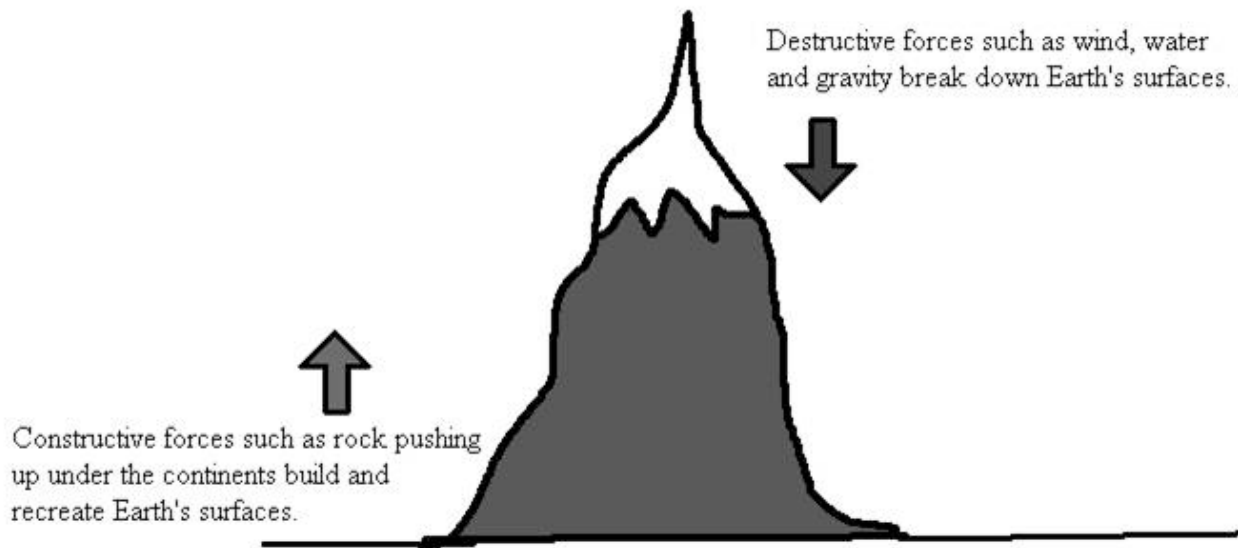


# Embedded Assessment 1: Classification

Please select the best answer to each question.

1. Members of kingdom Animalia depend on bacteria and fungi because bacteria and fungi:
  - a. do not perform photosynthesis.
  - b. recycle nutrients in dead organisms.\*
  - c. use sunlight to produce sugar.
2. The scientific name for the polar bear is *Ursus maritimus*. What is its specific name?
  - a. *Ursus*
  - b. *maritimus*\*
  - c. Polar bear
3. The two parts of a scientific name are the names of the genus and the:
  - a. specific name.\*
  - b. phylum name.
  - c. Family name.
4. Scientists classify organisms by:
  - a. Arranging the organisms in orderly groups.\*
  - b. Giving the organisms many common names.
  - c. Deciding whether the organisms are useful.
5. The organisms in what kingdom usually move by themselves and have specialized sense organs that allow them to respond to their environment?
  - a. Fungi
  - b. Plantae
  - c. Animalia\*

6.



Based on the diagram above, what force does **NOT** contribute to the breaking down of Earth's surfaces?

- a. Force of wind
- b. Force of rock pushing up\*
- c. Force of water
- d. Force of gravity

**Please answer the following question using complete sentences.**

7. Scientists used to classify organisms as either plants or animals. Why doesn't that classification system work?

Sample answer: Some organisms, such as slime molds and mushrooms, have characteristics that neither plants nor animals have. As a result, additional kingdoms and domains were added to the classification system.

