Unit

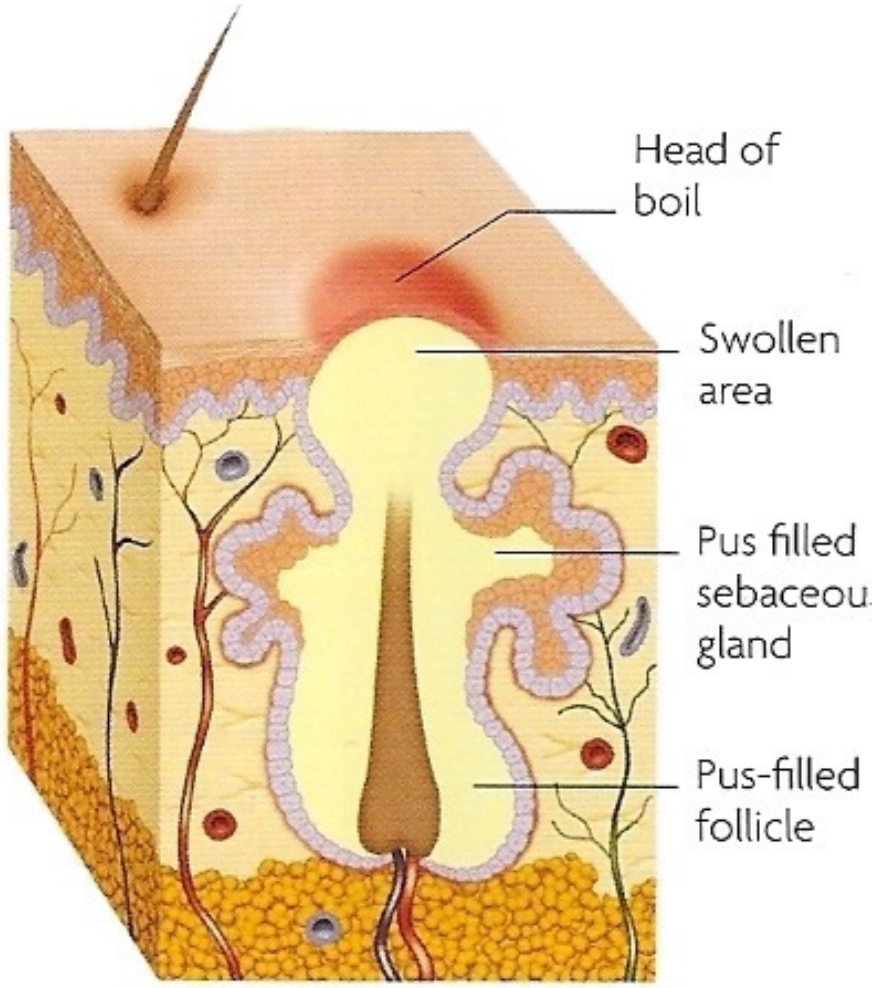
2

Homeostatic Imbalances of the Skin

ESSENTIALS
OF HUMAN
ANATOMY
& PHYSIOLOGY

Skin Homeostatic Imbalances

- **Infections**
  - **Athletes foot**
    - **Fungal infection**
  - **Boils and carbuncles**
    - **Bacterial infection**
  - **Cold sores**
    - **Virus**



CROSS SECTION OF A BOIL
Both the hair follicle and the sebaceous gland are filled with pus causing a red and tender swelling in the overlying skin.

Athlete’s foot

Carbuncle

Cold sore (fever blister)

Skin Homeostatic Imbalances

- **Infections and allergies**
  - **Contact dermatitis**
    - **Exposures cause allergic reaction**
  - **Impetigo**
    - **Bacterial infection**
  - **Psoriasis**
    - **Cause unknown**
    - **Triggered by trauma, infection, stress**

