

## UNIT 3 - CELLS, HISTOLOGY, INTEGUMENTARY SYSTEM

### ACTIVITY - What Is Covering You?

#### **Objective:**

The student will be able to describe the six functions of the skin.

#### **Materials:**

Paper  
Toothpicks  
Plastic gloves  
Paper cups  
Water  
Pepper  
Colored Pencils / markers  
Food coloring

#### **Introduction:**

The skin is an organ consisting of tissues structurally joined together to perform specific functions.

The six main functions are:

1. Protection: The skin covers the body and provides a physical barrier that protects underlying tissues from physical abrasion, bacterial invasion, dehydration and ultraviolet radiation.
2. Maintenance of body temperature: The production of perspiration by sweat glands help to lower body temperature back to normal.
3. Excretion: Not only does perspiration assume a role in helping to maintain normal body temperature, it also assists in excreting small amounts of water, salts and several organic compounds.
4. Perception of stimuli: (sensitivity) Skin contains numerous nerve endings and receptors that detect stimuli related to temperature, touch, pressure and pain.
5. Immunity: Certain cells of the epidermis are important components of the immunological system.
6. Synthesis of Vitamin D: The presence of ultraviolet radiation (sunlight), the skin synthesizes Vitamin D which is necessary for the absorption of calcium.

**Procedure:**

Before introducing the lesson, make sure the students have one of each of the following:

- paper cup
- toothpick
- plastic glove

Pour one half cup of water in each cup and sprinkle pepper in the water.

Use the following approach teach the six functions of the skin.

1. **Protection:** Have the students put on one glove and stick their fingers into the water with pepper. Have the students remove their fingers out of the water after a few seconds. Ask what happened? Have the students leave on their glove while you discuss what happened.
2. **Maintenance of body temperature:** By the time you finish discussing function one, the students hand with the glove should be warm and somewhat sweaty. Have the students take off the glove and wave that hand in the air. Now ask what do they feel? Discuss.
3. **Excretion:** Function two and three are somewhat alike. Include in your discussion that excretion is more than letting out a waste. Have the students express their opinion of excretion and then discuss the taste of perspiration.
4. **Perception of stimuli (sensitivity):** Have the students take the toothpick and gently rub it on their arm. Ask what they feel? Now, have the students pinch themselves (gently) and turn to the person next to them and touch them. Ask what do they feel? Discuss response. Include the idea that there are different sensors embedded within the skin.
5. **Immunity:** Certain cells of the epidermis are important components of the immunological system. Drop one drop of food coloring into the water. Note how the glove protects from bacterial invasion.
6. **Synthesis of Vitamin D:** In the presence of ultraviolet radiation (sunlight), the skin synthesizes Vitamin D which is necessary for the absorption of calcium. Discuss.

As independent practice have the students take a sheet of paper and fold it to make six squares. Then have students draw a picture representing each function.