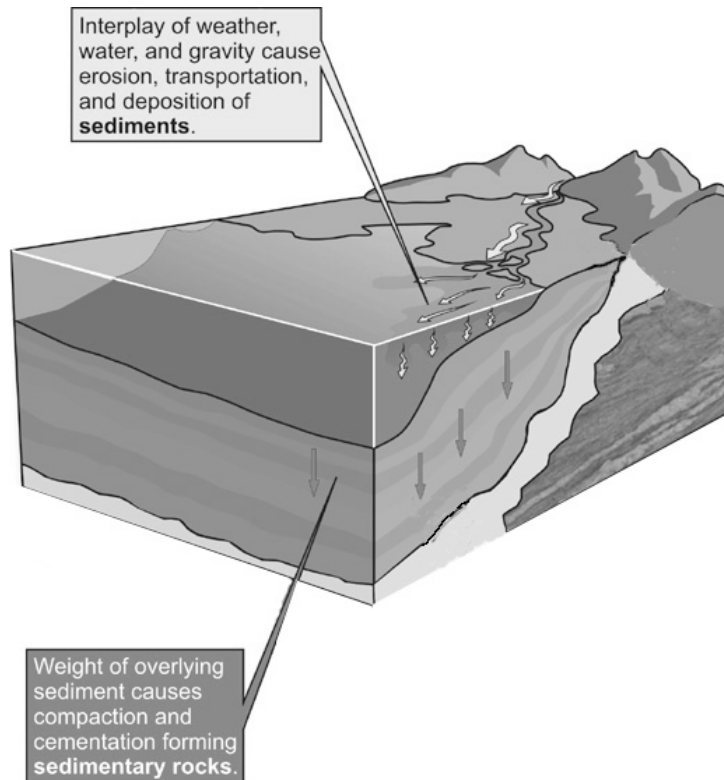
# Embedded Assessment 2: The Evolution of Living Things

Please select the best answer to each question.

1. Which of the following is NOT a result of natural selection?
  - a. Horses that are bred to be faster\*
  - b. Insects that are able to resist insecticides
  - c. Bacteria that survive antibiotics
2. What process would farmers use to produce vegetables that will grow in a specific climate?
  - a. Natural selection
  - b. Adaptation
  - c. Selective breeding\*
3. Which of the following is NOT a kingdom in Domain Eukarya?
  - a. Animalia
  - b. Bacteria\*
  - c. Protista
4. Darwin's Theory of Natural Selection suggests that \_\_\_\_\_ within a species is an important part of the process of natural selection.
  - a. being identical
  - b. long life
  - c. random variation\*
5. What kind of organism thrives in hot springs and other extreme environments?
  - a. Fungus
  - b. Bacterium
  - c. Archaeal\*

6. The scientific name for the European white waterlily is *Nymphaea alba*. To which genus does this plant belong?
- a. *Nymphaea*\*
  - b. *alba*
  - c. Water lily
7. A characteristic that improves an organism's ability to survive is a(n)
- a. adaptation.\*
  - b. inherited variation.
  - c. reproduction.
8. What can two different species have in common?
- a. Populations
  - b. Ancestors\*
  - c. Offspring
9. When the eight levels of classification are listed from broadest to narrowest, which level is sixth in the list?
- a. Order
  - b. Genus
  - c. Family\*
10. The simple, single-celled organisms that live in your intestines are classified in the Domain:
- a. Protista
  - b. Bacteria\*
  - c. Archaea

11.



According to the information in the diagram above, which of the following is NOT involved in the formation of sedimentary rock?

- a. Weathering and erosion
- b. Cementation
- c. Crystallization\*
- d. Compaction

12. Evolution is illustrated by the greater similarity of \_\_\_\_\_ in species that appear to be closely related.

- a. DNA and traits\*
- b. habitats
- c. appearances

13. The physical separation of Galapagos finches on various islands resulted in new \_\_\_\_\_ that ultimately led to a separation into different species.

- a. ancestors
- b. adaptations\*
- c. flight patterns

14. *Animalia*, *Protista*, *Fungi*, and *Plantae* are:

- a. scientific names of different organisms.
- b. names of kingdoms.\*
- c. levels of classification.

15. Groups of organisms living in different environments that can mate and have fertile offspring are part of the same

- a. species.\*
- b. population.
- c. fossil record.

**Please answer the following question using complete sentences.**

**16.** Explain why a species that has a short generation time will evolve more quickly than a species that has a long generation time.

Sample answer: Evolution occurs over the course of many generations, because it is the result of members in each generation passing on variations to the next generation. A species with a short generation time will have many more chances to pass on variations in the same period of time that a species with a long generation might go through just one generation.