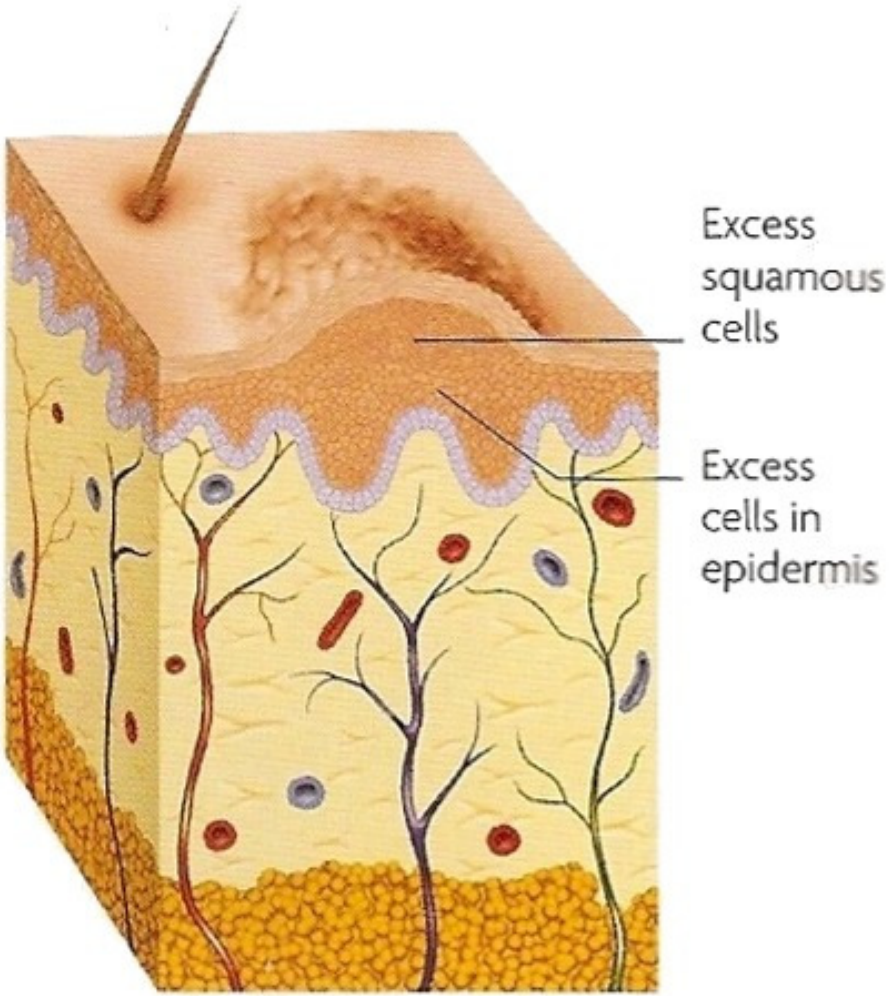
Contact dermatitis

Impetigo

Impetigo

Psoriasis

Wart



CROSS SECTION OF A WART
Overproliferation of epidermal cells causes this typical appearance of a common wart on the surface of the skin.

