***Prescott's Microbiology, 11e* (Willey)**

**Chapter 1 The Evolution of Microorganisms and Microbiology**

1) Extant microorganisms are organisms from the fossil record that are no longer present on Earth today.

Answer: FALSE

Topic: Taxonomy of Microorganisms

Bloom's/Accessibility: 2. Understand / Keyboard Navigation

ASM Topic: Module 01 Evolution

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

Learning Outcome: 01.02a Propose a timeline of the origin and history of microbial life and integrate supporting evidence into it

2) All cellular organisms can be placed into one of three \_\_\_\_\_\_\_\_, which include the *Bacteria, Archaea,* and the *Eukarya*.

Answer: domains

Topic: Taxonomy of Microorganisms

Bloom's/Accessibility: 2. Understand / Keyboard Navigation

ASM Topic: Module 01 Evolution

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

Learning Outcome: 01.01b Explain Carl Woeses contributions in establishing the three-domain system for classifying cellular life

3) *Archaea* are cellular organisms that have unique cell membrane \_\_\_\_\_\_\_\_.

Answer: lipids

Topic: Archaea

Bloom's/Accessibility: 1. Remember / Keyboard Navigation

ASM Topic: Module 02 Cell Structure and Function

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

Learning Outcome: 01.01c Determine the type of microbe (e.g., bacterium, fungus, etc.) when given a description of a newly discovered one

4) Microbiologists study a variety of organisms, but all are considered either *Bacteria* or *Archaea*.

Answer: FALSE

Topic: Taxonomy of Microorganisms

Bloom's/Accessibility: 2. Understand / Keyboard Navigation

ASM Topic: Module 05 Microbial Systems

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

Learning Outcome: 01.01a Define the term microbiology

5) All eukaryotes have a membrane-delimited nucleus.

Answer: TRUE

Topic: Taxonomy of Microorganisms

Bloom's/Accessibility: 2. Understand / Keyboard Navigation

ASM Topic: Module 02 Cell Structure and Function

ASM Objective: 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.

Learning Outcome: 01.01c Determine the type of microbe (e.g., bacterium, fungus, etc.) when given a description of a newly discovered one

6) Viruses are not generally studied by microbiologists because they are not classified as living organisms.

Answer: FALSE

Topic: Taxonomy of Microorganisms

Bloom's/Accessibility: 2. Understand / Keyboard Navigation

ASM Topic: Module 05 Microbial Systems

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

Learning Outcome: 01.01a Define the term microbiology

7) Viruses constitute the fourth domain of life in current biological classification schemes.

Answer: FALSE

Topic: Taxonomy of Microorganisms

Bloom's/Accessibility: 2. Understand / Keyboard Navigation

ASM Topic: Module 01 Evolution

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

Learning Outcome: 01.01b Explain Carl Woeses contributions in establishing the three-domain system for classifying cellular life

8) Protists contain all of the following forms of life EXCEPT \_\_\_\_\_\_\_\_.

A) protozoa

B) fungi

C) slime molds

D) algae

Answer: B

Topic: Taxonomy of Microorganisms

Bloom's/Accessibility: 1. Remember / Keyboard Navigation

ASM Topic: Module 01 Evolution

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

Learning Outcome: 01.01b Explain Carl Woeses contributions in establishing the three-domain system for classifying cellular life

9) Cells with a relatively complex morphology that have a true membrane-delimited nucleus are called \_\_\_\_\_\_\_\_.

A) prokaryotes

B) eukaryotes

C) urkaryotes

D) nokaryotes

Answer: B

Topic: Taxonomy of Microorganisms

Bloom's/Accessibility: 2. Understand / Keyboard Navigation

ASM Topic: Module 02 Cell Structure and Function

ASM Objective: 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.

Learning Outcome: 01.01c Determine the type of microbe (e.g., bacterium, fungus, etc.) when given a description of a newly discovered one

10) Cells with a relatively simple cell morphology that do not have a true membrane-delimited nucleus are called \_\_\_\_\_\_\_\_.

A) prokaryotes

B) eukaryotes

C) urkaryotes

D) nokaryotes

Answer: A

Topic: Bacterial Cellular Morphology

Bloom's/Accessibility: 2. Understand / Keyboard Navigation

ASM Topic: Module 02 Cell Structure and Function

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).

Learning Outcome: 01.01c Determine the type of microbe (e.g., bacterium, fungus, etc.) when given a description of a newly discovered one

11) The ribosomal RNA studies that led to the division of prokaryotic organisms into the Bacteria and the Archaea were begun by \_\_\_\_\_\_\_\_.

A) Pasteur

B) Woese

C) Needham

D) Watson

Answer: B

Topic: Taxonomy of Microorganisms

Bloom's/Accessibility: 1. Remember / Keyboard Navigation

ASM Topic: Module 01 Evolution

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

Learning Outcome: 01.01b Explain Carl Woeses contributions in establishing the three-domain system for classifying cellular life

12) Proteins function in modern cells as \_\_\_\_\_\_\_\_.

A) catalysts

B) hereditary information

C) structural elements

D) both catalysts and structural elements

Answer: D

Topic: Bacterial Cellular Morphology

Bloom's/Accessibility: 2. Understand / Keyboard Navigation

ASM Topic: Module 03 Metabolic Pathways

ASM Objective: 03.01 Bacteria and Archaea exhibit extensive, and often unique, metabolic diversity (e.g. nitrogen fixation, methane production, anoxygenic photosynthesis).

Learning Outcome: 01.01a Define the term microbiology

13) RNA serves to convert the information stored in DNA to \_\_\_\_\_\_\_\_.

A) carbohydrates

B) protein

C) lipids

D) RNA

Answer: B

Topic: Bacteria

Bloom's/Accessibility: 2. Understand / Keyboard Navigation

ASM Topic: Module 04 Information Flow and Genetics

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.