**Read the passage below and use the information, along with what you have learned in class, to answer the question that follows.**

In 1928, a biologist in London named Professor Alexander Fleming accidentally discovered penicillin. Professor Fleming had been studying cultures of bacteria in his laboratory when he left for a vacation with his family. When he returned, he found that a mold had started growing in one of his cultures and, to his surprise, it had destroyed the bacteria around it. This mold, which he named penicillin, became the first antibiotic, a discovery that revolutionized modern medicine. If you have ever gone to the doctor with an earache or other infection, you have probably received antibiotics to get rid of the infection and make you feel better.

As the use of antibiotics continues to grow in our society, however, bacteria have undergone changes as well. The strands of bacteria that are not resistant to antibiotics are easily destroyed, but any bacterium that contains abnormal resistance to antibiotics has a better chance of surviving, reproducing, and passing its genes to the next generation. As the bacteria not resistant to antibiotics are destroyed and bacteria that are resistant to antibiotics reproduce, these resistant bacteria can slowly come to represent a larger portion of the bacteria populations. As a result, scientists and doctors are seeing a growing number of dangerous bacteria that are resistant to antibiotics, making it more difficult to treat people who are infected with such bacteria.

17. As the use of antibiotics increases, doctors are also seeing an increase in the number of antibiotic-resistant bacteria they are asked to treat. This is an example of what important biological process?
- a. It is an example of selective breeding, because it describes a situation in which humans are involved in a process that changes populations.
  - b. It is an example of natural selection, because penicillin occurs naturally and so do bacteria.
  - c. It is an example of natural selection, because selective pressures in the bacteria's environment have increased the likelihood that certain bacteria – those resistant to antibiotics – will be able to reproduce and pass on their genes to the next generation.\*

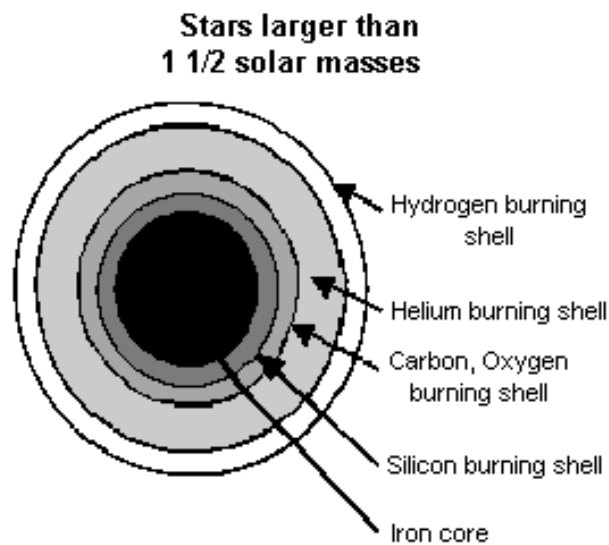


# Embedded Assessment 3: Cells

Please select the best answer to each question.

1. What is the smallest unit that can carry out all the processes necessary for life?
  - a. Cell\*
  - b. Nucleus
  - c. Organelle
2. A single-celled organism with a nucleus is most likely a member of which Kingdom?
  - a. Archaea
  - b. Bacteria
  - c. Protista\*

3.



From the information above, in stars larger than 1 1/2 solar masses, one can find \_\_\_\_\_ between the iron core and a carbon and oxygen burning shell.

- a. A helium burning shell
- b. A silicon burning shell\*
- c. A helium and silicon burning shell
- d. A hydrogen burning shell

4. Which statement is NOT part of the cell theory?
- a. All organisms are made of one or more cells.
  - b. Animal and plant cells contain the same organelles.\*
  - c. The cell is the basic unit of living things.
5. A structure made of two or more tissues working together is called a(n):
- a. cell.
  - b. organ.\*
  - c. system.
6. Larger size, longer life, and more-specialized cells are characteristics of organisms that are
- a. multicellular.\*
  - b. prokaryotic.
  - c. single-celled.
7. When certain genes make organisms more likely to survive and reproduce, which process can occur?
- a. Trait dominance
  - b. Natural selection\*
  - c. Selected breeding

**Please answer the following question using complete sentences.**

8. What are three parts that plant cells have and animal cells do not?

Sample Answer: Three parts that plant cells have and animal cells do not are the cell wall, chloroplasts, and vacuoles.

