

# Internal Affairs

## ■ How the Integumentary System Works with Other Body Systems

## □ How Other Systems Work with the Integumentary System

### *Skeletal System*

- Covers and protects the skeletal system
  - Role in vitamin D synthesis promotes calcium absorption needed for bone growth and maintenance
- Supports the skin
  - Stores minerals needed by skin

### *Muscular System*

- Covers and protects the muscles
  - Role in vitamin D synthesis promotes calcium absorption needed for muscle contraction
  - Permits radiant heat loss (sweating) during muscle contractions
- Generates body heat to warm the skin
  - Skeletal muscle contractions pull on skin, producing facial expressions

### *Nervous System*

- Houses cutaneous (tactile) receptors that convey sensory sensations to the brain
- Provides autonomic motor impulses to cutaneous vessels and glands

### *Endocrine System*

- Covers and protects certain endocrine glands
  - Converts some steroid hormones to their active forms
- Sex hormones cause integumentary features to change—pubic, axillary, and facial hair and oily skin

### *Circulatory System*

- Protects the circulatory system
  - Maintains constant body temperature
  - Prevents fluid loss (formation of scabs)
- Transports O<sub>2</sub> and CO<sub>2</sub>, nutrients, and fluids to and from the skin



### *Lymphatic System*

- Protects against pathogen invasion
  - Prevents edema (retention of interstitial fluid)
- Maintains a balanced amount of interstitial fluid within the skin
  - Immune cells protect skin from infection and promote tissue repair

### *Respiratory System*

- Protects organs of the upper respiratory tract
- Provides O<sub>2</sub> and eliminates CO<sub>2</sub>

### *Digestive System*

- Role in vitamin D synthesis enables intestinal absorption of calcium
- Provides nutrients for growth, maintenance, and repair of skin

### *Urinary System*

- Excretes salts and some nitrogenous wastes
- Eliminates metabolic wastes
  - Activates vitamin D

### *Reproductive System*

- Major component of scrotum that covers and protects testes
  - Cutaneous receptors respond to erotic stimuli
  - Mammary glands produce milk
- Gonads produce sex hormones that promote growth, maturation, and maintenance of the skin