



General Cadaver Demonstration High School

This guide is for high school students participating in the AIMS General Cadaver Demonstration. Programs will be presented by an AIMS Anatomy Specialist. During this activity, students will be exposed to the physiology and anatomic relationships of the major organ systems of the body and how those organs can relate to various human diseases. Students will become more familiar with the anatomical structures of the human body by observing, studying and examining human specimens. Included in this guide, you will find additional resources such as important terminology and pre/post tests for your students.

National Science Education (NSES) Content Standards

Content Standard K-12	Unifying Concepts and Processes: systems order and organization; evidence, models and explanation; form and function
Content Standard A	Science as Inquiry
Content Standard C	Life Science: matter, energy and organization of living systems
Content Standard F	Science in Personal Health and Social Perspectives: personal and community health

Show Me Standards (Science and Health/Physical Education)

Science 1	Properties and principles of matter and energy
Science 3	Characteristics and interactions of living organisms
Health/Physical Education 1	Structures of, functions of and relationships among human body systems
Health/Physical Education 2	Principles and practices of physical and mental health
Health/Physical Education 3	Diseases and methods for prevention, treatment and control
Health/Physical Education 4	Principles of movement and physical fitness
Health/Physical Education 5	Methods used to assess health, reduce risk factors, avoid high-risk behaviors
Health/Physical Education 6	Consumer health issues

Missouri Learning Standards

Life Sciences (9-12.LS1.A.2)	Interacting systems that provide specific functions within multicellular organisms
------------------------------	------------------------------------------------------------------------------------

Lesson Objectives:

Students will participate in the use of a cadaver as a learning tool for health science education.
Students will increase their understanding of the structures, functions and relationships among major organs and body systems.

Students will increase their foundational knowledge of the human body as it relates to disease prevention, treatment and overall health and wellness.

Students will increase their understanding of the disease process and how nutrition, exercise and proper health habits can prevent and/or impact such outcomes.

Students will increase their participation in their own health management by asking questions, seeking out information and/or taking initiative.

Prerequisite Knowledge:

Students should be familiar with terms relating to the major organs and systems.

Materials:

Review of Terminology/Vocabulary Reference Guide

Pre/Post Test

General Cadaver Demonstration Terminology/Vocabulary Reference Guide

Abdominal wall muscles	Rectus abdominis, external obliques, internal obliques, transverse abdominis
Alveoli	One of the microscopic air sacs of the lungs
Aortic arch	Curved portion between the ascending and descending portion of the aorta
Anus	The exit point of the alimentary canal
Appendix	Worm-shaped process projecting from the blind end of cecum
Arteries	Blood vessels that conduct blood away from the heart and into the circulation
Atherosclerosis	Changes in the walls of large arteries consisting of lipid deposits on the artery walls. Early stages of arteriosclerosis.
Bile	Greenish-yellow or brownish fluid produced in and secreted by the liver, stored in gallbladder and released into the small intestines
Bladder	Smooth, collapsible muscular sac that stores urine temporarily
Brainstem	The portion of the brain, consisting of the medulla oblongata, pons Varolii and midbrain, that connects the spinal cord to the forebrain and cerebrum
Bronchioles	Branching air passages inside the lungs
Bronchus	One of the two large branches of the trachea that leads to the lungs
Carina	A ridge at the base of the trachea that separates the openings of the right and left main bronchi
Carotid arteries	A pair of major blood vessels that supply oxygen-rich blood from the heart to the brain and face
Cerebellum	The tri-lobed structure of the brain, lying posterior to the pons and medulla oblongata and inferior to the occipital lobes of the cerebral hemispheres. It is responsible for the regulation and coordination of complex voluntary muscular movement as well as the maintenance of posture and balance. The second largest part of the brain.
Cerebrum	The large rounded structure of the brain that occupies most of the cranial cavity, divided into two cerebral hemispheres that are joined at the bottom by the corpus callosum. It controls and integrates motor, sensory and higher mental functions such as thought, reasoning, emotion and memory.

General Cadaver Demonstration
Terminology/Vocabulary Reference Guide (Continued)

Coronary arteries	The two arteries that branch from the base of the aorta and supply the heart muscle with oxygenated blood
Diabetes	Disease caused by deficient insulin release, leading to the inability of body cells to use carbohydrates
Diaphragm	Thin muscle below the lungs and heart that forms a muscular partition between the thoracic and abdominal cavities. It is the most important muscle of inspiration.
Digestion	Chemical breakdown of foods into simpler substances
Duodenum	First part of the small intestine
Dura Mater	The tough fibrous membrane covering the brain and the spinal cord and lining the inner surface of the skull. It is the outermost of the three meninges that surround the brain and spinal cord.
Enzymes	Members of the class of proteins that aid in the breakdown of foods
Esophagus	Muscular tube extending from the laryngopharynx through the diaphragm to join the stomach
Fallopian (Uterine) Tubes	Tubes through which the ovum is transported to the uterus
Femur	Large bone in the thigh between pelvis and knee
Fibula	Smaller bone between knee and foot; supports 1/6 of your body weight.
Gallbladder	Sac beneath right lobe of liver used for bile storage
Humerus	Bone of the upper part of the arm
Ileum	Terminal part of the small intestine, between the jejunum and cecum
Inferior vena cava	Major vessel that returns oxygen-depleted blood to the right atrium of the heart from body regions inferior to the diaphragm
Insulin	Hormone that enhances the carrier-mediated diffusion of glucose into tissue cells, thus lowering blood glucose levels
Jejunum	Middle part of the small intestine between the duodenum and the ileum
Kidneys	Pair of organs located in the right and left side of the abdomen which clear poisons from the blood, regulate acid concentration and maintain water balance in the body by excreting urine