Learning Outcome: 01.02a Propose a timeline of the origin and history of microbial life and integrate supporting evidence into it

14) The earliest microbial fossils that have been found are dated from approximately 4.5 million years ago.

Answer: FALSE

Topic: Bacteria

Bloom's/Accessibility: 1. Remember / Keyboard Navigation

ASM Topic: Module 01 Evolution

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

Learning Outcome: 01.01b Explain Carl Woeses contributions in establishing the three-domain system for classifying cellular life

15) Which of the following distinguish the field of microbiology from other fields of biology?

A) The size of the organism studied.

B) The techniques used to study organisms regardless of their size.

C) Both the size of the organism studied and the techniques employed in the study of organisms.

D) Neither the size of the organism studied nor the techniques employed in the study of organisms regardless of their size.

Answer: C

Topic: History of Microbiology

Bloom's/Accessibility: 2. Understand / Keyboard Navigation

ASM Topic: Module 02 Cell Structure and Function

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).

Learning Outcome: 01.01a Define the term microbiology

16) Who of the following developed a set of criteria that could be used to establish a causative link between a particular microorganism and a particular disease?

A) Fracastoro

B) Koch

C) Pasteur

D) Lister

Answer: B

Topic: History of Microbiology

Bloom's/Accessibility: 1. Remember / Keyboard Navigation

ASM Topic: Module 05 Microbial Systems

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

Learning Outcome: 01.03b Outline a set of experiments that might be used to decide if a particular microbe is the causative agent of a disease

17) Who of the following was the first to observe and accurately describe microorganisms?

A) Pasteur

B) Lister

C) van Leeuwenhoek

D) Tyndall

Answer: C

Topic: History of Microbiology

Bloom's/Accessibility: 1. Remember / Keyboard Navigation

ASM Topic: Module 02 Cell Structure and Function

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).

Learning Outcome: 01.03a Evaluate the importance of the contributions to microbiology made by Hooke, Leeuwenhoek, Pasteur, Lister, Koch, Beijerinck, von Behring, Kitasato, Metchnikoff, and Winogradsky

18) Who of the following provided the evidence needed to discredit the concept of spontaneous generation?

A) Pasteur

B) Koch

C) Semmelweiss

D) Lister

Answer: A

Topic: History of Microbiology

Bloom's/Accessibility: 1. Remember / Keyboard Navigation

ASM Topic: Module 05 Microbial Systems

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

Learning Outcome: 01.03a Evaluate the importance of the contributions to microbiology made by Hooke, Leeuwenhoek, Pasteur, Lister, Koch, Beijerinck, von Behring, Kitasato, Metchnikoff, and Winogradsky

19) The concept that living organisms arise from nonliving material is called \_\_\_\_\_\_\_\_.

A) biogenesis

B) cell theory

C) spontaneous generation

D) germ theory

Answer: C

Topic: History of Microbiology

Bloom's/Accessibility: 1. Remember / Keyboard Navigation

ASM Topic: Module 05 Microbial Systems

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

Learning Outcome: 01.03a Evaluate the importance of the contributions to microbiology made by Hooke, Leeuwenhoek, Pasteur, Lister, Koch, Beijerinck, von Behring, Kitasato, Metchnikoff, and Winogradsky

20) The concept that human and animal diseases are caused by microorganisms is called the \_\_\_\_\_\_\_\_.

A) cell theory

B) germ theory

C) causative theory

D) disease theory

Answer: B

Topic: History of Microbiology

Bloom's/Accessibility: 2. Understand / Keyboard Navigation

ASM Topic: Module 05 Microbial Systems

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

Learning Outcome: 01.03b Outline a set of experiments that might be used to decide if a particular microbe is the causative agent of a disease

21) Whose work on spontaneous generation first demonstrated the existence of a very heat-resistant form of bacteria that are called endospores?

A) Schwann

B) Redi

C) Tyndall

D) Pasteur

Answer: C

Topic: History of Microbiology

Bloom's/Accessibility: 1. Remember / Keyboard Navigation

ASM Topic: Module 02 Cell Structure and Function

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

Learning Outcome: 01.03a Evaluate the importance of the contributions to microbiology made by Hooke, Leeuwenhoek, Pasteur, Lister, Koch, Beijerinck, von Behring, Kitasato, Metchnikoff, and Winogradsky

22) Antiseptic surgery was pioneered by \_\_\_\_\_\_\_\_.

A) Pasteur

B) Lister

C) Jenner

D) Kitasato

Answer: B

Topic: History of Microbiology

Bloom's/Accessibility: 1. Remember / Keyboard Navigation

ASM Topic: Module 03 Metabolic Pathways

ASM Objective: 03.04 The growth of microorganisms can be controlled by physical, chemical, mechanical, or biological methods.

Learning Outcome: 01.03a Evaluate the importance of the contributions to microbiology made by Hooke, Leeuwenhoek, Pasteur, Lister, Koch, Beijerinck, von Behring, Kitasato, Metchnikoff, and Winogradsky

23) Studies by Emil von Behring and Shibasaburo Kitasato demonstrated that inactivated toxins can induce the synthesis of antitoxins in the blood of rabbits. These antitoxins (antibodies) are the basis of \_\_\_\_\_\_\_\_.

A) humoral immunity

B) cell-mediated immunity

C) antibiotic immunity

D) phagocyte-mediated immunity

Answer: A

Topic: History of Microbiology

Bloom's/Accessibility: 1. Remember / Keyboard Navigation

ASM Topic: Module 05 Microbial Systems

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

Learning Outcome: 01.03a Evaluate the importance of the contributions to microbiology made by Hooke, Leeuwenhoek, Pasteur, Lister, Koch, Beijerinck, von Behring, Kitasato, Metchnikoff, and Winogradsky

24) The first surgical antiseptic to be used was \_\_\_\_\_\_\_\_.

