

# Chapter two

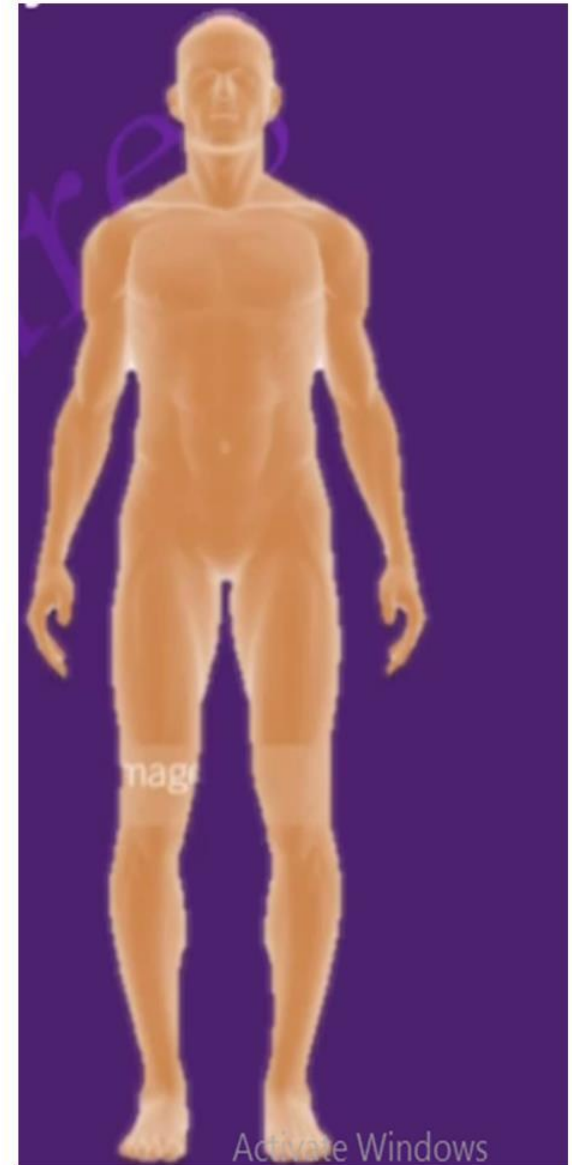
## Innate immune system

# **Innate immune system**

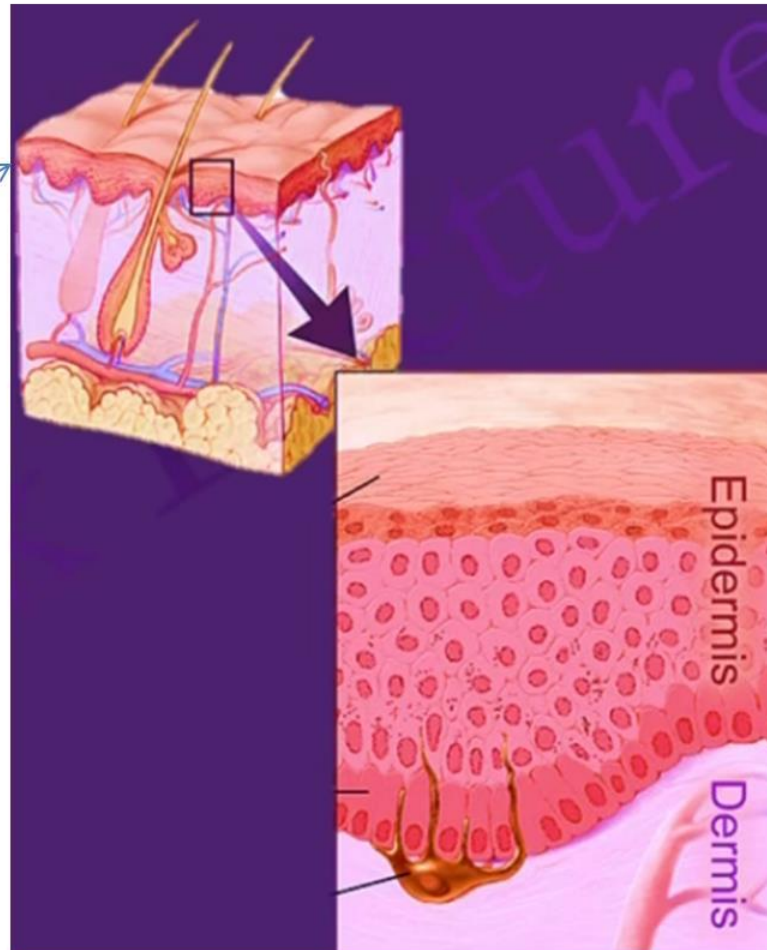
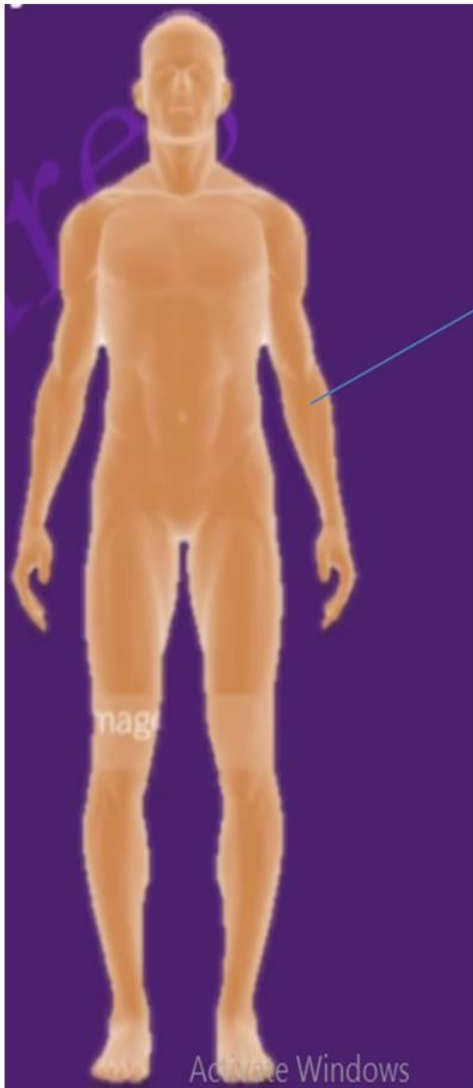
**First line of defense**

**The first line of defense is formed by:**

- 1. Skin**
- 2. Mucous membranes** of the respiratory system, gastro intestinal system, urinary system and reproductive system



