

Nester's Microbiology, 9e (Anderson)

Chapter 1 Humans and the Microbial World

1) The scientist usually considered the first to see microorganisms, which he called "animalcules," was _____.

- A) Redi
- B) van Leeuwenhoek
- C) Pasteur
- D) Tyndall

Answer: B

Section: 01.01

Topic: History of Microbiology

Bloom's: 1. Remember

Learning Outcome: 01.01 Describe the key experiments of scientists who disproved spontaneous generation.

ASM Objective: 02.01 The structure and function of microorganisms have been revealed by the use of microscopy (including bright field, phase contrast, fluorescent, and electron).

2) The word "animalcule" was first used by _____.

- A) Pasteur
- B) Redi
- C) van Leeuwenhoek
- D) Tyndall
- E) Hooke

Answer: C

Section: 01.01

Topic: History of Microbiology

Bloom's: 1. Remember

Learning Outcome: 01.01 Describe the key experiments of scientists who disproved spontaneous generation.

ASM Objective: 02.01 The structure and function of microorganisms have been revealed by the use of microscopy (including bright field, phase contrast, fluorescent, and electron).

- 3) The idea of spontaneous generation postulated that
- A) organisms could evolve into the next generation of organisms.
 - B) organisms could spontaneously turn into other types of organisms.
 - C) living organisms could spontaneously arise from non-living material.
 - D) living organisms could spontaneously arise from other living organisms.
 - E) living organisms must contain at least ten cells.

Answer: C

Section: 01.01

Topic: History of Microbiology

Bloom's: 2. Understand

Learning Outcome: 01.01 Describe the key experiments of scientists who disproved spontaneous generation.

ASM Objective: 02.01 The structure and function of microorganisms have been revealed by the use of microscopy (including bright field, phase contrast, fluorescent, and electron).

- 4) Which of these scientists were involved in investigating the idea of spontaneous generation?
- A) Redi and van Leeuwenhoek
 - B) Redi and Pasteur
 - C) van Leeuwenhoek and Pasteur
 - D) Pasteur and Escherich
 - E) Escherich and Redi

Answer: B

Section: 01.01

Topic: History of Microbiology

Bloom's: 2. Understand

Learning Outcome: 01.01 Describe the key experiments of scientists who disproved spontaneous generation.

ASM Objective: 02.01 The structure and function of microorganisms have been revealed by the use of microscopy (including bright field, phase contrast, fluorescent, and electron).

5) The work of Tyndall and Cohn

- A) supported the idea of spontaneous generation rather than the idea of biogenesis.
- B) explained why some spontaneous generation investigators got different results from those of Pasteur.
- C) showed that all microbes caused disease if they enter the human body.
- D) allowed scientists to see microorganisms using a simple microscope.
- E) showed that boiling fails to kill vegetative bacteria.

Answer: B

Section: 01.01

Topic: History of Microbiology

Bloom's: 3. Apply

Learning Outcome: 01.01 Describe the key experiments of scientists who disproved spontaneous generation.

ASM Objective: 02.03 Bacteria and Archaea have specialized structures (e.g., flagella, endospores, and pili) that often confer critical capabilities.; 02.01 The structure and function of microorganisms have been revealed by the use of microscopy (including bright field, phase contrast, fluorescent, and electron).

6) The structures present in the hay infusions used in experiments on spontaneous generation that made them difficult to sterilize are

- A) chloroplasts.
- B) endospores.
- C) organelles.
- D) toxins.
- E) nuclei.

Answer: B

Section: 01.01

Topic: History of Microbiology

Bloom's: 1. Remember

Learning Outcome: 01.01 Describe the key experiments of scientists who disproved spontaneous generation.

ASM Objective: 02.03 Bacteria and Archaea have specialized structures (e.g., flagella, endospores, and pili) that often confer critical capabilities.; 02.01 The structure and function of microorganisms have been revealed by the use of microscopy (including bright field, phase contrast, fluorescent, and electron).

- 7) The contradictory results obtained by different scientists apparently doing the same experiments in investigating spontaneous generation
- A) show that experiments should only be done once.
 - B) show the importance of exactly duplicating experimental conditions.
 - C) led to further experiments that ultimately proved spontaneous generation.
 - D) could not be explained by anyone involved in the work.
 - E) led to the development of swan-necked flasks.

Answer: B

Section: 01.01

Topic: History of Microbiology

Bloom's: 3. Apply

Learning Outcome: 01.01 Describe the key experiments of scientists who disproved spontaneous generation.; 01.03 Describe the scientific method, using Pasteur's swan-necked flask experiment as an example.

ASM Objective: 02.03 Bacteria and Archaea have specialized structures (e.g., flagella, endospores, and pili) that often confer critical capabilities.; 02.01 The structure and function of microorganisms have been revealed by the use of microscopy (including bright field, phase contrast, fluorescent, and electron).

- 8) If Pasteur had done his experiments investigating spontaneous generation in a horse stable,
- A) the results would probably have supported the idea of spontaneous generation.
 - B) the results would probably not have supported the idea of spontaneous generation.
 - C) the results would probably been the same as those obtained in a laboratory.
 - D) the results would probably have supported the idea of spontaneous biogenesis.
 - E) it would probably have taken several years to obtain any results.

Answer: A

Section: 01.01

Topic: History of Microbiology; Prokaryotes

Bloom's: 3. Apply

Learning Outcome: 01.01 Describe the key experiments of scientists who disproved spontaneous generation.; 01.03 Describe the scientific method, using Pasteur's swan-necked flask experiment as an example.

ASM Objective: 02.03 Bacteria and Archaea have specialized structures (e.g., flagella, endospores, and pili) that often confer critical capabilities.; 02.01 The structure and function of microorganisms have been revealed by the use of microscopy (including bright field, phase contrast, fluorescent, and electron).

- 9) Cellulose is a major component of plants and is only directly digested by
- A) carnivores.
 - B) termites.
 - C) herbivores.
 - D) microorganisms.
 - E) birds.

Answer: D

Section: 01.02

Topic: Environmental Microbiology; Prokaryotes

Bloom's: 2. Understand

Learning Outcome: 01.02 Explain how the successful challenge to the idea of spontaneous generation led to the Golden Age of Microbiology.

ASM Objective: 02.01 The structure and function of microorganisms have been revealed by the use of microscopy (including bright field, phase contrast, fluorescent, and electron).; 03.03 The survival and growth of any microorganism in a given environment depends on its metabolic characteristics.; 05.04 Microorganisms, cellular and viral, can interact with both human and nonhuman hosts in beneficial, neutral or detrimental ways.; 06.01 Microbes are essential for life as we know it and the processes that support life (e.g., in biogeochemical cycles and plant and/or animal microflora).

- 10) Plants are dependent on microorganisms for
- A) providing oxygen in a usable form.
 - B) providing water.
 - C) changing atmospheric nitrogen to a usable form.
 - D) providing simple carbohydrates.
 - E) providing complex proteins.

Answer: C

Section: 01.02

Topic: Environmental Microbiology; Prokaryotes

Bloom's: 3. Apply

Learning Outcome: 01.04 Explain the importance of microorganisms in the health of humans and the surrounding environment.

