Nails and Hair

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Why do you have arm hair?

Hair covers much of our bodies. But why? Think of the way that you can sense something brush against your arm. Your arm hair is important in providing this type of sensation and making you aware of your environment. Also, hair can trap heat and keep your body warm.

Hair and Nails

Along with the skin, the integumentary system includes the nails and hair. Both the nails and hair contain the tough protein, keratin. The keratin forms fibers, which makes your nails and hair tough and strong. Keratin is similar in toughness to chitin, the carbohydrate found in the exoskeleton of arthropods.

Nails

Nails are similar to claws in other animals. They cover the tips of fingers and toes. Fingernails and toenails both grow from nail beds. As the nail grows, more cells are added at the nail bed. Older cells get pushed away from the nail bed and the nail grows longer. There are no nerve endings in the nail. Otherwise cutting your nails would hurt a lot!

Nails act as protective plates over the fingertips and toes. Fingernails also help in sensing the environment. The area under your nail has many nerve endings. These nerve endings allow you to receive more information about objects you touch.
The Guinness Book of World Records began tracking record fingernail lengths in 1955. At that time the record was 1 foot 10.75 inches long. The current record-holder for men is from India, with a record of 20 feet 2.25 inches for all nails on his left hand, the longest being his thumbnail at 4 feet 9.6 inches. The record for women is held by an American woman. The record is 28 feet (850 cm) for all nails of both hands, with the longest nail on her right thumb at 2 feet 11 inches. Since adult nails grow at about 3 mm a month (1/10 of an inch), how long would it take to grow such long nails?

**Hair**

Hair is one of the defining characteristics of mammals. In fact, mammals are the only animals to have hair. Hair sticks out from the epidermis, but it grows from the dermis (Figure 1.1). Hair grows from inside the hair follicle. New cells grow in the bottom part of the hair, called the bulb. Older cells get pushed up, and the hair grows longer. The cells that make up the hair strand are dead and filled with the rope-like protein keratin.

![Hair follicle and oil glands](image)

In humans, hair grows everywhere on the body except the soles of the feet and the palms of the hands, the lips, and the eyelids (except for eyelashes). Hair grows at a rate of about half an inch (1.25 cm) each month, or about 6 inches (15 cm) a year.

Hair, especially on the head, helps to keep the body warm. The air traps a layer of warm air near the skin and acts like a warm blanket. Hair can also act as a filter. Nose hair helps to trap particles in the air that may otherwise travel to the lungs. Eyelashes shield eyes from dust and sunlight. Eyebrows stop salty sweat and rain from flowing into the eye.

The world’s longest documented hair, according to Guinness World Records, belongs to Xie Qiuping of China at just under 18 feet 6 inches (5.627 m) when measured on May 8, 2004. She had been growing her hair since 1973 when she was 13 years old.

**Summary**

- Hair and nails are made of keratin, a tough protein.
• Nails act as protective plates over the fingertips and toes.
• Hair serves many functions such as acting as a filter and keeping the body warm.

Explore More

Use the resources below to answer the questions that follow.

• Skin, Hair, Nails at http://www.youtube.com/watch?v=IAAt_MfIY (1:12)

1. What is the function of your nails?
2. What is the function of the oil glands in your skin?
3. What are the functions of hair?

Review

1. What is keratin?
2. What are two functions of your nails?
3. What are two functions of your hair?
4. What animals, other than mammals, have hair?

References

1. Courtesy of the National Institutes of Health, User:Tsaitgaist/Wikimedia Commons. Illustration of hair follicle. Public Domain