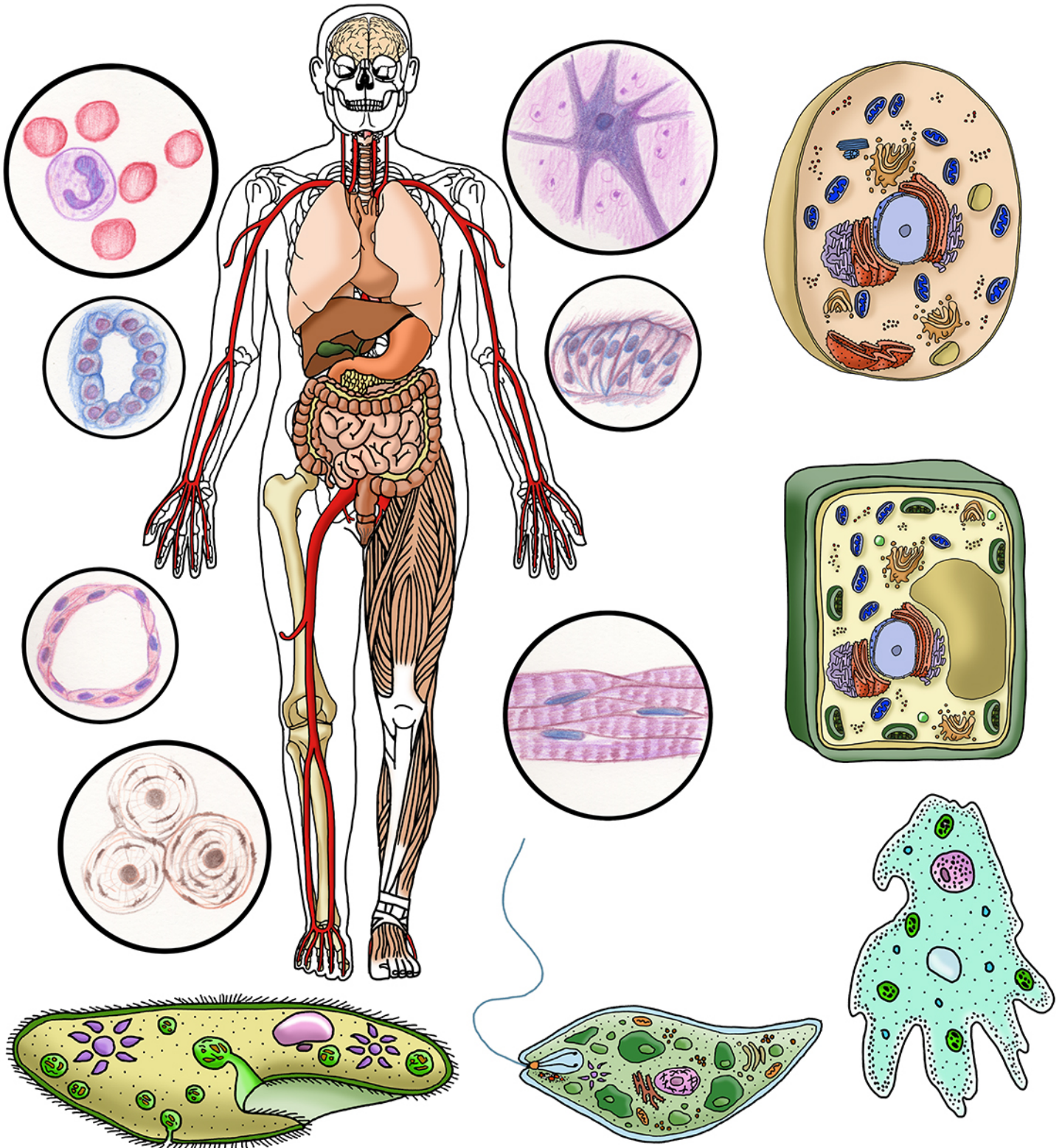


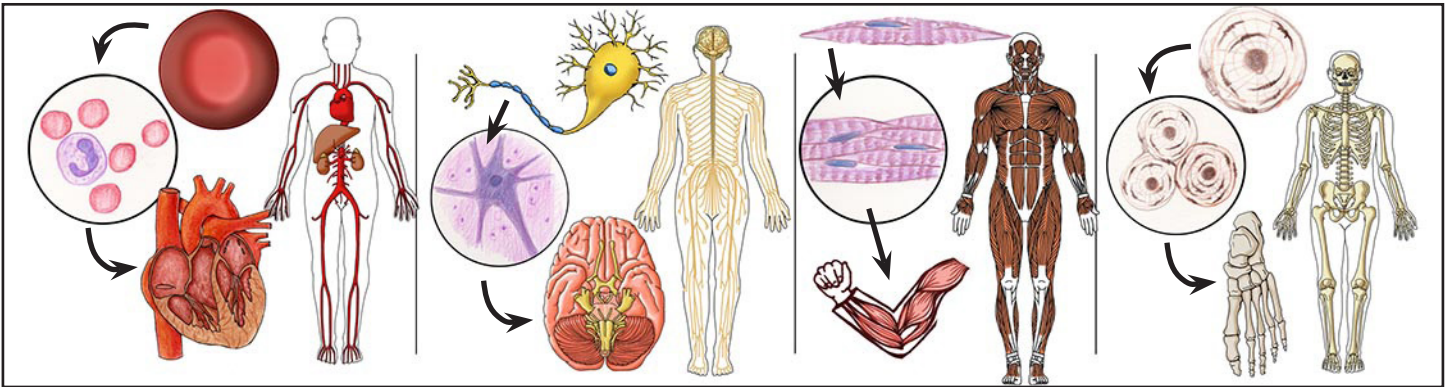
3 Disciplinary Core Ideas (DCI) for Structure and Function - CELLS



LS1.A: Structure and Function - Cells

3 Disciplinary Core Ideas for Grade 6-8

From: Energy • From Molecules to Organisms: Structures and Processes



This bundle includes 26 resources, including: Reading, Color Diagrams, Activities, Performance Tasks and Assessment (51 pages total). Copyright © 2020 Sheri Amsel • www.exploringnature.org. All rights reserved by author. Permission to copy for classroom use only. Electronic distribution limited to classroom use only.

Resources included in this Bundle:

- Next Generation Science Standards covered in the following pages of this Bundle (including 2 DCI).
- Rubric Building Resource for 2 of the DCI of this standard (2 pages)
- 1) Structure and Function - Cells - Reading (1 page)
- 2) Structure and Function - Cells - Short Answer Quiz with Answer Key (2 pages)
- 3) Animal Cell - Color Mini-Poster (1 page)
- 4) Color Code the Organelles of the Animal Cell (1 page)
- 5) Plant Cell - Color Mini-Poster (1 page)
- 6) Color Code the Organelles of the Plant Cell (1 page)
- 7) Comparing Animal and Plants Cells - Labeling in Color and BW with Answer Key (3 pages)
- 8) Draw the Parts of an Animal Cell (1 page)
- 9) Cell Organelle Functions - Reading Color and BW(2 pages)