ASM Objective: 03.01 Bacteria and Archaea exhibit extensive, and often unique, metabolic diversity (e.g., nitrogen fixation, methane production, anoxygenic photosynthesis).; 05.03 Microorganisms and their environment interact with and modify each other.; 05.04 Microorganisms, cellular and viral, can interact with both human and nonhuman hosts in beneficial, neutral or detrimental ways.

- 11) Microorganisms are involved in
- A) causing disease.
 - B) curing/treating disease.
 - C) preparing food.
 - D) cleaning up pollutants.
 - E) All of the answer choices are correct.

Answer: E

Section: 01.02

Topic: Applied and Industrial Microbiology

Bloom's: 2. Understand

Learning Outcome: 01.04 Explain the importance of microorganisms in the health of humans and the surrounding environment.; 01.05 List three commercial benefits of microorganisms.

ASM Objective: 03.03 The survival and growth of any microorganism in a given environment depends on its metabolic characteristics.; 05.03 Microorganisms and their environment interact with and modify each other.; 05.04 Microorganisms, cellular and viral, can interact with both human and nonhuman hosts in beneficial, neutral or detrimental ways.; 06.03 Humans utilize and harness microorganisms and their products.

- 12) Bacteria have been used to help produce or modify all of the following food products EXCEPT
- A) cheeses.
 - B) beer and wine.
 - C) pickled products.
 - D) bread.
 - E) peanuts.

Answer: E

Section: 01.02

Topic: Applied and Industrial Microbiology

Bloom's: 1. Remember

Learning Outcome: 01.05 List three commercial benefits of microorganisms.

ASM Objective: 05.04 Microorganisms, cellular and viral, can interact with both human and nonhuman hosts in beneficial, neutral or detrimental ways.; 06.03 Humans utilize and harness microorganisms and their products.

13) Microorganisms are involved in all of the following EXCEPT

- A) production of medicinal products.
- B) converting oxygen to a form useful to plants.
- C) food production.
- D) pollution cleanup.
- E) converting nitrogen to a form useful to plants.

Answer: B

Section: 01.02

Topic: Applied and Industrial Microbiology

Bloom's: 3. Apply

Learning Outcome: 01.04 Explain the importance of microorganisms in the health of humans and the surrounding environment.; 01.05 List three commercial benefits of microorganisms.

ASM Objective: 06.01 Microbes are essential for life as we know it and the processes that support life (e.g., in biogeochemical cycles and plant and/or animal microflora).; 06.03 Humans utilize and harness microorganisms and their products.

14) Bioremediation refers to

- A) rehabilitating wayward bacteria.
- B) using bacteria to clean up pollutants.
- C) development of new vaccines.
- D) monitoring newly discovered disease organisms.
- E) destroying organisms causing emerging infectious diseases.

Answer: B

Section: 01.02

Topic: Applied and Industrial Microbiology

Bloom's: 2. Understand

Learning Outcome: 01.04 Explain the importance of microorganisms in the health of humans and the surrounding environment.; 01.05 List three commercial benefits of microorganisms.

ASM Objective: 05.01 Microorganisms are ubiquitous and live in diverse and dynamic ecosystems.; 05.04 Microorganisms, cellular and viral, can interact with both human and nonhuman hosts in beneficial, neutral or detrimental ways.; 06.03 Humans utilize and harness microorganisms and their products.

- 15) Which of the following about the Golden Age of Medical Microbiology is FALSE?
- A) It started with the development of the first microscopes.
 - B) It occurred during the late 1800s to the early 1900s.
 - C) It is a time when the knowledge of bacteria and work with them expanded.
 - D) It was during this time that people realized that diseases could be caused by invisible agents.
 - E) It was a time when several major advances were made in microbiology.

Answer: A

Section: 01.02

Topic: History of Microbiology

Bloom's: 3. Apply

Learning Outcome: 01.02 Explain how the successful challenge to the idea of spontaneous generation led to the Golden Age of Microbiology.; 01.04 Explain the importance of microorganisms in the health of humans and the surrounding environment.

ASM Objective: 05.04 Microorganisms, cellular and viral, can interact with both human and nonhuman hosts in beneficial, neutral or detrimental ways.; 06.03 Humans utilize and harness microorganisms and their products.

- 16) Which of the following statements about newly emerging or reemerging diseases is FALSE?
- A) They may be caused by changing lifestyles.
 - B) Examples include Lyme disease and toxic shock syndrome.
 - C) They may result from a breakdown in sanitation and social order.
 - D) They are all caused by drug-resistant pathogens.
 - E) They may result when microbes evolve and develop new characteristics.

Answer: D

Section: 01.02

Topic: Infection and Disease

Bloom's: 2. Understand

Learning Outcome: 01.04 Explain the importance of microorganisms in the health of humans and the surrounding environment.; 01.07 Describe the role of microbes in disease, including examples of past triumphs and remaining challenges.

ASM Objective: 01.03 Human impact on the environment influences the evolution of microorganisms (e.g., emerging diseases and the selection of antibiotic resistance).; 05.04 Microorganisms, cellular and viral, can interact with both human and nonhuman hosts in beneficial, neutral or detrimental ways.

- 17) Lyme disease is an example of a disease that is due to
- A) increased interaction between humans and tick-carrying animals.
 - B) failure to effectively vaccinate children.
 - C) a mutation in the human genome.
 - D) climate change leading to a significantly greater mosquito population.
 - E) an increase in the number of people travelling to Asia and Africa.

Answer: A

Section: 01.02

Topic: Infection and Disease

Bloom's: 3. Apply

Learning Outcome: 01.04 Explain the importance of microorganisms in the health of humans and the surrounding environment.; 01.07 Describe the role of microbes in disease, including examples of past triumphs and remaining challenges.

ASM Objective: 01.03 Human impact on the environment influences the evolution of microorganisms (e.g., emerging diseases and the selection of antibiotic resistance).; 05.04 Microorganisms, cellular and viral, can interact with both human and nonhuman hosts in beneficial, neutral or detrimental ways.

- 18) The outbreak of measles within the last few years is due to
- A) mutation of the measles virus.
 - B) change in the environment.
 - C) a decline in vaccination of children in the previous years.
 - D) increase in sensitivity of detection techniques.
 - E) emergence of novel measles viruses.

Answer: C

Section: 01.02

Topic: Infection and Disease

Bloom's: 2. Understand

Learning Outcome: 01.04 Explain the importance of microorganisms in the health of humans and the surrounding environment.; 01.07 Describe the role of microbes in disease, including examples of past triumphs and remaining challenges.

ASM Objective: 05.04 Microorganisms, cellular and viral, can interact with both human and nonhuman hosts in beneficial, neutral or detrimental ways.

19) Which of the statements regarding smallpox is TRUE?

- A) Smallpox has been eliminated as a naturally occurring infection in human beings.
- B) Smallpox still occasionally occurs in developing countries.
- C) Smallpox outbreaks sometimes occur in chimpanzee populations.
- D) Smallpox has been eliminated by effective vaccination.
- E) Smallpox has been eliminated as a naturally occurring infection in human beings, AND has been eliminated by effective vaccination.

