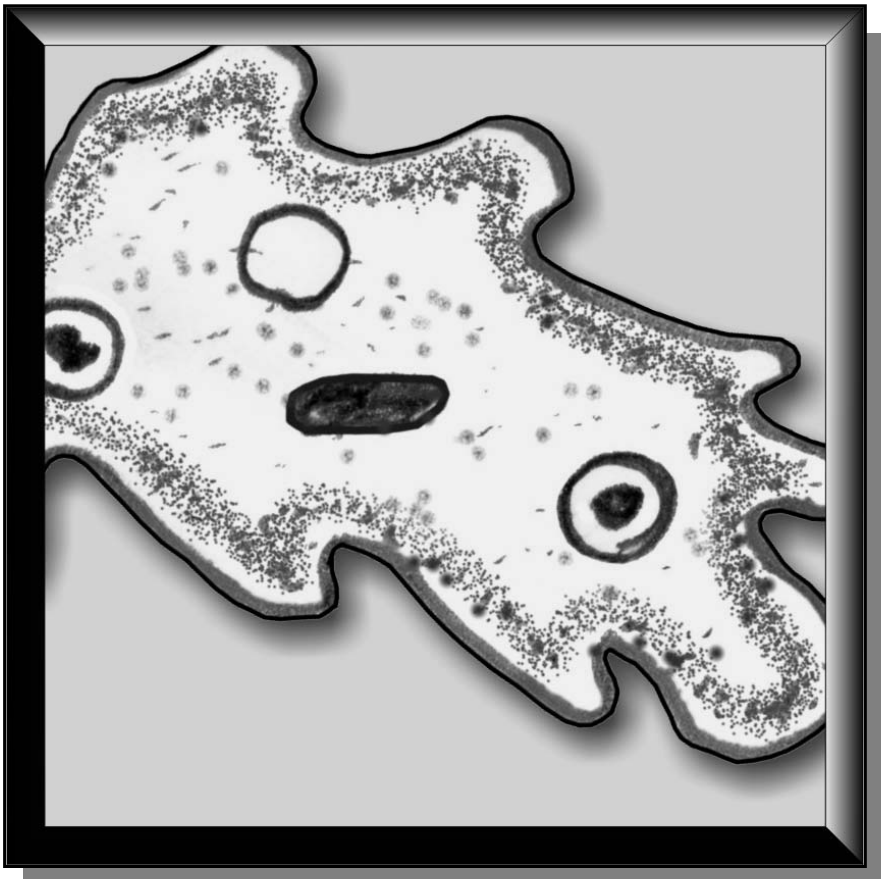
The Principles, Theories & Precepts of Biology

ACTIVITIES



Chapter 6

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The Principles, Theories & Precepts of Biology

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ACTIVITIES
Lesson 1:

THE MYSTERIOUS WORLD OF BACTERIA

You are making progress! ***Answer the following questions. Circle the correct answers or fill in the blanks with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. Bacteria that are responsible for causing illnesses are called: _____.
   (a) microbes (b) antibiotics (c) pathogens (d) antibodies

2. Bacteria that live on the roots of legume plants help make which of the following available to the plant? _____
   (a) oxygen from the air (c) carbon dioxide from the air
   (b) nitrogen from the air (d) water vapor from the air

3. Beneficial bacteria in the digestive system help to synthesize:_____.
   (a) amino acids (b) carbohydrates (c) hormones (d) vitamins

4. List four products that are produced with the help of beneficial bacteria._____
   _____
   _____.

5. In conditions such as tuberculosis and typhoid fever, bacteria grow aggressively in the _____ of the victim.

6. In conditions such as food poisoning and tetanus, bacteria produce powerful_____ that interfere with normal body functions.

7. ***Saprophytes*** are organisms that feed on: _____.
   (a) a living host (b) sick animals (c) themselves (d) dead matter

8. _____ organisms are those that rely on other organisms for food.
   (a) Photosynthetic (b) Autotrophic (c) Heterotrophic (d) none of the above

9. What is the contribution of saprophytes to nature?_____
   _____
   (a) They recycle the materials necessary for life.
   (b) They remove diseased animals from the population.
   (c) They do not take any energy from their environment.
   (d) They cause humans to use proper sanitation practices.

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10. What ability do ***parasites*** lack that causes them to rely on a host for survival?_____
_____
(a) the ability to regulate body temperature (c) the ability to reproduce
(b) the ability to move from place to place (d) the ability to digest nutrients

11. _____ bacteria use energy from the Sun to change non-living nutrients into living tissue.

12. A primary difference between the processes of ***photosynthesis*** and ***chemosynthesis*** is that:
_____
_____.
(a) photosynthesis uses sunlight for energy and chemosynthesis uses chemical reactions for energy
(b) bacteria perform photosynthesis but not chemosynthesis
(c) photosynthesis is an active process and chemosynthesis is a passive process
(d) photosynthesis is not necessary for life, but chemosynthesis is

13. All photosynthesis in bacteria produces oxygen as a byproduct. _____
(a) True or (b) False

14. Which of the following processes converts food energy into useable energy for life processes? _____
(a) chemosynthesis (b) photosynthesis (c) respiration (d) evaporation

15. The primary difference between ***aerobic*** and ***anaerobic respiration*** is the presence or absence of _____.

16. The most common form of respiration is: _____.
(a) aerobic (b) autotrophic (c) anaerobic (d) heterotrophic

17. Place an "X" in front of all of the following statements that are true concerning bacteria.
_____ (a) They are prokaryotic.
_____ (b) They contain membrane-bound organelles.
_____ (c) They contain multiple circular DNA molecules.
_____ (d) Their cell membranes are made of lipids and proteins.

18. Most bacterial cell walls are composed of: _____.
(a) nucleic acids (b) proteins (c) lipids (d) carbohydrates

19. The functions of the bacterial cell wall include which of the following?_____
_____
(a) regulation of DNA replication and translation
(b) regulation of molecules entering and leaving the cell
(c) storage of the cell's energy reserves
(d) transduction of chemical signals to the nucleus

20. The technique that enables scientists to determine the type of cell wall is called_____
_____.

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21. Bacteria that absorb the purple stain are called _____, and those that do not are called _____.

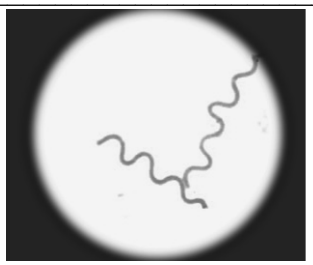
22. Why are gram-negative bacterial infections very serious?_____

_____

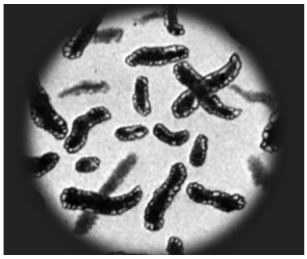
(a) Gram-negative bacteria have an extra lipid-layer that keeps out drugs used to fight bacterial infections.
(b) Gram-negative bacteria do not have a cell wall, enabling the toxic contents of the cell to freely infect all surrounding tissues.
(c) Gram-negative bacteria are disease causing, whereas gram-positive bacteria are not.
(d) all of the above

Label each of the following bacteria types as cocci, bacilli, or spirilla.

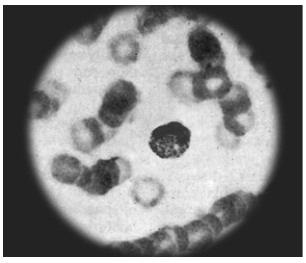
23. _____



24. _____



25. _____



26. A whip-like projection found on some cells that is typically used for movement is called a(n) _____.

27. Which of the following environments is conducive to the survival of Archaebacteria?

_____

(a) deep lakes
(b) mud in swamps
(c) digestive tracts of animals
(d) all of the above

28. Archaebacteria require an oxygenated environment in order to survive. _____
(a) True or (b) False

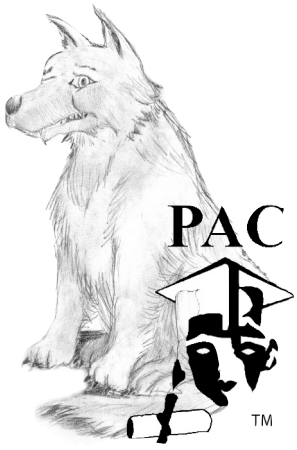
29. The largest and most diverse group of bacteria is the _____, that require oxygen for respiration.