- 10) Cell Organelle Vocabulary Quiz with Answer Key - Matching (2 pages)
- 11) Cell Organelle Vocabulary Quiz - Short Answer Quiz (2 pages)
- 12) Cell Organelles - Matching with Answer Key (2 pages)
- 13) Organelle Function Analogy - Matching Activity with Answer Key (2 pages)
- 14) Cell Organelles - Cut Windows: Foldable Activity (3 pages)
- 15) Cell Organelles - Foldable Fact Finder - Color and BW (3 pages)
- 16) Cheek Cell Investigation (2 pages)
- 17) Onion Cells Investigation (2 pages)

- 18) Unicellular Microorganisms - Reading and Diagram (1 page)
- 19) Classification of Unicellular Organisms - Diagram (1 page)
- 20) Unicellular Microorganisms and their Organelles Color and BW Diagrams (2 pages)
 - Next Generation Science Standard covered in this Following Pages (1 DCI).
 - Rubric Building Resource for DCI of the standard (1 page)
- 21) The Cells and Tissues of Blood Vessels and other Organs - Reading and Performance Task (1 page)
- 22) The Many Types of Cells and Tissues of Blood Vessels - Color Diagram (1 page)
- 23) Color Code the Many Types of Cells and Tissues of Blood Vessels (1 page)
- 24) Cells of the Body - Color Diagram (1 page)
- 25) Organization of the Body Overview - Color Diagram (1 page)
- 26) Organization of the Body Color Diagrams: Muscular, Nervous, Circulatory, Digestive, Respiratory Systems (5 pages)