Answer: E

Section: 01.02

Topic: History of Microbiology

Bloom's: 2. Understand

Learning Outcome: 01.04 Explain the importance of microorganisms in the health of humans and the surrounding environment.; 01.07 Describe the role of microbes in disease, including examples of past triumphs and remaining challenges.

ASM Objective: 05.04 Microorganisms, cellular and viral, can interact with both human and nonhuman hosts in beneficial, neutral or detrimental ways.

20) Smallpox

- A) has occurred in a few countries since 1977.
- B) has little potential as a weapon of bioterrorism.
- C) has not occurred anywhere in the world since 1977.
- D) very seldom kills people, but does scar them.
- E) is an emerging infectious disease.

Answer: C

Section: 01.02

Topic: History of Microbiology

Bloom's: 2. Understand

Learning Outcome: 01.04 Explain the importance of microorganisms in the health of humans and the surrounding environment.; 01.07 Describe the role of microbes in disease, including examples of past triumphs and remaining challenges.

ASM Objective: 05.04 Microorganisms, cellular and viral, can interact with both human and nonhuman hosts in beneficial, neutral or detrimental ways.

- 21) Ulcers, previously thought to be caused by stress, are in fact often caused by
- A) a bacterial infection.
 - B) an insufficient diet.
 - C) a genetic mutation.
 - D) pathogenic normal microbiota.
 - E) a viral infection.

Answer: A

Section: 01.02

Topic: Infection and Disease

Bloom's: 2. Understand

Learning Outcome: 01.04 Explain the importance of microorganisms in the health of humans and the surrounding environment.; 01.07 Describe the role of microbes in disease, including examples of past triumphs and remaining challenges.

ASM Objective: 05.04 Microorganisms, cellular and viral, can interact with both human and nonhuman hosts in beneficial, neutral or detrimental ways.

- 22) Bacteria are useful to study because
- A) they produce protein in a simpler manner than more complex organisms.
 - B) they have the same fundamental metabolic and genetic properties as higher organisms.
 - C) they produce energy in a simpler manner than more complex organisms.
 - D) they are resistant to all known antibiotics.
 - E) they produce peptidoglycan in a simpler manner than more complex organisms.

Answer: B

Section: 01.03

Topic: Tools and Methods of Culturing, Classifying, and Identify Microorganisms

Bloom's: 2. Understand

Learning Outcome: 01.06 Describe why microorganisms are useful research tools.

ASM Objective: 04.02 Although the central dogma is universal in all cells, the processes of replication, transcription, and translation differ in Bacteria, Archaea, and Eukaryotes.; 05.04 Microorganisms, cellular and viral, can interact with both human and nonhuman hosts in beneficial, neutral or detrimental ways.

23) Normal microbiota

- A) are only found in the digestive tract.
- B) protect us from disease by crowding out "bad" invading bacteria.
- C) are only found on small select parts of our bodies.
- D) always cause disease when growing on our bodies.
- E) play no role in our general health.

Answer: B

Section: 01.02

Topic: History of Microbiology

Bloom's: 2. Understand

Learning Outcome: 01.04 Explain the importance of microorganisms in the health of humans and the surrounding environment.

ASM Objective: 05.04 Microorganisms, cellular and viral, can interact with both human and nonhuman hosts in beneficial, neutral or detrimental ways.

24) Bacteria are present on the body

- A) only during disease-causing infections.
- B) at all times.
- C) only in certain areas.
- D) only after intense exercise.
- E) only after using public transport.

Answer: B

Section: 01.02

Topic: Infection and Disease

Bloom's: 2. Understand

Learning Outcome: 01.04 Explain the importance of microorganisms in the health of humans and the surrounding environment.

ASM Objective: 05.04 Microorganisms, cellular and viral, can interact with both human and nonhuman hosts in beneficial, neutral or detrimental ways.

25) Bacteria are good research models because they

- A) vary in size from microscopic to macroscopic.
- B) share many biochemical and physiological properties with more complex organisms.
- C) can be assembled into complex multicellular organisms.
- D) have complicated growth requirements.
- E) develop the same diseases as humans and animals.

Answer: B

Section: 01.03

Topic: Applied and Industrial Microbiology; Microbial World

Bloom's: 2. Understand

Learning Outcome: 01.06 Describe why microorganisms are useful research tools.

ASM Objective: 05.04 Microorganisms, cellular and viral, can interact with both human and nonhuman hosts in beneficial, neutral or detrimental ways.; 06.03 Humans utilize and harness microorganisms and their products.

26) Select the FALSE statement regarding bacteria.

- A) They are found as rods, spheres, or spirals.
- B) They reproduce by binary fission.
- C) They contain a peptidoglycan cell wall.
- D) They are found as single cells.
- E) They are never photosynthetic.

Answer: E

Section: 01.03

Topic: Microbial World; Prokaryotes

Bloom's: 3. Apply

Learning Outcome: 01.08 Compare and contrast characteristics of members of the Bacteria, Archaea, and Eukarya.

ASM Objective: 02.03 Bacteria and Archaea have specialized structures (e.g., flagella, endospores, and pili) that often confer critical capabilities.; 02.01 The structure and function of microorganisms have been revealed by the use of microscopy (including bright field, phase contrast, fluorescent, and electron).

27) Which is usually NOT true of archaea?

- A) They move using flagella.
- B) They reproduce by mitosis.
- C) They contain rigid cell walls.
- D) They are found as single cells.
- E) They are prokaryotes.

Answer: B

Section: 01.03

Topic: Microbial World; Prokaryotes

Bloom's: 3. Apply

Learning Outcome: 01.08 Compare and contrast characteristics of members of the Bacteria, Archaea, and Eukarya.

ASM Objective: 05.01 Microorganisms are ubiquitous and live in diverse and dynamic ecosystems.

28) All of the statements regarding archaea are true EXCEPT

- A) they contain peptidoglycan as part of their cell walls.
- B) they reproduce by binary fission.
- C) they contain rigid cell walls.
- D) they are found as single cells.
- E) they often grow in extreme environments.

Answer: A

Section: 01.03

Topic: Microbial World; Prokaryotes

Bloom's: 2. Understand

Learning Outcome: 01.08 Compare and contrast characteristics of members of the Bacteria, Archaea, and Eukarya.

ASM Objective: 02.03 Bacteria and Archaea have specialized structures (e.g., flagella, endospores, and pili) that often confer critical capabilities.; 05.01 Microorganisms are ubiquitous and live in diverse and dynamic ecosystems.

29) An extreme environment in which archaea have been found is

- A) oceans.
- B) boiling hot springs.
- C) marshes.
- D) refrigerators.
- E) animal digestive tracts.

Answer: B

Section: 01.03

Topic: Microbial World; Prokaryotes

Bloom's: 3. Apply

Learning Outcome: 01.08 Compare and contrast characteristics of members of the Bacteria, Archaea, and Eukarya.

ASM Objective: 02.03 Bacteria and Archaea have specialized structures (e.g., flagella, endospores, and pili) that often confer critical capabilities.; 03.01 Bacteria and Archaea exhibit extensive, and often unique, metabolic diversity (e.g., nitrogen fixation, methane production, anoxygenic photosynthesis).

