

Name _____

Hour _____



Six Kingdoms Coloring Worksheet



Directions: Read the following and then answer the questions by coloring the picture on the back. Your answers will be shown by how you color.

Traditionally, living things were divided into two kingdoms, plants and animals. As the science of biology continues to develop, we have come to realize that two kingdoms are not enough for all organisms to fit into. For example, there is a single-celled organism called *Euglena*. This organism has some characteristics of a plant and some characteristics of an animal. As time went on, other organisms were discovered with weird traits that made them difficult to classify as either plant or animal.

Most scientists agree that it makes sense to divide living things into six kingdoms. Remember, though, that kingdoms are purely human inventions. No other living organism, as far as we can tell, cares a bit what kingdom it is in. As the future of biology unfolds, we may see evidence for division into more than six kingdoms. (Various biologists have already suggested seven and eight kingdoms.)

Kingdom Archaeobacteria

This kingdom includes bacteria and interesting little creatures called cyanophytes, also called blue-green algae. They are unicellular (single-celled) and prokaryotic, meaning that there is no nucleus inside the cell. Most biologists believe that the first living things on earth were probably similar to today's bacteria. Another cool thing about this group of organisms is that they are adapted to almost any type of environment, even if it is extreme by our standards (hot, cold, salty, etc.) Bacteria are just about everywhere on Earth

Kingdom Eubacteria

This kingdom also includes bacteria. This group of bacteria is the true bacteria. They are unicellular and prokaryotic. A cool thing about this group of bacteria is that they can live inside you. Some examples include e-coli (lives in intestines), staphylococcus (lives on your skin), and streptococcus (lives on your skin and in your throat).

Kingdom Protista

Scientists created this kingdom so they could put organisms in it that didn't fit anywhere else. Most protists are single-celled. The cells have a nucleus like plant and animal cells. Some of these organisms kind of act like plants and some of them kind of act like animals. Some of them are like both. That's why they're weird. *Euglena* is plantlike and animal-like. *Paramecium* is a unicellular organism that moves itself rapidly through water by using thousands of little cilia. The amoeba changes shape constantly and flow around food to engulf it. Like a little blob.

Kingdom Fungi

This kingdom includes yeasts, molds, mushrooms, and mildews. Most fungi are multicellular (made of many cells) except yeast, which are unicellular. Fungi live exclusively by absorbing nutrients, usually by secreting digestive enzymes to break down their food so it can be absorbed more easily.

Kingdom Animalia

Such things as sponges, sea anemones, sea cucumbers may not be as easily recognized, but are nonetheless still animals. All animals are multicellular. Animal cells lack a cell wall.

Kingdom Plantae

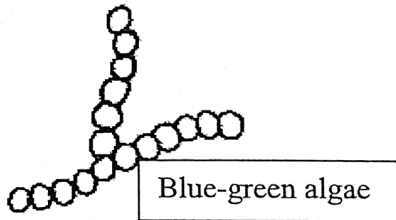
This includes plants (oddy enough!) So things like mosses, pine trees, and roses fit here. There's also a bunch of algae in this kingdom. Plants are usually multicellular, and their cells have a cell wall, unlike animal cells. Their cell walls are made of a substance called cellulose.

Use the reading above to find the answers to the following questions. Then follow the directions so you'll know how to color the picture on the back. Your answers will be shown by how you color.