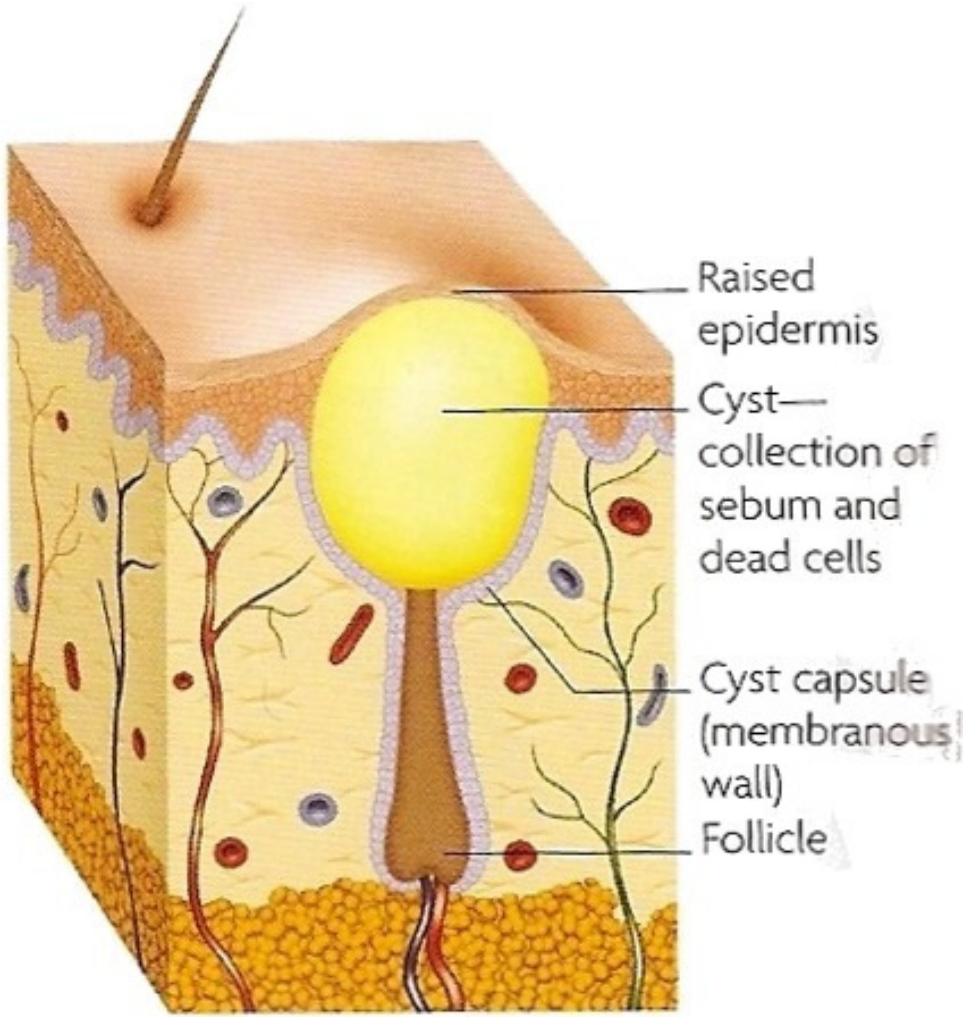
Common Wart

Plantar Wart

Eczema

Ringworm

Cyst

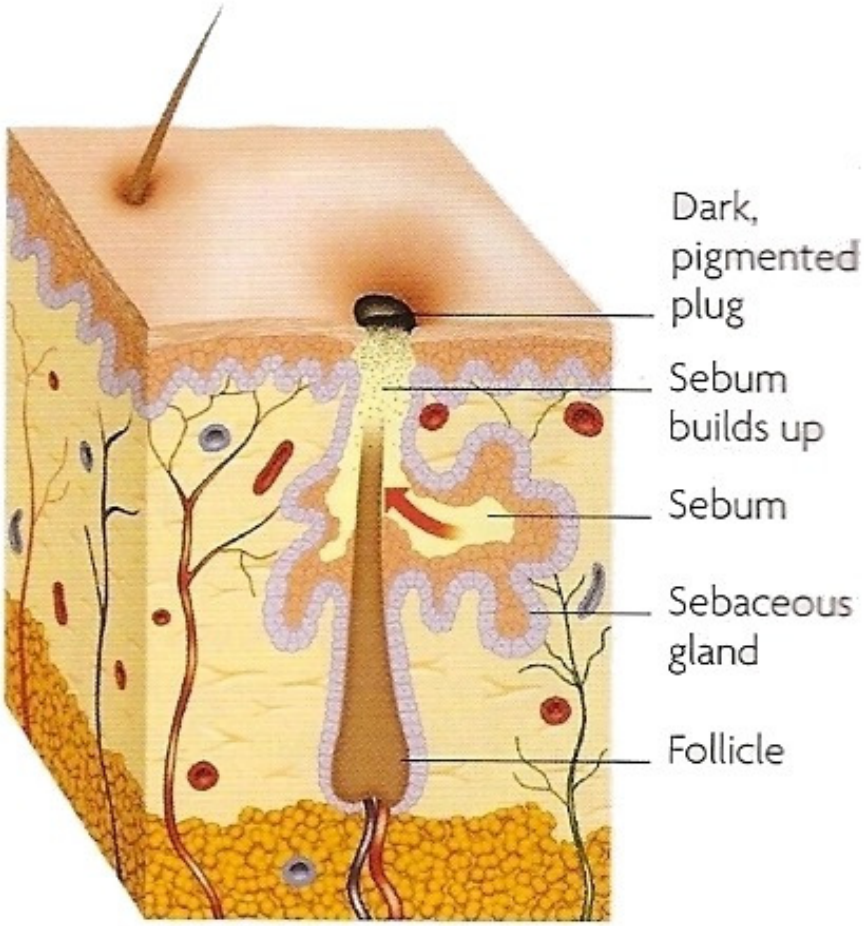


CROSS SECTION OF A CYST
The epidermis is stretched and raised into a domelike lump where this sebaceous cyst protrudes from the dermis.