30) The cell types that lack a membrane-bound nucleus and have rigid cell walls of peptidoglycan are

- A) eukaryotes.
- B) fungi.
- C) bacteria.
- D) archaea.
- E) protozoa.

Answer: C

Section: 01.03

Topic: Microbial Metabolism; Prokaryotes

Bloom's: 1. Remember

Learning Outcome: 01.08 Compare and contrast characteristics of members of the Bacteria, Archaea, and Eukarya.

ASM Objective: 02.03 Bacteria and Archaea have specialized structures (e.g., flagella, endospores, and pili) that often confer critical capabilities.; 03.01 Bacteria and Archaea exhibit extensive, and often unique, metabolic diversity (e.g., nitrogen fixation, methane production, anoxygenic photosynthesis).

31) The prokaryotic domain includes

- A) bacteria.
- B) archaea.
- C) eukarya.
- D) bacteria, archaea, AND fungi.
- E) bacteria AND archaea.

Answer: E

Section: 01.03

Topic: Microbial World; Prokaryotes

Bloom's: 1. Remember

Learning Outcome: 01.08 Compare and contrast characteristics of members of the Bacteria, Archaea, and Eukarya.

ASM Objective: 02.03 Bacteria and Archaea have specialized structures (e.g., flagella, endospores, and pili) that often confer critical capabilities.; 03.01 Bacteria and Archaea exhibit extensive, and often unique, metabolic diversity (e.g., nitrogen fixation, methane production, anoxygenic photosynthesis).

32) Select the TRUE statement(s) regarding eukaryotes.

- A) Eukaryotes are all multicellular organisms AND have a membrane around the DNA.
- B) Eukaryotes have a more complex internal structure than archaea or bacteria.
- C) Eukaryotes have a simpler internal structure than archaea or bacteria AND have a membrane around the DNA.
- D) Eukaryotes have a membrane around the DNA.
- E) Eukaryotes have a more complex internal structure than archaea or bacteria AND have a membrane around the DNA.

Answer: E

Section: 01.03

Topic: Eukaryotes; Microbial World

Bloom's: 3. Apply

Learning Outcome: 01.08 Compare and contrast characteristics of members of the Bacteria, Archaea, and Eukarya.

ASM Objective: 02.03 Bacteria and Archaea have specialized structures (e.g., flagella, endospores, and pili) that often confer critical capabilities.

33) Which group(s) below contain single-celled and multicellular organisms?

- A) Algae AND bacteria
- B) Fungi AND archaea
- C) Protozoa AND bacteria
- D) Algae AND fungi
- E) Fungi AND protozoa

Answer: D

Section: 01.03

Topic: Eukaryotes; Microbial World

Bloom's: 3. Apply

Learning Outcome: 01.08 Compare and contrast characteristics of members of the Bacteria, Archaea, and Eukarya.

ASM Objective: 02.03 Bacteria and Archaea have specialized structures (e.g., flagella, endospores, and pili) that often confer critical capabilities.; 02.04 While microscopic eukaryotes (for example, fungi, protozoa, and algae) carry out some of the same processes as bacteria, many of the cellular properties are fundamentally different.

- 34) All living organisms
A) may be classified in four domains.
B) may be classified in three domains.
C) probably do not have a common ancestor.
D) have never shared genes between domains.
E) are capable of causing disease.

Answer: B

Section: 01.03

Topic: Microbial World; Tools and Methods of Culturing, Classifying, and Identify Microorganisms

Bloom's: 2. Understand

Learning Outcome: 01.08 Compare and contrast characteristics of members of the Bacteria, Archaea, and Eukarya.

ASM Objective: 01.05 The evolutionary relatedness of organisms is best reflected in phylogenetic trees.

- 35) The system by which organisms are named is referred to as
A) systematics.
B) naming.
C) nomenclature.
D) cladistics.
E) bioinformatics.

Answer: C

Section: 01.03

Topic: Microbial World; Tools and Methods of Culturing, Classifying, and Identify Microorganisms

Bloom's: 2. Understand

Learning Outcome: 01.09 Explain the features of an organisms scientific name.

ASM Objective: 01.04 The traditional concept of species is not readily applicable to microbes due to asexual reproduction and the frequent occurrence of horizontal gene transfer.

36) The scientific name of an organism includes its

- A) family and genus.
- B) first name and last name.
- C) genus and species.
- D) domain and genus.
- E) domain and species.

Answer: C

Section: 01.03

Topic: Microbial World; Tools and Methods of Culturing, Classifying, and Identify Microorganisms

Bloom's: 2. Understand

Learning Outcome: 01.08 Compare and contrast characteristics of members of the Bacteria, Archaea, and Eukarya.; 01.09 Explain the features of an organisms scientific name.

ASM Objective: 01.04 The traditional concept of species is not readily applicable to microbes due to asexual reproduction and the frequent occurrence of horizontal gene transfer.; 01.05 The evolutionary relatedness of organisms is best reflected in phylogenetic trees.

37) Which is/are the correctly written name?

- A) *Staphylococcus aureus*
- B) *Staphylococcus a.*
- C) *St. aureus*
- D) staph
- E) *Staphylococcus Aureus*

Answer: A

Section: 01.03

Topic: Microbial World; Tools and Methods of Culturing, Classifying, and Identify Microorganisms

Bloom's: 3. Apply

Learning Outcome: 01.09 Explain the features of an organisms scientific name.

ASM Objective: 01.04 The traditional concept of species is not readily applicable to microbes due to asexual reproduction and the frequent occurrence of horizontal gene transfer.; 01.05 The evolutionary relatedness of organisms is best reflected in phylogenetic trees.

- 38) Which of these may pertain to the term strain?
- A) *E. coli* 0157:H7
 - B) *E. coli*
 - C) Minor variation of a species
 - D) Major variation of a species
 - E) *E. coli* 0157:H7 AND minor variation of a species

Answer: E

Section: 01.03

Topic: Microbial World; Tools and Methods of Culturing, Classifying, and Identify Microorganisms

Bloom's: 3. Apply

Learning Outcome: 01.09 Explain the features of an organisms scientific name.

ASM Objective: 01.04 The traditional concept of species is not readily applicable to microbes due to asexual reproduction and the frequent occurrence of horizontal gene transfer.; 01.05 The evolutionary relatedness of organisms is best reflected in phylogenetic trees.

- 39) Select the statement that is TRUE regarding viroids.
- A) They are naked (lacking a protein shell) pieces of RNA.
 - B) They are naked (lacking a protein shell) pieces of DNA.
 - C) They are known to cause neurodegenerative diseases in animals.
 - D) They are composed of protein encasing DNA.
 - E) They are composed of both RNA and DNA within a lipid coat.

Answer: A

Section: 01.03

Topic: Microbial World; Viruses

Bloom's: 1. Remember

Learning Outcome: 01.11 Compare and contrast viruses, viroids, and prions.

ASM Objective: 05.01 Microorganisms are ubiquitous and live in diverse and dynamic ecosystems.