A) iodine

B) ethanol

C) phenol

D) None of the choices are correct.

Answer: C

Topic: History of Microbiology

Bloom's/Accessibility: 1. Remember / Keyboard Navigation

ASM Topic: Module 03 Metabolic Pathways

ASM Objective: 03.04 The growth of microorganisms can be controlled by physical, chemical, mechanical, or biological methods.

Learning Outcome: 01.03a Evaluate the importance of the contributions to microbiology made by Hooke, Leeuwenhoek, Pasteur, Lister, Koch, Beijerinck, von Behring, Kitasato, Metchnikoff, and Winogradsky

25) Old cultures of bacteria that have lost their ability to cause disease are said to be \_\_\_\_\_\_\_\_.

A) impotent

B) virulent

C) pathogenic

D) attenuated

Answer: D

Topic: History of Microbiology

Bloom's/Accessibility: 1. Remember / Keyboard Navigation

ASM Topic: Module 05 Microbial Systems

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

Learning Outcome: 01.03a Evaluate the importance of the contributions to microbiology made by Hooke, Leeuwenhoek, Pasteur, Lister, Koch, Beijerinck, von Behring, Kitasato, Metchnikoff, and Winogradsky

26) Who is credited with developing and documenting the first vaccination procedure against smallpox?

A) Koch

B) Pasteur

C) Jenner

D) Lister

Answer: C

Topic: History of Microbiology

Bloom's/Accessibility: 1. Remember / Keyboard Navigation

ASM Topic: Module 03 Metabolic Pathways

ASM Objective: 03.04 The growth of microorganisms can be controlled by physical, chemical, mechanical, or biological methods.

Learning Outcome: 01.03a Evaluate the importance of the contributions to microbiology made by Hooke, Leeuwenhoek, Pasteur, Lister, Koch, Beijerinck, von Behring, Kitasato, Metchnikoff, and Winogradsky

27) Who is credited with developing a vaccine against chicken cholera?

A) Koch

B) Pasteur

C) Jenner

D) Lister

Answer: B

Topic: History of Microbiology

Bloom's/Accessibility: 1. Remember / Keyboard Navigation

ASM Topic: Module 03 Metabolic Pathways

ASM Objective: 03.04 The growth of microorganisms can be controlled by physical, chemical, mechanical, or biological methods.

Learning Outcome: 01.03a Evaluate the importance of the contributions to microbiology made by Hooke, Leeuwenhoek, Pasteur, Lister, Koch, Beijerinck, von Behring, Kitasato, Metchnikoff, and Winogradsky

28) Who of the following first discovered that some blood leukocytes could engulf disease-causing bacteria?

A) von Behring

B) Meister

C) Metchnikoff

D) Ivanowski

Answer: C

Topic: History of Microbiology

Bloom's/Accessibility: 1. Remember / Keyboard Navigation

ASM Topic: Module 03 Metabolic Pathways

ASM Objective: 03.04 The growth of microorganisms can be controlled by physical, chemical, mechanical, or biological methods.

Learning Outcome: 01.03a Evaluate the importance of the contributions to microbiology made by Hooke, Leeuwenhoek, Pasteur, Lister, Koch, Beijerinck, von Behring, Kitasato, Metchnikoff, and Winogradsky

29) The use of enrichment cultures and selective media was pioneered by \_\_\_\_\_\_\_\_.

A) Beijerinck

B) Jenner

C) Pasteur

D) von Behring

Answer: A

Topic: History of Microbiology

Bloom's/Accessibility: 1. Remember / Keyboard Navigation

ASM Topic: Module 03 Metabolic Pathways

ASM Objective: 03.04 The growth of microorganisms can be controlled by physical, chemical, mechanical, or biological methods.

Learning Outcome: 01.03a Evaluate the importance of the contributions to microbiology made by Hooke, Leeuwenhoek, Pasteur, Lister, Koch, Beijerinck, von Behring, Kitasato, Metchnikoff, and Winogradsky

30) Fanny Hesse first suggested that agar be used to solidify microbiological media.

Answer: TRUE

Topic: History of Microbiology

Bloom's/Accessibility: 1. Remember / Keyboard Navigation

ASM Topic: Module 03 Metabolic Pathways; Module 06 Impact of Microorganisms

ASM Objective: 03.04 The growth of microorganisms can be controlled by physical, chemical, mechanical, or biological methods.

Learning Outcome: 01.03c Predict the difficulties that might arise when using Koch's postulates to determine if a microbe causes a disease unique to humans

31) M. J. Berkeley demonstrated that the great potato blight of Ireland was caused by a water mold (then thought to be a fungus).

Answer: TRUE

Topic: History of Microbiology

Bloom's/Accessibility: 1. Remember / Keyboard Navigation

ASM Topic: Module 05 Microbial Systems

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

Learning Outcome: 01.03a Evaluate the importance of the contributions to microbiology made by Hooke, Leeuwenhoek, Pasteur, Lister, Koch, Beijerinck, von Behring, Kitasato, Metchnikoff, and Winogradsky

32) Invisible living creatures were thought to exist and cause disease long before they were ever observed.

Answer: TRUE

Topic: History of Microbiology

Bloom's/Accessibility: 2. Understand / Keyboard Navigation

ASM Topic: Module 05 Microbial Systems

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

Learning Outcome: 01.03a Evaluate the importance of the contributions to microbiology made by Hooke, Leeuwenhoek, Pasteur, Lister, Koch, Beijerinck, von Behring, Kitasato, Metchnikoff, and Winogradsky

33) Koch's postulates were instrumental in establishing that the intracellular parasite *Mycobacterium leprae* is the causative organism of leprosy.