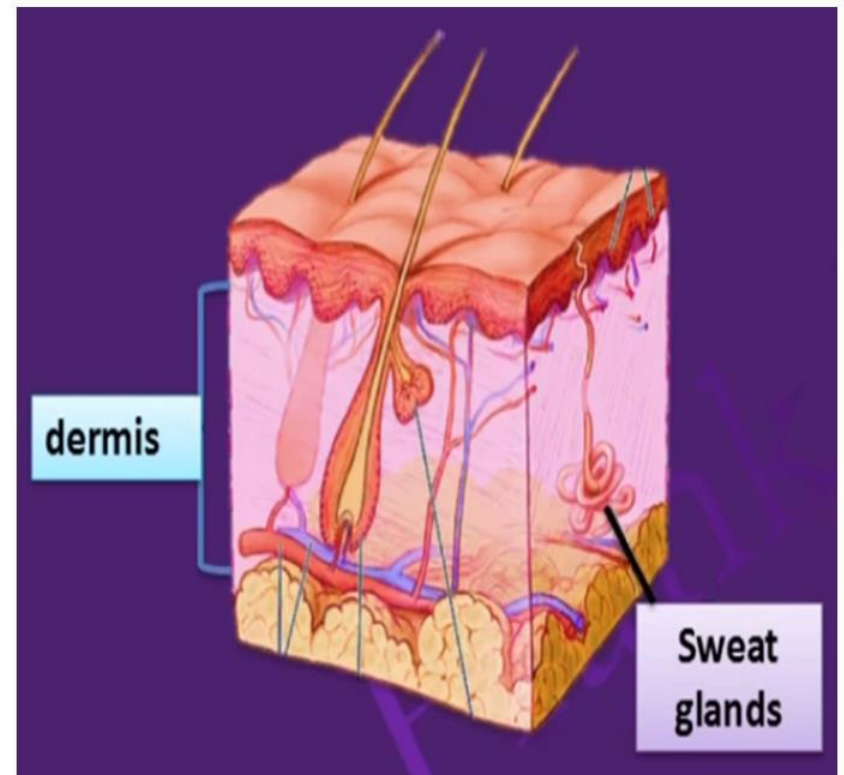
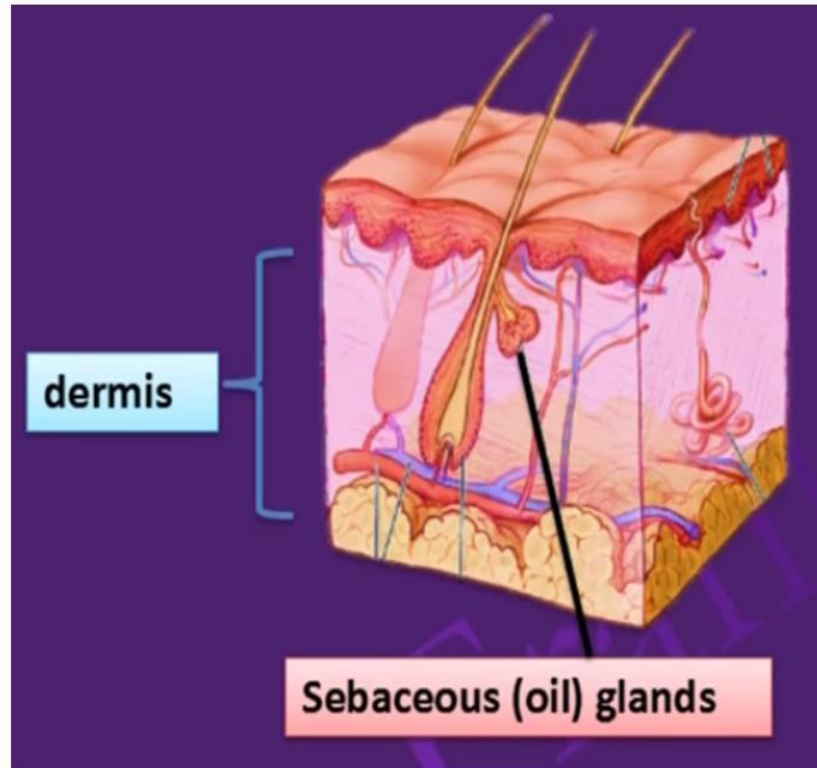
# SKIN



# Skin – Epidermis

- It consists closely packed keratinocytes
- Keratins are resistant to bacterial enzymes and toxins
- Have low PH (3-5) – this discourages the growth of many microbes
- Outer skin shed continuously

