

● Before You Read

On the lines below, explain how having healthy skin, hair, and nails affects your total health. Remember to include social and mental/emotional health in your explanation.

BIG Idea

Taking care of your skin, hair, and nails helps keep your whole body healthy.

Study Coach

Table Make a three-column table. Label the columns “Tissue,” “Structure,” and “Function.” In the first column, list “Skin,” “Hair,” and “Nails.” In the second column, describe the important structural features of each. In the third column, write the function of each.

Tissue	Structure	Function

● Read to Learn

Your Skin

The skin is the largest organ on the human body. Skin consists of two main layers: the epidermis and the dermis. The **epidermis** is the outer, thinner layer of the skin that is composed of living and dead cells. The **dermis** is the thicker layer of the skin beneath the epidermis. The dermis is made up of connective tissue and contains blood vessels and nerves. Cells in the epidermis make substances called *lipids*, which make your skin waterproof. This waterproofing helps the body maintain a balance of water and electrolytes. Other cells produce **melanin**, a pigment that gives the skin, hair, and iris of the eyes their color. People with darker skin produce more melanin than people with lighter skin. The melanin in skin also helps protect the body from harmful ultraviolet (UV) radiation. UV rays can cause skin cancer.

The skin performs three main functions:

- **Protection.** The skin acts as a barrier to prevent pathogens from entering your system. If this barrier is broken by a cut or other wound, the skin will repair itself.



Think it Over

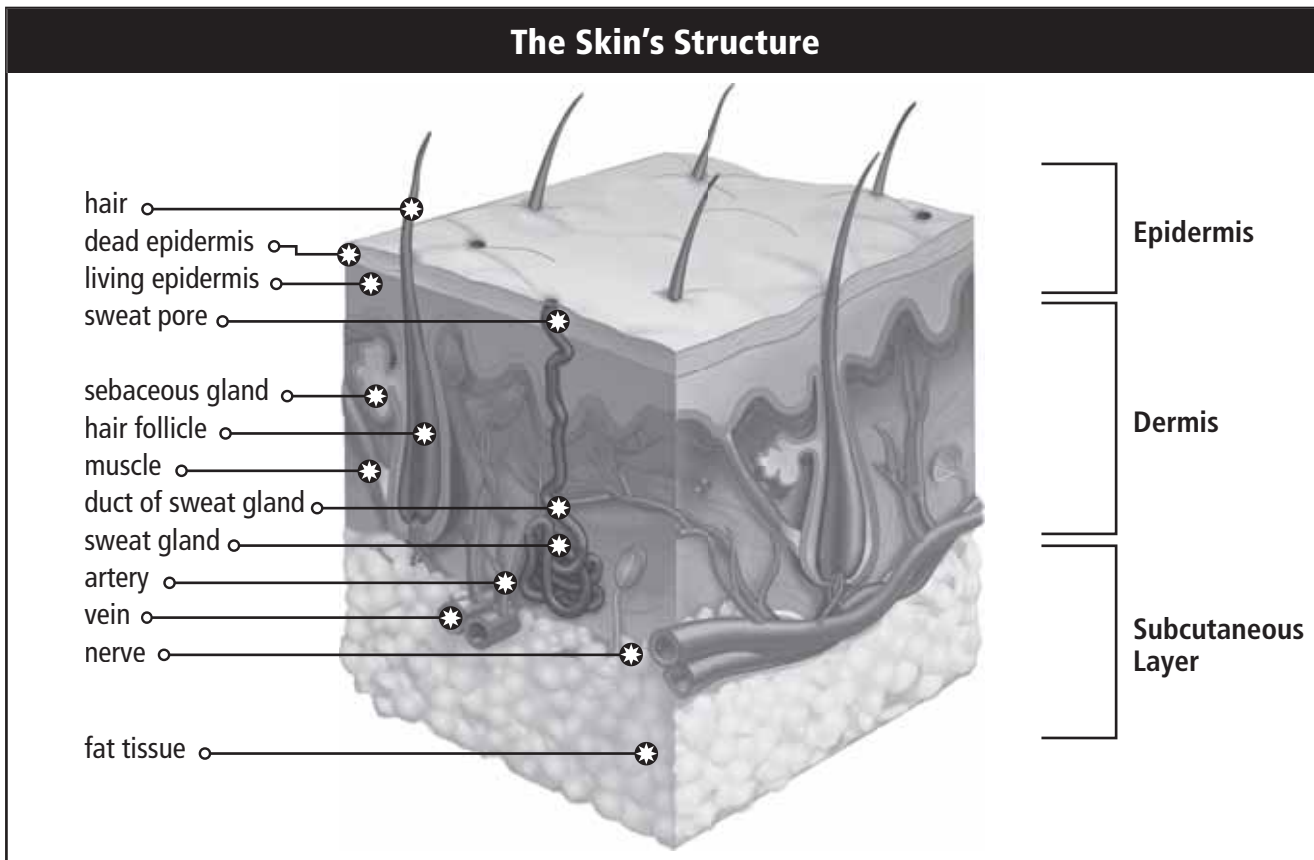
- 1. Analyze** How does sweating cool your body?

