

## PART 4

# Our Body: The Universe Within

at the Puyallup Fair

### SYSTEMS OF THE BODY

Your body is made of systems that all work to keep you going strong. Learn about the digestive, circulatory and musculoskeletal systems today and explore other systems of your body during your visit to the fee-based exhibit *Our Body: The Universe Within* at the Puyallup Fair.

### DIGESTIVE SYSTEM

The digestive system processes food and breaks it down into usable proteins, fats, minerals, carbohydrates and other substances. The digestion process begins in your mouth when salivary glands produce saliva, secretions that mix with food and break it down. The food then goes down your esophagus in peristaltic waves, or waves of muscular contractions, to the stomach. The stomach contains chemicals like hydrochloric acid and enzymes. The stomach gradually releases materials into the small intestine, where digestion is further completed. All the nutrients are absorbed into the bloodstream, leaving the rest as unusable residue which passes through the large intestine to the rectum.

The digestive system is composed of the stomach, small and large intestines, liver and pancreas.

#### Fun Facts:

1. About 2/3 of the body is water.
2. Scientists estimate that almost 400,000 cases of cancer in the U.S. could be prevented solely through changes in the diet.
3. The liver is the largest gland and the second-largest organ in the human body.
4. Digestion begins when you chew your food.

### CIRCULATORY SYSTEM

The circulatory system has three distinct parts: pulmonary circulation (lungs), coronary circulation (heart), and systemic circulation (veins and arteries). Each of these parts must be working independently in order for them all to work together. On average, your body has approximately five quarts of blood continually traveling through it by way of the circulatory system. Your heart pumps to keep the blood moving on its journey throughout your body.

The cardiovascular system demonstrates how blood flows through the body from the heart and from the organs back to the heart. The arteries are depicted in red and the veins are in blue.

#### Fun Facts:

1. The adult human body contains 5-6 quarts of blood, while an infant has about 1 quart of blood.
2. Capillaries are so small that red blood cells can only travel through them in single file.
3. The human heart beats about 40 million times a year.
4. The aorta is the largest artery in the human body. Its diameter is about the same as a garden hose.
5. The heart circulates the body's blood more than 1,000 times a day.

### MUSCULOSKELETAL SYSTEM

#### Muscular System

The human body contains more than 650 individual muscles attached to the skeleton, which provide the pulling power for us to actually move. The muscular system consists of three different types of muscle tissues: skeletal, cardiac and smooth. Each of these different tissues has the ability to contract, which allows for body movements and functions. There are two types of muscles in the system: involuntary, which we cannot control, and voluntary, which we can control.

#### Skeletal System

The skeletal system works with the muscular system. The skeletal system includes all your bones, ligaments and tendons. It determines the shape and symmetry of the body, protects your organs, and acts as a firm base for the attachments of all your muscles. The skeletons of men and women are similar; however, the female skeleton is a bit lighter and smaller and has a wider pelvis for birthing.

This exhibit uses a body in simulated motion to demonstrate how various muscle groups work together to keep a body in motion.

#### Fun Facts:

1. Over half of the bones in your body are located in your hands and feet.
2. The only jointless bone in the human body is the hyoid bone in the throat.
3. At birth, humans have 300 bones. As a baby grows, some of the smaller bones fuse together until there are only 290.
4. Muscles can move in only one direction. To compensate, the human body has complementary or muscle groups opposite each other. For example, the bicep and tricep in the arm.

For more activities, access the curricula guide online at [seattletimes.com/NIE](http://seattletimes.com/NIE). Not an NIE educator? Register with us today for free access to educational resources.

Gate admission is free for students! The Puyallup Fair offers free tickets to most schools in western Washington, so if you're a student just ask your teachers or principal for your ticket. Last year, schools in the Puget Sound region received a total of 750,147 free passes to the Puyallup Fair.

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