# SKIN- Dermis



# SKIN



Continuous shedding of skin

Low pH: 3-5

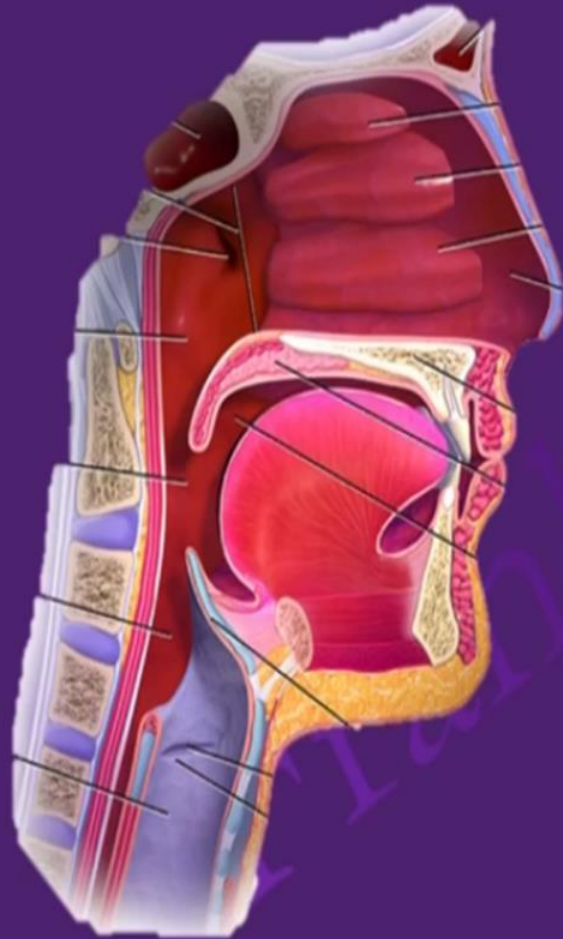
**Sebaceous glands:**  
sebum-unsaturated fatty acids

**Sweat glands:** Perspiration

**Perspiration:**  
salt,  
antimicrobial peptides  
lysozyme



# The Upper Respiratory Tract



**NOSE:** mucus-coated hairs

**MUCOUS MEMBRANE:** cilia



**The Upper Respiratory System**

**Coughing and  
Sneezing**

Activate Windows  
Go to Settings to activate Windows.



# EAR

Hairs in External Ear

EARWAX (CERUMEN)



**Earwax** is a mixture of secretions rich in fatty acids which is responsible for low pH(3-5).

This low pH inhibits the growth of many pathogenic microbes.

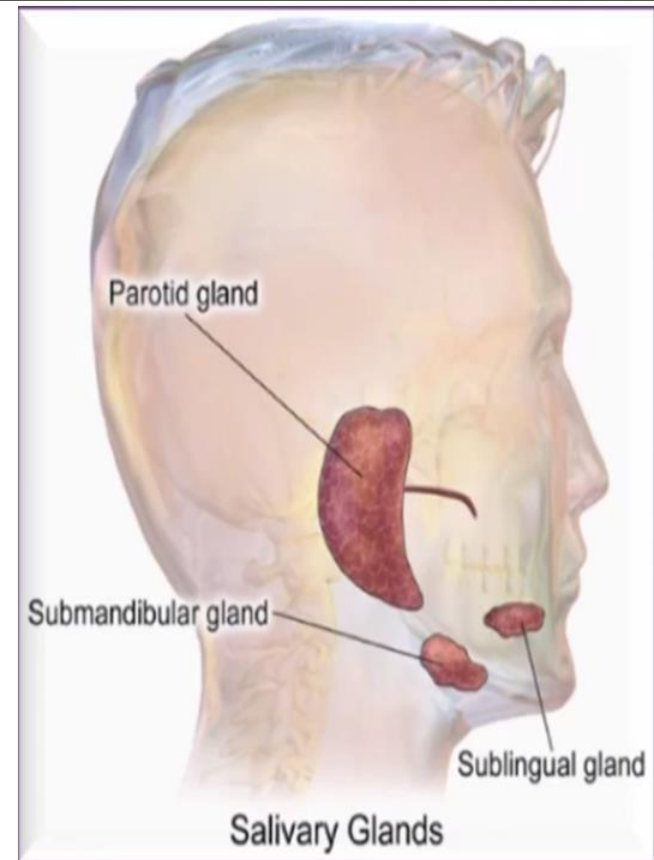


**Tears contain lysozyme**



**Gastric juice contains HCl, mucus  
and enzymes (pepsin)**

**PH : 1.2-3.0**



**Vaginal secretion create acidic  
environment (PH 3.0 - 5.0)**

**Menstrual flow cleans uterus  
and vagina from microbes**