Answer: FALSE

Topic: History of Microbiology

Bloom's/Accessibility: 1. Remember / Keyboard Navigation

ASM Topic: Module 05 Microbial Systems

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

Learning Outcome: 01.03c Predict the difficulties that might arise when using Koch's postulates to determine if a microbe causes a disease unique to humans

34) Edward Jenner's work in preventing rabies led to the use of the term vaccination to describe a type of procedure used in the prevention of disease.

Answer: FALSE

Topic: History of Microbiology

Bloom's/Accessibility: 1. Remember / Keyboard Navigation

ASM Topic: Module 03 Metabolic Pathways

ASM Objective: 03.04 The growth of microorganisms can be controlled by physical, chemical, mechanical, or biological methods.

Learning Outcome: 01.03a Evaluate the importance of the contributions to microbiology made by Hooke, Leeuwenhoek, Pasteur, Lister, Koch, Beijerinck, von Behring, Kitasato, Metchnikoff, and Winogradsky

35) Although developed over 100 years ago, Koch's postulates continue to be used successfully in all known human infectious diseases.

Answer: FALSE

Topic: History of Microbiology

Bloom's/Accessibility: 2. Understand / Keyboard Navigation

ASM Topic: Module 05 Microbial Systems

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

Learning Outcome: 01.03c Predict the difficulties that might arise when using Koch's postulates to determine if a microbe causes a disease unique to humans

36) Viruses and bacteria were first cultured in the laboratory at about the same time.

Answer: FALSE

Topic: History of Microbiology

Bloom's/Accessibility: 2. Understand / Keyboard Navigation

ASM Topic: Module 05 Microbial Systems

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

Learning Outcome: 01.03a Evaluate the importance of the contributions to microbiology made by Hooke, Leeuwenhoek, Pasteur, Lister, Koch, Beijerinck, von Behring, Kitasato, Metchnikoff, and Winogradsky

37) Charles Chamberland developed porcelain filters that allowed other scientists to demonstrate that viruses are smaller than bacteria.

Answer: TRUE

Topic: History of Microbiology

Bloom's/Accessibility: 1. Remember / Keyboard Navigation

ASM Topic: Module 07 Scientific Thinking

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.

Learning Outcome: 01.03a Evaluate the importance of the contributions to microbiology made by Hooke, Leeuwenhoek, Pasteur, Lister, Koch, Beijerinck, von Behring, Kitasato, Metchnikoff, and Winogradsky

38) The first disease to be identified as being caused by a virus was tobacco mosaic disease.

Answer: TRUE

Topic: History of Microbiology

Bloom's/Accessibility: 1. Remember / Keyboard Navigation

ASM Topic: Module 05 Microbial Systems

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

Learning Outcome: 01.03b Outline a set of experiments that might be used to decide if a particular microbe is the causative agent of a disease

39) John Tyndall demonstrated that microorganisms present in the air are carried on dust particles.

Answer: TRUE

Topic: History of Microbiology

Bloom's/Accessibility: 1. Remember / Keyboard Navigation

ASM Topic: Module 05 Microbial Systems

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

Learning Outcome: 01.03a Evaluate the importance of the contributions to microbiology made by Hooke, Leeuwenhoek, Pasteur, Lister, Koch, Beijerinck, von Behring, Kitasato, Metchnikoff, and Winogradsky

40) Agostino Bassi demonstrated that a type of silkworm disease was caused by a fungus and proposed that many diseases are caused by microorganisms.

Answer: TRUE

Topic: History of Microbiology

Bloom's/Accessibility: 1. Remember / Keyboard Navigation

ASM Topic: Module 05 Microbial Systems

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

Learning Outcome: 01.03a Evaluate the importance of the contributions to microbiology made by Hooke, Leeuwenhoek, Pasteur, Lister, Koch, Beijerinck, von Behring, Kitasato, Metchnikoff, and Winogradsky

41) The usefulness of agar in solidifying microbiological growth media is limited because it does not remain solid at temperatures above 28oC.

Answer: FALSE

Topic: History of Microbiology

Bloom's/Accessibility: 2. Understand / Keyboard Navigation

ASM Topic: Module 03 Metabolic Pathways

ASM Objective: 03.04 The growth of microorganisms can be controlled by physical, chemical, mechanical, or biological methods.

Learning Outcome: 01.03a Evaluate the importance of the contributions to microbiology made by Hooke, Leeuwenhoek, Pasteur, Lister, Koch, Beijerinck, von Behring, Kitasato, Metchnikoff, and Winogradsky

42) Robert Koch developed a vaccine that could be used to prevent anthrax.

Answer: FALSE

Topic: History of Microbiology

Bloom's/Accessibility: 1. Remember / Keyboard Navigation

ASM Topic: Module 03 Metabolic Pathways

ASM Objective: 03.04 The growth of microorganisms can be controlled by physical, chemical, mechanical, or biological methods.

Learning Outcome: 01.03a Evaluate the importance of the contributions to microbiology made by Hooke, Leeuwenhoek, Pasteur, Lister, Koch, Beijerinck, von Behring, Kitasato, Metchnikoff, and Winogradsky

43) Elie Metchnikoff discovered \_\_\_\_\_\_\_\_, which is a major feature of the host immune response.

Answer: phagocytosis

Topic: History of Microbiology

Bloom's/Accessibility: 1. Remember / Keyboard Navigation

ASM Topic: Module 03 Metabolic Pathways

ASM Objective: 03.04 The growth of microorganisms can be controlled by physical, chemical, mechanical, or biological methods.

Learning Outcome: 01.03a Evaluate the importance of the contributions to microbiology made by Hooke, Leeuwenhoek, Pasteur, Lister, Koch, Beijerinck, von Behring, Kitasato, Metchnikoff, and Winogradsky

44) An Italian physician, \_\_\_\_\_\_\_\_, challenged the concept of spontaneous generation by demonstrating that maggots do not arise from decaying meat but rather from developing fly eggs.