General Cadaver Demonstration
Terminology/Vocabulary Reference Guide (Continued)

Left atrium	Chamber on the left side of the heart that receives oxygenated blood from the pulmonary veins
Left ventricle	Inferiorly-located chamber on the left side of the heart that receives oxygenated blood from the left atrium and pumps it into the systemic circulation via the aorta
Liver	Lobed accessory organ that overlies the stomach. Produces bile to help digest fat and serves other metabolic and regulatory functions.
Meninges	Three layers of tissue that cover and protect the brain and spinal cord
Myocardial Infarction (MI)/Heart Attack	Damage that occurs to the heart when one of the coronary arteries is occluded
Ovaries	Female sex organ in which ova (egg) are produced
Pancreas	Gland located behind the stomach, between the spleen and duodenum. Produces both endocrine and exocrine secretions.
Pericardium	Double-layered membrane or serosa that surrounds the heart and roots of the great vessels
Phrenic nerve	A vital and only nerve that controls the diaphragm, the primary muscle used for breathing
Pulmonary trunk	Vessel that leaves the right ventricle and routes blood to the lungs where gas exchange occurs
Radius	One of two bones that constitute the forearm. It articulates with the humerus at the elbow.
Rectum	Muscular tube at the end of the large intestine
Right atrium	Chamber on the right side of the heart that receives oxygen-depleted blood returning to the heart from the superior vena cava, the inferior vena cava and coronary sinus
Right ventricle	Inferiorly-located chamber on the right side of the heart that receives oxygen-depleted blood from the right atrium and pumps it to the lung
Sciatic nerve	Nerve which originates in the lumbar and sacral spinal cord and supplies motor and sensory innervation to the lower extremities. Largest nerve in the body and has two branches, the tibial nerve and peroneal nerve.

General Cadaver Demonstration
Terminology/Vocabulary Reference Guide (Continued)

Small intestine	The long tube-like section of the digestive tract where most food digestion and absorption occur
Spleen	Largest lymphoid organ. Provides for lymphocyte proliferation, immune surveillance and response and blood-cleansing functions.
Sternum	A long flat bone in the central part of the chest that connects to the ribs via cartilage and forms the front of the rib cage. Helps to protect the heart, lungs and major blood vessels.
Stomach	J-shaped muscular organ that stores and helps digest food
Superior vena cava	Major vessel that returns oxygen-depleted blood to the right atrium of the heart from body regions superior to the diaphragm
Tibia	Large bone between knee and foot; supports 5/6 of your body weight
Tibialis anterior	Superficial muscle of anterior leg. Laterally parallels the sharp anterior margin of the tibia. Prime mover of dorsiflexion.
Trachea	Fibrocartilaginous tube, lined with mucous membrane, passing from the larynx to the bronchi
Ulna	One of the bones that comprise the forearm; situated next to the radius
Uterus	Hollow, thick-walled organ that receives, retains and nourishes fertilized egg; site where embryo/fetus develops
Veins	Blood vessels that return blood toward the heart from the circulation
Vertebral arteries	A pair of blood vessels that supply blood to the brain and spine

**General Cadaver Demonstration
Pre/Post Test**

1. The diaphragm serves as the most important muscle of inspiration. It is powered by what important nerve? _____
2. Name the 4 abdominal wall muscles:
 - _____
 - _____
 - _____
 - _____
3. Name 3 functions of the spleen:
 - _____
 - _____
 - _____
4. The base of the trachea where it branches off to the right and left lungs is known as the _____.
5. The first and shortest part of the small intestine is the _____. This is where most _____ occurs.
6. Oxygen-rich blood is carried into the brain by two pairs of arteries. These arteries are known as:
 - _____
 - _____
7. _____ is a collection of lipid fats and proteins that sheath/cover the long extensions of neurons called axons. This substance is produced in the CNS by these types of cells.
8. This muscular tube passes through the thoracic cavity just behind the trachea _____.
9. Name the four key functions of the liver:
 - _____
 - _____
 - _____
 - _____
10. This is a rapidly developing loss of brain functions due to a disruption of the supply of blood to the brain _____.
11. These lung structures are spherical in shape and are the primary sites of gas exchange with the blood _____.
12. What does the pancreas produce that neutralizes acids and protects the intestines from digesting itself _____?

Bonus: Are you interested in a career in medicine, science or healthcare?

**General Cadaver Demonstration
Pre/Post Test Answers**

1. phrenic nerve
2. 4 abdominal wall muscles:
 - Rectus abdominis
 - External obliques
 - Internal obliques
 - Transverse abdominis
3. 3 functions of the spleen:
 - Helps detect pathogens/immune response
 - Recognizes and destroys old and damaged platelets and red blood cells (takes out of circulation)
 - Stores blood cells and platelets, serves as a reservoir for blood
4. carina
5. duodenum; digestion
6. carotid arteries; vertebral arteries
7. myelin
8. esophagus
9. 4 key functions of the liver:
 - Produce bile
 - Convert glucose to glycogen for storage
 - Produce cholesterol
 - Clears blood of drugs and other toxins
10. stroke or cerebrovascular accident (CVA)
11. alveoli
12. sodium bicarbonate