

## Bodyworks: Introduction to Internal Human Anatomy

### DESCRIPTION

What does a real heart look like? And how does it team up with our brain, muscles, bones and lungs? This program uses preserved specimens and anatomical models to teach students about the organization of the human body, and the structures and functions of several major organ systems and how they interact to keep the whole human organism alive.

### IF YOU ARE VISITING THE MUSEUM...

This program is tailored to be a hybrid program. Some of the program will be spent in our classrooms where we will learn about some of the below body systems and the rest of the time will be spent in our "What is Health?" gallery. The major body systems we will cover are the muscular, nervous, and respiratory systems.

### OBJECTIVES

Students will:

- List the hierarchy of organism organization: cells, tissues, organs and organ systems.
- Describe how the body uses oxygen and nutrients to make energy at the cellular level.
- Discuss major structures and functions of the muscular, nervous, and respiratory systems in the human body.
- Explore the human health gallery.

## OHIO'S LEARNING STANDARDS

### 6<sup>th</sup> Grade

Science: Life Science – Cellular to Multicellular

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| <b>6.LS.1</b> | Cells are the fundamental unit of life.  |
| <b>6.LS.3</b> | Cells carry on specific functions that sustain life.   |
| <b>6.LS.4</b> | Living systems at all levels of organization demonstrate the complementary nature of structure and function. |

## BEFORE YOUR PROGRAM

### IF YOU ARE VISITING THE MUSEUM...

- Please arrive 15-10 minutes before the program starts.
- Make sure children have the expectation of keeping their hands to themselves, having indoor voices, and having walking feet.
- Use the vocabulary and additional resources provided in this Teacher Guide to preview or review program content with your class.

### IF WE ARE VISITING YOU...

- Please have student desks clear before the program begins.
- Please have a place for the museum educator to set their laptop up for PowerPoint slides. A classroom projector may be used, or a blank wall space or white board may be provided for the educator to project onto using the Museum projector.
- Please provide two tables for the museum educator to set up display items.
- Use the vocabulary and additional resources provided in this Teacher Guide to preview or review program content with your class.
- If booking multiple programs in a row, transitions will be easier if museum staff sets up in only one location.

### IF YOU ARE JOINING VIRTUALLY...

- If your students are joining us from your classroom computer, please arrange your room and projection screen so everyone can see us clearly.
- Please test your visual and audio connections prior to the day of the program. If you would like us to facilitate a test connection with you, we are happy to do so.
- If you and your students are joining us from your homes, we will have an educator monitoring the Chat feature for questions. We request that you or another staff person serve as a Co-Host to help monitor students for any inappropriate Chat or camera behavior.
- If you will have a hybrid class (some at school, some joining from home), our educator will monitor the Chat and camera behavior, and we reserve the right to temporarily move any disruptive students to our Waiting Room so we or school staff can correct the undesired behavior.
- If you prefer, we can turn off all cameras and interact solely via the Chat feature.

## VOCABULARY

**alveoli** – tiny, thin-walled sacs of the lungs where oxygen and carbon dioxide are exchanged.

**artery** – blood vessel that carries oxygenated blood away from the heart. The tissue of an artery is tough and elastic to handle high blood pressure from the ventricles of the heart.

**anatomy** – The structure of an organism or the science of the structure of animals or plants.

**bone marrow** – the living core of a bone, where bone cells exist and new blood cells are created.

**cell** – a microscopic living unit of protoplasm. Sometimes called a “building block” of living multicellular plants and animals; a bacteria is a single-cell organism.

**diaphragm** – a muscle between the chest and abdomen that moves up and down to push air in and out of the lungs.

**involuntary muscle** – muscles that work automatically, with no conscious control from the organism.

**neuron** – a nerve cell.

**nutrients** – materials that provide living organisms with substances they require for life and growth.

**organ** – in animals and plants, a part that is adapted to perform a specific function.

**organism** – any living thing.

**organ system** – several organs within an organism which must operate together to provide a specific function for life.

**physiology** – the science dealing with the functions and processes of living organisms.

**tissue** – the substance of a living organism that is made of cells. A doctor might take a “tissue sample” of an organ that they suspect is diseased in order to look at its cells under a microscope.

**vein** – blood vessel that carries deoxygenated blood towards the heart. Vein tissue is thinner than arterial, because of the lower blood pressure inside them.

**voluntary muscle** – muscles over which the brain has conscious control.



## EXTENSION ACTIVITIES

### **Calculate Your Heart Rate**

1. Sit quietly in a chair.
2. Feel for your pulse. Take the first two fingers of your right hand and place them on the inside of your left wrist, at the base of the thumb just where the hand and wrist meet. Press gently. What do you feel? You can also try placing the same fingers on the side of your throat, just below the jawbone.
3. For 15 seconds, count how many times you feel your heartbeat. (You may need a friend to keep time while you count). Multiply that number by 4 to calculate your heart rate (beats per minute).

### **Observe a Partner's Pupils**

1. Have students in groups of two.
2. Have the students look and face each other and stare at their partner's eyes, specifically their pupils.
3. As the teacher, turn off the classroom lights for 20 seconds. Have the students keep staring at each other's eyes.
4. After 20 seconds, while the students are still staring at their partners, turn the lights back on. What do they notice? Did any changes occur in their eyes?