Answer: Redi

Topic: History of Microbiology

Bloom's/Accessibility: 1. Remember / Keyboard Navigation

ASM Topic: Module 05 Microbial Systems

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

Learning Outcome: 01.03a Evaluate the importance of the contributions to microbiology made by Hooke, Leeuwenhoek, Pasteur, Lister, Koch, Beijerinck, von Behring, Kitasato, Metchnikoff, and Winogradsky

45) \_\_\_\_\_\_\_\_ discovered that soil bacteria could oxidize iron, sulfur, and ammonia to obtain energy.

Answer: Winogradsky

Topic: History of Microbiology

Bloom's/Accessibility: 1. Remember / Keyboard Navigation

ASM Topic: Module 03 Metabolic Pathways

ASM Objective: 03.01 Bacteria and Archaea exhibit extensive, and often unique, metabolic diversity (e.g. nitrogen fixation, methane production, anoxygenic photosynthesis).

Learning Outcome: 01.03a Evaluate the importance of the contributions to microbiology made by Hooke, Leeuwenhoek, Pasteur, Lister, Koch, Beijerinck, von Behring, Kitasato, Metchnikoff, and Winogradsky

46) \_\_\_\_\_\_\_\_ was the first to isolate a root nodule bacterium capable of nitrogen fixation.

Answer: Beijerinck

Topic: History of Microbiology

Bloom's/Accessibility: 1. Remember / Keyboard Navigation

ASM Topic: Module 03 Metabolic Pathways

ASM Objective: 03.01 Bacteria and Archaea exhibit extensive, and often unique, metabolic diversity (e.g. nitrogen fixation, methane production, anoxygenic photosynthesis).

Learning Outcome: 01.03a Evaluate the importance of the contributions to microbiology made by Hooke, Leeuwenhoek, Pasteur, Lister, Koch, Beijerinck, von Behring, Kitasato, Metchnikoff, and Winogradsky

47) The endosymbiotic hypothesis is generally accepted as the origin of eukaryotic organelles.

Answer: TRUE

Topic: Taxonomy of Microorganisms

Bloom's/Accessibility: 2. Understand / Keyboard Navigation

ASM Topic: Module 01 Evolution

ASM Objective: 01.01 Cells, organelles (e.g. mitochondria and chloroplasts) and all major metabolic pathways evolved from early prokaryotic cells.

Learning Outcome: 01.02a Propose a timeline of the origin and history of microbial life and integrate supporting evidence into it

48) The relationship between specific bacteria and specific diseases was first demonstrated by Koch.

Answer: TRUE

Topic: History of Microbiology

Bloom's/Accessibility: 1. Remember / Keyboard Navigation

ASM Topic: Module 05 Microbial Systems

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

Learning Outcome: 01.03a Evaluate the importance of the contributions to microbiology made by Hooke, Leeuwenhoek, Pasteur, Lister, Koch, Beijerinck, von Behring, Kitasato, Metchnikoff, and Winogradsky

49) Some microorganisms are useful in bioremediation processes that reduce the effects of pollution.

Answer: TRUE

Topic: Bacteria

Bloom's/Accessibility: 2. Understand / Keyboard Navigation

ASM Topic: Module 06 Impact 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 microbiota).

Learning Outcome: 01.04a Construct a concept map, table, or drawing that illustrates the diverse nature of microbiology and how it has improved human conditions

50) The branch of microbiology that deals with diseases of humans and animals is called \_\_\_\_\_\_\_\_ microbiology.

Answer: medical

Topic: History of Microbiology

Bloom's/Accessibility: 1. Remember / Keyboard Navigation

ASM Topic: Module 05 Microbial Systems

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

Learning Outcome: 01.04b Discuss the belief held by many microbiologists that microbiology is experiencing its second golden age

51) The branch of microbiology that deals with the mechanisms by which the human body protects itself from disease-causing organisms is called \_\_\_\_\_\_\_\_.

Answer: immunology

Topic: History of Microbiology

Bloom's/Accessibility: 1. Remember / Keyboard Navigation

ASM Topic: Module 05 Microbial Systems

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

Learning Outcome: 01.04b Discuss the belief held by many microbiologists that microbiology is experiencing its second golden age

52) \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_ microbiologists monitor community food establishments and water supplies in order to control the spread of communicable diseases.

Answer: Public health

Topic: History of Microbiology

Bloom's/Accessibility: 1. Remember / Keyboard Navigation

ASM Topic: Module 05 Microbial Systems

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

Learning Outcome: 01.04a Construct a concept map, table, or drawing that illustrates the diverse nature of microbiology and how it has improved human conditions

53) The branch of microbiology that studies the relationship between microorganisms and their habitats is called \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_.

Answer: microbial ecology

Topic: History of Microbiology

Bloom's/Accessibility: 1. Remember / Keyboard Navigation

ASM Topic: Module 05 Microbial Systems

ASM Objective: 05.03 Microorganisms and their environment interact with and modify each other.

Learning Outcome: 01.04a Construct a concept map, table, or drawing that illustrates the diverse nature of microbiology and how it has improved human conditions

54) \_\_\_\_\_\_\_\_ microbiology involves the use of microorganisms to make products such as antibiotics, vaccines, steroids, alcohols, vitamins, amino acids, and enzymes.

Answer: Industrial

Topic: History of Microbiology

Bloom's/Accessibility: 1. Remember / Keyboard Navigation

ASM Topic: Module 06 Impact of Microorganisms

ASM Objective: 06.03 Humans utilize and harness microorganisms and their products.