- 40) Outside a cell, viruses are
- A) running a small number of biochemical reactions.
 - B) synthesizing proteins necessary for entry into the host.
 - C) inert, and not capable of replication.
 - D) constructing a cell membrane known as an envelope.
 - E) capable of some replication.

Answer: C

Section: 01.03

Topic: Microbial World; Viruses

Bloom's: 2. Understand

Learning Outcome: 01.11 Compare and contrast viruses, viroids, and prions.

ASM Objective: 02.05 The replication cycles of viruses (lytic and lysogenic) differ among viruses and are determined by their unique structures and genomes.

41) Viruses may only be grown

- A) in sterile growth media.
- B) in living cells.
- C) at body temperature.
- D) in darkness.
- E) in liquid broths.

Answer: B

Section: 01.03

Topic: Microbial World; Viruses

Bloom's: 3. Apply

Learning Outcome: 01.11 Compare and contrast viruses, viroids, and prions.

ASM Objective: 02.05 The replication cycles of viruses (lytic and lysogenic) differ among viruses and are determined by their unique structures and genomes.

42) Viruses are in the domain(s)

- A) viridae.
- B) eukarya.
- C) archaea AND bacteria.
- D) bacteria AND viridae.
- E) None of the answer choices is correct.

Answer: E

Section: 01.03

Topic: Microbial World; Viruses

Bloom's: 3. Apply

Learning Outcome: 01.11 Compare and contrast viruses, viroids, and prions.

ASM Objective: 02.05 The replication cycles of viruses (lytic and lysogenic) differ among viruses and are determined by their unique structures and genomes.

43) Viruses

- A) are obligate intracellular parasites.
- B) are single-celled organisms.
- C) consist of only proteins.
- D) are in the domain *Archaea*.
- E) consist only of DNA or RNA.

Answer: A

Section: 01.03

Topic: Viruses

Bloom's: 2. Understand

Learning Outcome: 01.11 Compare and contrast viruses, viroids, and prions.

ASM Objective: 02.05 The replication cycles of viruses (lytic and lysogenic) differ among viruses and are determined by their unique structures and genomes.; 02.01 The structure and function of microorganisms have been revealed by the use of microscopy (including bright field, phase contrast, fluorescent, and electron).

44) What do viruses, viroids, and prions all have in common?

- A) They contain only RNA.
- B) They are acellular agents of disease.
- C) They contain only DNA.
- D) They infect only animals.
- E) They cause neurodegenerative diseases.

Answer: B

Section: 01.03

Topic: Microbial World; Viruses

Bloom's: 3. Apply

Learning Outcome: 01.11 Compare and contrast viruses, viroids, and prions.

ASM Objective: 01.04 The traditional concept of species is not readily applicable to microbes due to asexual reproduction and the frequent occurrence of horizontal gene transfer.

45) Both viruses and viroids are

- A) capable of independent reproduction.
- B) obligate intracellular parasites.
- C) members of the domain *Bacteria*.
- D) larger than most bacteria in size.
- E) agents that cause disease in animals.

Answer: B

Section: 01.03

Topic: Microbial World; Viruses

Bloom's: 3. Apply

Learning Outcome: 01.11 Compare and contrast viruses, viroids, and prions.

ASM Objective: 01.04 The traditional concept of species is not readily applicable to microbes due to asexual reproduction and the frequent occurrence of horizontal gene transfer.; 01.05 The evolutionary relatedness of organisms is best reflected in phylogenetic trees.

46) Prions

- A) are only composed of RNA.
- B) are only composed of DNA.
- C) are only composed of protein.
- D) cause diseases in plants.
- E) are only composed of RNA and DNA.

Answer: C

Section: 01.03

Topic: Microbial World; Viruses

Bloom's: 1. Remember

Learning Outcome: 01.11 Compare and contrast viruses, viroids, and prions.

ASM Objective: 01.04 The traditional concept of species is not readily applicable to microbes due to asexual reproduction and the frequent occurrence of horizontal gene transfer.

47) A new organism was found that was unicellular and 1 cm long. The "large" size of this organism alone would

- A) mean that it could not be a bacterium.
- B) mean that it must be a protozoan.
- C) not be useful in identification.
- D) mean that it had to be in the domain *Eukarya*.
- E) suggest that it is a virus.

Answer: C

Section: 01.02

Topic: Microbial World; Prokaryotes; Tools and Methods of Culturing, Classifying, and Identify Microorganisms

Bloom's: 3. Apply

Learning Outcome: 01.08 Compare and contrast characteristics of members of the Bacteria, Archaea, and Eukarya.

ASM Objective: 02.01 The structure and function of microorganisms have been revealed by the use of microscopy (including bright field, phase contrast, fluorescent, and electron).

48) Although it is said that the twentieth century was the Age of Physics, it is predicted that the twenty-first century will be the age of

- A) chemistry.
- B) computers.
- C) microbial biodiversity.
- D) mathematics.
- E) psychology.

Answer: C

Section: 01.03

Topic: Microbial World

Bloom's: 2. Understand

Learning Outcome: 01.05 List three commercial benefits of microorganisms.

49) Spontaneous generation refers to the idea that organisms came from other organisms.

Answer: FALSE

Section: 01.01

Topic: History of Microbiology

Bloom's: 1. Remember

Learning Outcome: 01.01 Describe the key experiments of scientists who disproved spontaneous generation.

ASM Objective: 02.01 The structure and function of microorganisms have been revealed by the use of microscopy (including bright field, phase contrast, fluorescent, and electron).

50) The human body only contains bacteria during illness.

Answer: FALSE

Section: 01.02

Topic: Infection and Disease; Microbial World

Bloom's: 2. Understand

Learning Outcome: 01.04 Explain the importance of microorganisms in the health of humans and the surrounding environment.; 01.07 Describe the role of microbes in disease, including examples of past triumphs and remaining challenges.

ASM Objective: 05.04 Microorganisms, cellular and viral, can interact with both human and nonhuman hosts in beneficial, neutral or detrimental ways.

51) Bacteria and eukarya both contain membrane-bound organelles.

Answer: FALSE

Section: 01.03

Topic: Eukaryotes; Prokaryotes

Bloom's: 2. Understand

Learning Outcome: 01.08 Compare and contrast characteristics of members of the Bacteria, Archaea, and Eukarya.

ASM Objective: 02.01 The structure and function of microorganisms have been revealed by the use of microscopy (including bright field, phase contrast, fluorescent, and electron).

52) The scientific name of an organism indicates its domain.

Answer: FALSE

Section: 01.03

Topic: Microbial World; Tools and Methods of Culturing, Classifying, and Identify Microorganisms

Bloom's: 2. Understand

Learning Outcome: 01.09 Explain the features of an organisms scientific name.

ASM Objective: 01.04 The traditional concept of species is not readily applicable to microbes due to asexual reproduction and the frequent occurrence of horizontal gene transfer.; 01.05 The evolutionary relatedness of organisms is best reflected in phylogenetic trees.

53) Viroids are naked (lacking a protein shell) pieces of RNA that infect plants.

Answer: TRUE

Section: 01.03

Topic: Microbial World; Viruses

Bloom's: 2. Understand

Learning Outcome: 01.11 Compare and contrast viruses, viroids, and prions.