30. Write the **Life Principle**:"_____

_____

_____."

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ACTIVITIES
Lesson 2:

BACTERIA: REPRODUCTION MECHANISMS & COLONIZATION

You are making progress! ***Answer the following questions. Circle the correct answers or fill in the blanks with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. ***Binary fission*** in bacteria produces:
   _____.
   (a) one daughter cell twice the size of the parent cell
   (b) two genetically different daughter cells
   (c) four daughter cells, each with half the number of chromosomes as the parent cell
   (d) two genetically identical daughter cells

2. Binary fission is considered to be a form of asexual reproduction because:_____
   _____.
   (a) it does not involve the exchange of genetic information
   (b) it produces daughter cells similar to the parent cell
   (c) it increases the bacterial population
   (d) genetic information is shared between two parent cells

3. Number the steps of binary fission in the correct order.
   _____ Cell wall elongates, separating the two strands of DNA.
   _____ DNA forms a loop, attaches itself to plasma membrane and copies itself.
   _____ Cell reproduction is completed.
   _____ Cell wall and plasma membrane grow, separating the two DNA strands.

4. If a mistake in DNA replication occurs during binary fission, a marked difference between the parent cell and the daughter cell could result. This phenomenon would be called a(n) _____.

5. The point where the number of new bacteria being produced equals the number of bacteria that are dying is called a(n) _____ of the population.
   (a) initial growth (c) steady state
   (b) exponential phase (d) death phase

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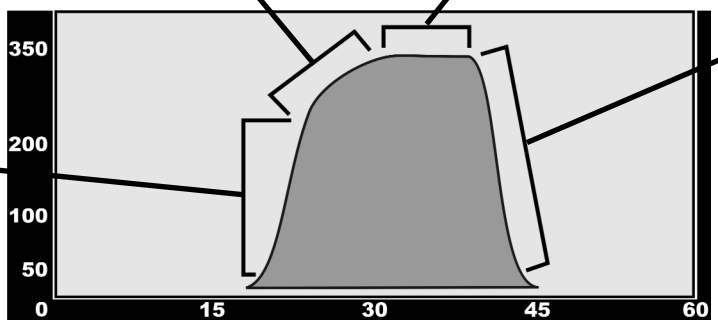
6. Label the phases in the lifespan of bacteria on the diagram below.

(b) _____
_____

(c) _____
_____

(d) _____
_____
_____

(a) _____
_____
_____



Bacteria Lifespan in Days

7. The form of sexual reproduction in bacteria that results in new combinations of genes is called: _____.
   (a) replication (c) binary fission
   (b) conjugation (d) mitosis

8. The protein bridge that forms between two bacteria during sexual reproduction is called a(n): _____.
   (a) pilus (b) plasmid (c) conjugation tube (d) cell wall

9. The small, circular section of DNA that is transferred in bacterial sexual reproduction is called a(n): _____.
   (a) pilus (b) plasmid (c) conjugation tube (d) nucleus

10. Which of the following is an advantage of ***conjugation***?_____
_____
   (a) It results in genetically identical offspring, keeping good genes in the population.
   (b) It results in genetic variation, ensuring that some bacteria will always have the combinations needed for survival.
   (c) It allows bacteria to dispose of their defective genes without harming the population.
   (d) all of the above

11. The process of bacterial reproduction in which genetic material is added to or replaces portions of a bacterium's DNA is called: _____.
   (a) transformation (c) conjugation
   (b) binary fission (d) colonization

12. Which of the following best describes what happens to the DNA of a dead bacterium?
_____
_____
   (a) It disintegrates and is recycled into the environment.
   (b) It is transformed into structural proteins that will help to build a new bacterium.
   (c) It is absorbed by other bacteria and incorporated into their own DNA.
   (d) It is used to code for the regeneration of the dead bacterium.

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13. What is the role of the spore in a bacterial population?_____
_____

(a) It is used in difficult conditions to produce a new individual either immediately or after a period of dormancy.
(b) It is a quick way to reproduce without the expense of much energy as in conjugation and transformation.
(c) It ensures genetic variation within a particular species of bacteria.
(d) It is used as an energy source for bacteria in difficult conditions when food is scarce.

14. ***Endospores*** enable bacteria to survive harsh conditions because they are:_____
_____.

(a) extremely large
(b) very numerous
(c) resistant to harsh conditions
(d) inside the bacteria

15. What can you infer from the information about spore production in your text?_____
_____

(a) It is not a very efficient means of reproduction.
(b) It is only beneficial under mild conditions.
(c) It is a form of asexual reproduction.
(d) It contributes to the decline in a bacterial population.

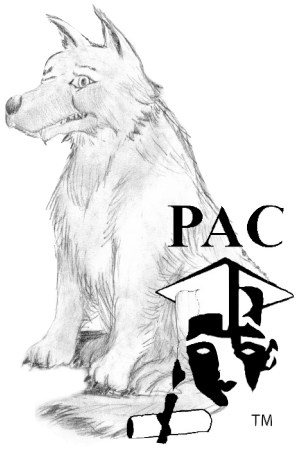
16. Bacteria's ability to survive is enhanced by the formation of colonies. _____

(a) True or (b) False

17. Write the **Life Principle**:

"_____
_____
_____."

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BACTERIA: THE ROLES THEY PLAY

You are making progress! ***Answer the following questions. Circle the correct answers or fill in the blanks with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. The mass of living bacteria is greater than that of all other organisms combined. _____
   (a) True or (b) False

2. Bacteria help to return raw materials to the Earth for the cycle of life by:_____
   _____.
   (a) breaking down the tissues of dead plants and animals
   (b) preparing the soil to receive nutrients from dead plants and animals
   (c) producing raw materials needed for life and secreting them into the soil
   (d) none of the above

3. Plants and other organisms cannot use nitrogen gas directly. _____
   (a) True of (b) False

4. The process by which bacteria convert nitrogen gas into a useable form for plants is called:
   _____.
   (a) nitrogen respiration (c) nitrogen digestion
   (b) nitrogen fixation (d) nitrogen fermentation

5. Place an "X" in front of each of the following foods that are made with the help of bacteria.
   _____ (a) pickles
   _____ (b) cheese
   _____ (c) yogurt
   _____ (d) vinegar
   _____ (e) buttermilk

6. The products of bacterial sewage treatment include which of the following?_____
   _____
   (a) purified water
   (b) nitrogen
   (c) carbon dioxide
   (d) all of the above

7. The sludge left over from bacterial sewage treatment is used as_____
   _____.

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8. *Thiobacillus ferroxidans* produces _____, which reacts with copper to form _____.
   (a) hydrochloric acid; copper chlorate
   (b) sulfuric acid; copper sulfate
   (c) phosphoric acid; copper phosphate
   (d) palmitic acid; copper palmitate

9. *Thiobacillus ferroxidans* helps ***metallurgists*** to extract the copper from ***copper ore*** because: _____.
   (a) it produces a copper-containing, water-soluble product that can be washed out of the ore as it forms
   (b) it dissolves copper and isolates it into retrievable pools
   (c) it digests copper, allowing metallurgists to retrieve it by killing the large bacterial population
   (d) it radioactively labels copper so that it can be identified by metallurgists for mining

10. _____ was the first person to show that certain bacteria cause disease, establishing the _____.
   (a) Joseph Lister; bacterial infection theory
   (b) Louis Pasteur; germ theory of disease
   (c) Isaac Newton; infection theory
   (d) Francis Bacon; bacterial disease theory

11. *Streptococcus pyrogenes* is the bacterium responsible for: _____.
   (a) tuberculosis (b) tetanus (c) cholera (d) strep throat

12. Bacteria can cause disease in two ways: by releasing toxins and by:_____ _____.
   (a) entering cells and taking over cellular processes
   (b) breaking down cells and tissues for food
   (c) enhancing the function of organ systems
   (d) none of the above

13. Meat, poultry, and eggs should be properly cooked to prevent the presence of_____ _____, a bacterium that causes food poisoning in humans.

14. A powerful drug which kills certain bacteria by interfering with critical cell processing is called a(n) _____.

15. The mechanism of penicillin function is to interfere with bacterial:_____ _____.
   (a) DNA transcription (c) protein packaging
   (b) cell wall synthesis (d) motility

16. Most bacteria are not harmful. _____ (a) True or (b) False

17. _____—the killing of bacteria with heat or chemicals—is the simplest way to control bacteria.

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18. ***Probiotics*** are the friendly bacteria that inhabit the:_____ _____.

(a) urinary system (c) nervous system

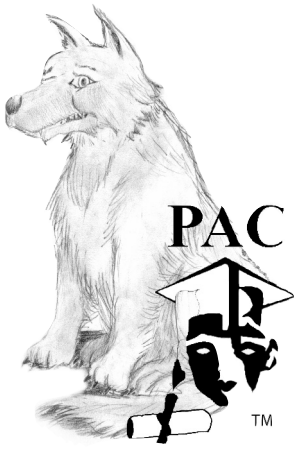
(b) cardiovascular system (d) digestive system

19. Probiotics help the body to digest food and manufacture_____.

20. Write the **Life Principle**:

"_____ _____ _____."