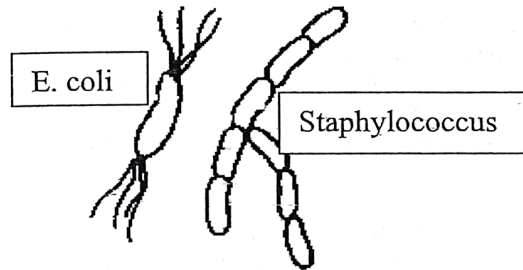
1. What is the single-celled organism that is animal and plant-like called? _____ Color it blue
2. How many kingdoms are there? Write the number in the top left corner on the back side of this sheet.
3. What kingdom did the first organisms on Earth belong to? _____ Color everything in this kingdom yellow.
4. What kingdom are true bacteria in? _____ Color the word orange.
5. What kingdom do *Paramecium* and *Euglena* belong to? _____ Color the word red.
6. What protist changes shape constantly and flows around its food to engulf it? _____ Color it pink.
7. What kingdom are fungi, molds and yeast in? _____ Color the word green.
8. What organisms have cellulose in their cell walls? _____ Color them green and brown.
9. Which kingdoms have organisms that are multi-cellular? _____ Circle all of them with orange.
10. What kingdom includes sea anemones, snails, humans, insects and birds? _____ Color the word purple.