ASM Objective: 02.05 The replication cycles of viruses (lytic and lysogenic) differ among viruses and are determined by their unique structures and genomes.; 05.04 Microorganisms, cellular and viral, can interact with both human and nonhuman hosts in beneficial, neutral or detrimental ways.

54) Viruses simultaneously contain DNA, RNA, and protein.

Answer: FALSE

Section: 01.03

Topic: Viruses

Bloom's: 2. Understand

Learning Outcome: 01.11 Compare and contrast viruses, viroids, and prions.

ASM Objective: 02.01 The structure and function of microorganisms have been revealed by the use of microscopy (including bright field, phase contrast, fluorescent, and electron).

55) Viruses, viroids, and prions are obligate intracellular agents.

Answer: TRUE

Section: 01.03

Topic: Microbial World; Viruses

Bloom's: 3. Apply

Learning Outcome: 01.11 Compare and contrast viruses, viroids, and prions.

ASM Objective: 02.01 The structure and function of microorganisms have been revealed by the use of microscopy (including bright field, phase contrast, fluorescent, and electron).

56) Viruses and bacteria are both based on the unit of a cell.

Answer: FALSE

Section: 01.03

Topic: Viruses

Bloom's: 2. Understand

Learning Outcome: 01.08 Compare and contrast characteristics of members of the Bacteria, Archaea, and Eukarya.; 01.11 Compare and contrast viruses, viroids, and prions.

ASM Objective: 02.01 The structure and function of microorganisms have been revealed by the use of microscopy (including bright field, phase contrast, fluorescent, and electron).

57) An organism is categorized in a domain according to its cell size.

Answer: FALSE

Section: 01.03

Topic: Microbial World

Bloom's: 2. Understand

Learning Outcome: 01.08 Compare and contrast characteristics of members of the Bacteria, Archaea, and Eukarya.

ASM Objective: 01.05 The evolutionary relatedness of organisms is best reflected in phylogenetic trees.

58) Archaea are very similar to bacteria and have rigid cell walls made of peptidoglycan.

Answer: FALSE

Section: 01.03

Topic: Prokaryotes

Bloom's: 2. Understand

Learning Outcome: 01.08 Compare and contrast characteristics of members of the Bacteria, Archaea, and Eukarya.

ASM Objective: 02.03 Bacteria and Archaea have specialized structures (e.g., flagella, endospores, and pili) that often confer critical capabilities.; 02.01 The structure and function of microorganisms have been revealed by the use of microscopy (including bright field, phase contrast, fluorescent, and electron).

59) *Thiomargarita namibiensis* can not be a eukaryote because it is only 1 mm in width.

Answer: FALSE

Section: 01.03

Topic: Prokaryotes

Bloom's: 3. Apply

Learning Outcome: 01.08 Compare and contrast characteristics of members of the Bacteria, Archaea, and Eukarya.

ASM Objective: 01.05 The evolutionary relatedness of organisms is best reflected in phylogenetic trees.; 02.01 The structure and function of microorganisms have been revealed by the use of microscopy (including bright field, phase contrast, fluorescent, and electron).

60) HIV/AIDS can be categorized as a new or emerging infectious disease. By putting it into this category, we are effectively saying that

A) this infection hasn't been observed in the human population prior to recent (within the last 50 years) outbreaks.

B) this disease has been in susceptible populations for centuries, but has only recently achieved infection levels that became detectable.

C) the infectious agent is still evolving and changing, unlike with older, more established diseases such as plague or polio.

D) the disease has always been in susceptible populations and causing disease, but we lacked the technology to detect it.

E) this infection hasn't been observed in the human population prior to recent (within the last 5 years) outbreaks.

Answer: A

Section: 01.02

Topic: Infection and Disease

Bloom's: 5. Evaluate

Learning Outcome: 01.04 Explain the importance of microorganisms in the health of humans and the surrounding environment.

ASM Objective: 05.04 Microorganisms, cellular and viral, can interact with both human and nonhuman hosts in beneficial, neutral or detrimental ways.

61) An illness outbreak occurs in New York City birds in the late 1990s. After a lengthy scientific investigation, the Centers for Disease Control (CDC) determine that the agent causing the birds to die is the West Nile virus. Outbreaks of this illness have been observed in several other countries in Asia and the Middle East across the last 50 years, but not in the United States. With this information, what would be the best categorization of this infectious agent/disease?

- A) This is a reemerging infection. It is been around for a long time, and it is reappearing in a susceptible population again.
- B) This is a nosocomial (hospital-acquired) infection. It is transmitted from animals to human beings in urban environments.
- C) This is an emerging infection. It hasn't been around that long, and it has made a jump across continents into a new susceptible population.
- D) This is an unimportant infection that not a concern to human beings because it occurs in birds, so there is no need to classify it.
- E) This is a chronic infection. It has been around for many years, and it has made a jump across continents into a new susceptible population.

Answer: C

Section: 01.02

Topic: Infection and Disease

Bloom's: 5. Evaluate

Learning Outcome: 01.04 Explain the importance of microorganisms in the health of humans and the surrounding environment.

ASM Objective: 05.04 Microorganisms, cellular and viral, can interact with both human and nonhuman hosts in beneficial, neutral or detrimental ways.

62) Why are we concerned at all with monitoring emerging/reemerging diseases?

- A) These represent growing threats to human health that will require new scientific research and resources to effectively combat.
- B) Because globalization leads to more chances for spread of illnesses into new areas and populations. Monitoring these illnesses will help us to protect people.
- C) Because the speed of travel has increased, so it is far more likely that a serious pathogen can spread rapidly across the globe. Monitoring these illnesses will help us protect populations.
- D) All of the answer choices are correct.
- E) None of the answer choices is correct.

Answer: D

Section: 01.02

Topic: Infection and Disease

Bloom's: 4. Analyze

Learning Outcome: 01.04 Explain the importance of microorganisms in the health of humans and the surrounding environment.

ASM Objective: 06.02 Microorganisms provide essential models that give us fundamental knowledge about life processes.

63) A microbiologist obtained two pure isolated biological samples: one of a virus, and one of a viroid. The labels came off during a move from one lab to the next, however. The scientist felt she could distinguish between the two samples by analyzing for the presence of a single type of molecule. What type of molecule would she be looking for to differentiate between the two?

- A) DNA
- B) Protein
- C) Lipids
- D) RNA
- E) Carbohydrate

Answer: B

Section: 01.03

Topic: Viruses

Bloom's: 4. Analyze

Learning Outcome: 01.11 Compare and contrast viruses, viroids, and prions.

ASM Objective: 01.05 The evolutionary relatedness of organisms is best reflected in phylogenetic trees.; 02.01 The structure and function of microorganisms have been revealed by the use of microscopy (including bright field, phase contrast, fluorescent, and electron).

64) A scientist has two samples—the first is a prion sample, while the second is a viroid sample. However, the samples are in unlabeled tubes. The scientist wants to run a simple analysis to determine which tube contains the prion sample and which one contains the viroid. What type of molecule would she look for to do this?

