

Inquiry Into Life, 16e, Mader
Chapter 1 The Study of Life

- 1) Organs are composed of tissues, which are composed of cells. This is an example of which characteristic of life?
- A) Living things grow and develop.
 - B) Living things respond to stimuli.
 - C) Living things maintain themselves by homeostasis.
 - D) Living things have levels of hierarchical organization.
 - E) Living things are adapted to the environment.
- 2) The smallest structural and functional unit in a multicellular organism is a(n)
- A) cell.
 - B) tissue.
 - C) organ.
 - D) organ system.
 - E) organism.
- 3) Which level of biological organization is composed of several tissues?
- A) organism
 - B) organ system
 - C) organ
 - D) cell
 - E) molecules
- 4) Which sequence correctly lists the different levels of biological organization, from the smallest and simplest to the largest and most complex?
- A) cells-organs-tissues-organ systems-organism
 - B) cells-tissues-organ systems-organs-organism
 - C) tissues-cells-organs-organ systems-organism
 - D) tissues-organs-organ systems-organism-cells
 - E) cells-tissues-organs-organ systems-organism
- 5) Organs are composed of tissues, which are composed of cells. This is an example of which characteristic of life?
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- 6) Which sequence of classification categories is in the proper order from least to most inclusive?
- A) genus, class, kingdom, domain, order, phylum, species, family
 - B) domain, class, genus, family, species, order, phylum, kingdom
 - C) species, genus, family, order, class, phylum, kingdom, domain
 - D) genus, species, order, class, family, kingdom, domain, phylum
 - E) species, genus, family, class, order, phylum, kingdom, domain
- 7) What is the correct format for the binomial name of a manatee?
- A) *Trichechus Manatus*
 - B) *trichechus manatus*
 - C) TRICHECHUS manatus
 - D) *Trichechus manatus*
 - E) *trichechus Manatus*
- 8) Corn belongs to the kingdom
- A) Plantae.
 - B) Animalia.
 - C) Fungi.
 - D) Protista.
 - E) Archaea.
- 9) The three major domains of life are
- A) plantae, animalia, and archaea.
 - B) bacteria, fungi, and eukaryotes.
 - C) eukarya, prokarya, and animalia.
 - D) archaea, bacteria, and eukarya.
 - E) eukarya, prokarya, and fungi.
- 10) A multicellular, photosynthetic organism with complex, specialized cells and tissues would most likely be assigned to
- A) kingdom Animalia.
 - B) kingdom Fungi.
 - C) domain Archaea.
 - D) kingdom Protista.
 - E) kingdom Plantae.
- 11) Regions of the earth inhabited by living organisms are known collectively as
- A) the biosphere.
 - B) an ecosystem.
 - C) a population.
 - D) an organism.
 - E) a community.

- 12) All of the populations of various species living within a given area constitute a(n)
A) biosphere.
B) ecosystem.
C) population.
D) domain.
E) community.
- 13) A community of organisms along with the surrounding physical environment constitutes a(n)
A) biosphere.
B) ecosystem.
C) population.
D) habitat.
E) community.
- 14) The most important factor that determines where major ecosystems are located on the globe is
A) soil type.
B) available vegetation.
C) climate.
D) oxygen levels.
E) political boundaries.
- 15) The term "biodiversity" refers to
A) a study of the physical, non-living components of an ecosystem.
B) the similarities between species.
C) the rate of extinction of species due to human activities.
D) the total number of species, variation of species, and the ecosystems in which they live.
E) the study of food chains within an ecosystem.
- 16) An informed statement that can be tested in a manner suited to the processes of science is known as a
A) hypothesis.
B) phenomenon.
C) control.
D) variable.
E) theory.
- 17) Which answer choice lists the steps of the scientific method in the correct order?
A) hypothesis, observation, experiment, conclusion, data collection
B) conclusion, hypothesis, observation, experiment, data collection
C) observation, hypothesis, experiment, data collection, conclusion
D) observation, experiment, hypothesis, conclusion, data collection
E) data collection, conclusion, hypothesis, experiment, observation

18) Which of the following is one of the domains of life?

