The integumentary system

The Integumentary System (Layers of the Skin) The larges organ of the human body, the skin, contains two main layers such as the epidermis and the dermis. The epidermis, being the outer layer of the skin, is a keratinized stratified squamous epithelium which does not have direct blood supple. It contains four different cell types including keratinocytes, melanocytes, Merkel??™s cells, and Langerhans??™ cells. Keratinocytes are responsible for producing keratin, which is where skin gets it strength and flexibility. Keratin also waterproofs the visible layer of the skin.

They are also the most common cells. They derive from the deepest part of the epidermis from cells which are undergoing almost continuous mitosis. Considering the location in the body, keratinocytes can be organized in four to five layers.

Melanocytes produce melanin, which is known as a dark pigment that gives skin its color. The body of melanocytes are hard to distinguish in an ordinarily LM preparation, because the melanosomes are mainly located the processes of the cells. Merkel cells are present in little numbers between the epidermal layer and the dermal layer. They function as sensory receptors. Lastly, Langerhans??™ cells arise from bone marrow and move to the epidermis along with other areas of the body, while containing stratified squamous epithelial tissue. They possess antigens that help in the immune system.

All these cell get their nutrients from the dermis; however, it??™s only the cells deep in the stratum basale that receive nourishment. The stratum basale, which is the deepest layer of the epidermis, consists of one layer of

columnar and cuboidal cells resting on the basement membrane. The cells in the stratum basale divide continuously. They are known as the stem cells of the epidermis. As the new cells are created, the older cells are pushed to the surface of the skin and die. The dead cells are then removed in a process known as desquamation. Desquamation is a process in which keratinocytes are pushed to the surface of the skin.

These cells are brushed off in the millions each day. New cell are produced every 35 to 45 days. The other layers of the epidermis consist of the stratum spinosum, stratum granulosum, stratum lucidum and stratum corneum. The stratum spinosum has spiny cell that support the skin buy interlocking. There are five to ten rows of cells, which are closely linked together. Mitosis is less frequent.

Cells in this layer begin to die because they do not receive enough nutrition. The stratum granulosum is the middle layer that begins the keratinization process. This is the production of keratin. During this process epithelial cells die becoming our skin. The process begins in the third layer. The Stratum granulosum is a thin area containing three to five layers Cytoplasm in the cells contains a number of fine grains known as keratohyalin granules. They form free accumulations in the cytoplasm. The stratum lucidum protects the body from ultraviolet sunlight.

It contains a number of layers of dead flattened dead keratinocytes. The stratum lucidum can only be found in the palms and the sole of the feet. It cannot be identified in thin skin in most cases. This layer is also translucent.

The outer layer, the stratum corneum, is thick with 20 to 30 rows of dead cells.

It makes up about ? of the epidermal thickness. It helps to keep the skin elastic while protecting cells from dying underneath. They cells are filled with a keratin filament embedded in a dense matrix of proteins. These cells are referred to as cornified cells, also known as horny cells. Individual cell are very difficult to observe for many reason, for example the cells are flat and they are in a continuous membrane caused by lipids between the cells. Following the epidermis is the dermis layer, which is the second major skin region. It is a thick layer of connective tissue. The dermis has a gel-like matrix consisting of: collagen, reticular fibers, and elastic fiber.

Collage is a protein that gives the skin more strength, reticular fibers give support, and the elastic fibers make the skin more flexible. The dermis contains different thicknesses throughout the body and is made up of two different layers. These layers are the papillary layer and the reticular layer.

The papillary layer, which is made up of loss connective tissue, is located directly under the epidermis, which it connects to through papillae. Papillae are finger like projections, which may contain capillaries that provide the epidermis with nourishment, or contain Meissner??™s corpuscle also known as touch receptors. Fingerprints and footprints are created by two rows of papillae. This help keep the skin from tearing, along with helping with gripping items. The reticular layer makes up about 80% of the dermis.

It contains a strong elastic network, which is formed by collagen fibers. This network contains a pattern referred to as the cleavage lines or Langer??™s

line. Incisions made parallel to the cleavage lines heal much faster with less scarring compared to those made perpendicular. The sensory receptors, also known as Pacinian corpuscles, are used for deep pressure. This layer also contains sweat glands, lymph vessels, smooth muscle, and hair follicles. The hypodermis is just under the dermis layer.

Using loss connective tissue like adipose tissue to insulate the body and helping to keep heat inside the body. This layer is also what gives the female form its characteristic curves. Work CitedLutz Slomianka. ??? Blue Histology ??“ Integumentary System.??? School of Anatomy and Human Biology. 2009.

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