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ACTIVITIES
Lesson 4:

BACTERIA: PROBIOTICS, YOUR PERSONAL PHARMACY

You are making progress! ***Answer the following questions. Circle the correct answers or fill in the blanks with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. Dr. Elie Metchnikoff's book, _____ brought the benefits of probiotics to the attention of the general public in 1908.

2. Dr. Metchnikoff identified a type of white blood cell called a(n):_____ _____ that engulfs and destroys bacteria.
   (a) erythrocyte (b) platelet (c) phagocyte (d) osteocyte

3. ***Phagocytosis*** is an important function of the: _____.
   (a) digestive sytem (c) immune system
   (b) nervous system (d) reproductive system

4. Dr. Metchnikoff believed that the consumption of large quantities of cultured foods like yogurt would: _____.

   (a) impair the function of the cardiovascular system
   (b) maintain beneficial bacteria in the gastrointestinal tract
   (c) decrease the life span by promoting bacterial growth
   (d) cause gastrointestinal acid production, killing bacteria

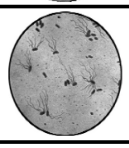
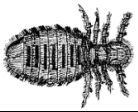
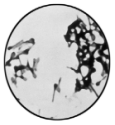
5. Beneficial bacterial microorganisms enter a baby's body in the birth canal and rapidly make their way into the _____ where they establish themselves in large colonies.
   (a) liver (b) intestine (c) muscle (d) kidney

6. Babies not allowed to nurse ***mother's milk*** are more susceptible to disease and allergies than are babies allowed to nurse immediately after birth. _____
   (a) True or (b) False

7. Place an "X" in front of all of the following that are functions of probiotics in humans.
   _____ (a) enhancing the function of the gastrointestinal tract
   _____ (b) protecting the body from harmful invaders
   _____ (c) producing hormones and vitamins
   _____ (d) help maintain growth, function, and immune response

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Probiotics help to protect the body against pathogenic or harmful foreign invaders. Use the chart below to answer questions # 8-10 concerning bacterial diseases.

Disease	Bacteria Involved	Bacteria, Carrier or Symptom	Symptoms/ Comments	Mode of Transmission
Pneumonia	Pneumococcus		Inflamed, infected, weakened lungs, persistent cough; can be fatal	Airborne water droplets
Tuberculosis	Tubercle bacillus		Fatigue, persistent cough, bleeding in lungs; can be fatal	Airborne water droplets
Cholera	Vibrio cholerae		Severe vomiting, diarrhea; often fatal	Contaminated water
Typhoid fever	Samonella typhi or typhosa		Fever, headaches, rash, diarrhea; often fatal	Contaminated food or water
Bubonic plague	Pasteurella pestis or yersinia (from infected rats)		Swollen glands, bleeding under skin; often fatal; killed nearly one third the population of Europe in the mid 1300's	Flea bites
Typhus	Rickettsia prowazekii		Chills, fever, rash; can be fatal	Lice bites (especially from body lice)
Lyme disease	Borrelia burgdorferi (from infected animals)		Often a large "bull's eye" rash, pain, swelling in joints	Tick bites, embedding
Syphilis	Treponema pallidum		Lesions, damages Central Nervous System if left untreated	Sexual contact
Tetanus	Clostridium tetani		Severe, prolonged muscle spasm; "lock-jaw"	Wounds, broken skin
Leprosy	Mycobacterium leprae		Skin lesions, tissue degeneration, nerve damage	Personal contact

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8. Which of the following diseases is transmitted by contaminated water and food?_____
_____
(a) tetanus (b) typhoid fever (c) diphtheria (d) tuberculosis

9. The symptoms of tetanus include which of the following?_____
_____
(a) fever, sore throat, fatigue (c) nerve damage, skin lesions
(b) rash, chills, fever (d) severe, prolonged muscle spasms

10. Fleas can transmit _____, and ticks can carry_____.
(a) typhus; leprosy (c) bubonic plague; lyme disease
(b) leprosy; bubonic plague (d) lyme disease; typhus

11. More than _____ different species of microorganisms live in the human digestive system.

12. Which of the following can disrupt the balance of beneficial microorganisms in the body?
_____
(a) diet high in sugar (c) excessive alcohol intake
(b) diet low in soured milk products (d) all of the above

13. Prescription antibiotics are special drugs that have the ability to distinguish between harmful bacteria and beneficial bacteria. _____ (a) True or (b) False

14. Healthy individuals usually have a balance of about _____ good to _____ harmful organisms in the intestines.
(a) 50%; 50% (b) 25%; 75% (c) 85%; 15% (d) 75%; 25%

15. Harmful gut bacteria are responsible for a condition known as_____ _____ which is poisoning from one's own body.

16. List five symptoms of a bacterial imbalance in the gastrointestinal tract._____
_____
_____
_____

17. The balance of natural flora in the gut can be restored in which of the following ways?
_____
(a) avoiding soured-milk products (c) eating chicken and beef
(b) taking certain supplements (d) none of the above

18. Scientists who ***scour*** nature for compounds or organisms that fight disease or perform everyday jobs such as removing fabric stains and keeping bread fresh are called:
_____.
(a) immunologists (b) bioprospectors (c) microbiologists (d) physiologists

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19. Soil based organisms have been:_____
_____.
(a) eliminated by the introduction of chemicals, pesticides and water chlorination
(b) proven helpful in the digestive tracts of humans and livestock
(c) proven aggressive in crowding out pathogens
(d) all of the above

20. The soil based organism *Bacillus Subtilis* is effective in eliminating:_____
_____.
(a) allergic reactions (b) appendicitis (c) dysentery (d) psoriasis

21. Write the **Life Principle**:
"_____
_____
_____."

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VIRUSES: A VERY STRANGE PHENOMENON

You are making progress! ***Answer the following questions. Circle the correct answers or fill in the blanks with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. ***Viruses*** are not classified into any kingdom or phylum because they are not considered to: _____.
   (a) contribute to disease (c) have genetic material
   (b) be living organisms (d) be beneficial

2. A virus cannot reproduce itself and has no means of converting nutrients into useable energy. _____ (a) True or (b) False

3. Dimitri Ivanovsky determined that the *Tobacco Mosaic Virus* was due to a(n): _____.
   (a) bacterium (c) destructive cell
   (b) insect (d) invisible particle

4. A virus is a non-living particle consisting of only _____ surrounded by a(n) _____.
   (a) cells; cell wall
   (b) DNA or RNA; protein coat
   (c) carbohydrates; lipid bilayer
   (d) degredative enzymes; membrane

5. Viruses cannot live outside a living cell. _____ (a) True or (b) False

6. Place the following events of viral infection in chronological order.
   _____ (a) virus fuses with cell membrane
   _____ (b) virus contacts cell
   _____ (c) virus releases genetic information into cell
   _____ (d) host cell makes copies of virus
   _____ (e) new viruses infect other cells
   _____ (f) virus expresses its genes in host

7. The process by which viral enzymes destroy a host cell's DNA, ribosomes and resources to reproduce is called _____

8. The process by which viral genes combine with the host cell's DNA, produce viral ***mRNA***, and gradually make new viruses is called _____.

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Use the chart below to answer questions #9-12.

Symptoms and Transmission of Persistant Viral Diseases

Disease	Mode of Transmission	Symptoms
AIDS	Sexual contact, contaminated blood products, contaminated hypodermic needles and syringes	Immune system failure; fatal
Chicken Pox	Air	Fever, blisters that form scabs
Hemorrhagic fever: Ebola virus	Sexual contact, contact with blood or other body fluids	Fever, epithelial cell destruction, massive hemorrhaging; often fatal
Infectious hepatitis	Contaminated food or water	Fever, chills, nausea, swollen liver, jaundice, joint pain
Influenza (flu)	Air	Muscle aches, sore throat, cough, headache
Measles	Air	Blotchy rash, high fever, can cause fetal blindness, throat
Mumps	Air	Swollen painful salivary glands
Polio	Contaminated food or water	Headache, stiff neck, possible paralysis
Rabies	Bite of infected animal	Fever, paralysis; fatal unless treated
Rubella (German measles)	Air	Rash, swollen glands
Smallpox	Air	High fever, large pustules on skin; often fatal
Yellow fever	Mosquitoes	Fever, aches, nausea, liver cell destruction; can be fatal