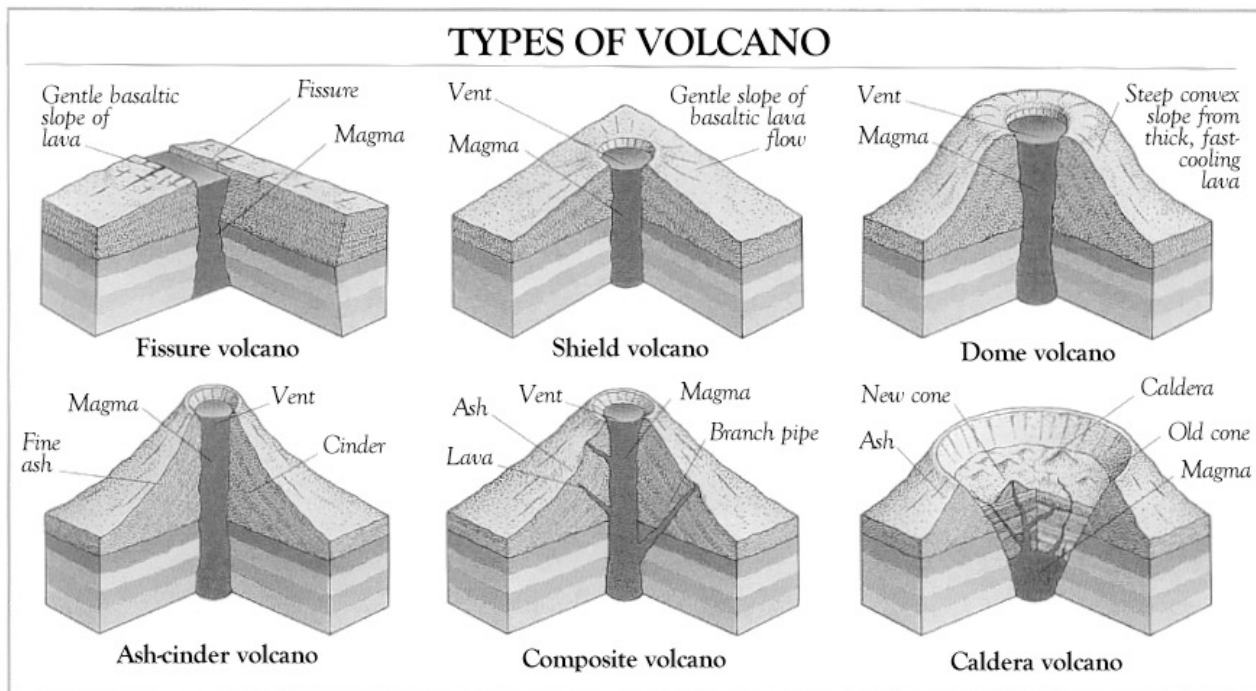
# Embedded Assessment 4: The Cell in Action

Please select the best answer to each question.

1. How do particles move from areas of lower concentration to areas of higher concentration?

- a. by cellular respiration
- b. by active transport\*
- c. by diffusion

2.



Using information from the above figure, one can see that a dome volcano has a convex slope that is steep, while \_\_\_\_\_ and \_\_\_\_\_ volcano types have gentle slopes.

- a. Ash-cinder and Composite
- b. Caldera and Composite
- c. Shield and Ash-cinder
- d. Fissure and Shield\*

3. Cells without a nucleus are called:
  - a. chloroplasts.
  - b. eukaryotes.
  - c. prokaryotes.\*
4. Domain Eukarya does NOT include:
  - a. plants.
  - b. bacteria.\*
  - c. fungi.
5. During the process of diffusion,
  - a. a cell surrounds and absorbs large particles.
  - b. particles move from areas of lower concentration to higher concentration.
  - c. particles move from areas of higher concentration to lower concentration.\*
6. A complex, multicellular organism that eats food, usually moves around and responds quickly to the environment is likely a(n):
  - d. animal\*
  - e. fungus
  - f. plant.
7. Osmosis is important to cells because
  - a. cells are filled with fluids that are made mostly of water.\*
  - b. cells need to move from place to place.
  - c. cells are usually dry.