- A) Lipids
- B) DNA
- C) Protein
- D) Polysaccharides
- E) Peptidoglycan

Answer: C

Section: 01.03

Topic: Microbial World; Viruses

Bloom's: 4. Analyze

Learning Outcome: 01.11 Compare and contrast viruses, viroids, and prions.

ASM Objective: 07.01b Ability to apply the process of science: Analyze and interpret results from a variety of microbiological methods and apply these methods to analogous situations.

65) A scientist discovers a new species near coral reefs in Australia. He finds that this single-celled species is photosynthetic (using sunlight for energy), has a rigid cell wall structure with no peptidoglycan, uses a flagellum for motion, and contains a variety of internal structures that are membrane-bound. Given this information, this new species is most likely a(n) _____ cell in the _____ domain.

- A) bacterial; *Eukarya*
- B) fungal; *Prokarya*
- C) viral; *Archaea*
- D) algal; *Eukarya*
- E) protozoan; *Bacteria*

Answer: D

Section: 01.03

Topic: Eukaryotes

Bloom's: 4. Analyze

Learning Outcome: 01.08 Compare and contrast characteristics of members of the Bacteria, Archaea, and Eukarya.; 01.10 Compare and contrast the algae, fungi, and protozoa.

ASM Objective: 01.04 The traditional concept of species is not readily applicable to microbes due to asexual reproduction and the frequent occurrence of horizontal gene transfer.; 01.05 The evolutionary relatedness of organisms is best reflected in phylogenetic trees.; 02.01 The structure and function of microorganisms have been revealed by the use of microscopy (including bright field, phase contrast, fluorescent, and electron).

66) Scientists recently cloned Louis Pasteur and put him back to work in a modern lab. He promptly developed a topical gel (used externally) that breaks down proteins. Since he hasn't been around for some time, he's unsure what the best application for his invention might be. Help him out. What pathogenic agent would this gel be most effective and safe at eliminating?

- A) Viroids on the surface of agricultural plant tissues.
- B) Prions inside the central nervous system of cows.
- C) Viruses on the surface of the skin.
- D) Bacteria in the intestines of human beings.
- E) The fungus that causes infections under people's toenails.

Answer: C

Section: 01.03

Topic: Infection and Disease; Viruses

Bloom's: 5. Evaluate

Learning Outcome: 01.08 Compare and contrast characteristics of members of the Bacteria, Archaea, and Eukarya.; 01.11 Compare and contrast viruses, viroids, and prions.

ASM Objective: 05.04 Microorganisms, cellular and viral, can interact with both human and nonhuman hosts in beneficial, neutral or detrimental ways.

A scientist isolates a microbe from a contaminated water source. She thinks that the organism might be a new bacteria that is capable of surviving in the presence of lead, a heavy metal. She makes tubes of growth medium containing either no lead, 0.1 mg lead, 0.25 mg lead, 0.5 mg of lead or 1 mg of lead. She inoculates each tube with the 10×10^3 cells of the new organism and then incubates the inoculated medium at 37°C. After 48 hours, she examines the tubes of medium and finds that there is no growth in any of them. However, she finds that the bacteria grew fine in medium that did not contain any lead. She decides to repeat the experiment using lower concentrations of lead than those she used initially.

67) Select which of the following is the hypothesis being tested by the scientist.

- A) The newly isolated microbe can grow in the presence of lead.
- B) The newly isolated microbe is a bacteria.
- C) Lead can be placed into tubes of growth medium.
- D) Bacteria must be incubated for 72 hours before they grow.
- E) Lead is a good nutrient for all bacterial growth.

Answer: A

Section: 01.01

Topic: Environmental Microbiology; Prokaryotes

Bloom's: 4. Analyze

Learning Outcome: 01.03 Describe the scientific method, using Pasteur's swan-necked flask experiment as an example.

ASM Objective: 03.01 Bacteria and Archaea exhibit extensive, and often unique, metabolic diversity (e.g., nitrogen fixation, methane production, anoxygenic photosynthesis).; 03.03 The survival and growth of any microorganism in a given environment depends on its metabolic characteristics.; 07.01a Ability to apply the process of science: Demonstrate an ability to formulate hypotheses and design experiments based on the scientific method.

68) Identify the control step in the scenario described.

- A) Inoculating the test microbe into nutrient medium containing lead.
- B) Isolating the microbe from a contaminated water source.
- C) Inoculating the test microbe into nutrient medium lacking lead.
- D) Inoculating the test microbe into medium containing lower levels of lead than used initially.
- E) Inoculating the test microbe into contaminated water containing high levels of lead.

Answer: C

Section: 01.01

Topic: Environmental Microbiology; Prokaryotes

Bloom's: 5. Evaluate

Learning Outcome: 01.03 Describe the scientific method, using Pasteur's swan-necked flask experiment as an example.

ASM Objective: 03.01 Bacteria and Archaea exhibit extensive, and often unique, metabolic diversity (e.g., nitrogen fixation, methane production, anoxygenic photosynthesis).; 03.02 The interactions of microorganisms among themselves and with their environment are determined by their metabolic abilities (e.g., quorum sensing, oxygen consumption, nitrogen transformations).; 07.01b Ability to apply the process of science: Analyze and interpret results from a variety of microbiological methods and apply these methods to analogous situations.

69) What conclusion can the scientist in this scenario make from her results?

- A) The test bacteria take more than 48 hours to grow in the laboratory when incubated at 37°C.
- B) All contaminated water contains high levels of lead and other heavy metals.
- C) The amounts of lead used in the experiment killed the bacteria being tested.
- D) All experiments should be repeated three times or more.
- E) Lead-contaminated water does not contain any bacteria at all.

Answer: C

Section: 01.01

Topic: Microbial Ecology; Microbial World; Prokaryotes

Bloom's: 5. Evaluate

Learning Outcome: 01.01 Describe the key experiments of scientists who disproved spontaneous generation.

ASM Objective: 05.03 Microorganisms and their environment interact with and modify each other.; 05.04 Microorganisms, cellular and viral, can interact with both human and nonhuman hosts in beneficial, neutral or detrimental ways.; 07.01a Ability to apply the process of science: Demonstrate an ability to formulate hypotheses and design experiments based on the scientific method.

- 70) Select the TRUE statement regarding viruses.
- A) Most viruses are smaller than bacteria but bigger than mitochondria.
 - B) Viruses may be unicellular or multicellular.
 - C) Viruses have completely random shapes.
 - D) Viruses always cause death of the host cells they infect.
 - E) Virus are considered living because they contain nucleic acid.

Answer: A

Section: 01.03

Topic: Viruses

Bloom's: 3. Apply

Learning Outcome: 01.11 Compare and contrast viruses, viroids, and prions.

ASM Objective: 02.05 The replication cycles of viruses (lytic and lysogenic) differ among viruses and are determined by their unique structures and genomes.

Janus is a keen baseball player at the high school where you are employed as a nurse. He comes to your office and shows you an injury to his knee which he got by sliding into home base, scoring a game-winning run. His knee has a red, raw patch where the skin has been scraped off, and the area around the wound is swollen. Janus tells you that he washed his knee with soap and water to remove any germs and then put a bandage on it.

