

SELF-TESTS

In the matching section, there is only one answer to each question; however, the lettered options (a, b, c, etc.) may be used more than once or not at all.

I. Matching

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| ___ 1. Found in some nitrogen-fixing <i>Cyanobacteria</i> . | a. Heterocysts |
| ___ 2. Found in cell wall of <i>Mycobacterium</i> . | b. Endoflagella |
| ___ 3. Provide motility to spirochetes. | c. Flagella |
| ___ 4. Produced by many <i>Streptomyces</i> . | d. Mycolic acids |
| | e. Geosmin |

II. Matching

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|---|------------------------|
| ___ 1. Serovars, typhoid fever. | a. <i>Burkholderia</i> |
| ___ 2. Cause of Q fever. | b. <i>Ehrlichia</i> |
| ___ 3. Several <i>Pseudomonas</i> species have been reclassified into this genus. | c. <i>Coxiella</i> |
| ___ 4. Grow obligately in white blood cells; cause a tickborne disease. | d. <i>Wolbachia</i> |
| ___ 5. Endosymbionts of insects. | e. <i>Salmonella</i> |

III. Matching

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| ___ 1. Endospores. | a. <i>Clostridium</i> |
| ___ 2. Anaerobic, gram-negative, slender rods with pointed ends. | b. <i>Streptococcus</i> |
| ___ 3. Filamentous bacteria that produce most of our commercial antibiotics. | c. <i>Staphylococcus</i> |
| ___ 4. Gram-positive cocci that form grapelike clusters. | d. <i>Streptomyces</i> |
| ___ 5. Gram-positive cocci that are aerotolerant anaerobes. | e. <i>Fusobacterium</i> |
| ___ 6. Cause of cat-scratch disease. | f. <i>Bartonella</i> |
| ___ 7. Cause of melioidosis. | g. <i>Burkholderia</i> |

IV. Matching

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| — 1. Many of these are plant pathogens, causing plant soft-rot diseases. | a. <i>Erwinia</i> |
| — 2. Infectious by elementary bodies. | b. <i>Caulobacter</i> |
| — 3. Filamentous bacteria, aerobes; cell wall resembles mycobacteria; often stain acid-fast. | c. <i>Leptospira</i> |
| — 4. Spirochetes. | d. <i>Nocardia</i> |
| — 5. Some of these are stalked and attach themselves to aquatic surfaces. | e. <i>Klebsiella</i> |
| — 6. Many are capable of fixing nitrogen from air. | f. <i>Chlamydia</i> |

V. Matching

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| — 1. Genus <i>Homo</i> . | a. Domain Bacteria |
| — 2. Genus <i>Sulfolobus</i> . | b. Domain Archaea |
| — 3. Genus <i>Staphylococcus</i> . | c. Domain Eukarya |
| — 4. Genus <i>Chlamydia</i> . | |

VI. Matching

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| — 1. A genus of gliding bacteria that is an important cellulose degrader. | a. <i>Nitrosomonas</i> |
| — 2. A sheathed bacterium. | b. <i>Cyanobacteria</i> |
| — 3. A chemoautotrophic bacterium that participates in nitrification in soil. | c. <i>Sphaerotilus natans</i> |
| — 4. Photosynthetic bacteria that may fix nitrogen. | d. Purple sulfur or green sulfur bacteria |
| — 5. Photosynthetic, anoxygenic bacteria. Often use reduced-sulfur compounds for energy and sulfur granules accumulate in the cells. | e. <i>Cytophaga</i> |
| | f. <i>Beggiatoa</i> |

VII. Matching

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| ___ 1. Cause of whooping cough (pertussis). | a. <i>Pseudomonas aeruginosa</i> |
| ___ 2. Produces a food-poisoning enterotoxin. | b. <i>Bordetella pertussis</i> |
| ___ 3. Endospores. | c. <i>Escherichia coli</i> |
| ___ 4. Plague. | d. <i>Yersinia pestis</i> |
| ___ 5. Important for operation of an activated-sludge sewage system. | e. <i>Staphylococcus aureus</i> |
| ___ 6. Observed to fix nitrogen while living in close association with certain tropical grasses. | f. <i>Clostridium tetani</i> |
| ___ 7. A filamentous bacterial pathogen. | g. <i>Zoogloea</i> spp. |
| | h. <i>Nocardia asteroides</i> |
| | i. <i>Azospirillum</i> |

VIII. Matching

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|------------------------------|--------------------------|
| ___ 1. <i>Bdellovibrio</i> . | a. Alphaproteobacteria |
| ___ 2. <i>Helicobacter</i> . | b. Betaproteobacteria |
| ___ 3. <i>Pseudomonas</i> . | c. Gammaproteobacteria |
| ___ 4. <i>Escherichia</i> . | d. Deltaproteobacteria |
| ___ 5. <i>Rhizobium</i> . | e. Epsilonproteobacteria |
| ___ 6. <i>Neisseria</i> . | f. Nonproteobacteria |

Fill in the Blanks

- Serratia marcescens* colonies produce a _____-colored pigment.
- The term _____ is applied to helical bacteria that do not complete a full turn morphologically.
- The cell walls of the archaea do not contain _____.
- _____ -hemolytic types of bacteria form a narrow, greenish zone of hemolysis on blood agar plates.
- _____ -hemolytic types of bacteria form a clear zone of hemolysis on blood agar plates.
- Streptococcus pyogenes* is an example of _____ -hemolytic bacteria.

7. Appendages such as stalks or buds on bacteria are called _____.
8. Usually, nutrients are assimilated during metabolism; when they are not assimilated and external products such as hydrogen sulfide gas are formed, this is termed _____ metabolism.
9. A gram-positive bacterium with a G + C content of 35% would be considered a member of the _____ G + C gram-positive bacteria.
10. The genus *Rhizobium* is important for agriculture because it allows _____ plants such as peas to fix nitrogen.

Critical Thinking

1. Which morphological type of bacteria would be the most efficient in taking up nutrients, given that they have the same volume, a spherical cell or a filamentous cell? Briefly explain your answer.

2. Assuming that both types of bacteria were present on the Earth before other life arose, which photosynthesizing bacterium would have been the most valuable to support other life when it appeared, cyanobacteria or purple sulfur bacteria?

3. Why do many gastric-ulcer patients respond favorably to treatment with antibiotics?

4. What characteristics do you think would favor the proliferation of a bacterial species
 - a. in the human intestinal tract?

 - b. on a rock of newly cooled liquid lava that is just protruding above the sea?