Learning Outcome: 01.04a Construct a concept map, table, or drawing that illustrates the diverse nature of microbiology and how it has improved human conditions

55) Microbial \_\_\_\_\_\_\_\_ are scientists who investigate the synthesis of antibiotics and toxins, the production of energy with microorganisms, and the ways in which microorganisms survive harsh environmental conditions.

Answer: physiologists

Topic: History of Microbiology

Bloom's/Accessibility: 1. Remember / Keyboard Navigation

ASM Topic: Module 03 Metabolic Pathways

ASM Objective: 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).

Learning Outcome: 01.04a Construct a concept map, table, or drawing that illustrates the diverse nature of microbiology and how it has improved human conditions

56) Microbial \_\_\_\_\_\_\_\_ focuses on the nature of heredity and how it regulates the development and function of cells and organisms.

Answer: genetics

Topic: History of Microbiology

Bloom's/Accessibility: 1. Remember / Keyboard Navigation

ASM Topic: Module 04 Information Flow and Genetics

ASM Objective: 04.01 Genetic variations can impact microbial functions (e.g., in biofilm formation, pathogenicity and drug resistance).

Learning Outcome: 01.04a Construct a concept map, table, or drawing that illustrates the diverse nature of microbiology and how it has improved human conditions

57) Which of the following provides the best explanation for why viruses are not included in the three domain system?

A) Viruses are too small.

B) Viruses have either DNA or RNA, not both.

C) Viruses are not a cellular life form.

D) Viruses show no evidence of evolution.

Answer: C

Topic: Taxonomy of Microorganisms

Bloom's/Accessibility: 5. Evaluate / Keyboard Navigation

ASM Topic: Module 01 Evolution

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

Learning Outcome: 01.01b Explain Carl Woeses contributions in establishing the three-domain system for classifying cellular life

58) A new microbe has been discovered in the rumen of sheep. Microscopy shows no evidence of a nuclear membrane and biochemical studies of the cell wall demonstrate the lack of peptidoglycan. Metabolic studies show that this microbe generates methane. This microbe would most likely be classified in \_\_\_\_\_\_\_\_.

A) domain Bacteria

B) domain Archaea

C) domain Eukarya, Kingdom Fungi

D) domain Eukarya, Protists

Answer: B

Topic: Taxonomy of Microorganisms

Bloom's/Accessibility: 4. Analyze / Keyboard Navigation

ASM Topic: Module 03 Metabolic Pathways

ASM Objective: 03.01 Bacteria and Archaea exhibit extensive, and often unique, metabolic diversity (e.g. nitrogen fixation, methane production, anoxygenic photosynthesis).

Learning Outcome: 01.01c Determine the type of microbe (e.g., bacterium, fungus, etc.) when given a description of a newly discovered one

59) What is the most compelling reason why "protists" are not considered to be a taxonomic group?

A) They are not cellular life forms.

B) They are too small to be included among the eukaryotes.

C) The group includes both prokaryotic and eukaryotic cell types.

D) The organisms often included in this group are very diverse and don't form a cohesive taxon.

Answer: D

Topic: Taxonomy of Microorganisms

Bloom's/Accessibility: 5. Evaluate / Keyboard Navigation

ASM Topic: Module 01 Evolution

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

Learning Outcome: 01.01b Explain Carl Woeses contributions in establishing the three-domain system for classifying cellular life

60) Scientists study microorganisms on Earth today to search for life forms elsewhere, as well as to explore the origins of life on Earth. These microorganisms that are studied are referred to as \_\_\_\_\_\_\_\_.

A) existing

B) extant

C) extinct

D) extirpated

Answer: B

Topic: Taxonomy of Microorganisms

Bloom's/Accessibility: 3. Apply / Keyboard Navigation

ASM Topic: Module 06 Impact of Microorganisms

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

Learning Outcome: 01.01d Provide an example of the importance to humans of each of the major types of microbes

61) The most important aspect of agar that makes it a useful ingredient for solidifying media for bacterial culture is \_\_\_\_\_\_\_\_.

A) because it provides an excellent nitrogen source for bacteria

B) because bacteria are unable to break it down so it stays solidified

C) because it melts at 100oC and solidifies at temperatures below 40oC

D) because it provides an excellent carbon and energy source for bacteria

Answer: B

Topic: History of Microbiology

Bloom's/Accessibility: 2. Understand / Keyboard Navigation

ASM Topic: Module 03 Metabolic Pathways

ASM Objective: 03.04 The growth of microorganisms can be controlled by physical, chemical, mechanical, or biological methods.

Learning Outcome: 01.03a Evaluate the importance of the contributions to microbiology made by Hooke, Leeuwenhoek, Pasteur, Lister, Koch, Beijerinck, von Behring, Kitasato, Metchnikoff, and Winogradsky

62) Which molecule is believed to have preceded the other two during the evolution of life?

A) Proteins

B) DNA

C) RNA

Answer: C

Topic: Taxonomy of Microorganisms

Bloom's/Accessibility: 3. Apply / Keyboard Navigation

ASM Topic: Module 01 Evolution

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

Learning Outcome: 01.02a Propose a timeline of the origin and history of microbial life and integrate supporting evidence into it

63) What is the most compelling reason why DNA, rather than RNA, evolved to be the storage repository for genetic information in cellular life forms?

A) DNA has deoxyribose rather than ribose.

B) DNA molecules are more chemically stable than RNA molecules.

C) DNA is double-stranded rather than single-stranded.

Answer: B

Topic: History of Microbiology

Bloom's/Accessibility: 5. Evaluate / Keyboard Navigation

ASM Topic: Module 04 Information Flow and Genetics

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.

Learning Outcome: 01.02a Propose a timeline of the origin and history of microbial life and integrate supporting evidence into it

64) Each of the following provides evidence in support of the primary role of RNA in the evolution of life EXCEPT \_\_\_\_\_\_\_\_.

