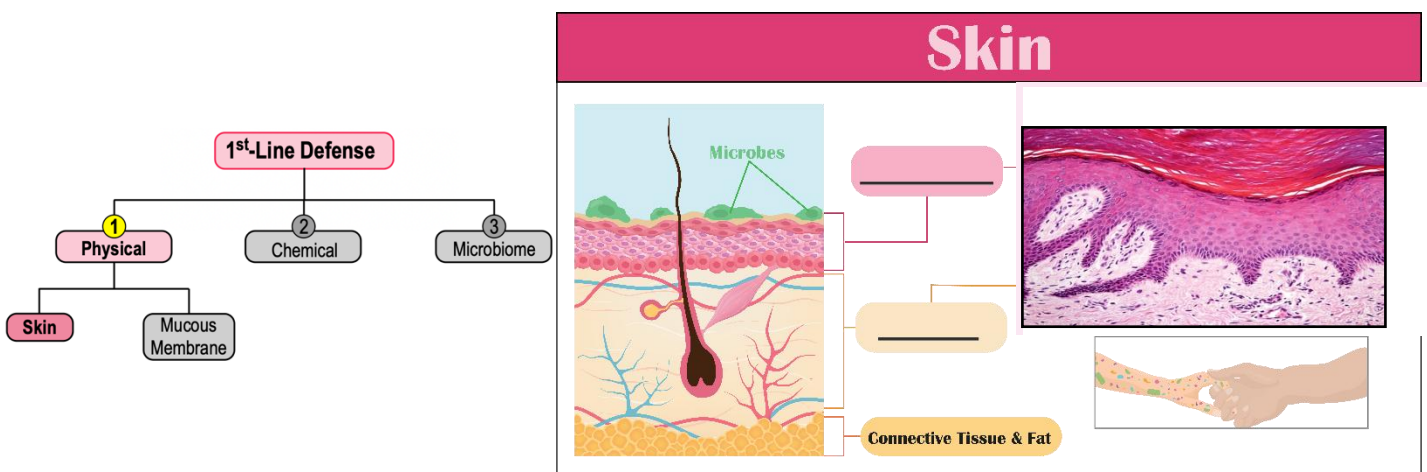
- Skin:** a physical barrier part in the first-line of defense of innate immunity that is composed of ____ layers.

1) **Epidermis:** _____ surface layer composed of many layers of *epithelial cells*.

- Outermost layer is composed of _____ cells that contain the *water-repelling* protein **keratin**.
- Keratin (Ex. hair & nails) creates a _____ environment on the skin preventing microbial growth.
- *Shedding* of the outer layer of epidermis removes microbes on the skin by taking them along.

2) **Dermis:** _____ layer of skin cells that is *thicker* than epidermis.

- Composed of connective tissue that makes it extremely *durable* and tough to break.



- Under the dermis layer is a layer of fat tissue called the subcutaneous layer that contains blood vessels.

CONCEPT: PHYSICAL BARRIERS IN FIRST-LINE DEFENSE: SKIN

PRACTICE: Which of the following sheds dead cells along with microbes attached to those cells?

- a) Epidermis.
- b) Dermis.
- c) Hypodermis.
- d) Mucous membrane.
- e) Hair follicles.

PRACTICE: Examples of 1st line defenses to infection which are components of the innate immune system include all of the following except?

- a) Unbroken skin.
- b) Phagocytosis of a pathogen by an immune cell.
- c) Digestive enzymes in saliva.
- d) Destructive acids in gastric juices.
- e) Naturally occurring human microbiome.

PRACTICE: Why is keratin an important layer of defense against infection?

- a) Keratin is hydrophobic which keeps the skin & hair dry which decreases microbial growth.
- b) Keratin is the top layer of skin that regularly flakes off, removing microbes from the skin's surface.
- c) Keratin is the main component of the dermis making it hard to tear which decreases infections from wounds.