NEXT GENERATION SCIENCE STANDARDS

3 Disciplinary Core Ideas (DCI) covered in this Bundle:

LS1.A: Structure and Function

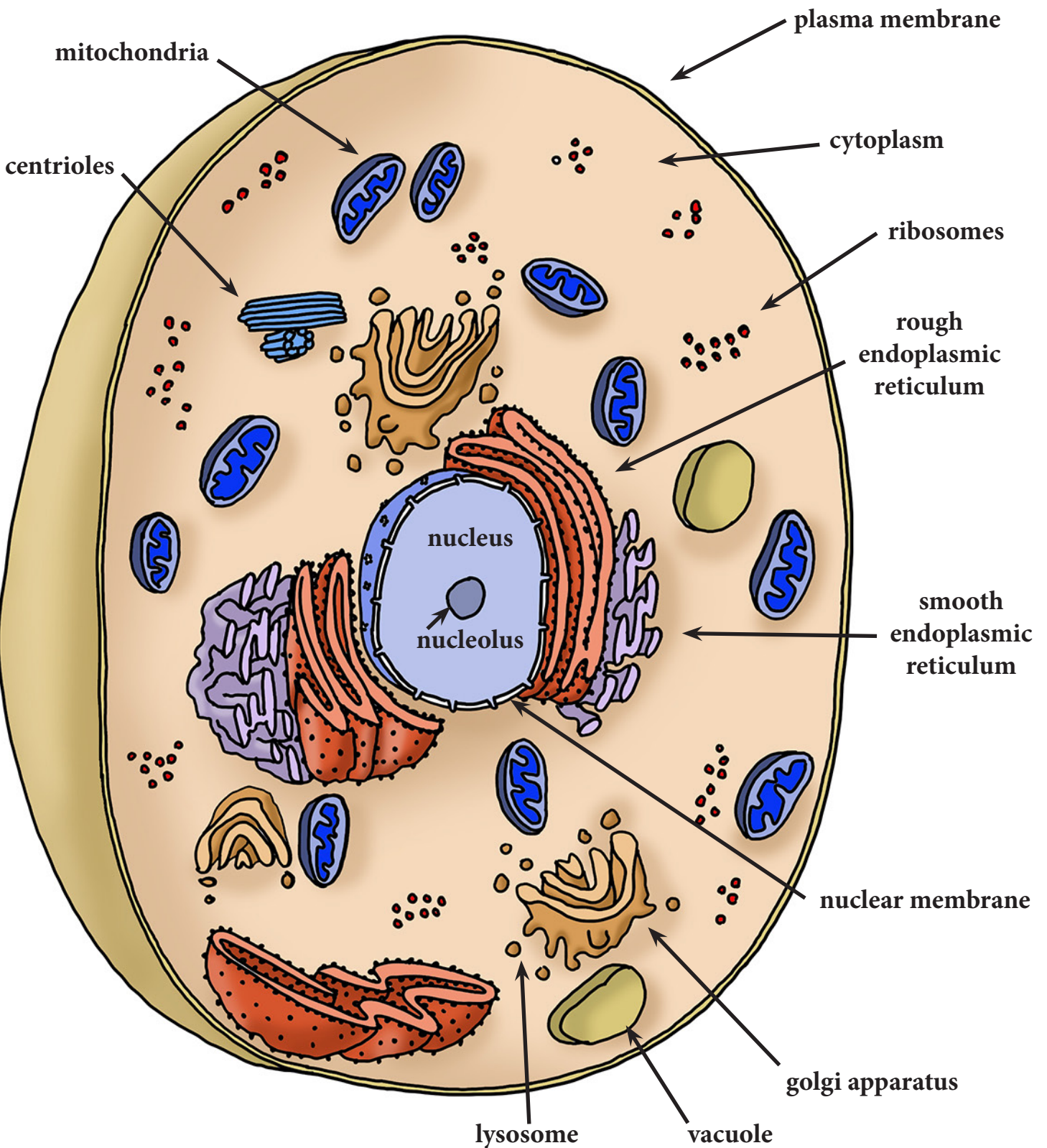
1. All living things are made up of cells, which is the smallest unit that can be said to be alive. An organism may consist of one single cell (unicellular) or many different numbers and types of cells (multicellular).

