Skin and the Integumentary System

Skin (cutaneous membrane) is principle organ, plus accessory organs (hairs, glands, nails) form integumentary system

Functions: protection from abrasion, drying, radiation, infection
   regulation of body temperature (*Describe two ways)
houses some sensory organs
energy storage
excretion
synthesis of some important biomolecules

Skin composed of two layers and underlying layer that attaches to deeper body: 6.2
1. epidermis - top layer that is exposed at surface
   - formed of stratified squamous epithelium
   - important cell types are keratinocytes (keratin producing cells) and melanocytes (melanin producing cells)
   - distinct layers develop as cells divide and are pushed to the surface; as cells push to the surface they produce keratin, die and flatten. This forms dead tough protective layer at surface
   - layers are called strata: stratum basale (bottom not even providing layer produces new cells), stratum spinosum, stratum granulosum (producing keratin), stratum lucidum (only in thick skin where callus is formed), stratum corneum (dead flat cells filled with keratin)
   - melanocytes in stratum basale produce melanin, a pigment the absorbs ultraviolet radiation
   - pressure at surface and damage to cells stimulate growth of keratinocytes
   - UV radiation stimulates melanocyte production of melanin

* Describe the growth pattern of the epidermis and explain why this pattern is important in maintaining homeostasis.
* Describe two ways that the epidermis protects the body.
* What specific type tissue forms the epidermis?

2. dermis - composed mostly of irregular dense connective tissue
   - provides mechanical strength of skin to prevent puncture and tearing
   - composed of fibroblasts which produce much collagen and some elastic fibers
   - good blood supply and nerves
   - ridges of dermis (dermal papillae) form irregular surface with epidermis; this increases surface for nutrient and waste exchange, sensory structures

* What specific tissue forms the dermis?
* What are dermal papillae and how do they help maintain the epidermis?
* What type fibers predominate in the dermis and how does the arrangement of these fibers give strength to the dermis?