8. The process of photosynthesis uses carbon dioxide, water and energy to produce
- a. fermentation.
  - b. glucose.\*
  - c. ATP.
9. Cells divide into two new cells by the processes of
- a. fermentation and cellular respiration.
  - b. mitosis and cytokinesis.\*
  - c. multiplication and division.
10. Which of the following is NOT an example of natural selection?
- a. Male birds developing extremely colorful displays of feathers
  - b. Insects developing pesticide resistance
  - c. Dog owners breeding their pets to produce friendlier offspring\*
11. What important process in cells uses oxygen and glucose to produce energy?
- a. photosynthesis
  - b. fermentation
  - c. cellular respiration\*
12. Which part of the cell forms a barrier between the cell and its environment?
- a. Cell membrane\*
  - b. Nucleus
  - c. Ribosome

13. Where does photosynthesis take place in a cell?

- a. In the nucleus
- b. In the mitochondria
- c. In the chloroplasts\*

14. Cells are divided into two groups depending on whether or not they have a(n):

- a. eukaryote.
- b. membrane.
- c. nucleus.\*

15. A characteristic that can be passed from parent to offspring through genes is called a

- a. zygote.
- b. eukaryote.
- c. trait.\*

**Please answer the following question using complete sentences.**

16. All energy that fuels life comes from the sun. Explain, through discussion of photosynthesis and cellular respiration, how this is true.

Plants convert energy from the sun into glucose, or food, through the process of photosynthesis. Plants can use this glucose for energy through the process of cellular respiration. Other organisms, like animals, consume plants (or other animals, which in turn consume plants) to acquire the glucose that plants produced through photosynthesis. Those organisms then convert glucose into energy through cellular respiration, too.

**Read the passage below and use the information, along with what you have learned in class, to answer the question that follows.**

Cancer starts in the body's cells. All of our organs and tissues are made up of cells. Each cell contains genes that determine how the cell grows, functions, and eventually dies. Through the process of mitosis, when the cell reproduces, it makes a carbon copy of itself.

When someone has cancer, their cells don't grow in a normal way, and the person develops growths or tumors. Cancer starts with one cell changing due to a mutation in the cell's DNA that affects its growth. Once a cell in the body has changed in this way, it tends to multiply at a much more rapid rate than normal. The normal 'checkpoints' regulating mitosis are ignored or overridden by the cancer cell, and cell reproduction continues out of control.

If one cell is affected by cancer, then through the process of mitosis, a tumor made up of a cluster of malignant cells is created. These malignant cells can send out signals to the body so that they develop blood vessels at the site to provide them with a steady supply of food (glucose) and oxygen. The blood vessels attached to the cancerous cells also mean that the cancer has the means to travel to other parts of the body.

Cancer cells that have broken away from the tumor travel through the bloodstream and are taken to different parts of the body. From there, they can start new tumors, a process known as metastasis.

When someone is described as having a form of cancer, the term refers to the part of the body where the disease started.

17. According to the article, what is the difference between the way a normal, healthy cell reproduces and the way a cancer cell reproduces?

- a. The cancerous cell disrupts mitosis so it can no longer occur, leaving cells with no way of producing new cells.
- b. The cancerous cell makes mitosis occur very slowly, so that the body's cells can no longer keep up with the rate at which new cells are needed.
- c. The cancerous cell goes through mitosis very rapidly, without the normal balances that control the rate of mitosis, and it overproduces new cells.\*

