Hair and Nails

[Author Name(s), First M. Last, Omit Titles and Degrees]

[Institutional Affiliation(s)]

Author Note

[Include any grant/funding information and a complete correspondence address.]

**Research**

Nails and hair are the accessory structure of the skin which makes an integumentary system. The function of both is largely dependent on their anatomical structure (Dr, 2014). Both are made up of dead keratinized proteins that protect skin and finger extremities. This anatomical relationship shows that both of them originate from the ectoderm, which is the outer most layer of skin. Inside a hair follicle bulge from which a hair originates, the epidermis is connected to erector pili muscles which are responsible for skin insulation (Fujiwara et al., 2011).

**Critical thinking**

The skin has three different layers known as 1) the outermost “epidermis” 2) the middle “dermis” and 3) the innermost “Endodermis” (Dr, 2014). Both hair and nail are originated from the outermost layer epidermis. The function is highly dependent on the physiological structure of hair and nails which can be proved by the mechanism of “Pilo Erection”. Pilo erection is a process in which the hair on the surface of the human body erect in response to emotion and cold (Torkamani, Rufaut, Jones, & Sinclair, 2014). Did you ever go out in the middle of a chilly night and experienced “Goosebumps”? This a body’s normal response to maintaining homeostasis. These goosebumps serve as a function of protection. They trap the necessary air inside, creating a layer of insulation that brings the body back to the normal temperature. Now the question is how the structure of hair plays a role in this process?

The epidermis layer constitutes a root of a hair which is called a hair follicle. In the base of the hair follicle, the epidermis is connected to the smooth muscles called “Erector Pilli muscles”. It usually extends to the second layer of skin called the dermis. When Erector Pilli muscles contract as a result of the response from the sympathetic nerve system, they lead to the erection of the hairs (Fujiwara et al., 2011). This phenomenon is normally observed in humans. However, organism with heavy hair coats are more likely to exhibit this behavior.

**References**

Dr, K. S. S. (2014). *Anatomy & Physiology: The Unity of Form and Function*. McGraw-Hill Education.

Fujiwara, H., Ferreira, M., Donati, G., Marciano, D. K., Linton, J. M., Sato, Y., … Watt, F. M. (2011). The Basement Membrane of Hair Follicle Stem Cells Is a Muscle Cell Niche. *Cell*, *144*(4), 577–589. https://doi.org/10.1016/j.cell.2011.01.014

Torkamani, N., Rufaut, N. W., Jones, L., & Sinclair, R. D. (2014). Beyond Goosebumps: Does the Arrector Pili Muscle Have a Role in Hair Loss? *International Journal of Trichology*, *6*(3), 88–94. https://doi.org/10.4103/0974-7753.139077