- A) Animalia
- B) Eukarya
- C) Plantae
- D) Protista
- E) Fungi

19) Technology is the

- A) application of scientific knowledge to the interests of humans.
- B) study of living organisms.
- C) study of the interactions between living organisms and their environment.
- D) application of common knowledge for a practical purpose.
- E) application of laws to benefit society.

20) Using technology in the field of agriculture which has enabled farmers to feed a growing human population is an example of a beneficial use of technology.

21) A physician specializes in surgery involving the following group of organs: mouth, esophagus, stomach, and intestines. Overall, what is the highest level of organization that this physician is specialized in?

- A) cell
- B) tissue
- C) organ
- D) organ system
- E) organism

22) Which statement about living organisms is false?

- A) Living organisms create energy.
- B) Living organisms maintain homeostasis.
- C) Living organisms reproduce.
- D) Living organisms have adaptations.
- E) Living organisms grow and develop.

23) When you are overheated, you perspire, and when you are too cold, you shiver to generate heat. Which property of life is best represented by this example?

- A) homeostasis
- B) development
- C) behavior
- D) organization
- E) adaptation

24) The body temperature in humans is maintained around 37°C. Which characteristic of life does this information represent?

- A) Living organisms acquire materials and energy from the environment.
- B) Living organisms maintain homeostasis.
- C) Living organisms adapt.
- D) Living organisms grow and develop.
- E) Living organisms respond to stimuli.

25) The bones in a bird are hollow, reducing its weight for flight. This is an example of which characteristic of life?

- A) Living organisms grow and develop.
- B) Living organisms acquire materials and energy from the environment.
- C) Living organisms reproduce.
- D) Living organisms adapt to their environment.
- E) Living organisms are homeostatic.

26) Which classification category includes the most species?

- A) family
- B) genus
- C) class
- D) phylum
- E) kingdom

27) Which of these classification categories contains the most closely related group of organisms?

- A) domain
- B) genus
- C) family
- D) phylum
- E) kingdom

28) The common name for "cat" in Spanish is "gato" and in Chinese is "mao." Which of the following statements pertaining to the use of scientific names instead of common names is false?

- A) Common names may refer to more than one kind of organism.
- B) Scientific names can be known and recognized by all scientists throughout the world.
- C) The scientific name is related to the classification of that organism.
- D) The common name more clearly identifies an organism as unique than does the scientific name.

29) All the banded sunfish (*Enneacanthus obesus*) in a pond would comprise a(n)

- A) population.
- B) ecosystem.
- C) community.
- D) biosphere.
- E) species.

- 30) When comparing energy and chemicals in an ecosystem
- A) both chemicals and energy cycle over and over again.
 - B) chemicals cycle over and over again but energy does not cycle.
 - C) neither chemicals nor energy cycle.
 - D) energy cycles over and over again but chemicals do not cycle.
- 31) When researchers test a new human cancer drug using mice, the mice constitute the
- A) hypothesis.
 - B) data.
 - C) experimental design.
 - D) model.
 - E) control.
- 32) Which of the following domains contains organisms that are adapted to life in extreme environments?
- A) domain Archaea
 - B) domain Bacteria
 - C) domain Eukarya
 - D) domain Animalia
 - E) domain Plantae
- 33) Which domains contain organisms that lack a membrane-bound nucleus?
- A) Archaea and Bacteria
 - B) Archaea and Eukarya
 - C) Bacteria and Eukarya
 - D) Eukarya and Animalia
 - E) Archaea and Animalia
- 34) It is estimated that as much as 10% of all species may be in danger of extinction before the end of the century.
- 35) Wood becomes petrified when its tissues are replaced by minerals. Although petrified wood is no longer part of a living organism, which property of life will still be present in the wood?
- A) organization
 - B) homeostasis
 - C) growth and reproduction
 - D) response to stimuli
 - E) metabolism
- 36) An unmanned spacecraft has been sent to another planet to detect new life forms. If the probe could only send back one image, which property or properties of life would be observable in the picture?
- A) organization
 - B) homeostasis and metabolism
 - C) growth
 - D) response to stimuli
 - E) evolution