2. Within cells, special structures are responsible for particular functions, and the cell membrane forms the boundary that controls what enters and leaves the cell.

3. In multicellular organisms, the body is a system of multiple interacting subsystems. These subsystems are groups of cells that work together to form tissues and organs that are specialized for particular body functions.

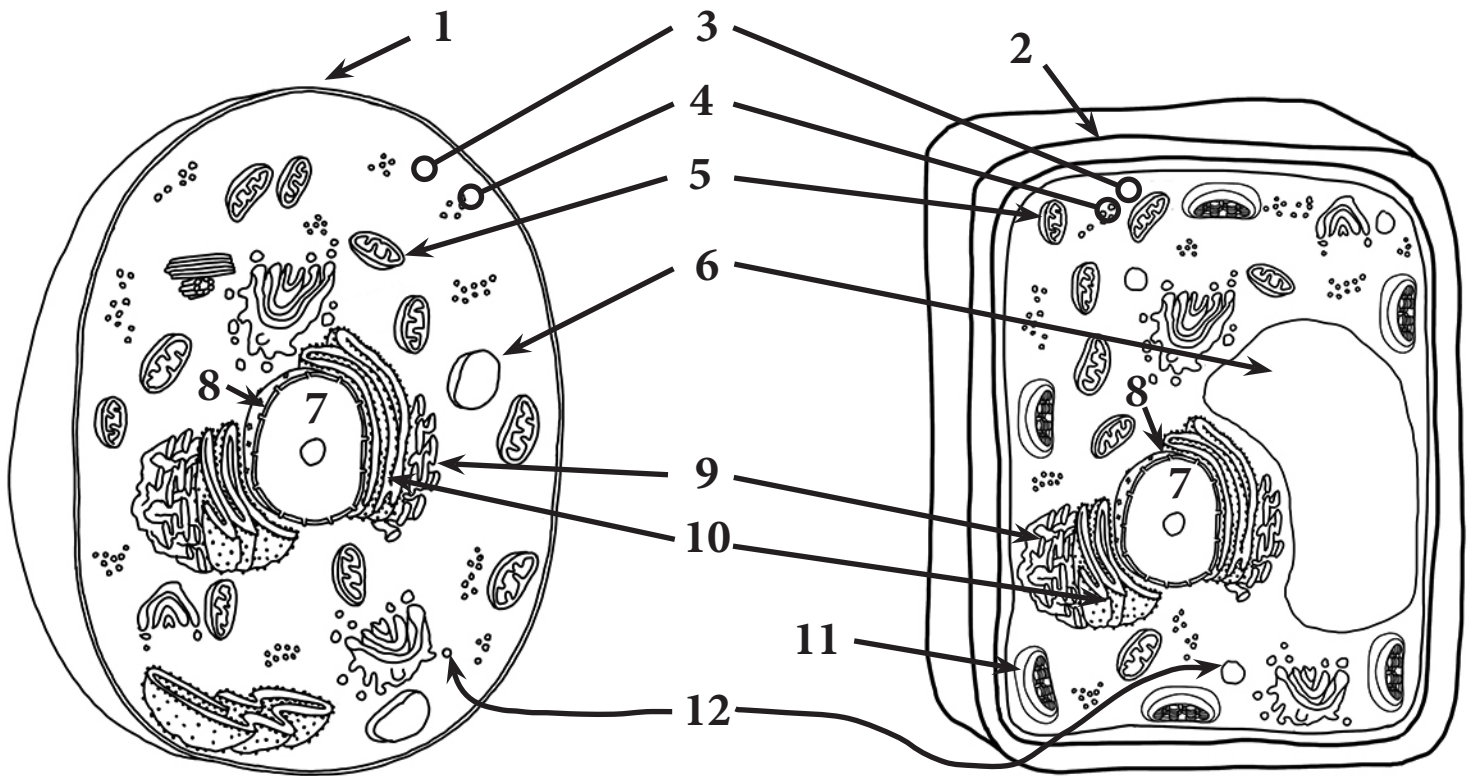
*provided by the NGSS website

Animal Cell



Comparing Animal and Plants Cells - Labeling

Label the different organelles in a plant cell and animal cell.