9. Which of the following viral diseases is transmitted by mosquitoes?_____

_____

(a) Chickenpox (c) Polio
(b) Mumps (d) Yellow fever

10. Immune system failure is associated with which of the following viral diseases?_____

_____

(a) Rabies (b) Mumps (c) AIDS (d) Infectious hepatitis

11. Which of the following viral diseases is transmitted in the air?_____

_____

(a) Chickenpox (c) Influenza
(b) Measles (d) all of the above

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12. The symptoms of Hemorrhagic fever caused by Ebola Virus include which of the following?_____ _____
    (a) swollen glands (c) rash
    (b) massive hemmorrhaging (d) congestion

13. Messenger RNA carries genetic information from the DNA in the nucleus to the: _____ in the cytoplasm.
    (a) endoplasmic reticulum (c) Golgi apparatus
    (b) ribosome (d) lysozome

14. A virus that infects bacteria is called a(n) _____.

15. Viral DNA that has become part of the host cell's DNA is called a(n)_____ _____.

16. Lambda DNA can emerge from host chromosomes in the event of radiation or chemical activation, resulting in:_____.
    (a) assembly of new viruses (c) destruction of the virus
    (b) cell proliferation (d) net loss of viral DNA

17. All viruses are: _____.
    (a) autotrophic (b) saprophytic (c) parasitic (d) mutualistic

18. Which of the following is an example of a viral disease?_____
    (a) heart disease (b) mumps (c) botulism (d) diabetes

19. In the human body, Polio virus usually attaches to the surface of a cell in the: _____.
    (a) throat or nose (c) kidney or liver
    (b) eyes or ears (d) stomach or intestine

20. Vaccines have almost completely eliminated polio. _____ (a) True or (b) False

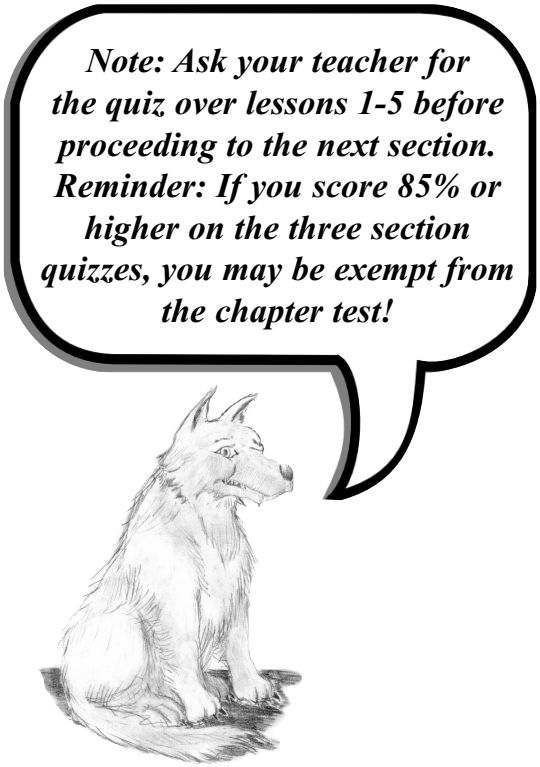
21. ***Retroviruses*** are a class of viruses that contain _____ as their genetic material.

22. Genetic material in retroviruses is copied from _____ to _____.
    (a) DNA; RNA (c) RNA; DNA
    (b) DNA; DNA (d) RNA; RNA

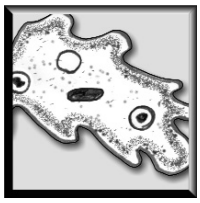
23. Viruses are specific for _____ on the surface of certain body cells.
    (a) sugars (b) proteins (c) nucleic acids (d) lipids

24. Write the **Life Principle**:
    "_____
    _____
    _____."

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ACTIVITIES
Lesson 6:

PROTISTA: A WORLD OF ANIMAL-LIKE WONDERS

You are making progress! ***Answer the following questions. Circle the correct answers or fill in the blanks with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. Members of the Kingdom Protista could best be described as:_____.
   (a) plants (b) animals (c) fungi (d) none of these

2. Single-celled eukaryotes do not have the specialized multicellular structures found in the other eukaryotic kingdoms. _____ (a) True or (b) False

3. Protozoans are _____-like protists.
   (a) animal (b) plant (c) fungi (d) algae

4. Organisms of the phylum Zoomastigina are also called: _____.
   (a) ciliates (b) flagellates (c) sporozoans (d) heliozoans

5. A whiplike projection found on some cells that is typically used for movement is called a(n) _____.

6. Zoomastigina benefit termites by:_____
   _____.
   (a) fighting off harmful bacteria that enters the gut
   (b) digesting cellulose fibers in the wood
   (c) keeping the external environment free of predators
   (d) providing shelter for the termites

7. The relationship between termites and Zoomastigina is an example of:_____
   _____.
   (a) mutualism (c) saphrotism
   (b) parasitism (d) commensalism

8. A parasitic flagellate called *Trypanosoma* lives in the human bloodstream and causes:
   _____.
   (a) Toxoplasmosis
   (b) African sleeping sickness
   (c) Amoebic dysentery
   (d) Typhoid fever

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9. The most striking feature of the organisms in the phylum *Sarcodina* is that they have no standard: _____.
   (a) location (c) body shape
   (b) reproductive cycle (d) movement pattern

10. The organ of movement and feeding in an amoeba is called a(n):_____ _____.
    (a) flagellum (b) pseudopod (c) cillium (d) phagosome

11. The class of sarcodines called the _____ have produced huge deposits of microscopic shells on the bottom of the ocean floor.
    (a) amoebas (b) foraminiferas (c) heliozoans (d) protozoans

12. _____ produce thin shells of silica which is the substance used to make glass.

13. _____ do not have structures for movement.
    (a) zoomastiginans (c) sporozoans
    (b) sarcodines (d) ciliates

14. A small, typically single-celled structure capable of producing a new individual, either immediately or after a period of dormancy is called a(n)_____ _____.

15. Short, hairlike projections of some cells that are used to pull an organism through the water with a coordinated rowing movement are called _____.

16. Ciliates live in: _____.
    (a) oceans (b) mud (c) volcanoes (d) lakes

17. The ***contractile vacuole*** of the paramecium functions to:_____ _____.
    (a) store and mobilize nutrients
    (b) collect and expel water
    (c) control body movement
    (d) control metabolism

18. The ***macronucleus*** of the paramecium controls _____.

19. The ***micronucleus*** of the paramecium:_____ _____.
    (a) stores copies of all the cell's genes
    (b) controls metabolism
    (c) stores and mobilizes nutrients
    (d) none of the above

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Matching:

20. _____ ***gullet*** (a) waste-discharging region on a paramecium

21. _____ ***oral pore*** (b) depression on a paramecium used for the intake of food particles

22. _____ ***anal pore*** (c) form of sexual reproduction that results in new combinations of genes

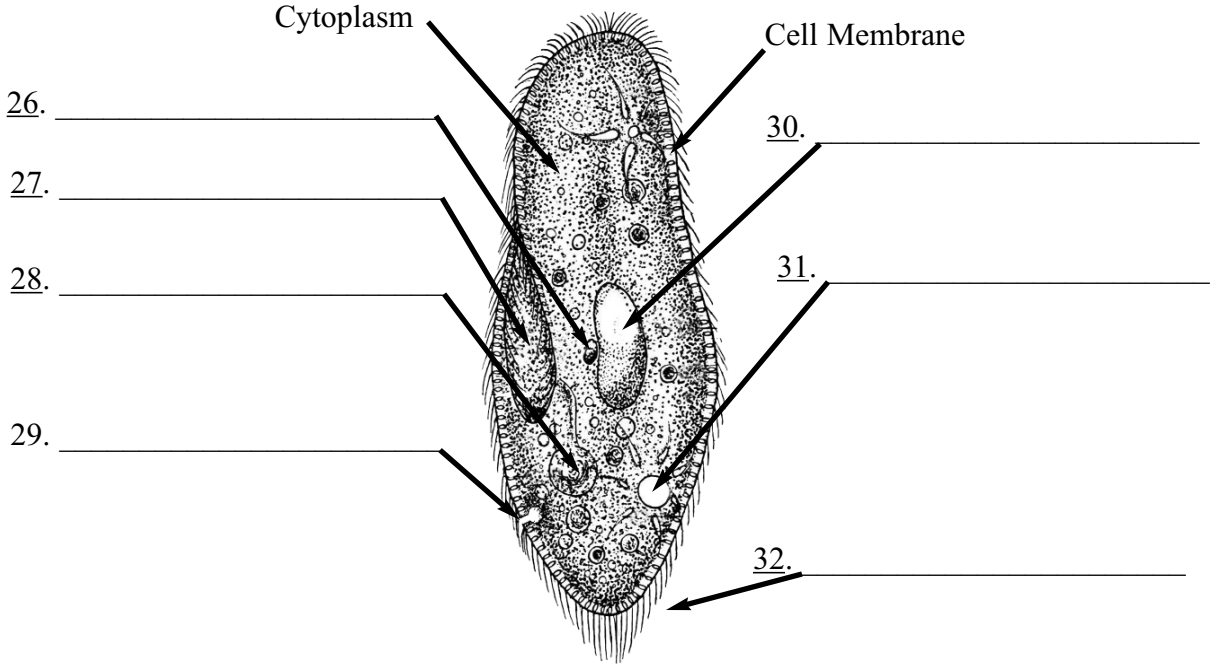
23. _____ ***trichocysts*** (d) the food intake end of a paramecium where the gullet is found

24. _____ ***conjugation*** (e) tiny-bottle-shaped structure embedded in the paramecium and discharged in time of need for defense

25. *Balantidium coli* is transmitted to humans through the _____ of infected animals.