- 37) Ever since the antibiotic drug penicillin was discovered in 1928, the incidence of resistant bacteria has steadily increased as a direct result of
- A) biodiversity.
 - B) natural selection.
 - C) homeostasis.
 - D) development.
 - E) reproduction.
- 38) Nutrient molecules obtained from the food we eat are used to build cellular structures or for energy. This best represents which characteristic of life?
- A) Living things acquire materials and energy from the environment.
 - B) Living things are homeostatic.
 - C) Living things are adapted.
 - D) Living things grow and develop.
 - E) Living things respond to stimuli.
- 39) You have discovered a previously unknown organism. It is multicellular with a filamentous form, and it absorbs food from its environment. Upon microscopic examination, you see that the cells have nuclei. How would you classify this organism?
- A) domain Bacteria
 - B) kingdom Animalia
 - C) kingdom Protista
 - D) kingdom Fungi
 - E) kingdom Plantae
- 40) Which of these is an example of inductive reasoning used to form a hypothesis?
- A) Every fungus that has ever been studied absorbs its food; therefore, food absorption is characteristic of fungi.
 - B) All fungi absorb their food; if mushrooms are fungi, then the mushroom absorbs its food.
 - C) A mushroom is classified in the kingdom Fungi of the domain Eukarya.
 - D) The cell from a mushroom has a nucleus.
 - E) Fungi are not capable of photosynthesis.
- 41) You are conducting an experiment to determine which brand of fertilizer results in the greatest amount of fruit production by tomato plants. In this example, the response variable would be the
- A) brand of fertilizer.
 - B) unfertilized tomato plants.
 - C) fertilized tomato plants.
 - D) amount of fruit produced by the tomato plants.
 - E) variety of tomato plants.

- 42) Which of the following might plausibly be said by a scientist?
- A) Although no one else gets the same results as I do, since I get the results in my experiments, it is still science.
 - B) Since all the accumulated body of data support it, my hypothesis is undoubtedly "true."
 - C) Test methods are unimportant since anyone can run another test; it is the results that make the substance of science.
 - D) The test's results and conclusion finish the scientist's job; it is enough that a scientist alone knows the results.
 - E) There is always a possibility that a more advanced experiment might falsify my hypothesis.
- 43) Which of the following is a potential consequence if the agricultural industry produced food without the use of technology?
- A) There could be a significant decrease in the amount of food produced.
 - B) There would be a collapse of many of the terrestrial ecosystems on Earth.
 - C) The extinction of the top level species that reside in the communities around the agricultural land.
 - D) The amount of food produced would increase.
 - E) None of these consequences will occur if people stop using technology in the agriculture industry.
- 44) Which of the following represents a potential threat to biodiversity?
- A) People construct artificial reefs to support marine life.
 - B) Humans clear land for agriculture and housing.
 - C) Energy flows through an ecosystem, with much lost as heat.
 - D) Tropical rain forests and coral reefs are found where solar energy is the most abundant.
 - E) In a food chain, one organism feeds on another.
- 45) Which statement regarding science and technology is true?
- A) Science, without the assistance of technology, has brought about life-improving discoveries, such as antibiotics.
 - B) Technology, without the assistance of science, helps us to understand the causes of cancer.
 - C) Science is defined as the application of technological knowledge.
 - D) Combining both science and technology may ease the feeding of the world population by producing new plant strains.
- 46) If a new anti-cancer drug is found to be effective in initial tests with mice, what might researchers conclude?
- A) If the drug was effective in a large number of mice, it will therefore be effective in humans.
 - B) If the drug was effective in a small proportion of mice, it will be effective in a small proportion of humans.
 - C) The mice have provided a positive control in this experiment that proves the drug is effective in humans.
 - D) The drug is effective in the mouse model; it must still be tested in humans.
 - E) The effect of the drug on mice has no bearing on the effect of the drug on humans.

47) Some students consume large amounts of coffee and so-called energy drinks to help them stay alert when studying. You notice that many who engage in this practice seem to do poorly on exams. Suppose you want to investigate the relationship between caffeine consumption and exam performance. Which of the following statements would be an appropriate hypothesis?

- A) Students who consume large amounts of caffeine while studying will have lower exam scores than those who consume less caffeine.
- B) One should avoid consuming too much caffeine while studying.
- C) Too much caffeine is harmful to your health.
- D) Many students consume large amounts of caffeine while studying.
- E) Caffeine increases alertness but also increases anxiety.