A) some RNA molecules are catalytic

B) RNA catalyzes peptide bond formation during protein synthesis

C) ATP (energy currency of the cell) is a ribonucleotide

D) RNA is less chemically stable than DNA

E) RNA can regulate gene expression

Answer: D

Topic: Taxonomy of Microorganisms

Bloom's/Accessibility: 4. Analyze / Keyboard Navigation

ASM Topic: Module 04 Information Flow and Genetics

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.

Learning Outcome: 01.02a Propose a timeline of the origin and history of microbial life and integrate supporting evidence into it

65) While each of these processes are believed to have evolved prior to aerobic respiration, which one is the most critical process, without which aerobic respiration could never have developed?

A) Oxygenic photosynthesis

B) Anoxygenic photosynthesis

C) Alcohol fermentation

D) Lactic acid fermentation

Answer: A

Topic: History of Microbiology

Bloom's/Accessibility: 4. Analyze / Keyboard Navigation

ASM Topic: Module 03 Metabolic Pathways

ASM Objective: 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).

Learning Outcome: 01.02a Propose a timeline of the origin and history of microbial life and integrate supporting evidence into it

66) Which term is most inclusive? In other words, which term includes all the others?

A) Microbial species

B) Microbial strain

C) Biovars

D) Serovars

Answer: A

Topic: Taxonomy of Microorganisms

Bloom's/Accessibility: 4. Analyze / Keyboard Navigation

ASM Topic: Module 01 Evolution

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

Learning Outcome: 01.02c Compare and contrast the definitions of plant and animal species, microbial species, and microbial strains

67) Which of the processes named here is the least likely to contribute to the evolution of genetic diversity of bacteria and archaea?

A) Mutation

B) Sexual reproduction

C) Binary fission

D) Horizontal gene transfer

Answer: B

Topic: Taxonomy of Microorganisms

Bloom's/Accessibility: 4. Analyze / Keyboard Navigation

ASM Topic: Module 01 Evolution

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.

Learning Outcome: 01.02c Compare and contrast the definitions of plant and animal species, microbial species, and microbial strains

68) A student is observing microorganisms in a sample of pond water. One organism of interest has an obvious nucleus, small oval structures containing a green pigment, and does not appear to be motile. In which of the following groups would this microbe most likely be classified?

A) Eukaryotes (Fungi)

B) Eukaryotes (Algae)

C) Bacteria

D) Archaea

E) Eukaryotes (Protozoa)

Answer: B

Topic: Taxonomy of Microorganisms

Bloom's/Accessibility: 4. Analyze / Keyboard Navigation

ASM Topic: Module 02 Cell Structure and Function

ASM Objective: 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.

Learning Outcome: 01.01c Determine the type of microbe (e.g., bacterium, fungus, etc.) when given a description of a newly discovered one

69) A student is observing microorganisms in a sample of pond water. One organism of interest has an obvious nucleus and has been moving rapidly during observation and appears to have rows of cilia along its surface. In which of the following groups would this microbe most likely be classified?

A) Eukaryotes (Fungi)

B) Eukaryotes (Algae)

C) Bacteria

D) Eukaryotes (Protozoa)

Answer: D

Topic: Taxonomy of Microorganisms

Bloom's/Accessibility: 4. Analyze / Keyboard Navigation

ASM Topic: Module 02 Cell Structure and Function

ASM Objective: 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.

Learning Outcome: 01.01c Determine the type of microbe (e.g., bacterium, fungus, etc.) when given a description of a newly discovered one

70) A microbial \_\_\_\_\_\_\_\_ is a collection of strains that share many stable properties and differ significantly from other groups of strains.

Answer: species

Topic: Taxonomy of Microorganisms

Bloom's/Accessibility: 2. Understand / Keyboard Navigation

ASM Topic: Module 01 Evolution

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

Learning Outcome: 01.02c Compare and contrast the definitions of plant and animal species, microbial species, and microbial strains

71) Morphovars, serovars, biovars, and pathovars are examples of terms that refer to microbial \_\_\_\_\_\_\_\_.

A) species

B) strains

C) types

D) Archaea

Answer: B

Topic: Taxonomy of Microorganisms

Bloom's/Accessibility: 2. Understand / Keyboard Navigation

ASM Topic: Module 01 Evolution

ASM Objective: 01.02 Mutations and horizontal gene transfer, with the immense variety of microenvironments, have selected for a huge diversity of microorganisms.; 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.

Learning Outcome: 01.02c Compare and contrast the definitions of plant and animal species, microbial species, and microbial strains

72) In a search for new antibiotics, a previously unknown organism has been recovered from the soil. It is nonmotile and is composed of long threadlike structures formed from nucleated cells. It is non-photosynthetic and absorbs its nutrients. This organism will most likely be classified among the \_\_\_\_\_\_\_\_.

A) bacteria

B) Archaea

C) eukaryotes (fungi)

D) eukaryotes (protozoa)

E) eukaryotes (algae)

Answer: C

Topic: Taxonomy of Microorganisms

Bloom's/Accessibility: 3. Apply / Keyboard Navigation

ASM Topic: Module 02 Cell Structure and Function

ASM Objective: 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.

Learning Outcome: 01.01c Determine the type of microbe (e.g., bacterium, fungus, etc.) when given a description of a newly discovered one

Match the microbe with an example of its importance to humans.

A) Bacteria

B) Algae

C) Prions

D) Viruses

E) Fungi

73) Members of this microbial group cause serious diseases such as smallpox, AIDS, and Ebola fever.

Topic: Taxonomy of Microorganisms

Bloom's/Accessibility: 3. Apply / Keyboard Navigation

ASM Topic: Module 05 Microbial Systems

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

Learning Outcome: 01.01d Provide an example of the importance to humans of each of the major types of microbes

74) Members of this group have caused "mad cow disease" and Creutzfeld-Jacob disease.