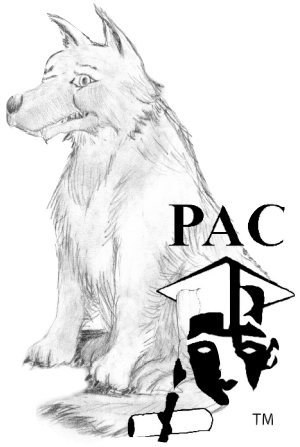
Label the diagram of the paramecium below.

Paramecium



33. Write the **Life Principle**:
"_____
_____
_____."

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ACTIVITIES
Lesson 7:

PROTISTA: A WORLD OF PLANT-LIKE WONDERS

You are making progress! ***Answer the following questions. Circle the correct answers or fill in the blanks with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. Plant-like protists contain _____, organelles that are present in plants.
   (a) cuticles (b) cotyledons (c) chloroplasts (d) pollen grains

2. The principal pigment of green plants is called _____.

3. ***Algae*** is a general term used to describe all:_____
   _____.
   (a) single-celled heterotrophic organisms
   (b) multi-cellular photosynthetic organisms
   (c) single-celled photosynthetic organisms
   (d) multi-cellular heterotrophic organisms

4. List the three phyla of algae in plant-like protists:_____
   _____

5. A typical Euglena is about 50 micrometers in length and has two:_____.
   (a) nuclei (b) eyespots (c) flagella (d) chloroplasts

6. The function of the ***eyespot*** in the euglena is to:_____
   _____.
   (a) locate sufficient light for photosynthesis
   (b) guide the euglena to water regions rich in food
   (c) produce light so the euglena can locate nutrients
   (d) distract predators away from the nucleus of the organism

7. Euglenas reproduce through: _____.
   (a) conjugation (c) binary fission
   (b) transformation (d) sporogenesis

8. The firm, flexible coating outside the plasma membrane of the euglena is called a(n):
   _____.
   (a) cell wall (b) cuticle (c) pellicle (d) protein coat

9. Dinoflagellates belong to the phylum: _____.
   (a) Pyrrophyta (b) Chrysophyta (c) Euglenophyta (d) Bryophyta

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10. Dinoflagellates are named after a chemical reaction that they can undergo which produces: _____.
(a) acid (b) fire (c) light (d) gas

11. The phenomenon which occurs when algae reproduce so rapidly in aquatic environments that they take over their habitat, making the water appear the same color as the algae itself is called _____.

12. The bloom of the dinoflagellates causes what is known as a: _____.
(a) green tide (b) red tide (c) blue tide (d) brown tide

13. Shellfish such as clams, oysters and mollusks can survive the bloom of the dinoflagellates because: _____.
(a) they are immune to the toxin released by the bloom
(b) they have shells that keep the bloom from contacting them
(c) they emit a toxin that kills the bloom in their immediate environment
(d) all of the above

14. The phylum Chrysophyta includes which of the following?_____
_____
(a) yellow-green algae (c) diatoms
(b) golden algae (d) all of the above

15. Chrysophytes have cell walls that contain _____ rather than cellulose.
(a) chitin (b) pectin (c) starch (d) glycogen

16. ***Diatoms*** have a unique:_____ among the chrysophytes.
(a) cell wall composition
(b) mode of locomotion
(c) metabollic rate
(d) chloroplast composition

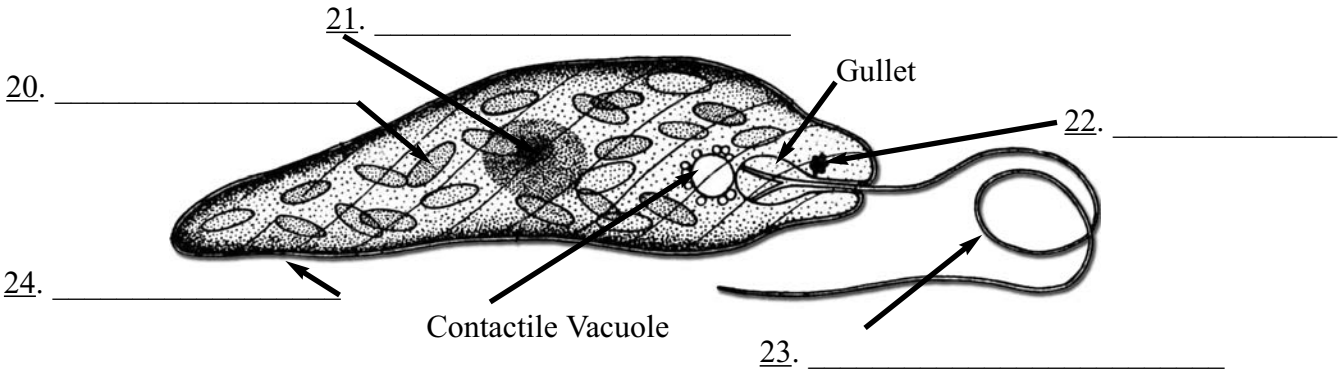
17. Silicon dioxide as found in diatoms is the principal component of:_____
_____.
(a) steel (b) wood (c) glass (d) plastic

18. Diatoms are the _____ creatures on earth.
(a) most diverse (c) most endangered
(b) most abundant (d) most isolated

19. Diatomaceous earth can be used as a(n): _____.
(a) filter (b) abrasive (c) insect deterrent (d) all of these

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Review Question:
Label the diagram of the Euglena below.

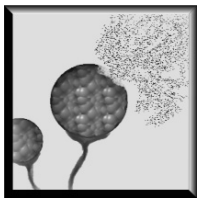


25. Write the **Life Principle**:
"_____
_____
_____."

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ACTIVITIES
Lesson 8:

SLIME MOLDS AND WATER MOLDS: PROTISTA OR FUNGI?

You are making progress! ***Answer the following questions. Circle the correct answers or fill in the blanks with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. Slime molds have characteristics of both the Protista and _____ kingdoms.
   (a) Animalia (c) Plantae
   (b) Fungi (d) Archaebacteria

2. One difference between fungi and slime molds is that slime molds do not have:_____ _____.
   (a) chlorophyll (c) cell walls of chitin
   (b) centrioles (d) colonial characteristics

3. The feeding stage mass of slime molds is called a(n)_____ _____.

4. Most slime molds are harmful to plants and animals. _____ (a) True or (b) False

5. Cellular slime molds belong to the pylum _____.

6. Cellular slime molds begin their life cycles resembling:_____.
   (a) amoebas (c) trypanosomes
   (b) sporozoans (d) paramecia

7. A ***fruiting body*** is a reproductive structure in cellular slime molds that produces _____.

8. Acellular slime molds belong to the phylum _____.

9. Acellular slime mold masses are made up of:_____ _____.
   (a) thousands of cells, each with an individual nucleus
   (b) one cell with thousands of nuclei
   (c) one cell with one nucleus
   (d) none of the above

10. Which of the following habitats would best support the growth of slime mold?_____ _____
    (a) a garden that is raked daily
    (b) an arid desert
    (c) under a moist dead tree
    (d) a rock garden

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11. Water molds act as _____,
_____ and _____.

