1.4: An Invisible World (Exercises)

1.1: What Our Ancestors Knew

**Multiple Choice**

**Exercise**

Which of the following foods is NOT made by fermentation?

1. beer
2. bread
3. cheese
4. orange juice

D

**Exercise**

Who is considered the “father of Western medicine”?

1. Marcus Terentius Varro
2. Thucydides
3. Antonie van Leeuwenhoek
4. Hippocrates

D

Who was the first to observe “animalcules” under the microscope?

1. Antonie van Leeuwenhoek
2. Ötzi the Iceman
3. Marcus Terentius Varro
4. Robert Koch

A

Who proposed that swamps might harbor tiny, disease-causing animals too small to see?

1. Thucydides
2. Marcus Terentius Varro
3. Hippocrates
4. Louis Pasteur

B

Fill in the Blank

Thucydides is known as the father of ________________.

scientific history

Researchers think that Ötzi the Iceman may have been infected with _____ disease.

Lyme

The process by which microbes turn grape juice into wine is called ________________.
fermentation

Short Answer

What did Thucydides learn by observing the Athenian plague?

Why was the invention of the microscope important for microbiology?

What are some ways people use microbes?

Critical Thinking

Explain how the discovery of fermented foods likely benefited our ancestors.

What evidence would you use to support this statement: Ancient people thought that disease was transmitted by things they could not see.

1.2: A Systematic Approach

Multiple Choice

Which of the following was NOT a kingdom in Linnaeus’s taxonomy?

1. animal
2. mineral
3. protist
4. plant

C

Which of the following is a correct usage of binomial nomenclature?

1. Homo Sapiens
2. homo sapiens
3. Homo sapiens
4. Homo Sapiens

C

Which scientist proposed adding a kingdom for protists?
1. Carolus Linnaeus
2. Carl Woese
3. Robert Whittaker
4. Ernst Haeckel

D

Which of the following is NOT a domain in Woese and Fox's phylogenetic tree?

1. Plantae
2. Bacteria
3. Archaea
4. Eukarya

A

Which of the following is the standard resource for identifying bacteria?

1. Systema Naturae
2. Bergey's Manual of Determinative Bacteriology
3. Woese and Fox's phylogenetic tree
4. Haeckel's General Morphology of Organisms

B

Short Answer

What is a phylogenetic tree?

Which of the five kingdoms in Whittaker's phylogenetic tree are prokaryotic, and which are eukaryotic?

What molecule did Woese and Fox use to construct their phylogenetic tree?

Name some techniques that can be used to identify and differentiate species of bacteria.

Critical Thinking

Why is using binomial nomenclature more useful than using common names?
Label the three Domains found on modern phylogenetic trees.

Figure

1.3: Types of Microorganisms

Multiple Choice

Which of the following types of microorganisms is photosynthetic?

1. yeast
2. virus
3. helminth
4. alga

Which of the following is a prokaryotic microorganism?

1. helminth
2. protozoan
3. cyanobacterium
4. mold

Which of the following is acellular?

1. virus
2. bacterium
3. fungus
4. protozoan

Which of the following is a type of fungal microorganism?

1. bacterium
2. protozoan
3. alga
4. yeast

D

Which of the following is not a subfield of microbiology?

1. bacteriology
2. botany
3. clinical microbiology
4. virology

B

Fill in the Blank

A _______ is a disease-causing microorganism.

pathogen

Multicellular parasitic worms studied by microbiologists are called ___________.

helminths

The study of viruses is ___________.

virology

The cells of prokaryotic organisms lack a _______.

nucleus
Short Answer

Describe the differences between bacteria and archaea.

Name three structures that various protozoa use for locomotion.

Describe the actual and relative sizes of a virus, a bacterium, and a plant or animal cell.

Critical Thinking

Contrast the behavior of a virus outside versus inside a cell.

Where would a virus, bacterium, animal cell, and a prion belong on this chart?

Figure