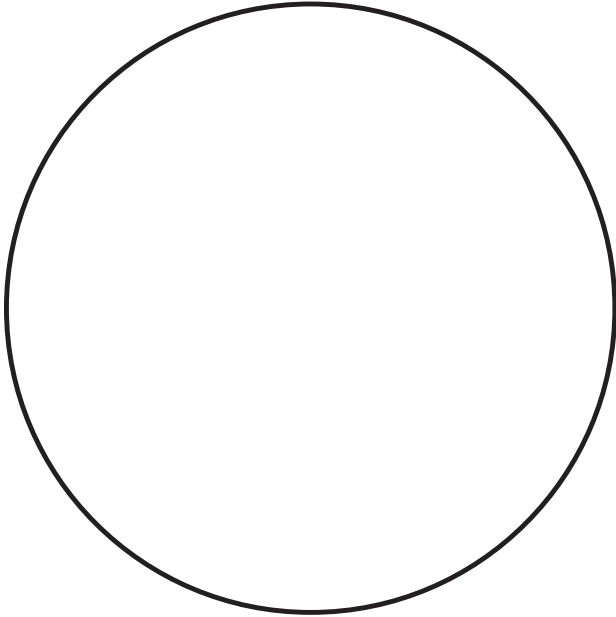


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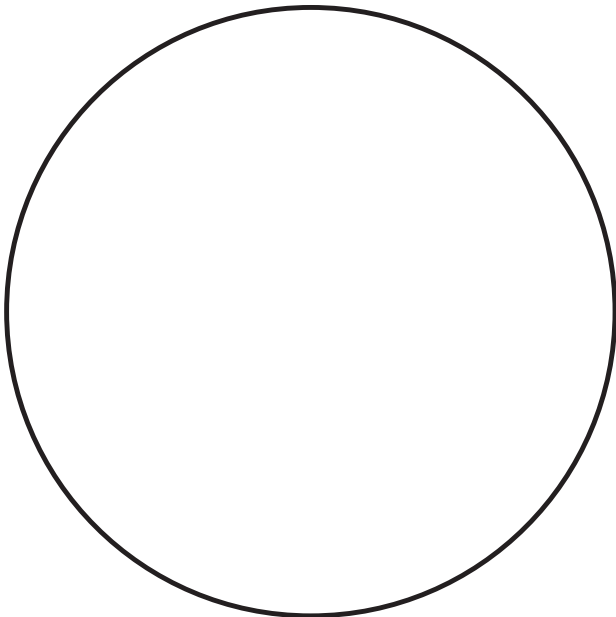
Cheek Cell Investigation Worksheet

Draw the cheek cells at three different magnifications.