12. Water molds operate in a _____ medium.
(a) fresh water (b) salt water (c) rocky (d) sandy

13. Scientists cannot agree on how to categorize water molds.____ (a) True or (b) False

14. A microbiologist studies which of the following?_____
_____
(a) microscopic living organisms
(b) the interaction of microorganisms with people
(c) microscopic infectious agents
(d) all of the above

15. Write the **Life Principle**:
"_____
_____
_____."

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ACTIVITIES
Lesson 9:

PROTIST DISEASES

You are making progress! ***Answer the following questions. Circle the correct answers or fill in the blanks with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. African sleeping sickness is caused by a flagellate protist of the genus:_____ _____.
   (a) Trypanosoma (c) Phytophthora
   (b) Toxoplasma (d) Giardia

2. African sleeping sickness is passed through the bite of the: _____.
   (a) sand flea (b) mosquito (c) tsetse fly (d) seed tick

3. Symptoms of sleeping sickness include which of the following?_____ _____
   (a) destruction of blood cells
   (b) destruction of central nervous system
   (c) chills and rashes
   (d) all of the above

4. Place an "X" in front of all of the following protists that can be found in contaminated water.
   _____ (a) Trypanosoma
   _____ (b) Toxoplasma
   _____ (c) Entamoeba
   _____ (d) Giardia

5. Symptoms of amoebic dysentery and giardiasis include abdominal pain and severe_____ _____.

6. Amoebic dysentery is most common: _____.
   (a) in areas with poor sanitation
   (b) in daycare centers
   (c) among campers
   (d) in first world countries

7. Giardias may be present in water that appears to be very clean. _____
   (a) True or (b) False

8. Symptoms of giardiasis may mimic a peptic ulcer or: _____.
   (a) the common cold (c) gall bladder disease
   (b) an allergic reaction (d) the influenza virus

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9. The best way to prevent contracting giardiasis is to:_____ _____.
   (a) thoroughly boil water when camping
   (b) avoid sleeping in areas with poor sanitation
   (c) wash hands before drinking out of streams
   (d) check streams for "floaties" before drinking

10. The most serious infectious disease caused by protists in tropical and subtropical regions of the world is: _____.
   (a) Late blight (c) Giardiasis
   (b) Malaria (d) Chagas' disease

11. The first standard treatment for _____ was ***quinine***, a derivative of the Cinchona tree.

12. _____ discovered the protist *plasmodium* in the intestine of mosquitoes and established the major features of the life cycle of this protist.
   (a) Dr. Ronald Ross
   (b) Dr. Carolyn Kaiser
   (c) Dr. Gary Mold
   (d) Dr. James Shultz

13. Plasmodium is transmitted through the bite of the Anopheles: _____.
   (a) fly (b) tick (c) flea (d) mosquito

14. After Plasmodium enters the bloodstream, it infects_____ _____ cells.
   (a) skin and muscle (c) liver and blood
   (b) nerve and bone (d) kidney and adipose

15. Cells that are infected by Plasmodium eventually burst open, releasing waste products and toxins into the bloodstream. _____ (a) True or (b) False

16. The malaria eradication program involved ***chloroquine*** and _____.

17. Strains of Plasmodium began to emerge with resistance to chloroquine following the malaria eradication program. _____ (a) True or (b) False

18. Whirling trout disease is caused by the protist: _____.
   (a) Plasmodium falciparum (c) Myxobolus cerebralis
   (b) Trypsanoma cruzi (d) Entamoeba hystolytica

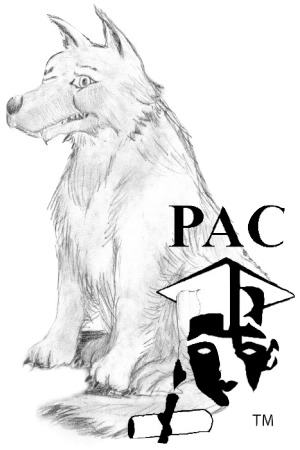
19. Whirling-trout disease attacks the _____ of infected trout.
   (a) cartilage and nervous system
   (b) bone and circulatory system
   (c) smooth muscle and urinary system
   (d) all of the above

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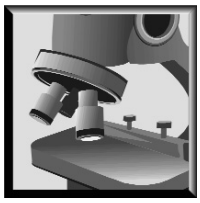
20. Brown trout are: _____.
    (a) particularly susceptible to whirling-trout disease
    (b) not in contact with the disease-causing protist
    (c) resistant to whirling-trout disease
    (d) native to the northwestern United States

21. Write the **Life Principle**:
    "_____
    _____."

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ACTIVITIES
Lesson 10:

THE SIMPLE THINGS IN LIFE

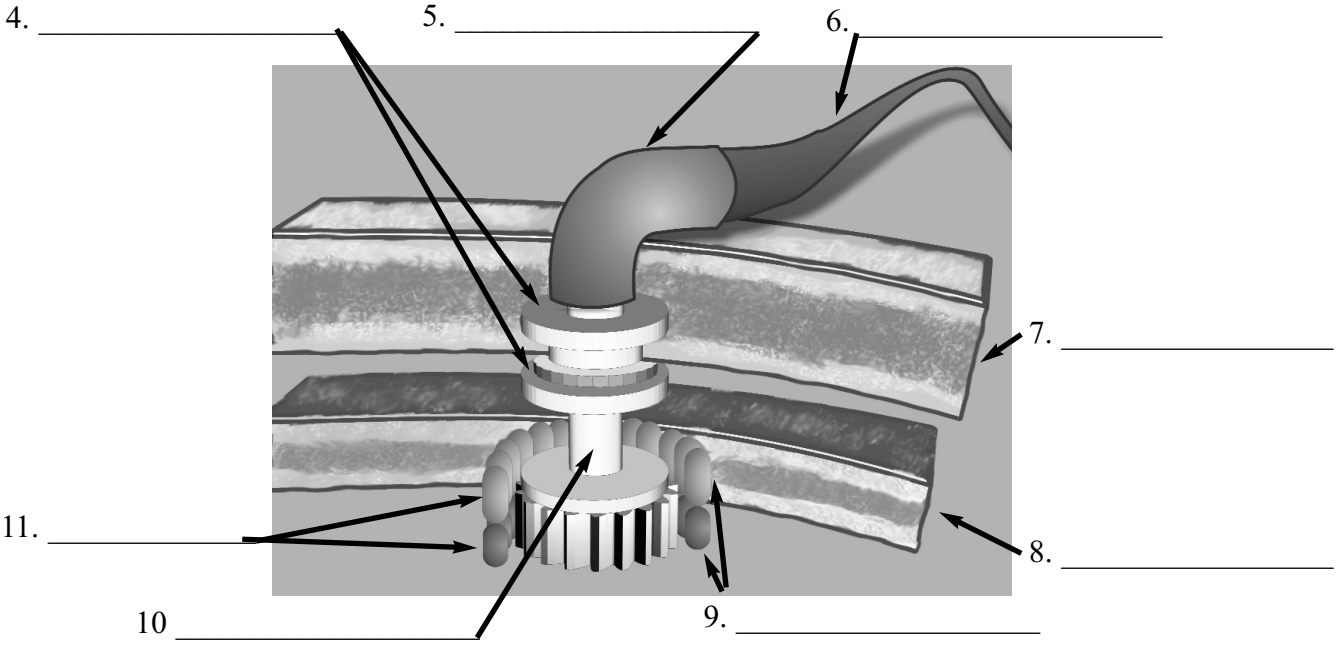
You are making progress! ***Answer the following questions. Circle the correct answers or fill in the blanks with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. The ***genome*** for Haemophilus influenzae Rd has _____ base pairs coding for 1,743 genes.

2. The Haemophilus influenzae Rd organism can be described as "simple" because it has very few genes involved in DNA replication. _____ (a) True or (b) False

3. Flagella can be used by bacteria not only for locomotion, but for:_____ _____.
   (a) attachment to a solid object
   (b) protection from predators
   (c) reproductive purposes
   (d) sensing hot or cold environments

Label the "motor" parts pertaining to the bacterial flagelum below for #4-11.



12. The flagellum can be described as irreducibly complex. _____
    (a) True or (b) False

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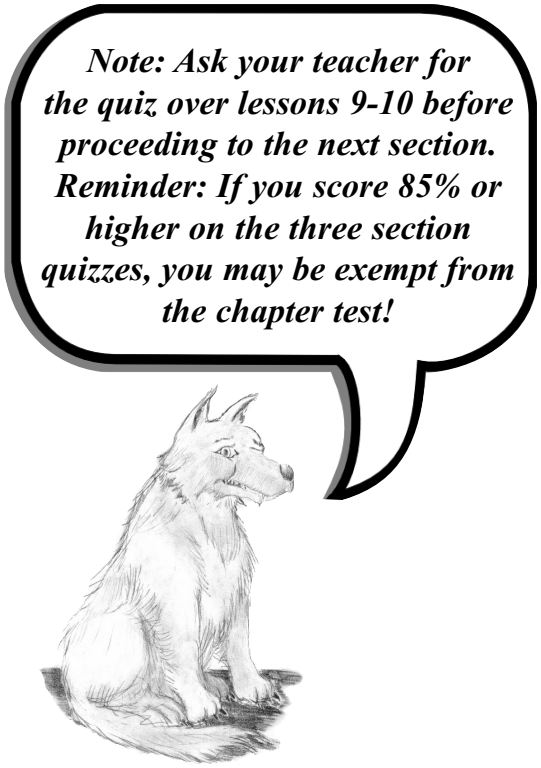
13. _____ described the cell as "a simple little lump of ***albuminous*** combination of carbon."
    (a) Michael Denton (c) Ernest Haeckel
    (b) Scott Minnich (d) Carolus Linnaeus

