

Name _____

MicroBiology

CHECK YOUR UNDERSTANDING

MULTIPLE CHOICE:

1. Infecting people with small pox when they previously had cowpox would be
A. mild.
B. lethal.
C. severe.
D. minimal, if anything.
2. What did Jenner inject into people to vaccinate them against small pox?
A. Fluid from a cowpox blister.
B. Blood from an infected cow.
C. Pus from an infected person.
D. Antibiotics he developed against small pox.
3. *E. coli* lives in
A. water.
B. bacteria.
C. blood cells.
D. intestines of mammals.
4. Viral specificity results from
A. viral strength or weakness.
B. the wide distribution of viruses.
C. matching of chemical structures.
D. toxins produced by non-host cells.
5. A "phage" is a type of
A. bacterial cell.
B. cell with a bacterial infection.
C. bacteria with a viral infection.
D. virus that invades bacteria cells.
6. Structurally, Bacteriophage T4 is an arrangement of
A. proteins around a DNA chromosome.
B. proteins around an RNA chromosome.
C. a DNA chromosome around a protein core.
D. an RNA chromosome around a protein core.
7. A prophage is **BEST** described as
A. active viral genetic material.
B. dormant viral genetic material.
C. active bacterial genetic material.
D. dormant bacterial genetic material.
8. The sequence that **BEST** describes the lytic cycle is
A. infection – replication – self-assembly – lysis.
B. replication – infection – self-assembly – lysis.
C. lysis – replication – self-assembly – infection.
D. lysis – self-assembly – infection – replication.
9. Which is **TRUE** of the lysogenic cycle, but **FALSE** for the lytic cycle?
A. The host cell ruptures.
B. There a period of "dormancy".
C. The host cell produces genetic material for the virus.
D. The viral components self-assemble.
10. The genetic material of a retrovirus will organize the synthesis of
A. DNA from its RNA structure.
B. DNA from its DNA structure.
C. RNA from its RNA structure.
D. RNA from its DNA structure.
11. Retroviruses are medically significant because they inject
A. cancer-causing genes.
B. cancer preventing genes.
C. genetic material that produces cancer-causing genes.
D. genetic material that produces cancer-preventing genes.
12. Which of these is **NOT** a difference between RNA and DNA?
A. RNA contains uracil, where DNA doesn't contain uracil.
B. RNA is single-stranded, where DNA is double-stranded.
C. RNA contains ribose, where DNA contains deoxyribose.
D. RNA is found in bacteria, where DNA is found in humans.
13. Passive immunity typically
A. is relatively short-lived.
B. causes antibody production.
C. is induced by injecting weakened pathogens.
D. comes and goes depending on a person's health.
14. Interleukins, proteins released by certain white blood cells function to
A. absorb pathogens in the blood stream.
B. activate other white blood cells during an infection.
C. deactivate the immune system after an infection has passed.
D. warn body cells that there are pathogens in the blood stream.
15. Which of these would **NOT** be found in a bacterial cell?
A. Ribosome.
B. Lysosome.
C. Chromosome.
D. Cell membrane.
16. Pili, on the surface of bacterial cells, function for
A. Defense.
B. Movement.
C. Attachment.
D. Detecting stimuli.
17. Which is **MOST** characteristic of bacteria?
A. Anaerobic.
B. Common and abundant.
C. Live in harsh environments.
D. Uncommon with simple characteristics.
18. A bacterium that makes its food using chemical energy is a
A. photosynthetic autotroph.
B. chemosynthetic autotroph.
C. photosynthetic heterotroph.
D. chemosynthetic heterotroph.
19. During binary fission, bacteria will
A. divide by mitosis and double their number.
B. produce gametes that fuse to form a zygote.
C. divide by meiosis and quadruple their number.
D. combine, exchange genetic material, then divide.
20. In one hour, given ideal growing conditions, a small colony of 10 bacterial cells could grow to include
A. 13 cells.
B. 40 cells.
C. 80 cells.
D. 100's of cells.
21. Which sequence describes conjugation?
1. DNA replication
2. genetic recombination
3. genetic transfer between cells
A. 1, 3, 2
B. 2, 3, 1
C. 3, 1, 2
D. 1, 2, 3
22. Which is **TRUE** for endospore production?
A. Sexual; during poor conditions.
B. Sexual; during good conditions.
C. Asexual; during poor conditions.
D. Asexual; during good conditions.