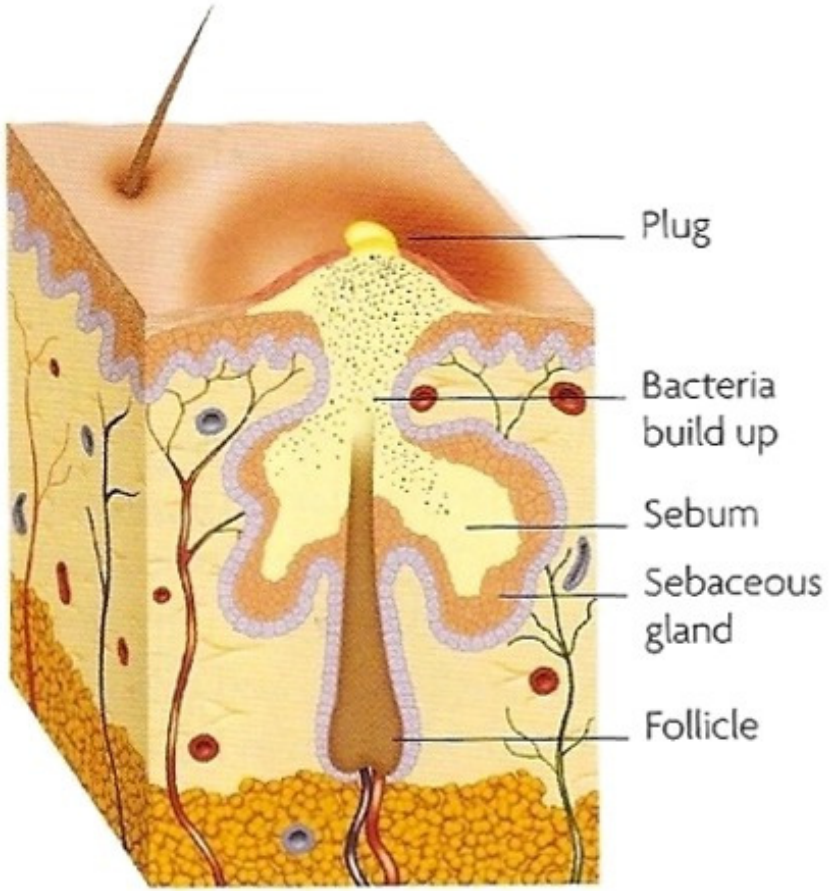
Sebaceous Cyst

Severe Frostbite

Acne

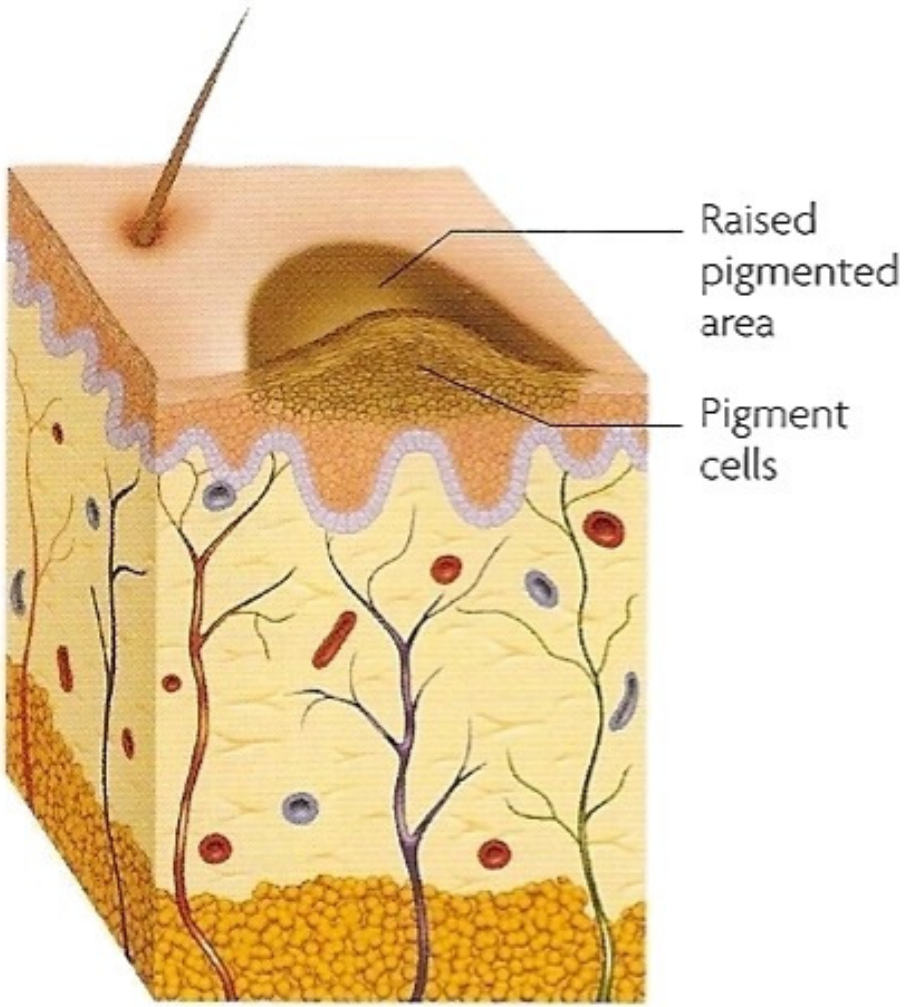


BLACKHEAD



INFECTED FOLLICLE

Mole



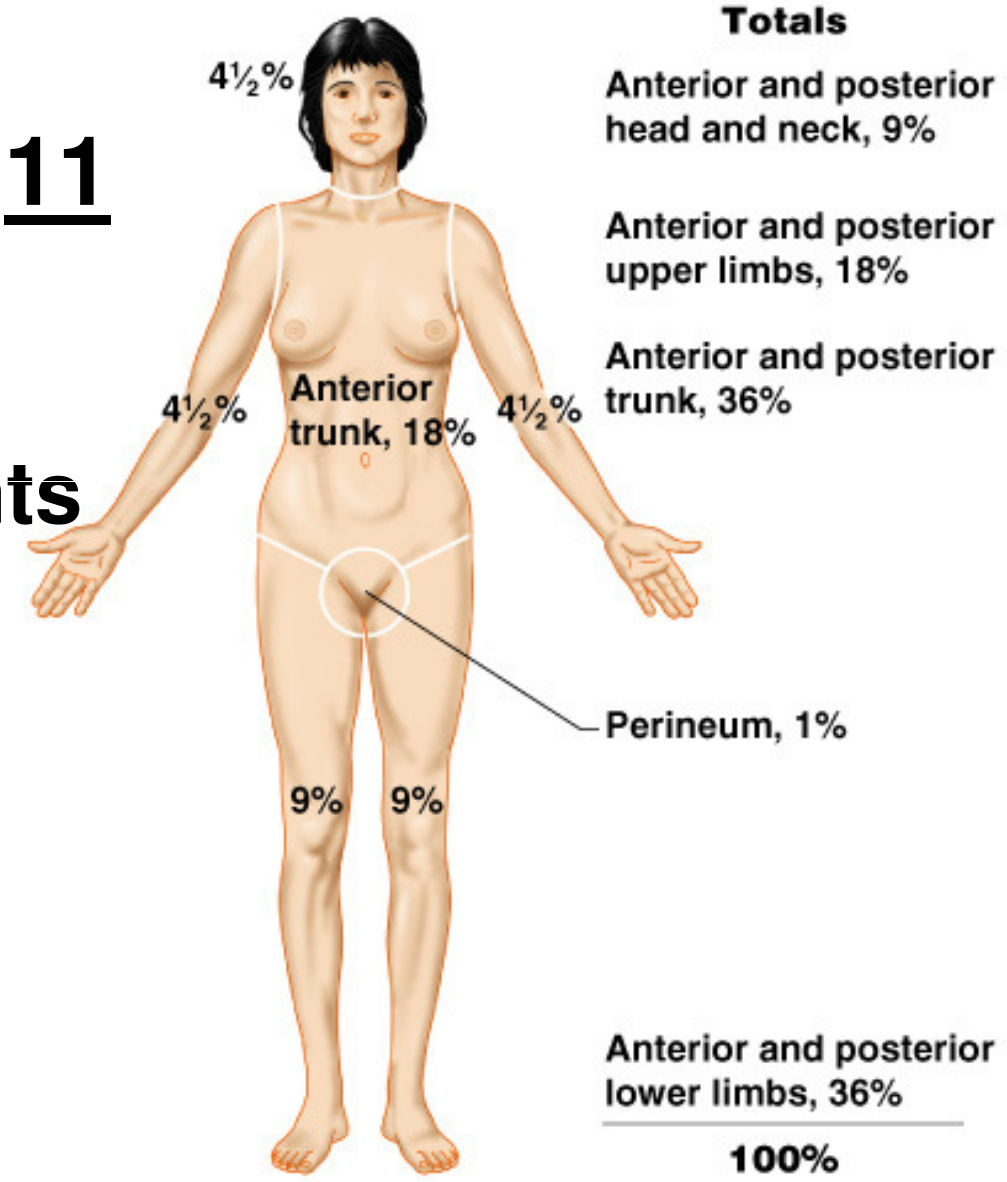
CROSS SECTION OF A MOLE
Although raised to the exterior, the area of pigmentation in this mole does not extend to cells beneath the epidermis.