Picture This

- 2. Explain** In what layer of the skin are the hair follicles located?

- **Temperature control.** When your body temperature begins to rise, the blood vessels in the skin dilate, or widen. This allows heat to escape through the skin's surface. Sweat glands are structures within the dermis. Sweat glands cool the skin by releasing perspiration through ducts to pores on the skin's surface. If your body temperature begins to drop, the blood vessels in the skin constrict, or narrow. This reduces the amount of heat lost through the skin and helps maintain body heat.
- **Sensation.** Touch a hot stove, and your hand immediately pulls back. Why? The skin is a major sense organ. Nerve cells in the dermis are stimulated by changes in the outside environment. These receptors enable you to feel sensations such as pressure, pain, heat, and cold.

The dermis is a thick layer composed of connective tissue. This gives skin the ability to stretch. Sebaceous glands are also found in the dermis. **Sebaceous glands** are structures within the skin that produce an oily secretion called sebum. Sebum helps keep skin and hair from drying out. Blood vessels in the dermis supply cells with oxygenated blood and nutrients. The vessels also help remove wastes from body cells.



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Keeping Your Skin Healthy

Keeping your skin healthy should be an important part of your daily routine. To keep your skin healthy:

- Wash your face every morning and evening with mild soap and water.
- Wash your body daily to remove and slow the growth of bacteria that cause body odor.
- Avoid touching your face with your hands. This can introduce new bacteria to the skin's surface.
- Be careful to choose personal skin care products that do not irritate your skin.
- Follow a well-balanced eating plan that is rich in vitamins and minerals. Choose foods that are rich in vitamin A, such as milk, green and yellow vegetables, and liver.

How does UV radiation affect your skin?

A suntan is a sign that your skin has been damaged by UV rays. When skin is exposed to UV radiation, more melanin is produced. This is the skin's way of protecting itself from the UV rays. Prolonged exposure to UV rays can lead to skin cancer. To protect your skin from the sun's damaging rays:

- Always wear sunscreen on exposed areas of skin. Use an SPF of 15 or higher that blocks both UVB and UVA (the more penetrating) rays. Apply it 15 to 30 minutes before going outside, even on cloudy days.
- Wear protective clothing, including hats, long-sleeve shirts, and long pants. Wear sunglasses to protect your eyes from damaging UV rays.
- Avoid using tanning beds. Tanning beds are not safe, and prolonged exposure can lead to skin cancer. ✓

How can body piercing and tattooing affect your skin?

Both piercing and tattooing break the physical barrier of the skin. This can result in infection from bacteria. There is also a risk of exposure to blood-borne viruses such as hepatitis B, hepatitis C, and HIV. The American Dental Association warns that oral piercing can damage your mouth and teeth. Tattoos and piercings may also damage your social health by limiting job prospects and relationships.



Think it Over

- 3. Recall** Look back to Chapter 10, Lesson 2. What other foods are good sources of vitamin A?



READING CHECK

- 4. Explain** Why does your skin tan when it is exposed to the sun?

5. **Describe** How is the teen in the photo maintaining the health of his skin?



IT Stock Free/age fotostock

What are some common skin problems?