Topic: Taxonomy of Microorganisms

Bloom's/Accessibility: 3. Apply / Keyboard Navigation

ASM Topic: Module 05 Microbial Systems

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

Learning Outcome: 01.01d Provide an example of the importance to humans of each of the major types of microbes

75) Members of this group include decomposers, associate with plant roots and help plants grow, produce antibiotics, help bread rise, and help make wine.

Topic: Taxonomy of Microorganisms

Bloom's/Accessibility: 3. Apply / Keyboard Navigation

ASM Topic: Module 05 Microbial Systems

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

Learning Outcome: 01.01d Provide an example of the importance to humans of each of the major types of microbes

76) Members of this group are photosynthetic, include unicellular and multicellular forms, and are the foundation of aquatic food chains.

Topic: Taxonomy of Microorganisms

Bloom's/Accessibility: 3. Apply / Keyboard Navigation

ASM Topic: Module 05 Microbial Systems

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

Learning Outcome: 01.01d Provide an example of the importance to humans of each of the major types of microbes

77) This group includes beneficial microorganisms that fix nitrogen and make antibiotics, as well as harmful microorganisms that cause disease such as plague and strep throat.

Topic: Taxonomy of Microorganisms

Bloom's/Accessibility: 3. Apply / Keyboard Navigation

ASM Topic: Module 05 Microbial Systems

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

Learning Outcome: 01.01d Provide an example of the importance to humans of each of the major types of microbes

Answers: 73) D 74) C 75) E 76) B 77) A

78) Three of the SSU rRNA sequences of three organisms have been compared. For organisms 1 and 2, two of the twelve nucleotides in the sequence are different. For organisms 1 and 3, six of the twelve nucleotides are different. Which organism has greater evolutionary distance from organism 1?

A) Organism 2

B) Organism 3

C) The evolutionary distance is the same.

D) Evolutionary distance cannot be predicted from this data.

Answer: B

Topic: Taxonomy of Microorganisms

Bloom's/Accessibility: 3. Apply / Keyboard Navigation

ASM Topic: Module 01 Evolution

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

Learning Outcome: 01.02b Design a set of experiments that could be used to place a newly discovered cellular microbe on a phylogenetic tree based on small subunit (SSU) rRNA sequences

79) The following are steps in using SSU rRNA molecules to develop phylogenetic trees. Place these steps in the correct order.

1. Isolate DNA from cells of each organism being tested.

2. Amplify the DNA of the SSU rRNA genes of each organism using polymerase chain reaction.

3. Determine the nucleotide sequence of the SSU rRNA genes of each organism.

4. Align nucleotide sequences to compare.

5. Count the number of nucleotide differences between each pair of sequences and calculate the evolutionary distance.

6. Input data into computer and use appropriate software to construct a phylogenetic tree.

Answer: 1, 5, 3, 4, 6, 2

Topic: Taxonomy of Microorganisms

Bloom's/Accessibility: 3. Apply / Keyboard Navigation

ASM Topic: Module 01 Evolution

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

Learning Outcome: 01.02b Design a set of experiments that could be used to place a newly discovered cellular microbe on a phylogenetic tree based on small subunit (SSU) rRNA sequences

80) Which group of microbes contains organisms necessary for production of wine and bread?

A) Bacteria

B) Archaea

C) Fungi

D) Algae

Answer: C

Topic: Taxonomy of Microorganisms

Bloom's/Accessibility: 1. Remember / Keyboard Navigation

ASM Topic: Module 06 Impact of Microorganisms

ASM Objective: 06.03 Humans utilize and harness microorganisms and their products.

Learning Outcome: 01.01d Provide an example of the importance to humans of each of the major types of microbes

81) You discover a new microbe while working on a citizen scientist project.  The microbe is taken to a lab that specializes in placing organisms in their correct phylogenic niche. In order to determine its evolutionary relatedness to other microbes, the lab carries out \_\_\_\_\_\_\_\_.

A) SSU rRNA analysis

B) microscopic analysis

C) biochemical tests

D) DNA fingerprinting

Answer: A

Topic: Taxonomy of Microorganisms

Bloom's/Accessibility: 3. Apply / Keyboard Navigation

ASM Topic: Module 01 Evolution

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

Learning Outcome: 01.02b Design a set of experiments that could be used to place a newly discovered cellular microbe on a phylogenetic tree based on small subunit (SSU) rRNA sequences

82) You are a medical microbiologist in Dallas, TX. A small population of individuals spread throughout the city have been experiencing alarming yet similar symptoms affecting the liver that have physicians puzzled as to the etiology, although they all suspect it is microbial in nature.  What steps would you take to elucidate the organism?

A) 1. Sample the livers from affected patients to culture and compare organisms;  2. Grow the suspected organisms in culture; 3. Inoculate the cultured organisms into a laboratory animal and monitor for similar symptoms; 4. Culture and analyze the organism from the lab animal and determine relatedness.

B) 1. Inoculate all suspected organisms into a laboratory animal and monitor for similar symptoms;  2. Biopsy the original patient's liver to look for organisms;  3. Grow the suspected organisms from the liver in culture;  4. Culture and analyze the organism from the lab animal and determine relatedness.

C) Sample the livers of all sick individuals and culture the organisms, comparing symptoms and microscopic characteristics.

D) 1. Biopsy the patient's liver to look for organisms;  2. Culture the organisms obtained from the liver and run biochemical tests to determine similarities to other known liver pathogens; 3. Inoculate liver pathogens into lab animals to compare symptoms.

Answer: A

Topic: Bacteria

Bloom's/Accessibility: 5. Evaluate / Keyboard Navigation

ASM Topic: Module 05 Microbial Systems

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

Learning Outcome: 01.03b Outline a set of experiments that might be used to decide if a particular microbe is the causative agent of a disease