Skin Homeostatic Imbalances

- **Burns**
  - **Tissue damage and cell death caused by heat, electricity, UV radiation, or chemicals**
  - **Associated dangers**
    - **Dehydration**
    - **Electrolyte imbalance**
    - **Circulatory shock**

Rule of Nines

- Determine extent of burns
- Body divided into 11 areas for quick estimation
  - Each area represents about 9%



Severity of Burns

- First-degree burns
  - Only epidermis
  - Red and swollen
- Second- degree burns
  - Epidermis and upper dermis
  - Red with blisters
- Third-degree burns
  - Destroys entire skin layer
  - Gray-white or black

First-degree burns

Second- degree burns

Third-degree burns

Critical Burns

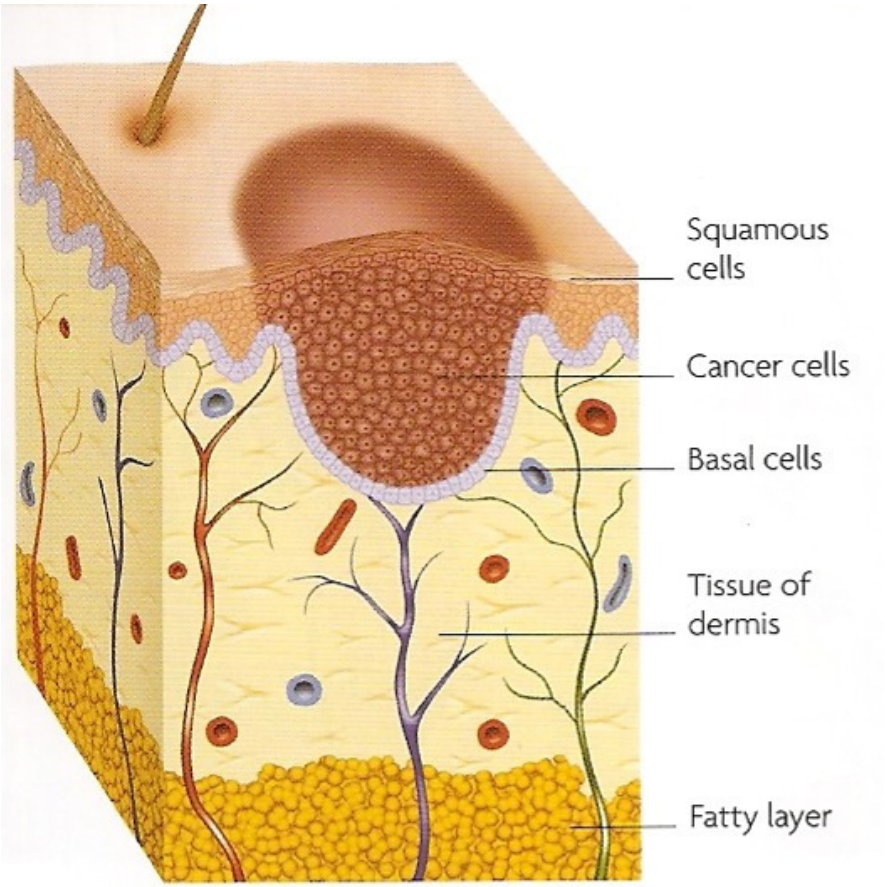
- **Burns are considered critical if:**
  - **Over 25% of body has second degree burns**
  - **Over 10% of the body has third degree burns**
  - **Third degree burns of the face, hands, or feet**

Skin Cancer

- Cancer- abnormal cell mass
- Two types
  - Benign
    - Does not spread (encapsulated)
  - Malignant
    - Metastasized (moves) to other areas
- Skin cancer- most common type of cancer

Skin Cancer Types

- **Basal cell carcinoma**
  - **Least malignant**
  - **Most common**
  - **Begins in stratum basale**