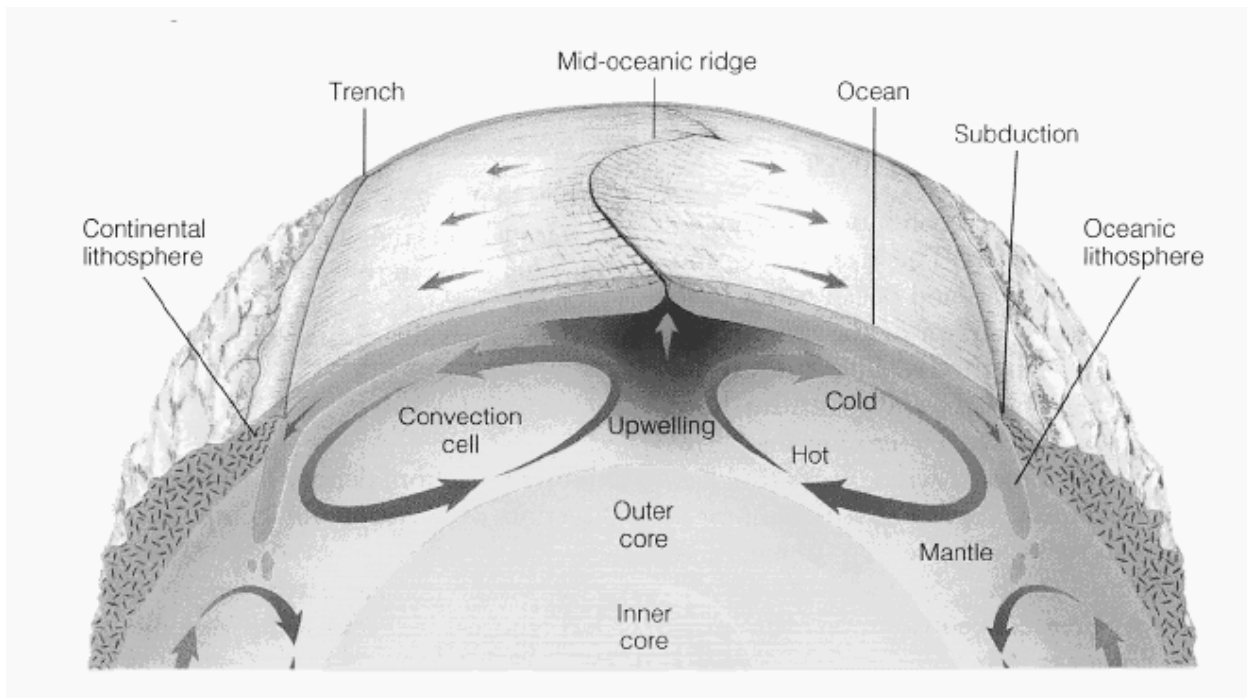


# Embedded Assessment 5: Heredity

Please select the best answer to each question.

1. A puppy with two yellow Labrador retriever parents:
  - a. always has a black coat.
  - b. sometimes has a black coat.
  - c. always has a yellow coat.\*
2. How do particles move from areas of higher concentration to areas of lower concentration?
  - a. by active transport
  - b. by diffusion\*
  - c. by travel
3. Members of a species who live in the same place are a
  - a. family.
  - b. generation.
  - c. population.\*
4. Cells that are like each other and do the same job form a(n):
  - a. organ.
  - b. system.
  - c. tissue.\*
5. Organisms in Kingdom Fungi:
  - a. are usually green.
  - b. break down material outside their body and then absorb the nutrients.\*
  - c. do not have nuclei.

6. When a purple flower is crossed with a white flower, it results in four purple flowers. The gene for purple is almost certainly:
- a. cross-pollinated.
  - b. dominant.\*
  - c. recessive.
- 7.



According to the diagram above, a convection cell:

- a. is a rotating cycle of continental and oceanic lithosphere.
- b. is a rotating cycle of hot and cold material.\*
- c. takes place in the outer core.
- d. takes place in the inner core.

**Please answer the following question using complete sentences.**

8. In cats, there are two types of ears: normal and curly. A curly eared cat mated with a normal eared cat and all of the kittens had curly ears. Are curly ears likely a dominant or recessive trait? Explain.

Sample answer: Curly ears are almost certainly dominant. The curly eared cat has at least one curly ear gene, and a normal eared cat has at least one normal ear gene; therefore, at least one of their offspring would likely have a curly gene and a normal gene for its genotype. For this genotype, the dominant gene is whichever shows up in the offspring's phenotype. Since all the kittens had curly phenotypes, the curly gene must be dominant.