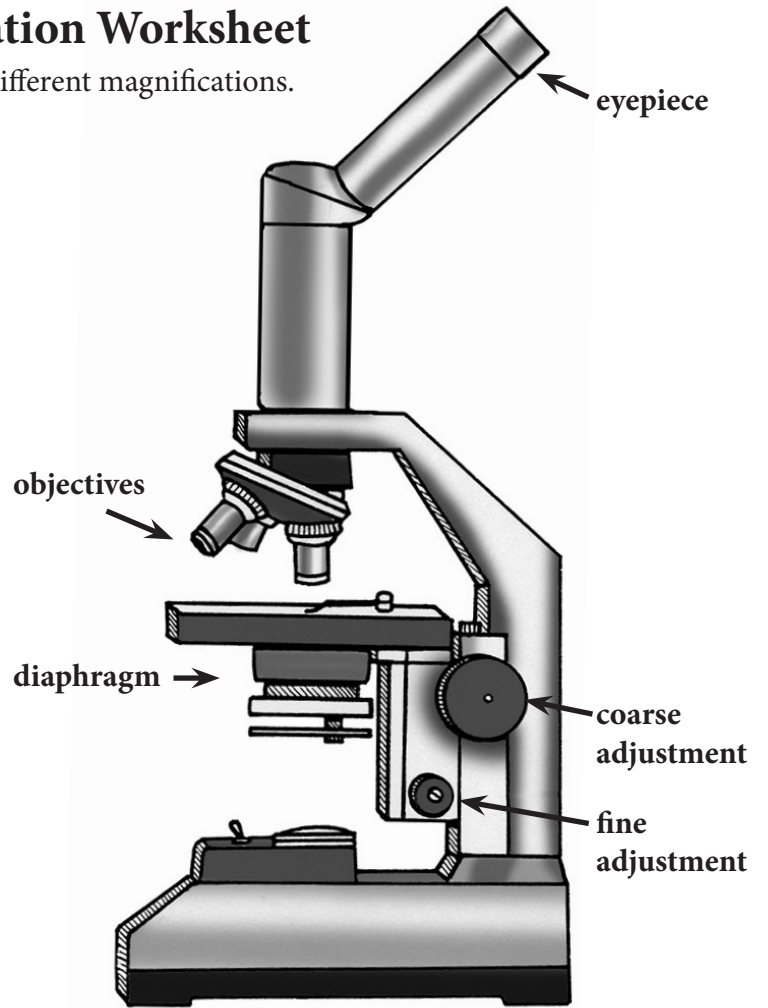
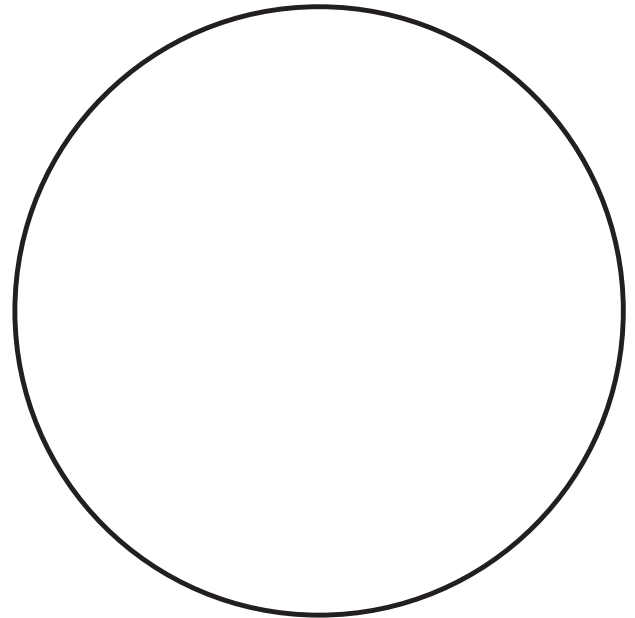
40X