14. The information content of a simple cell can be compared to_____ _____ pages of the Encyclopedia Britannica.

15. Molecular biologist Michael Denton describes the cell as evidence of:_____ _____.
    (a) design and complexity
    (b) human intelligence and ingenuity
    (c) construction by random processes
    (d) none of the above

16. Sir Fred Hoyle compares the probability of a higher life form emerging from macromolecules to: _____.
    (a) a tornado in a junkyard
    (b) a spaceship in another galaxy
    (c) a great city like London or New York
    (d) an outboard motor

15. Write the **Life Principle**: "_____ _____ _____."



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ACTIVITIES
Lesson 11:

FUNGI: PART I

You are making progress! ***Answer the following questions. Circle the correct answers or fill in the blanks with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. The role of fungi in nature is primarily: _____.
   (a) photosynthesis (c) anabolism
   (b) decomposition (d) commensalism

2. Fungi are all _____ organisms.
   (a) heterotrophic (c) photosynthetic
   (b) autotrophic (d) mutualistic

3. Fungi produce _____ that break down food particles outside their bodies.

4. The mass of ***hyphae*** that grows in a food source and forms the living body of a fungus is called the: _____.
   (a) fruiting body (c) mycelium
   (b) zygospore (d) fungal bloom

5. The living body of a fungus is made from a web of tiny filaments called_____ _____.

6. The living body of a fungus is usually the part of the fungus that we see. _____
   (a) True or (b) False

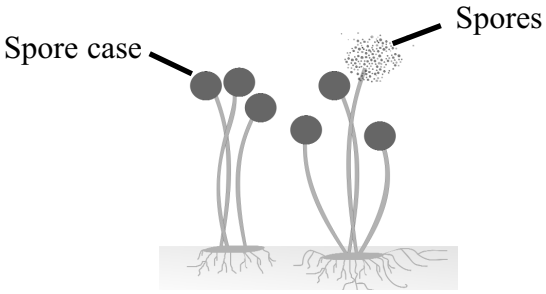
7. All fungi reproduce sexually. _____ (a) True or (b) False

8. When a + hypha fuses with a – hypha, the two nuclei:_____ _____.
   (a) fuse to form a diploid nucleus
   (b) produce haploid spores that fuse
   (c) fuse to form a haploid nucleus
   (d) fuse with the spores of a third hypha

9. List the four different phyla of fungi:_____ _____

10. A zygote surrounded by a protective covering found in the Zygomycetes is called a(n): _____.
    (a) mycelium (c) ascus
    (b) ascospore (d) zygospore

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Bread Mold

11. A bread mold releases spores as shown above in order to:_____
    (a) respire (c) absorb nutrients
    (b) reproduce (d) eliminate wastes

12. The bread molds are contained in which genus of the phylum Zygomycetes?_____
    _____
    (a) Amanita (c) Rhizopus
    (b) Saccharomyces (d) Aspergillus

13. The tough sac of an Ascomycete that contains the spores produced by sexual reproduction is called a(n): _____.
    (a) fruiting body (c) mycelium
    (b) zygospore (d) ascus

14. The spores produced by sexual reproduction in an Ascomycete are called_____
    _____.

15. The single-celled members of the phylum Acomycetes are generally called_____
    _____.

16. Most yeasts are: _____.
    (a) parasitic (c) communalistic
    (b) saprophytic (d) autotrophic

17. Yeasts are typically _____ shaped cells that are slightly larger than bacteria.
    (a) rod (b) spiral (c) egg (d) cone

18. Yeasts contain many membrane-bound organelles. _____ (a) True or (b) False

19. Yeasts can be helpful to humans by:_____.
    (a) storing beneficial vitamins
    (b) strengthening the immune system
    (c) cleaning the digestive tract
    (d) yeasts are always harmful to humans

20. Dry baker's yeast contains: _____ spores.
    (a) Rhizopus stolonifer (c) Amanita muscaria
    (b) Saccharomyces cerevisiae (d) Pennicilum notatum

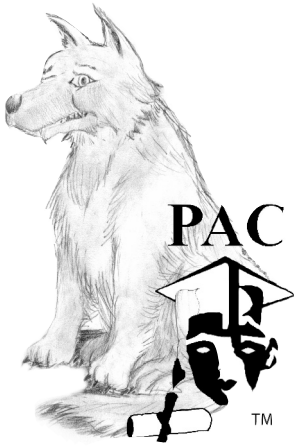
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21. The process responsible for making bread dough rise is called:_____ _____.

(a) aerobic respiration (c) photosynthesis
(b) fermentation (d) sporogenesis

22. Write the **Life Principle**:
"_____ _____ _____."

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ACTIVITIES
Lesson 12:

FUNGI: PART II

You are making progress! ***Answer the following questions. Circle the correct answers or fill in the blanks with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. The phylum *Basidiomycota* includes almost all of the organisms commonly called:_____ _____.
   (a) slime molds (c) mushrooms
   (b) bread molds (d) athlete's foot

2. The visible structure of a Basidiomycete is actually just its: _____.
   (a) hyphae (c) fruiting body
   (b) mycelium (d) algal bloom

3. Haploid spores produced by the fruiting body of a basidiomycota are referred to as: _____.
   (a) ascospores (c) basidiospores
   (b) zygospores (d) deuterospores

4. "Destroying angel" mushrooms are members of the genus_____ _____.

5. The best way to distinguish poisonous mushrooms from non-poisonous mushrooms is by: _____.
   (a) color (b) shape (c) taste (d) none of these

6. ***Fairy rings*** are a result of: _____.
   (a) the magical properties of mushrooms
   (b) the saprophytic nature of mushrooms
   (c) the colonial characteristics of mushrooms
   (d) all of the above

7. Members of the phylum *Deuteromycota* are commonly called:_____ _____.
   (a) mushrooms (b) molds (c) imperfect fungi (d) club fungi

8. ***Athlete's foot*** and ***ringworm*** are both produced by Deuteromycetes. _____
   (a) True or (b) False

9. The drug penicillin is derived from imperfect fungi of the genus *Penicillium*. _____
   (a) True or (b) False

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10. _____ discovered the drug *penicillin*.

11. Penicillin mold produces a substance that: _____.
    (a) kills bacteria associated with disease
    (b) attacks the immune system
    (c) increases bacterial growth in culture
    (d) causes many human diseases

12. A chemical secreted by a living organism that kills or reduces the reproduction rates of other organisms is called a(n) _____.

13. Bacteria that are being destroyed by an ***antibiotic*** have the ability under certain conditions to: _____.
    (a) produce offspring that are immune to the antibiotic
    (b) produce offspring that are immune to all antibiotics
    (c) produce offspring that can no longer cause disease
    (d) none of the above

14. Bacteria that develop resistance to antibiotics are an examples of:_____ _____.
    (a) beneficial mutations
    (b) natural selection
    (c) evolution of a new species
    (d) all of the above

15. Write the **Life Principle**:
    "_____
    _____
    _____."

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ACTIVITIES
Lesson 13:

FUNGI & DISEASE

You are making progress! ***Answer the following questions. Circle the correct answers or fill in the blanks with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. An infection by a Deuteromycete of the genus *Tinea* causes which of the following diseases? _____
   (a) ringworm (c) impetigo
   (b) poison ivy (d) hay fever

2. Antifungal medicines are very effective in curing *Tinea* infections. _____
   (a) True or (b) False

3. Bread made with rye containing the fungus _____, commonly known as "ergot of rye," can be deadly to humans.
   (a) Phytophthora infestans
   (b) Candida albicans
   (c) Ophiostoma ulmi
   (d) Claviceps purpurea

4. Rye bread containing ergot of rye may have contributed to which of the following? _____
   (a) the Salem witch trials
   (b) the Great Potato Famine
   (c) the Great Chestnut Blight
   (d) the Great Wheat Rust

5. The threadlike hyphae of _____ invade the roots, stems and leaves of the potato plant, eventually killing it entirely.
   (a) Candida albicans
   (b) Cryphonectria parasitica
   (c) Phytophthora infestans
   (d) Ophiostoma ulmi

6. The Great Potato Famine resulted in the deaths of over a million people and the emigration of at least 2 million people from Ireland to the United States. _____
   (a) True or (b) False

7. Today, fungal disease is no longer a threat to crops and plants in the United States.
   _____ (a) True or (b) False

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8. The fungus that causes Chestnut blight is called:_____
_____.
(a) Phytophthora infestans (c) Ophiostoma ulmi
(b) Candida albicans (d) Cryphonectria parasitica

9. The fugus that causes Dutch Elm disease is called:_____
_____.
(a) Phytophthora infestans (c) Ophiostoma ulmi
(b) Candida albicans (d) Cryphonectria parasitica

10. Which of the following organisms is present in the intestinal flora of humans?_____
_____
(a) Phytophthora infestans (c) Ophiostoma ulmi
(b) Candida albicans (d) Cryphonectria parasitica

11. Friendly organisms in the intestinal flora: _____.
(a) help keep harmful bacteria under control
(b) hinder the digestion of toxic materials
(c) eventually hinder the intestine's function
(d) none of the above

12. Place an "X" in front of each statement that accentuates the proliferation of Candida albicans which takes the place of friendly flora in the intestine:
____ (a) Friendly flora are killed by antibiotics.
____ (b) A person is chronically stressed.
____ (c) An individual eats very acidic foods.
____ (d) Steroids are used long term.
____ (e) Oral contraceptives are used.
____ (f) Sugary foods are commonplace.
____ (g) The intestine is injured by trauma.