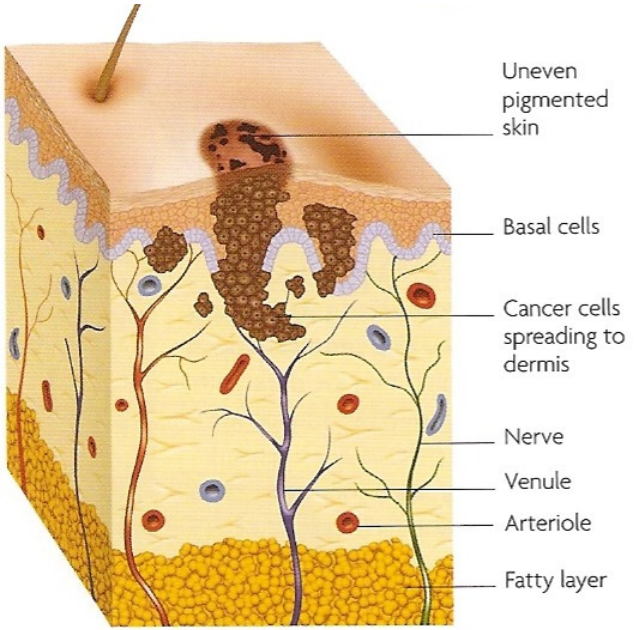
BASAL CELL CARCINOMA
Fast-dividing cells in the base of the epidermis are damaged by UV exposure and begin to multiply out of control, forming a mound of flattened, or squamous, cells. The growth remains localized within the epidermis.

Skin Cancer Types

- **Squamous cell carcinoma**
  - **Arises from stratum spinosum**
  - **Metastasizes to lymph nodes**
  - **Early removal allows a good chance of cure**

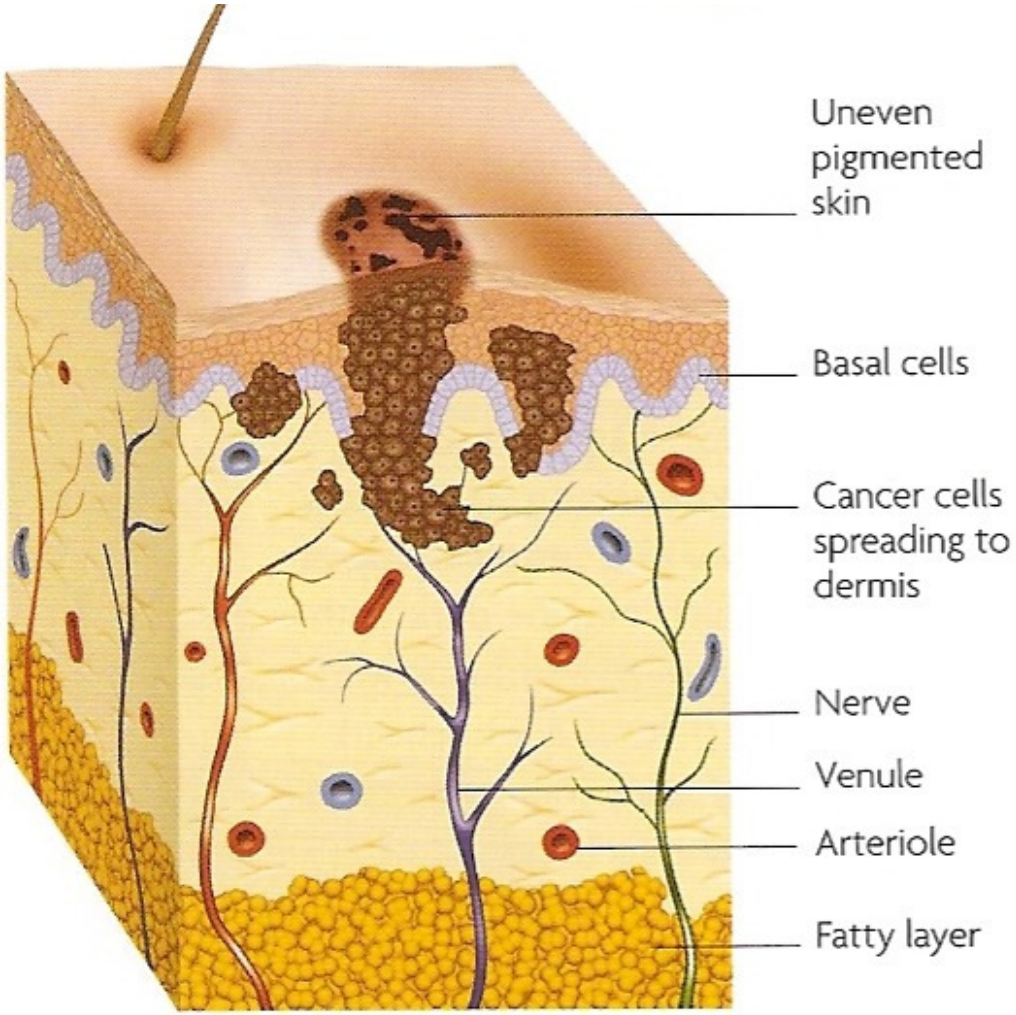
Skin Cancer Types

- **Malignant melanoma**
  - **Most deadly skin cancer**
  - **Cancer of melanocytes**
  - **Metastasizes rapidly to lymph and blood vessels**



MALIGNANT MELANOMA
Radiation damage to pigment-producing cells, called melanocytes, causes them to proliferate uncontrollably. A dark, irregular mass forms, while some cancer cells break into the dermis and may travel in the blood to other sites.