100X



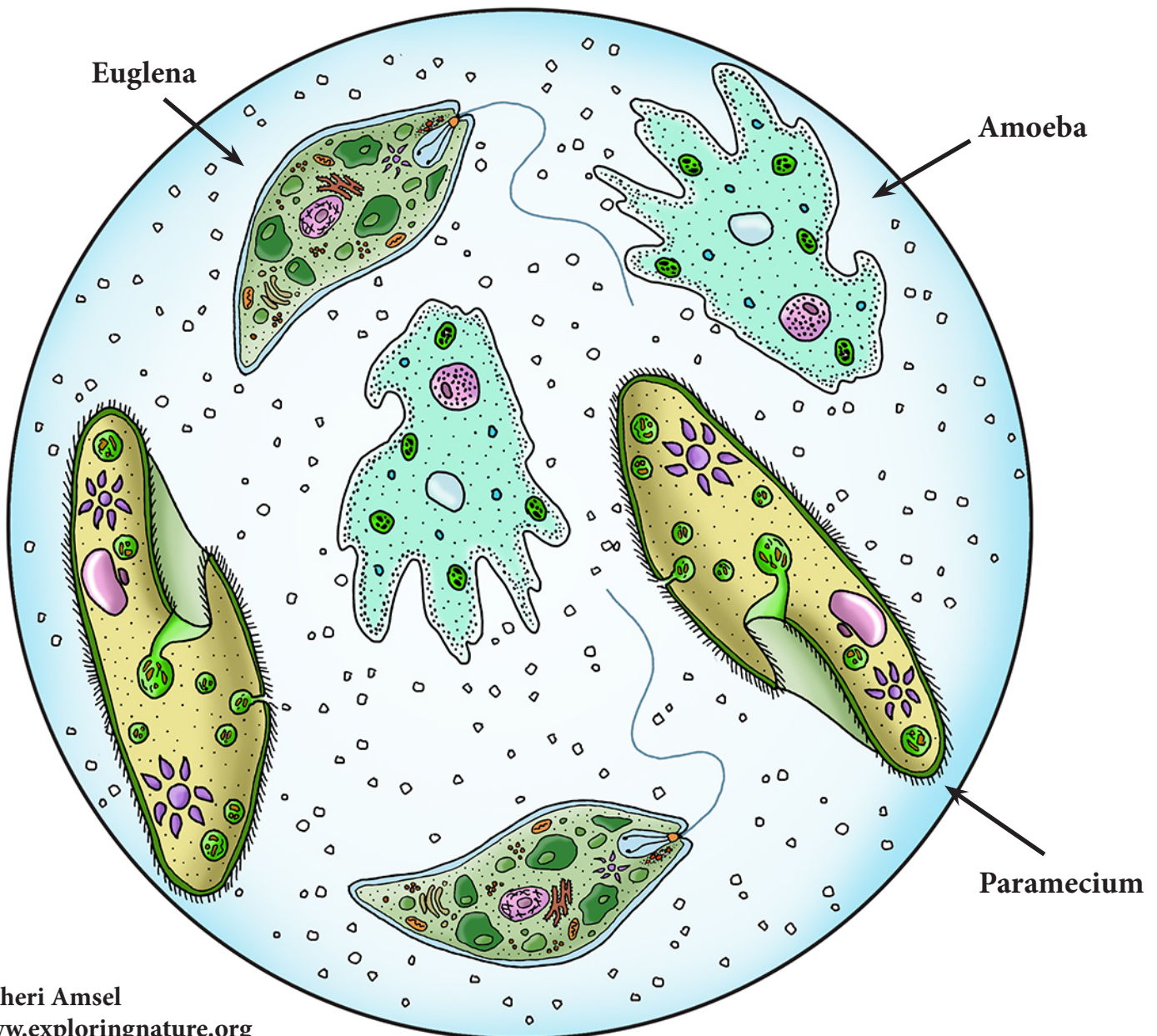
400X



Unicellular Microorganisms

One-celled organisms, also called single-celled or unicellular organisms, must carry out all the functions that a multicellular organism needs to live, including eating, getting rid of waste, moving, etc. The most abundant one-celled organisms are bacteria. Bacteria are *prokaryotic*, so lack the nucleus and distinct organelles of *eukaryotic* organisms. One-celled, eukaryotic organisms include organisms from the **Kingdom: Protista** and include plant-like **algae**, animal-like **protozoa**, and **fungi-like slime molds**.

In a drop of pond water, there can be many unicellular (and multicellular) organisms. In the illustration below, there are several different microorganisms. **Amoeba** are one-celled organisms that live in wet environments including ponds, wetlands, wet soil, and even human bodies. They have a movable shape and can extend pseudopods to reach for and engulf prey. They prey on smaller organisms, like bacteria. **Paramecium** are one-celled organisms that are covered in hair-like *cilia* that beat to propel them in a spirals through their aquatic environments. They feed on bacteria and other small protozoans. **Euglena** are one-celled protozoans with a whip-like *flagellum* that they use to propel themselves through their aquatic environment. Some euglena species have *chlorophyll*, so can produce their own food through *photosynthesis*.