48) You are conducting an experiment to determine what concentration of disinfectant is most effective in killing bacteria. In this example, the concentration of disinfectant would represent the

- A) control.
- B) experimental variable.
- C) response variable.
- D) data.
- E) hypothesis.

49) In the late 1800s, Louis Pasteur was searching for a vaccine for anthrax in livestock. One French veterinarian had a local reputation for being able to cure anthrax by applying oils and wrapping the animal in cloth to induce a fever. Pasteur also knew that some animals recovered well on their own when left untreated. Pasteur tested the effectiveness of the local veterinarian's methods by injecting four cattle with anthrax bacteria. He then directed the veterinarian to perform his procedures on two cattle. The other two cattle were left alone. What is the rationale for Pasteur's experimental design?

- A) Two cattle represent a test of the veterinarian's hypothesis; two represent a test of Pasteur's hypothesis.
- B) Two cattle represent a test of the treatment; two serve as a control to determine the likelihood of survival without treatment.
- C) Two cattle represent a test based on inductive reasoning; two serve to test deductive reasoning.
- D) The two cattle that are treated are the only test being conducted; the other two cattle serve no purpose beyond representing all the untreated cattle in France.
- E) The two cattle not being treated were just a whim on Pasteur's part.

50) As the human population size increases

- A) ecosystems remain unaffected.
- B) fewer fossil fuels are burned and carbon dioxide levels remain constant.
- C) it becomes evident that preserving the biosphere has no benefit to humans.
- D) fewer ecosystems are destroyed, resulting in an abundance of biodiversity.
- E) biodiversity is adversely affected as humans have destructive effects on ecosystems.

51) Which statement about ecosystems is true?

- A) Chemicals flow through ecosystems in a one-way direction and are not recycled.
- B) Energy continually cycles through an ecosystem.
- C) Some organisms can produce their own food and these organisms form the base of the food chain.
- D) Within an ecosystem there is a community of organisms, but non-living components are absent.
- E) The location of ecosystems around the world appears to be random. There is no relationship between ecosystem location and factors like climate.

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- A) The difference in survival between the two groups was not dependent on the treatment.
- B) In a small group with 50% survival, the treated cows would have survived anyway.
- C) The number of cows that survived was the same as the number of cows that died.
- D) With such a small group you cannot determine if survival was dependent on the treatment or random chance.
- E) The production of a fever in the treated cattle interfered with the outcome.

53) Give examples of the costs and benefits of using technology.

54) Which of the following statements regarding the scientific method are true? Check all that apply.

- A) Deductive reasoning is used to form a hypothesis.
- B) Observations are used to form a hypothesis.
- C) Experiments need to be repeatable.
- D) The control and experimental groups are identical except for one variable.
- E) The response variable is also known as the independent variable.

55) Which of the following statements regarding the scientific method are true? Check all that apply.

- A) Scientific studies are reported in scientific journals.
- B) At the end of an experiment, a hypothesis is determined to be absolutely true or absolutely false.
- C) The control is not subjected to the experimental variable.
- D) Data is analyzed using statistical tests.
- E) When analyzing data, a higher the p value means results are not likely due to chance.

56) The statement "plants grown from cross-pollinated seeds will grow taller and produce more fruit than plants grown from self-pollinated seeds" is an example of a scientific theory.

57) Historically, the protists were classified in "kingdom Protista." Recently, however, the protists were reclassified into "supergroups." What was the reason for this reclassification?

A) There were too many protist species to fit into a single kingdom.

B) Scientists decided to reclassify protists based on their nutritional mode. For example, all the photosynthesizers were placed together into one supergroup.

C) Scientists reclassified protists based on how many cells the organism contains. For example, there is a supergroup for one-celled organisms, a supergroup for two-celled organisms, etc.

D) New DNA evidence suggests that not all protists share a common ancestor and therefore their classification needed to be reorganized.

58) While exploring a river deep in the Amazon, you discover a new protists. The protist is green and photosynthesizes. In which supergroup will your new protist be classified?

A) SAR

B) Archaeplastida

C) Excavata

D) Amoebozoa

E) Opisthokonta