

**Overview:**

The major physiological systems of mammals and the organs that make up those systems are reviewed.

**Objectives:**

The student will:

- state the functions of the major systems;
- list primary organs of major systems; and
- explain the functions of the organs.

**Targeted Alaska Grade Level Expectations:****Science**

- [9] SA1.1 The student demonstrates an understanding of the processes of science by asking questions, predicting, observing, describing, measuring, classifying, making generalizations, inferring, and communicating\*
- [10] SA1.1 The student demonstrates an understanding of the processes of science by asking questions, predicting, observing, describing, measuring, classifying, making generalizations, analyzing data, developing models, inferring, and communicating
- [9] SC2.3 The student demonstrates an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms by stating the function of major physiological systems (i.e., circulatory, excretory, digestive, respiratory, reproductive, nervous, immune, endocrine, musculoskeletal, and integumentary).
- [10] SC2.3 The student demonstrates an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms by explaining the functions of organs of major systems (i.e., respiratory, digestive, circulatory, reproductive, nervous, musculoskeletal, and excretory)

**Whole Picture:**

A group of cells that are similar in structure and function are called tissues. A group of two or more tissues working together to perform a specific function are arranged into organs. Two or more organs working together make up an organ system. Systems working together make up an organism. Generally there are considered to be 10- 12 major systems and upwards of 70 or more organs in a mammal. The exact number of systems, and organs will vary depending on the source of information.

This lesson is serves as a general review of systems and the organs associated with those systems. A more complete study of each system and associated organs and tissues would follow in subsequent lessons.

**Materials:**

- National Geographic - Inside the Living Body (2002)
- 8 ½" x 11" paper
- Felt Pen
- Tape
- "National Geographic - Inside the Living Body" DVD (2002)
- STUDENT WORKSHEET: "All Systems Go"

**Activity Preparation:**

Write the names of the systems and organs on 8½ x 11 paper. There should be one word per sheet of paper.

**Activity Procedure:**

1. Introduce systems and organs with a whole class activity. Tell students they will have the name of a system, or organ taped to their back. They will stand and ask other students questions to help them figure out what

system, or organ, they have taped to them. They can only ask other students two “yes” or “no” questions. After asking the two questions the other student can also ask two questions. They should continue asking 4 other students, so each student can ask 10 questions of five students. Without letting the students see the words on the paper, tape the paper with the name of a system, or organ, to each student’s backs and let them begin. When they are finished they should return to their seats.

2. Go around the room and ask each student what word they have and what questions and answers led them to that decision. After everyone is finished have students remove the paper to see if they were correct.

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**NOTE:** Depending on the number of students in each class the names used for the activity can be systems only, organs only, or a combination of systems and organs.

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3. After the introductory activity show students the DVD “Inside the Living Body” for an overview of the human body. Discuss the DVD afterwards.
4. Have students complete the STUDENT WORKSHEET: “All Systems Go” describing the major function of each system, listing the major organs of the systems, and explaining the functions of each of the organs. They can use information from the DVD, Internet, and/or printed materials. Remind students that they should include only the primary organs for the systems. For example, the major components of the circulatory system are the heart, blood vessels and blood. Blood and blood vessels are not considered to be organs.

**Answers:**

<b>System</b>	<b>Function</b>	<b>Major Organs</b>	<b>Function</b>
Circulatory	Transport of nutrients, gases, hormones and wastes through the body.	1. Heart	1. Pump that moves blood through blood vessels to the rest of the body.
Excretory	Removal of cellular wastes, toxins and excess water or nutrients from the circulatory system.	1. Kidneys 2. Bladder	1. Removes wastes from blood. 2. Stores urine.
Digestive	Breakdown of food and absorption of nutrients that are necessary for growth and maintenance.	1. Stomach, 2. Small intestines 3. Large intestines.	1. Sac that stores and prepares food for absorption through digestion. 2. Long tube that digests food absorbs nutrients. 3. Absorbs water from undigested food
Respiratory	Gas exchange between the blood and the environment. Uptake of oxygen and disposal of carbon dioxide from the body.	1. Lungs	Organ where gas exchange occurs.
Reproductive	Manufacture cells that allow reproduction. In the male, sperm are created. Egg cells are produced in the female.	1. Female: ovaries 2. Male: testes,	1. Egg production 2. Sperm production
Nervous	Relay electrical signals to coordinate body movement.	1. Brain 2. Spinal cord	1. Control center of the nervous system 2. Nerve cord that carries messages from the brain to other parts of the body.
Musculoskeletal	Skeletal: Support for the body and protection of internal organs. Muscular system provides movement.	1. Bones 2. Muscles	1. Produce blood cells, support and stores minerals. 2. Smooth and striated muscle are considered a tissue by most sources. The heart is the exception. It is made up of cardiac muscle, and it is an organ.

## ALL SYSTEMS GO

## INSTRUCTIONS

Immune	Responsible for body defenses in fighting infections.	1. Lymph nodes	Produce immune cells (B and T) to fight disease
Endocrine	Relays chemical messages through the body to coordinate body activities such as digestion, growth, etc.	1. Endocrine glands	Regulates chemical activity in the body.
Integumentary	Protection against injury, infection and drying out. It aids in regulating temperature, and is the location for sensory receptors.	1. Skin	Protection, temperature control, removes wastes.

NAME: \_\_\_\_\_

**ALL SYSTEMS GO**

<b>System</b>	<b>Function</b>	<b>Major Organ(s)</b>	<b>Function</b>
Circulatory			
Excretory			
Digestive			
Respiratory			
Reproductive			
Nervous			
Musculoskeletal			
Immune			
Endocrine			
Integumentary			