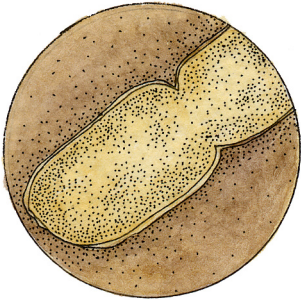


Classification of Unicellular Organisms

Domains: **Archaea**, **Eubacteria**, **Eukaryota**

Extreme Organisms

unicellular,
prokaryotic
microorganisms

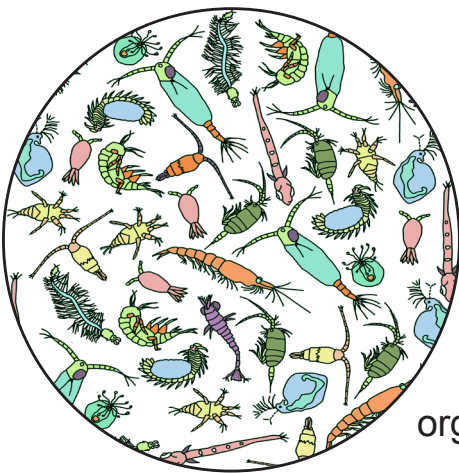


Bacteria

single-celled
prokaryotic
microorganisms

unicellular
and
multicelled
eukaryotic
organisms

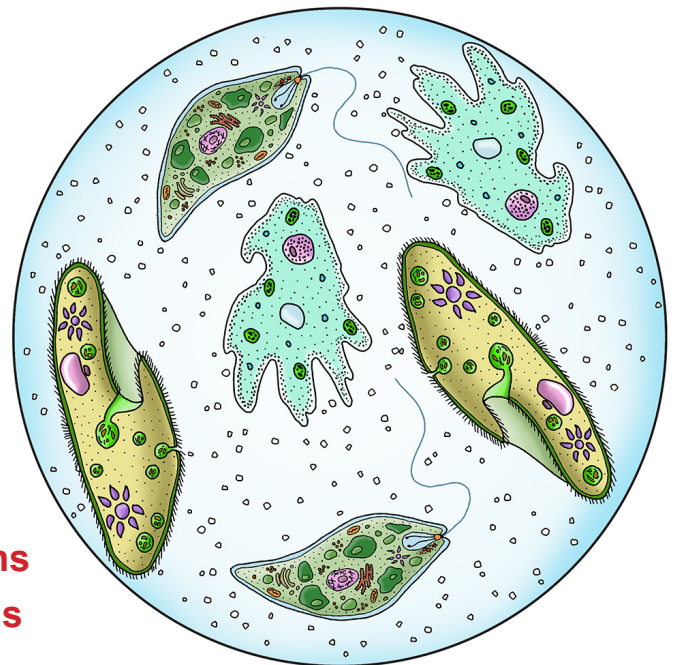
Kingdoms: **Protista**, **Fungi**, **Plantae**, **Animalia**



Diverse group

of unicellular
organisms, including:

- plant-like **algae**
- animal-like **protozoans**
- fungi-like **slime molds**



The Cells and Tissues of Blood Vessels and other Organs

Between arteries, veins and capillaries, there may be 60,000 miles of **blood vessels** in the human body. Their **function** is to deliver oxygen and nutrients to the tissues via arteries and dispose of carbon dioxide and waste via veins. Blood vessels, as with most body **organs**, are made up of a variety of different **cells** and **tissues** that help specialize it for its particular body function. They are designed for the ebb and flow of blood as it is pumped through the body. Both arteries and veins (not capillaries) are made up of several layers or *tunics*. Note the variety of different tissues that make up this organ and how each helps it complete its function.

The innermost layer of an artery and vein is called the *tunica interna*. It is made up of **endothelium tissue** and functions as a slick surface for smooth blood flow. The next layer is the *tunica media*. It is made up of **smooth muscle** with a very thin layer of elastin, lining its inside. The tunica media has **vasomotor fibers from the sympathetic nervous system** that regulate blood flow by signaling for this layer to *vasodilate (expand)* or *vasoconstrict (contract)* as needed. The outside layer is the *tunica externa*. It is made up of **collagen fibers (connective tissue)** that anchor and protect the blood vessels as well as **nerve fibers** and **lymphatic tissue**.

LS1.A: Structure and Function - In multicellular organisms, the body is a system of multiple interacting subsystems. These subsystems are groups of cells that work together to form tissues and organs that are specialized for particular body functions.

Performance Task: A study of other body organs will find similar layers of different kind of tissues that work together to help each organ complete its function in the body.

Choose another body organ, such as the stomach, lungs, kidneys, etc. and research the cells and tissues that make up it's "interacting subsystems." Then create a diagram illustrating these points similar to the following diagram on the many types of cells and tissues of blood vessels.

Performance Expectations - Students who demonstrate understanding can:

MS-LS1-3. Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.

Organization of the Body

Cell

Tissue

Organ

Body System

