

# **Integumentary System**

---

1. 5 functions of skin.
2. How skin contributes to temperature regulation of the body.
3. How does stress or exercise affect the amount of blood flowing through the dermis?
4. 4 roles of Vitamin D.
5. Tissue type in: epidermis; papillary region of dermis; reticular region of dermis; hypodermis
6. Location and purpose of arrector pili muscle
7. Purposes of sebaceous glands
8. Purposes of sudoriferous glands
9. 3 types of burns and symptoms
10. Acute vs. long-term crisis for burn victims.
11. Tissue-based cause of blister; stretch mark; cellulite
12. skin cancers (3 types)
13. Common bacterial infections of skin
14. Common fungal infections of skin

# Answers: Integumentary System

---

1. 5 functions of skin.

**Protection from trauma and pathogens**  
**Temperature regulation**  
**Touch**  
**Vitamin D synthesis**  
**Excretion of toxins and stress hormones**

2. How skin contributes to temperature regulation of the body.

**Cold? Blood vessels constrict if you are cold (to keep your core warm) and arrector pili muscles contract and give you goosebumps to generate heat.**

**Hot? Blood vessels in extremities dilate if you are hot (and then you cool off) Sweat glands activate when you are hot to cool you off.**

3. How does stress or exercise affect the amount of blood flowing through the dermis?

**Blood flow through the dermis generally decreases during stress or exercise.**

**However, if you are overheated, skin blood vessels are able to dilate to release heat as needed.**

4. 4 roles of Vitamin D.

**Bone health**  
**Immune health**  
**Cardiovascular health**  
**Mood health**

5. Tissue type in: epidermis; papillary region of dermis; reticular region of dermis; hypodermis

**Epidermis: basal keratinocytes form stratified squamous epithelium**

**Papillary region of dermis: areolar connective**

**Reticular region of dermis: dense fibrous irregular connective**

**Hypodermis: adipose connective**

6. Location and purpose of arrector pili muscle

**Location: Dermis of skin**

**Purpose: contraction helps generate heat; in furry mammals raised hairs communicate nervousness/fear/aggression**

7. Purposes of sebaceous glands:

- **Oil lubricates the skin and has antimicrobial properties**

8. Purposes of sudoriferous glands:

- **All sweat glands reduce friction and cool the body; apocrine sweat glands also communicate sexual maturity**

9. 3 types of burns and symptoms

- **First Degree: red, painful, only epidermis affected**
- **Second Degree: painful, epidermis and some of dermis may be burnt; blisters form**
- **Third Degree: Dermis is burnt (full-thickness burn); initially painless because nerve endings were destroyed**

10. Acute vs. long-term crisis for burn victims.

**Acute: Dehydration is critical and could lead to hypovolemic shock/organ failure if not properly rehydrated**

**Chronic: After initial crisis, infection is the main concern**

11. Tissue-based cause of blister; stretch mark; cellulite

**Blister: separation of epidermis and dermis—fluid fills this space**

**Stretch mark: tearing of dermis if it overly stretches**

**Cellulite: gaps in dermis collagen fibers allow hypodermal fat to poke through**

12. Skin cancers (3 types)

**~80% of skin cancers are basal cell carcinomas, which affect basal keratinocytes that are at the bottom of the epidermis. Squamous cell carcinomas affects cells in the outer parts of the epidermis. Melanoma affects the cells in the epidermis that produce melanin—rarest but most likely to metastasize.**

13. Common bacterial infections of skin

***Staphylococcus aureus* causes pimples and boils**

14. Common fungal infections of skin

**Dermatophytes can cause ringworm, jock itch, nail and hair follicle fungal infections**