- 71) You explain to Janus that he may have an infection in his wound, possibly caused by the organism *Staphylococcus epidermidis*. You tell him that the genus name of the organism indicates that
- A) the cells are found on the skin.
 - B) the cells are round and grow in clusters.
 - C) the organism is a pathogen.
 - D) the organism is normal microbiota.
 - E) the cells have a golden color.

Answer: B

Section: 01.03

Topic: Infection and Disease; Microbial World; Prokaryotes

Bloom's: 4. Analyze

Learning Outcome: 01.08 Compare and contrast characteristics of members of the Bacteria, Archaea, and Eukarya.; 01.09 Explain the features of an organisms scientific name.

ASM Objective: 05.04 Microorganisms, cellular and viral, can interact with both human and nonhuman hosts in beneficial, neutral or detrimental ways.

72) Janus tells you he knows that yeast cells are also small and round. He asks how scientists can tell the difference between yeasts and bacteria. Select the choice that best answers his question.

- A) Bacteria are microscopic.
- B) Bacteria are photosynthetic.
- C) Bacteria are unicellular.
- D) Bacteria contain peptidoglycan.
- E) Bacteria can be pathogenic.

Answer: D

Section: 01.02; 01.03

Topic: Infection and Disease; Microbial World; Prokaryotes

Bloom's: 3. Apply

Learning Outcome: 01.07 Describe the role of microbes in disease, including examples of past triumphs and remaining challenges.; 01.08 Compare and contrast characteristics of members of the Bacteria, Archaea, and Eukarya.

ASM Objective: 02.02 Bacteria have unique cell structures that can be targets for antibiotics, immunity, and phage infection.; 05.01 Microorganisms are ubiquitous and live in diverse and dynamic ecosystems.

73) Janus asks you if there is something he can use to kill any bacteria in his wound without affecting any of his own body cells. You tell him that some antibiotics kill bacteria by targeting _____, a compound unique to bacteria.

- A) protein
- B) nuclear membrane
- C) flagella
- D) peptidoglycan
- E) chitin

Answer: D

Section: 01.02; 01.03

Topic: Antimicrobial Medications; Control of Microbial Growth; Infection and Disease; Microbial World; Prokaryotes

Bloom's: 3. Apply

Learning Outcome: 01.04 Explain the importance of microorganisms in the health of humans and the surrounding environment.; 01.08 Compare and contrast characteristics of members of the Bacteria, Archaea, and Eukarya.

ASM Objective: 02.02 Bacteria have unique cell structures that can be targets for antibiotics, immunity, and phage infection.; 02.01 The structure and function of microorganisms have been revealed by the use of microscopy (including bright field, phase contrast, fluorescent, and electron).; 05.04 Microorganisms, cellular and viral, can interact with both human and nonhuman hosts in beneficial, neutral or detrimental ways.

74) Janus' knee infection should be considered an emerging infectious disease, and you should report it to the Centers of disease Control (CDC).

Answer: FALSE

Section: 01.02; 01.03

Topic: Infection and Disease; Microbial World; Prokaryotes

Bloom's: 3. Apply

Learning Outcome: 01.04 Explain the importance of microorganisms in the health of humans and the surrounding environment.; 01.08 Compare and contrast characteristics of members of the Bacteria, Archaea, and Eukarya.

ASM Objective: 05.04 Microorganisms, cellular and viral, can interact with both human and nonhuman hosts in beneficial, neutral or detrimental ways.

Sandy has been taking an antibiotic for a urinary tract infection (UTI). Although the signs and symptoms of Sandy's UTI resolved after a few days of taking the medication, she complains to you that she has been having watery diarrhea for the last two days, and she wonders whether the antibiotic is affecting her digestive tract. You take the opportunity to give her information about her normal microbiota.

75) You explain to Sandy that her body carries an enormous population of microorganisms, collectively called the normal microbiota. You tell her that this population has a vital role in maintaining her health. Select the FALSE statement regarding the role of the normal microbiota.

- A) Normal microbiota prevent disease by competing with pathogenic microbes.
- B) Normal microbiota help to degrade foods that the body otherwise could not digest.
- C) Normal microbiota synthesize vitamins that the body cannot produce.
- D) Normal microbiota produce insulin for controlling blood sugar levels.
- E) Normal microbiota likely affects the tendency to lose or gain weight.

Answer: D

Section: 01.02

Topic: Microbial Ecology; Microbial World; Prokaryotes

Bloom's: 3. Apply

Learning Outcome: 01.04 Explain the importance of microorganisms in the health of humans and the surrounding environment.

ASM Objective: 05.04 Microorganisms, cellular and viral, can interact with both human and nonhuman hosts in beneficial, neutral or detrimental ways.; 06.01 Microbes are essential for life as we know it and the processes that support life (e.g., in biogeochemical cycles and plant and/or animal microflora).

76) You are concerned that Sandy may have a *C. difficile* infection. When normal microbiota is disturbed, organisms such as *C. difficile* may thrive. What caused the disturbance in Sandy's normal microbiota in this case?

- A) The bacteria causing Sandy's urinary tract infection.
- B) The antibiotics Sandy was taking to treat her UTI.
- C) Sandy's presence in the hospital.
- D) Sandy's watery diarrhea.
- E) Dehydration caused by Sandy's watery diarrhea.

Answer: B

Section: 01.02

Topic: Antimicrobial Medications; Control of Microbial Growth; Infection and Disease

Bloom's: 5. Evaluate

Learning Outcome: 01.04 Explain the importance of microorganisms in the health of humans and the surrounding environment.

ASM Objective: 02.02 Bacteria have unique cell structures that can be targets for antibiotics, immunity, and phage infection.; 03.04 The growth of microorganisms can be controlled by physical, chemical, mechanical, or biological means.; 05.04 Microorganisms, cellular and viral, can interact with both human and nonhuman hosts in beneficial, neutral or detrimental ways.

77) Digestive tract microbiome plays no role in maintaining a person's health.

Answer: FALSE

Section: 01.02

Topic: Infection and Disease; Pathogenesis; Prokaryotes

Bloom's: 3. Apply

Learning Outcome: 01.04 Explain the importance of microorganisms in the health of humans and the surrounding environment.

ASM Objective: 05.04 Microorganisms, cellular and viral, can interact with both human and nonhuman hosts in beneficial, neutral or detrimental ways.

78) You are examining a pea plant that is showing signs of disease—brown leaves and no pea pods. You isolate an agent from the plant that only contains RNA and protein. This is a(n)

- A) viroid
- B) virus
- C) bacterium
- D) fungus
- E) protozoan

Answer: B

Section: 01.03

Topic: Microbial World; Tools and Methods of Culturing, Classifying, and Identify Microorganisms

Bloom's: 4. Analyze

Learning Outcome: 01.11 Compare and contrast viruses, viroids, and prions.

ASM Objective: 02.01 The structure and function of microorganisms have been revealed by the use of microscopy (including bright field, phase contrast, fluorescent, and electron).; 05.04 Microorganisms, cellular and viral, can interact with both human and nonhuman hosts in beneficial, neutral or detrimental ways.