Skin Cancer Types



MALIGNANT MELANOMA

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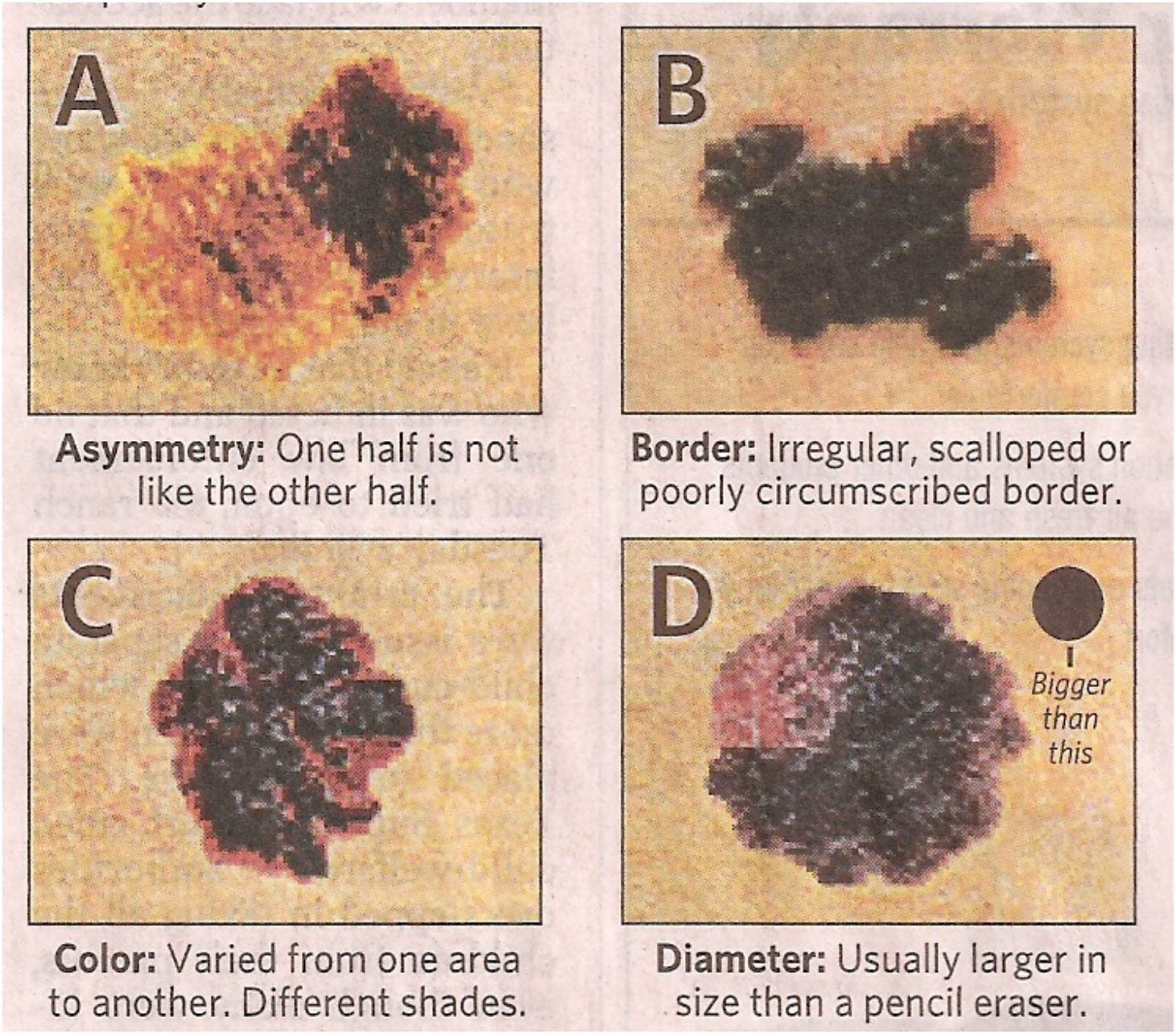
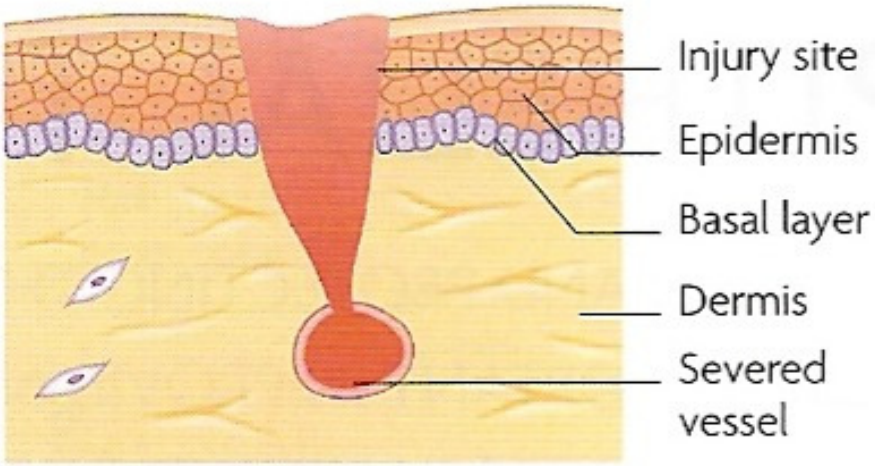
Detecting Cancer- ABCD rule

- A = Asymmetry
  - Two sides of pigmented mole do not match
- B = Border irregularity
  - Borders of mole are not smooth
- C = Color
  - Different colors in pigmented area
- D = Diameter
  - Spot is larger than 6 mm in diameter