13. Two of the common manifestations of Candida albicans are_____
_____ and vaginitis.

14. As Candida albicans proliferates in the intestines, it can change from the yeast-like form to the mycelial fungal form. _____ (a) True or (b) False

15. Candida albicans is ***dimorphic***, meaning that it:_____
_____.
(a) exists in two different shapes and forms
(b) has two nuclei in every cell
(c) is a cross between a fungus and a plant
(d) has two appendages for sensory input

16. The yeast-like form is _____, whereas the _____ state is agressively invasive.

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17. The root-like structures which anchor Candida albicans, and absorb water and nutrients from their environment in their fungal state, are known as:_____.
(a) rhizoids (b) sporozoans (c) hyphae (d) antigens

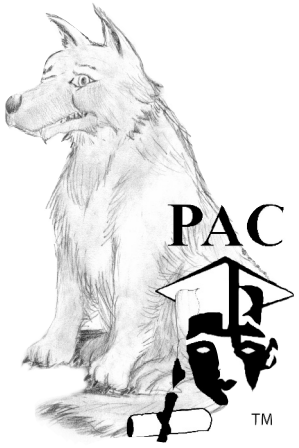
18. The fungal state of Candida albicans can penetrate the gastrointestinal lining, which mainly causes problems by:_____.
(a) initiating severe bleeding into the intestine, resulting in hemorrhagic shock
(b) allowing the introduction of antigenic substances from the gut into the blood stream
(c) allowing intestinal flora to circulate throughout all the systems of the body
(d) allowing harmful bacteria into the intestine from the external environment

19. Individuals with chronic Candida albicans overgrowth often suffer from a wide variety of food and environmental allergies. _____ (a) True or (b) False

20. Which of the following is a method of controlling Candida albicans overgrowth in the intestine? _____
(a) use of probiotics
(b) maintenance a proper, low-sugar diet
(c) use of anti-fungal supplements
(d) all of the above

21. Write the **Life Principle**:
"_____
_____
_____."

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ACTIVITIES
Lesson 14:

ALGAE: PART I

You are making progress! ***Answer the following questions. Circle the correct answers or fill in the blanks with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. Photosynthetic aquatic organisms that are classified as protists are known as:_____ _____.
   (a) fungi (b) algae (c) bacteria (d) animals

2. If the waters of the Earth were to become too polluted to support algae:_____ _____.
   (a) soon there would not be enough oxygen to support life
   (b) coastal seaweeds would soon predominate sea life
   (c) high and low tides would no longer occur
   (d) the sea would soon be filled with freshwater instead of saltwater

3. In a colony of single-celled organisms, each cell: _____.
   (a) can exist on its own
   (b) depends on other cells for survival
   (c) specializes in an individual task
   (d) works together with other cells

4. Brown algae belong to the phylum _____.

5. Yellow-orange pigments found in brown algae are called_____ _____.

6. The function of the ***cartenoids*** is to:_____ _____.
   (a) disguise brown algae from predators
   (b) gather sunlight for photosynthesis
   (c) secrete a protective layer for algae
   (d) give algae its toxicity

7. A structure found in grant kelp which can fill with air to allow the organism to float on top of the water, is called a(n) _____.

8. ***Alginic acid*** is found in the cell walls of brown algae and is used as a(n):_____ _____ in foods.
   (a) natural dye (c) thickening agent
   (b) preservative (d) spice

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9. Red algae belong to the phylum _____.

10. The bright red pigment that gives red algae its color is called:_____ _____.
    (a) alginic acid (c) cellulose
    (b) phycoerythrin (d) agar

11. Red algae can be red, green, purple, or reddish-black. _____
    (a) True or (b) False

12. _____ is a food source from red-algae that is often used to culture bacteria.

13. Green-algae belong to the phylum _____.

14. Most green algae live in salt water. _____ (a) True or (b) False

15. Green algae have cell walls made of: _____.
    (a) pectin (b) cellulose (c) chitin (d) peptidoglycan

16. Green algae store food in the form of _____.

17. _____, called "sea lettuce," is a green algae that is found along the shoreline and is composed of large, bright-green, leaflike sheets.
    (a) Chlamydomonas (c) Ulva
    (b) Spirogyra (d) Tinea

18. Write the **Life Principle**:
    "_____ _____ _____."

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ACTIVITIES
Lesson 15:

ALGAE: PART II

You are making progress! ***Answer the following questions. Circle the correct answers or fill in the blanks with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. Life cycles of photosynthetic algae exhibit both sexual and asexual phases._____
   (a) True or (b) False

2. ***Chlamydomonas*** have _____ set(s) of chromosomes.
   (a) one (b) two (c) three (d) four

3. A reproductive cell that can produce a new individual by cell division in Chlamydomonas is called a(n): _____.
   (a) zygospore (c) ascospore
   (b) zoospore (d) basidiospore

4. Chlamydomonas enters a sexual reproduction stage when its life is threatened by _____ conditions.

5. A reproductive cell that can produce a new individual only after fusing with a gamete of the opposing mating type is called a(n): _____.
   (a) zygote (c) gamete
   (b) spore (d) diploid

6. The word "***gamete***" means _____ in Greek and _____ in French.

7. A fertilized egg is called a(n): _____.
   (a) gamete (c) zoospore
   (b) gametophyte (d) zygote

8. The ***zygote*** only goes through meiosis _____ favorable climatic condition.
   (a) before (b) during (c) often (d) not at all

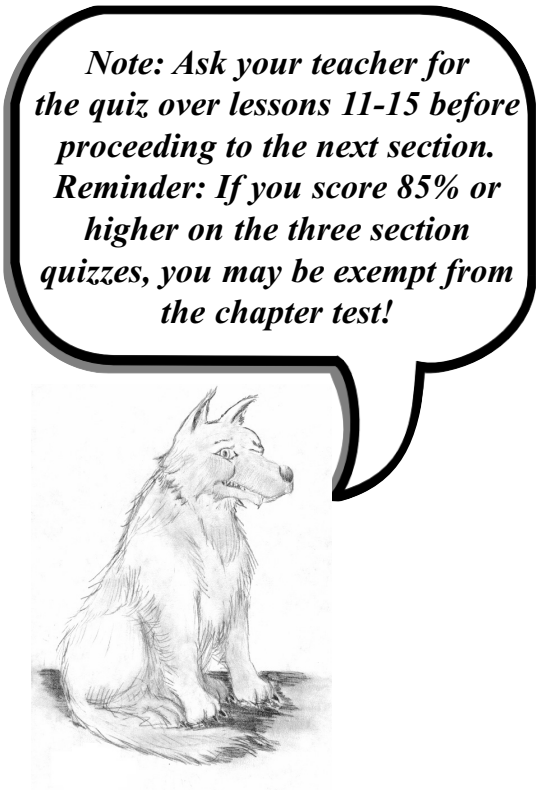
9. The ***sporophyte*** generation in plants is the _____ generation that reproduces by fertilization.
   (a) haploid gamete-bearing
   (b) diploid spore-bearing
   (c) haploid spore-bearing
   (d) diploid gamete bearing

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10. The ***gametophyte*** generation in plants is the _____ generation that reproduces by fertilization.
    (a) haploid gamete-bearing
    (b) diploid spore-bearing
    (c) haploid spore-bearing
    (d) diploid gamete bearing

11. ***Alternation of generations*** is the variation in a life cycle that:_____ _____.
    (a) remains in the productive diploid (2n) form
    (b) remains in the productive haploid (n) form
    (c) switches back and forth between diploid (2n) and haploid (n) forms
    (d) none of the above

12. Write the **Life Principle**:
    "_____ _____ _____ _____ _____."



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