Many skin problems can affect your self image, but are not life threatening. Check with a health care professional before buying any skin care product to make sure it's right for you. Common skin problems include:

- **Acne.** This occurs when pores in the skin get clogged. Bacteria causes inflammation, and pus may form in the pore. To treat acne, wash your face gently twice a day and apply over-the-counter treatments. Avoid using oily products or too much makeup. Touching and picking at acne may cause scarring. If home treatment does not help, prescription medication may be required.
- **Warts.** These are caused by a virus and are most commonly found on the hands, feet, and face. They can spread through direct contact with another person's wart.
- **Dermatitis, or eczema.** This is an inflamed or scaly patch of skin. Dermatitis usually results from an allergic reaction. Moisturize the area to soothe the irritation. A doctor may prescribe medications to treat dermatitis.

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The ABCDs of Melanoma

Regularly checking the appearance of your moles is important for the early detection of melanoma.



A

Asymmetry

An imaginary line drawn through the center of the mole does not produce matching halves.



B

Border Irregularity

Noncancerous moles have smooth edges. Suspect moles often have irregular edges.



C

Color

Look for moles that are intensely black, possibly with a bluish tint, or that have an uneven color.



D

Diameter

Check for moles that are wider across than the width of a pea.

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- **Fungal infections.** Ringworm and athlete's foot are infections caused by fungus growing on the skin. Fungus can be spread by contact with skin, infected clothing, or in public showers. Keep the infected area clean and dry, and treat with over-the-counter medicines.
- **Boils.** These form when **hair follicles**—sacs or cavities that surround the roots of hairs—become infected. The tissue becomes inflamed, and pus forms. Bursting or squeezing a boil can spread the infection. A doctor can drain the pus and prescribe antibiotics.
- **Vitiligo.** Vitiligo (vih-tuh-LY-go) is a condition in which patches of skin have no pigment. These areas do not have melanin and are extremely prone to sunburn. Keep these areas of skin covered at all times.
- **Moles.** Though most moles are harmless, certain types may develop into melanoma. **Melanoma** is the most serious form of skin cancer. Early detection and treatment can stop the spread of this cancer. Use the ABCDs of melanoma to monitor the appearance of moles. Report any changes to a dermatologist. ✓

Picture This

- 6. Explain** What should you do if you notice a mole that has changed in appearance?



READING CHECK

- 7. Explain** Why should you avoid touching or picking at acne?



Think it Over

8. Explain How do you choose hair care products that are right for you?

Your Hair

Hair is made up of dead cells. Living cells in the epidermis make new hairs and cause hair growth. Hair helps protect the skin, especially the scalp, from UV radiation. The eyebrows and eyelashes protect the eyes from dust. Hair also reduces the amount of heat lost through the skin of the scalp.

Healthy hair begins with a well-balanced diet. Daily brushing helps to distribute the natural oils in your hair evenly. Regular shampooing will keep your hair healthy. It's best to limit the use of harsh chemical treatments such as dyes, bleach, or permanents. Also, avoid excessive use of heating irons or hot combs. Overexposure to these can cause hair to become dry and brittle.

What are some common hair problems?

Dandruff is the dead skin cells that are shed as sticky white flakes when the scalp becomes too dry. Treat dandruff with an over-the-counter shampoo. If itching or scaling persists, consult a health care professional.

Head lice are tiny parasitic insects that live in the scalp hair of humans. They feed on blood by biting the scalp. Lice are mainly transmitted by head-to-head contact or by using infected brushes, combs, or hats. A medicated shampoo can kill the organisms. To prevent the spread of head lice, wash sheets, pillowcases, combs, and hats with hot water and soap. Vacuum often to remove organisms from carpets.

Your Nails

Like your hair, your fingernails and toenails are made of closely packed dead cells that contain keratin. Cells under the root of the nail divide and multiply, causing the nail to grow. Nails protect and support the tissues of fingers and toes.

Keep nails clean and evenly trimmed to prevent split nails and hangnails. Use a nail file to shape and smooth nails, and keep cuticles pushed back. A break in the skin around the nail allows pathogens into the body. If an infection occurs, keep the area clean and apply an antibiotic ointment if necessary.

Trim toenails straight across and just slightly above the skin level. This will help you reduce the risk of infection and ingrown nails. Keeping nails short also reduces the risk of fungal infections under the nails. Fungal infections can be treated with antifungal medicines. ✓



READING CHECK

9. Describe What problems might develop if you do not properly care for your nails?

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