

Highlight important  
vocabulary words.

## Science Shorts -7

### How Sweat Works

You are about to do something really big -- maybe -a job interview, a presentation, a first date or your wedding -- and you notice that your palms and underarms are sweating. Perhaps, you've just completed an aerobic workout and your whole body is drenched in sweat. How can such different activities have the same effect on your body? What is sweat and why do we make it?

Perspiration, or sweat, is your body's way of cooling itself, whether that extra heat comes from hardworking muscles or from over stimulated nerves. The average person has 2.6 million sweat glands in their skin! Sweat glands are distributed over the entire body. The sweat gland is in the layer of skin called the dermis along with other "equipment," such as nerve endings, hair follicles and so on.

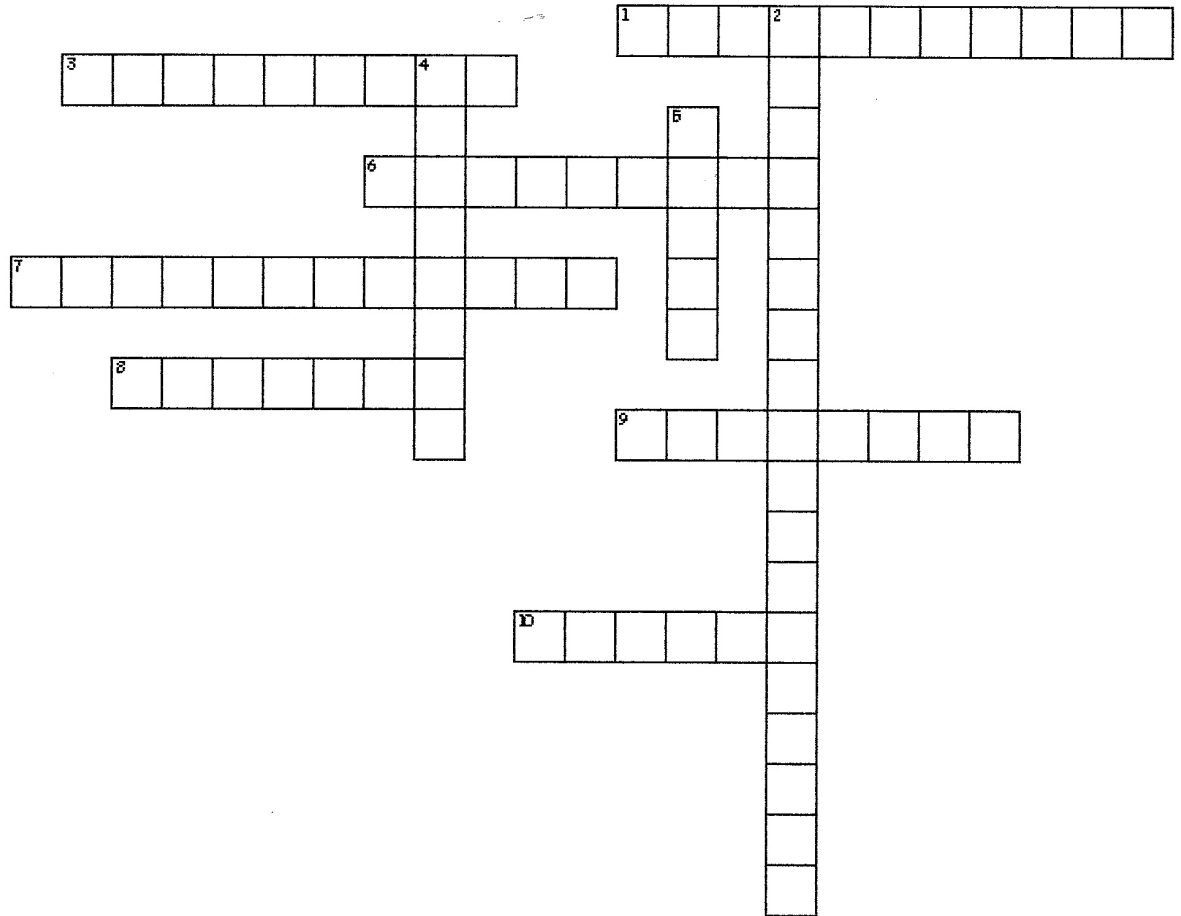
We are constantly sweating, even though we may not notice it. Sweating is your body's major way of getting rid of excess body heat, which is produced by metabolism or working muscles. The amount of sweat produced depends upon our states of emotion and physical activity. Sweat can be made in response to nerve stimulation, hot air temperature, and/or exercise.

When the sweat glands on your skin and palms are stimulated, the cells secrete a fluid that is similar to plasma -- that is, it is mostly water and it has high concentrations of sodium and chloride and a low concentration of potassium. The source of this fluid is the spaces between the cells (interstitial spaces), which get the fluid from the blood vessels (capillaries) in the dermis.

Sweat is produced under your arms in the same way. However, the sweat from this area contains proteins and fatty acids, which make it thicker and give it a milkier or yellowish color. This is why underarm stains in clothing appear yellowish. Sweat itself has no odor, but when bacteria on the skin and hair digest the proteins and fatty acids, they excrete an unpleasant odor. This is why deodorants and anti-perspirants are applied to the underarms instead of the whole body.

When the water in the sweat evaporates, it leaves the salts (sodium, chloride and potassium) behind on your skin, which is why your skin tastes salty. The loss of excessive amounts of salt and water from your body can quickly dehydrate you, which can lead to circulatory problems, kidney failure and heat stroke. So, it is important to drink plenty of fluids when you exercise or are outside in high temperatures. Sports drinks contain some salts to replace those lost in the sweat.

# How Sweat Works



**Across**

1. Blood vessels in the dermis
3. Color of underarm sweat stains
6. Loss of excessive amounts of salt and water
7. Another name for sweat
8. The number of sweat glands in the skin 2.6 \_\_\_\_\_
9. Produces unpleasant odor
10. The layer of skin where sweat glands are located

**Down**

2. Area between cells
4. The body's major way of getting rid of excess heat
5. Left on your skin when sweat evaporates