KINGDOMS OF LIVING

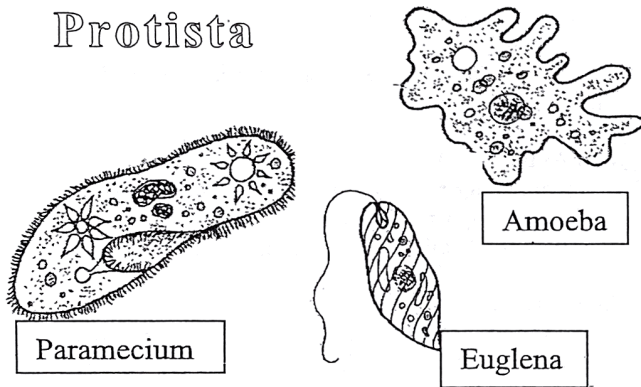
Kingdom Archaeobacteria



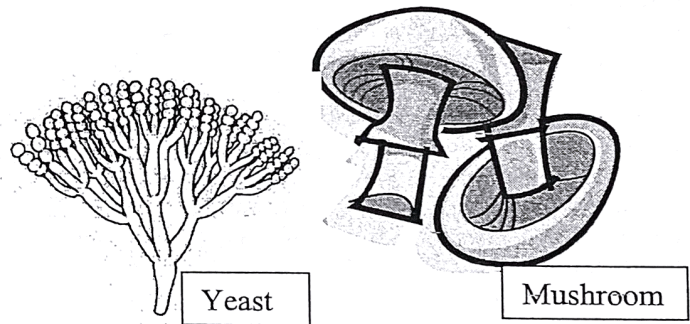
Kingdom Eubacteria



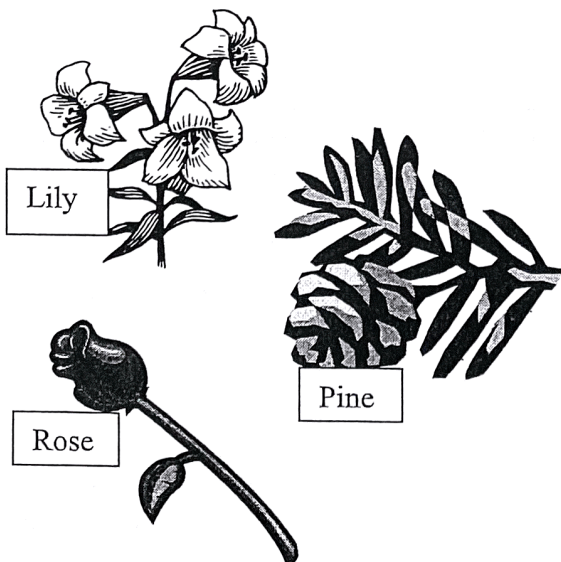
Kingdom Protista



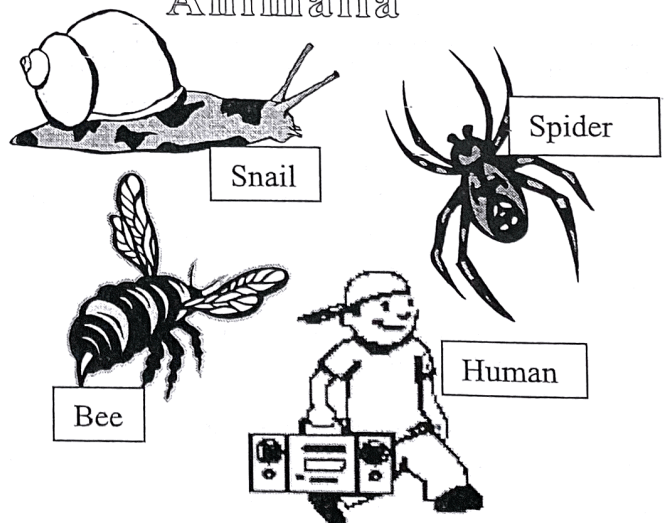
Kingdom Fungi



Kingdom Plantae



Kingdom Animalia



| | Virus | Archaeobacteria | Eubacteria | Protista Animal like | Protista Plant like | Fungi | plants | Animal |
|---|-------|-----------------|--|-------------------------|------------------------|-------|--------|--------|
| Reproduction Sexual or asexual ? | | | | | | | | |
| Nutrition (Auto/Heterotrophy) Acquisition | | | | | | | | |
| Metabolism Energy obtained | | | | | | | | |
| Benefit Humans or harm Human | | | | | | | | |
| Unique characteristic or fun fact | | | | | | | | |
| Scientific name (Example) | | | Escherichia Coli (E.coli) Streptococcus | | | | | |

The six kingdoms are grouped according to five major categories in addition to other major characteristics. The categories are:

- I. **CELL TYPE:** (kind of cell) all cells are made of the same organic material)
 - A. PROKARYOTIC: no organized nucleus, no internal membranes, peptidoglycan cell wall, have ribosomes (small), bacteria and blue-green algae
 - B. EUKARYOTIC: organized nucleus, internal membranes, nonpeptidoglycan cell wall
- II. **CELLULAR ORGANIZATION:**
 - A. **NUMBER OF CELLS**
 1. UNICELLULAR: (single-celled) all life functions, solitary or colonial (chains or clumps)
 2. MULTICELLULAR: (many-celled)
 - a. hyphae body form
 - b. tissue differentiation (limited to advanced organisms)
 - B. **LEVELS OF ORGANIZATION** (Tissue Differentiation)
 1. cells, 2. tissues, 3. organs, 4. organ system, 5. organism
 - C. **CELL WALL**
 1. PEPTIDOGLYCAN: contain peptidoglycan, a complex web-like molecule; found only in the Eubacteria
 2. UNCOMMON LIPIDS: nonpeptidoglycan, contains uncommon lipids, found only in Archaeobacteria
 3. PECTIN: contain pectin a complex polysaccharide, found in most Protista
 3. CELLULOSE: contain cellulose a complex polysaccharide; found in Plantae
 3. CHITIN: contain chitin, a tough material like that making up crab shells; found only in the Fungi
- III. **MODE OF NUTRITION** (how obtain energy/gets food)
 - A. AUTOTROPHIC: make own food, contain chlorophyll (photosynthetic), (some without chlorophyll are chemotrophic)
 - B. HETEROTROPHIC: get food from other organism, no chlorophyll, ingestion or absorption (free living, parasitic, saprophytic)
- IV. **Method of REPRODUCTION**
 - A. ASEXUAL: only one parent, offspring genetically identical to parent, no union of gametes
 - B. SEXUAL: two parents, offspring genetically different from parents (a combination of the two), union of gametes
- V. **MOTILITY**
 - A. MOTILE: ability to move from place to place, may only be motile in larval stage
 - B. NONMOTILE: cannot move from place to place, maybe sessile (attached to a surface)

Helpful Info for Classification Taxonomy

*Reference for
Table FILL-IN*