

Integumentary System



INTRODUCTION

The integumentary system consists of the skin, hair, nails, glands, and nerves. Its main function is to act as a barrier to protect the body from the outside world. It also functions to retain body fluids, protect against disease, eliminate waste products, and regulate body temperature. In order to do these things, the integumentary system works with all the other systems of your body, each of which has a role to play in maintaining the internal conditions that a human body needs to function properly.

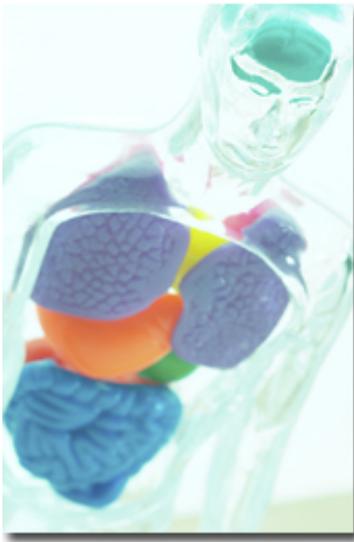
FUNCTIONS OF THE INTEGUMENTARY SYSTEM

The integumentary system has many functions, most of which are involved in protecting you and regulating your body's internal functions in a variety of ways:

- Protects the body's internal living tissues and organs
- Protects against invasion by infectious organisms
- Protects the body from dehydration
- Protects the body against abrupt changes in temperature
- Helps dispose of waste materials
- Acts as a receptor for touch, pressure, pain, heat, and cold
- Stores water and fat

HOW DOES THE INTEGUMENTARY SYSTEM WORK WITH OTHER SYSTEMS?

Your body is a complicated system that consists of many subsystems that help to keep it functioning properly. These subsystems serve a variety of purposes and require needed materials to function properly, as well as means of communicating information to other parts of the body. Thus, the skin and other parts of the integumentary system work with other systems in your body to maintain and support the conditions that your cells, tissues, and organs need to function properly.



The skin is one of the first defense mechanisms in your **immune system**. Tiny glands in the skin secrete oils that enhance the barrier function of the skin. Immune cells live in the skin and provide the first line of defense against infections.

By helping to synthesize and absorb vitamin D, the integumentary system works with **the digestive system** to encourage the uptake of calcium from our diet. This substance enters the bloodstream through the capillary networks in the skin. Healthy functioning of your skin also is related to the digestive system because the digestion and assimilation of dietary fats and oils are essential for the body to be able to make the protective oils for the skin and hair.

The integumentary system also works closely with the **circulatory system** and the surface capillaries through your body. Because certain substances can enter the bloodstream through the capillary networks in the skin, patches can be used to deliver medications in this manner for conditions ranging from heart problems (nitroglycerin) to smoking cessation (nicotine patches).

The skin also is important in helping to regulate your body temperature. If you are too hot or too cold, your brain sends nerve impulses to the skin, which has three ways to either increase or decrease heat loss from the body's surface: hairs on the skin trap more warmth if they are standing up, and less if they are lying flat; glands under the skin secrete sweat onto the surface of the skin in order to increase heat loss by evaporation if the body is too hot; capillaries near the surface can open when your body needs to cool off and close when you need to conserve heat.

Your skin plays a vital role in your body as regards the sense of touch. The **nervous system** depends on neurons embedded in your skin to sense the outside world. It processes input from your senses, including touch, and initiates actions based on those inputs. For example, when you stub your toe, nerve cells in the foot send signals up the leg, through the spinal cord, and up into the brain. The nerve cell connections in the brain sense these signals as pain.

As well as interacting with the body systems as explained above, the integumentary system also contributes to numerous physiological processes, especially those involved in the regulation of the body's internal environment so as to maintain a stable condition. An example is provided by the way that the skin helps in temperature regulation by changes in the pattern of blood supply to the skin and by sweating, as mentioned above.