uBEATS Teacher's Guide:

Medical Terminology Module #3

Organization of the Body

This teacher guide is a supplementary text to support the use of the uBEATS Medical Terminology Module #3 – Organization of the Body for grades 6-12.

To help students develop the knowledge necessary for an incredible future in health care, we created UNMC Building Excellence in Academics Through STEM (uBEATS), an online health science resource for students.

UNMC uBEATS modules are short (15 minutes or less), interactive online health science modules to support curriculum taught in grades 6 – 12. These do not replace curriculum but provide support for teachers and students incorporating evidence-based information and UNMC expert guided material. Each module is chunked into sections with formative and summative assessments with immediate feedback provided.

Tips on how to utilize uBEATS modules:

- **Internet access is required to view uBEATS modules.**
    - For those who have access to one-to-one technology, modules can be used in or outside of the classroom as a topic introduction, extension, or review. For classrooms without individual student devices, modules can be used in whole group instruction. Formative assessment questions can use the teacher's preferred call-and-response method and summative assessment questions can be displayed on the board and answered individually by students or printed and distributed to students after viewing the module.

Objectives

1. List the levels of organization within the body.
2. Name the body systems.
3. State each system's structures and functions.
4. Identify the body cavities and specific organs within them.

Introduction

Your body is made of different body systems. Each of those systems is a group of organs working together to provide a specific function. Those organs do their jobs because they are composed of unique collections of cells that form tissue that is appropriate for each organ. This module will help you learn medical terms used to describe the organization of your body.

Prior Knowledge

Before beginning this module, the teacher should understand the Next Generation Science Standards (NGSS) featuring Three-Dimensional Learning.

Disciplinary Core Ideas

LS1. A. Structure and Function NGSS. A central feature of life is that organisms grow, reproduce, and die. They have characteristic structures (anatomy and morphology), functions (molecular-scale processes to organism-level physiology), and behaviors (neurobiology and, for some animal species, psychology). Organisms and their parts are made of cells, which are the structural units of life and which themselves have molecular substructures that support their functioning. Organisms range in composition from a single cell (unicellular microorganisms) to multicellular organisms, in which different groups of large numbers of cells work together to form systems of tissues and organs (e.g., circulatory, respiratory, nervous, musculoskeletal), that are specialized for particular functions.

National Academies of Sciences, Engineering, and Medicine. 2012. A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas. Washington, DC: The National Academies Press. https://doi.org/10.17226/13165.

Science and Engineering Practices NGSS

2. Developing and using models

8. Obtaining, evaluating, and communicating information

Crosscutting Concepts NGSS

4. Systems and system models

6. Structure and function

Key Terms/Vocabulary

Levels of organization, atom, molecule, macromolecule, organelle, cell, tissue, organ, organ system, organism, body systems, integumentary, nervous, muscular, respiratory, digestive, urinary, cardiovascular, skeletal, endocrine, lymphatic, female reproductive, male reproductive, body cavities, cranial cavity, vertebral canal, cerebrospinal fluid, thoracic cavity, abdominopelvic cavity, abdominal cavity, pelvic cavity.

Standards

Nebraska's College and Career Ready Standards for Science 2024 **Nebraska Science Standards**

- SC.HS.6.1 Structure and function
    - Gather, analyze, and communicate evidence of the relationship between structure and function in living things.

National Consortium for Health Science Education **NCHSE**

- Foundation Standard 1: Academic Foundation
    - 1.1.1.a. Identify levels of organization of the human body.
    - 1.1.1.e. Identify body cavities.
    - 1.1.2. Identify basic structures and describe functions of human body systems.

Extensions of the lesson

To help students become more familiar with the Key Terms of this module, the teacher can use the vocabulary list for a classroom Word Wall or integrate the vocabulary into review sessions.

As student misconceptions become apparent, the teacher may need to reinforce these concepts:

- The human body is organized in a systematic way. Organelles are "tiny organs" with special functions within the cells. Cells are assembled into specialized tissues, which combine with other tissues to form self-contained groups of tissues called organs. Groups of organs that work together to carry out a certain function are called organ systems. These various systems function together as a whole, completing one individual organism.

- The cranial cavity, which holds the brain, is continuous with the vertebral canal, which contains the spinal cord. For this reason, the same cerebrospinal fluid (CSF) circulates within both cavities.
- The thoracic cavity is a space in the chest that is divided into three compartments: the right pleural cavity (containing the right lung), the mediastinum (containing the heart), and the left pleural cavity (containing the left lung).
- The abdominopelvic cavity is one continuous structure composed of two functional cavities: the abdominal cavity and pelvic cavity.

Enrichment

- Search online for “classroom activities for organization of the body.”

- For a quick review of the organization of life, see the 5-minute video Making sense of how life fits together.

- The Amoeba Sisters present an 8-minute animation to introduce the Human Body Systems.

- The Human Body Explained video series offers a 4-minute presentation on Body Cavities—Drawn & Defined.