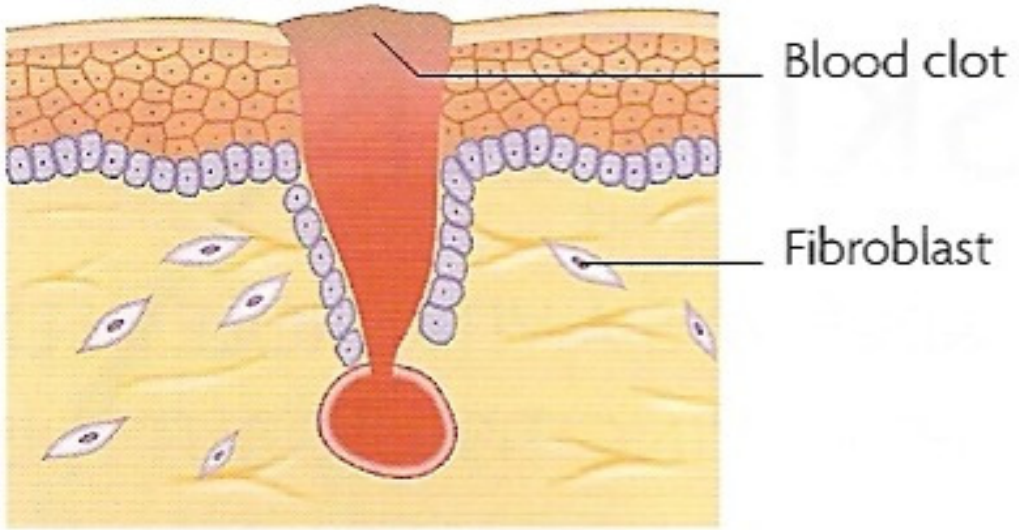
Detecting Cancer- ABCD rule



Skin Repair

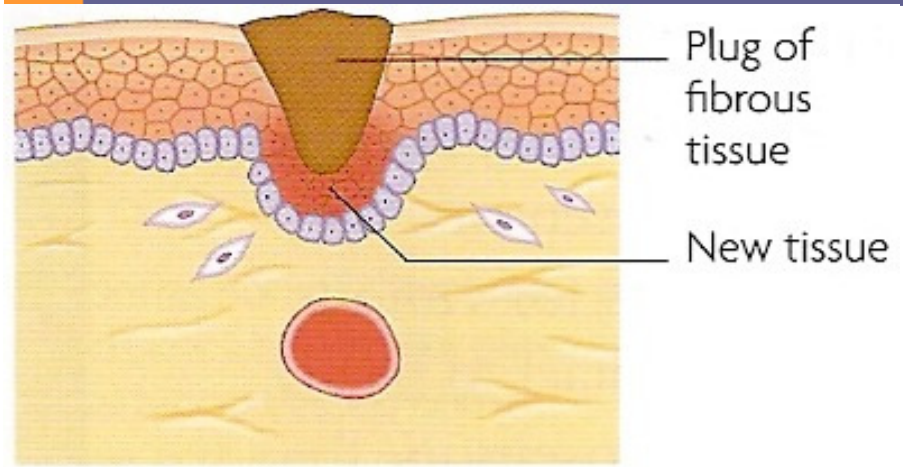


1 INJURY
The wound breaks open cells and releases their contents. These components attract various defense and repair cells.

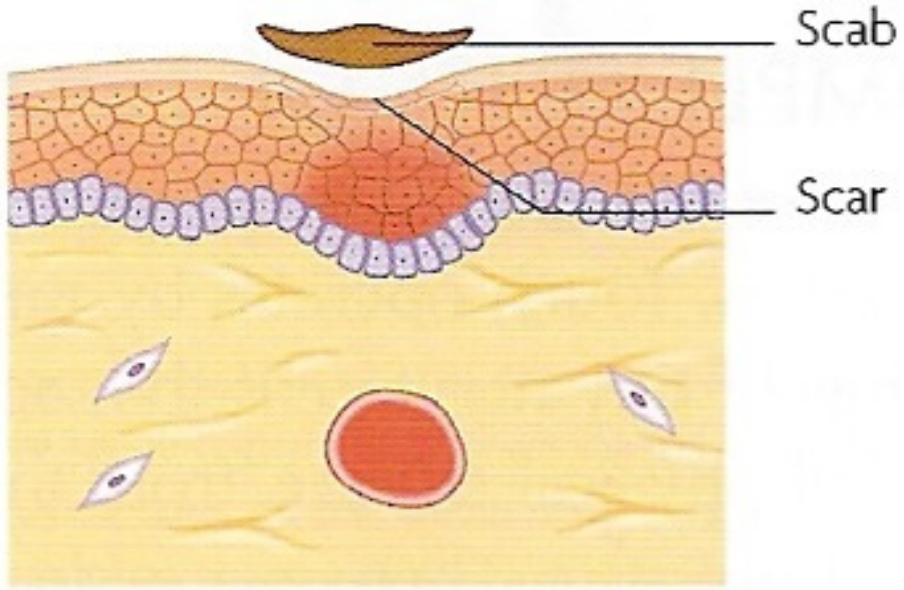


2 CLOTTING
Blood seeps from the vessel and forms a clot. Fibroblasts multiply and migrate to the damaged area.

Skin Repair



3 PLUGGING
Fibroblasts produce a plug of fibrous tissue within the clot, which contracts and shrinks. New tissue begins to form beneath.



4 SCABBING
The plug hardens and dries into a scab, which eventually detaches. A scar may remain but usually fades with time.