

What Causes Goosebumps? - The Anatomy of the Skin

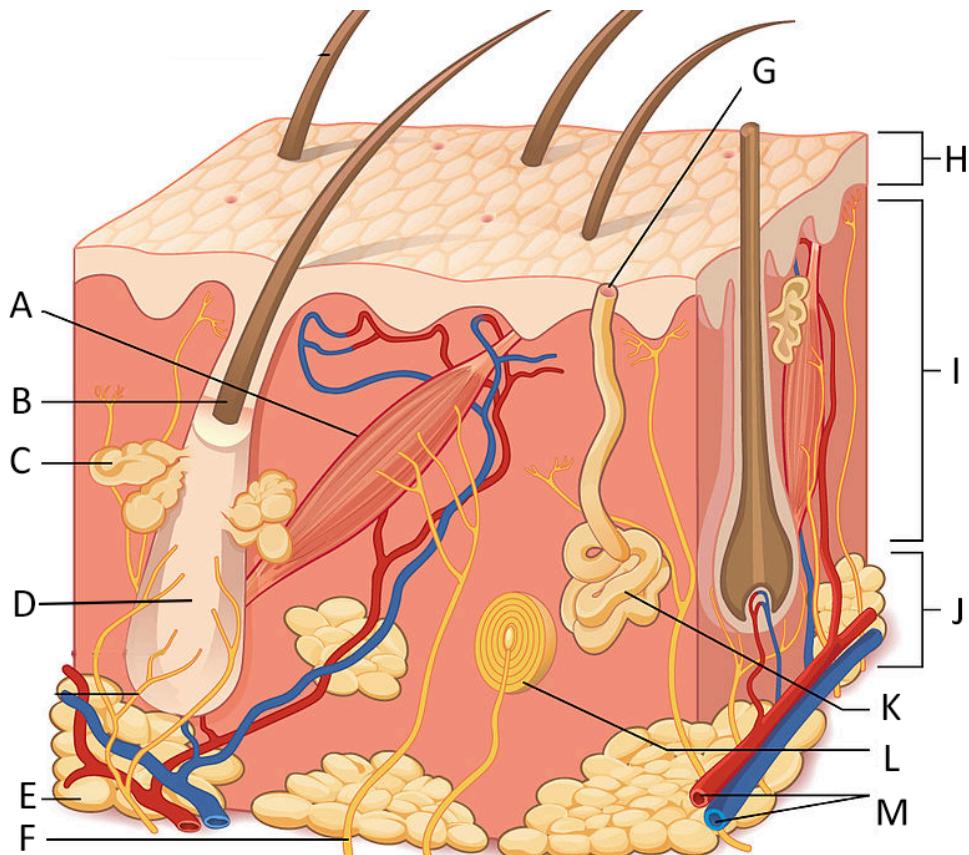
Have you ever watched a movie that was so interesting and emotional that you got goosebumps? Why do you think emotion can cause the hair on your skin to raise? To understand this phenomenon, we need to take a close look at the anatomy of the skin.

The skin is divided into three layers. The **epidermis** is the top layer, the part you can see. The middle layer is the **dermis**, and the innermost layer is called the **hypodermis**.

The dermis contains **blood vessels** and **sensory nerves**. **Sweat glands** attach to **sweat ducts** which open on the surface of the skin. The **hair shaft** is attached to a **hair follicle**. That follicle is attached to the **arrector pili muscle**. When this muscle contracts, the hair stands up. **Oil glands** wrap around the hair follicle, secreting oil that protects the skin. A special type of sensory nerve, called the **Pacinian corpuscle** senses pressure. It is shown as a sphere of nerve fibers.

The hypodermis contains a layer of **fatty tissue** that protects and insulates the body. Nerves and blood vessels travel through this layer to connect to their systems.

1. Using the descriptions above, label the cross section of the skin shown.

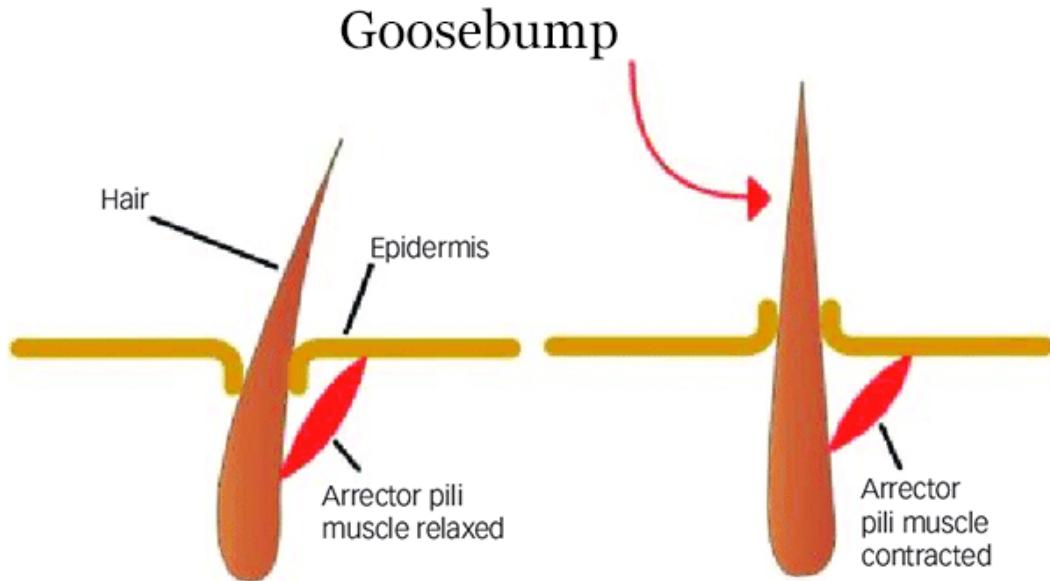


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The skin does not have any major muscle groups. Which makes sense, because you cannot consciously make your skin move or ripple. There is one muscle in the skin, the arrector muscle, which is attached to your hair follicles. The following graphic shows what happens in the skin when you get goosebumps.



2. Create a caption for the image to describe what is happening.

3. Acne is a skin condition that occurs when your hair follicles become clogged with oil and dead skin cells. This feeds naturally occurring bacteria on your skin, which leads to the characteristic inflammation. Why does routine washing of the face help prevent acne?

4. In animals, the reaction to being threatened is to raise the fur, which makes the animal appear larger or more menacing. Raising of the hair can also help the animal stay warm by creating pockets of insulating air. Suggest a reason for why humans get goosebumps.

A black silhouette of a cat standing on its hind legs and arching its back, which is a classic 'threatened' or 'frightened' pose in animals. The tail is curved upwards and to the right.

Video Explanation: [Institute of Human Anatomy Video \(10 min\)](#)