ANATOMY OF THE SKIN

The skin, which makes up the integumentary system, is also known as the cutaneous membrane and is the largest organ of the body in both surface area and weight. Skin is very sensitive, and incidence of skin cancer has increased due to prolonged sun exposure becoming more common.

There is thin skin and thick skin, a main difference between the two being that thick skin has hair whereas thin skin does not. The skin is at its thinest on the eyelids, where it is 0.5mm, and at its thickest at 4mm on the soles of the feet.

There are six main features of the integumentary system:

- 1. Regulates body temperature
- 2. Stores blood
- 3. Protects body from external environment
- 4. Detects cutaneous sensations
- 5. Excretes and absorbs substances
- Synthesises vitamin D

The layers of skin from the most superficial to the deepest are as follows: Epidermis > Dermis > Subcutaneous fatty layer

THE EPIDERMIS

The epidermis is made up of keratinised-stratified epithelium. It is the output of the of skin, and although it itself is avascular, the epidermis is supplied by nutrients for dermis layer. Every 25 rom Notesa 45 days, the epidermis is renewed.

The 4 Epidermal Cells:

95% of epidermal cell car keratinocytes calls hat produce keratin, the amount of which increases with acc, to at the top of m still bey contain the greatest amount of keratin. Kertanin is a tough, librous protein that helps protect the skin from wear and tear, microbes etc. Keratinocytes also produce lamellar granules which secrete a sealant that decreases water entry and loss, and inhibits the entry of foreign bodies into the skin.

Melanocytes deal with skin pigmentation and are mainly found in the basal layer. These cells transfer melanin granules to keratinocytes via long, slender processes that texted between the keratinocytes. Once inside the cell, the melanin granules form a layer over the side of the nucleus that faces the skin surface in order to shield the nucleus from experiencing genetic damage from dangerous UV light. However, the melanin granules themselves are particularly susceptible to DNA damage from UV light. Melanin is the protein responsible for hair and skin colouring, and there are two different types. Eumelanin produces brown/black colouring, whilst Pheomelanin produces a yellow/red colouring. Moles (made from eumelanin) and freckles are a buildup of these pigments.

Langerhans cells arise from red bone marrow and migrate to the epidermis where they have a role in the immune response. As antimicrobials, they assist other cells of the immune system by helping them to identify invading microbes so that they can be consequentially destroyed. Langerhans cells are extremely susceptible to damage from UV light.

Merkel cells are the most sparse of the epidermal cells and are located in the Stratum Basale. These cells are responsible for helping humans to feel light touches. This is achieved by each Merkel cell being in contact with a Merkel Tactile Disc, a flattened process which lies on the end of a sensory neurone, through which nervous impulses can transmitted.