13. A pathogen is **BEST** described as a
 A. toxic chemical.
 B. virus or bacterium.
 C. carrier of a disease.
 D. disease-causing microbe.
14. What proteins are released by white blood cells to deactivate foreign cells?
 A. Interferon.
 B. Pathogens.
 C. Antibodies.
 D. Antibiotics.
20. What shape is a bacillus bacterium?
 A. Spiral.
 B. Elongate.
 C. Spherical.
 D. Polyhedral.
21. Organisms that generally use oxygen, but can survive without it are called
 A. obligate aerobes.
 B. facultative aerobes.
 C. obligate anaerobes.
 D. facultative anaerobes.
22. Which of these is a correct match?
 A. Aerobic – plants – alcohol.
 B. Aerobic – animals – alcohol.
 C. Anaerobic – plants – lactic acid.
 D. Anaerobic – animals – lactic acid.
28. The cell walls of Gram positive bacteria contain
 A. lipids that absorb safranin.
 B. lipids that absorb crystal violet.
 C. carbohydrates that absorb safranin.
 D. carbohydrates that absorb crystal violet.
29. Agar is prepared from
 A. fruit.
 B. seaweed.
 C. grain crops.
 D. animal tissues.
30. Macroscopically, bacteria colonies **CANNOT** be distinguished from each other by
 A. Color.
 B. Sheen.
 C. Cell shape.
 D. Surface texture.

31. Which is **NOT** a sterile technique?
 A. Exposure to air.
 B. Using disinfectants.
 C. Avoiding direct contact.
 D. Heating equipment to sterilize it.

32. Antiseptics are used to kill bacteria
 A. in food.
 B. in a cut.
 C. internally.
 D. on non-living surfaces.

33. Which of these is **NOT** done by bacteria?
 A. Oil metabolism.
 B. Food production.
 C. Protein digestion.
 D. Oxygen production.

34. Biotechnology is **NOT** currently used to produce
 A. viruses.
 B. certain medicines.
 C. protein hormones.
 D. genetically altered food.

35. Which combination is **MOST** correct?
 A. Parasite – *E. coli* – intestines.
 B. Symbiont – *E. coli* – stomach.
 C. Pathogen – *H. pylori* – stomach.
 D. Decomposer – *H. pylori* – intestines.

36. Nitrifying bacteria convert
 A. N_2 into NH_3
 B. N_2 into NO_3^{-1}
 C. NO_3^{-1} into N_2
 D. NH_3 into NO_3^{-1}

WRITTEN ANSWERS:

- Use the criteria in the beginning of this unit to assess whether viruses are alive or not.
 - Why can viruses be classified as pathogens?
- Contrast each of the following:
 - active vs. passive immunity
 - interleukin vs. interferon
 - lytic cycle vs. lysogenic cycle
 - prokaryotic vs. eukaryotic
 - conjugation vs. binary fission
 - heterotrophic vs. autotrophic
 - aerobic vs. anaerobic
 - antibiotic vs. antiseptic
- What does it mean to say that a viral disease must “run its course”?
- Name and draw the three common shapes of bacteria.
 - Name a specific example of each one.

- Name at least two other features (besides shape and cell wall) that can be used to identify bacteria.
- What is the role of bacteria in wine making?
- Extrapolate the long-term effects of using a medication that only destroys the most common strain of a pathogen.
- Name three different habitats for bacteria. Describe the bacteria's ecological role in each.