

Chapter 1

How do you define life, or what is living?

Robert Hooke did what?

Anton Van Leeuwenhoek was the first to do what?

List the types of microorganisms and their cell walls (if present).

What are the three domains?

Define the following types of study:

- Bacteriology →
- Mycology →
- Virology →
- Parasitology →
- Genomics →

Most microbes are pathogenic

- a. True
- b. False

All cells have a cell _____.

Bacteria have cilia.

- a. True
- b. False

Bacteria reproduce by _____.

How do fungi obtain the organic chemicals used for energy?

How do protozoa obtain organic chemicals?

Algae ingests organic chemicals for energy.

- a. True
- b. False

Viruses are living organisms (yes/no).

What are helminths?

Which is a correctly typed scientific name?

- a. Baker's yeast
- b. Saccharomyces cerevisiae
- c. *Saccharomyces cerevisiae*
- d. *S. cerevisiae*

Explain the theory of spontaneous generation and its opposing theory.

What did Louis Pasteur do?

Chapter 3

6 μm is _____ mm.

1 mL is _____ CC.

How many lenses does a simple microscope have?

What type of microscope is used in the lab?

How do you find the total magnification of the microscope?

Define the following:

- Resolution \rightarrow
- Refractive index \rightarrow

Why is immersion oil added onto the slide?

What objects are visible under:

- Brightfield illumination →
- Darkfield illumination →

Fluorescence microscopy uses _____ light.

Electron microscopy uses light to view objects.

- a. True
- b. False

What is the purpose of fixed mounts?

In positive staining, what type of dye is used? In negative staining?

What is used in a gram stain? Star the critical step.

What is used in an acid fast stain? Star the critical step.

Gram-negative bacteria are (easier/harder) to kill than gram-positive bacteria.

List all the types of differential stains.

What are other ways to identify bacterial species?

Chapter 4

Part 1 (prokaryotes)

Identify the differences between prokaryotic and eukaryotic cells.

List the factors used to differentiate bacteria species.

What shapes and arrangements can bacteria have?

What is the glycocalyx and its different forms?

_____ form slimy layers on surfaces (such as teeth).

What type of bacteria has an outer membrane?

How do bacteria move?

What did Rebecca Lancefield do?

What is the function of fimbriae?

There are two types of pili, identify each type.

The _____ prevents osmotic lysis.

What makes up the carbohydrate backbone of the cell wall in both gram-positive and gram-negative cells?

Gram-positive cells have a (thick/thin) peptidoglycan layer.

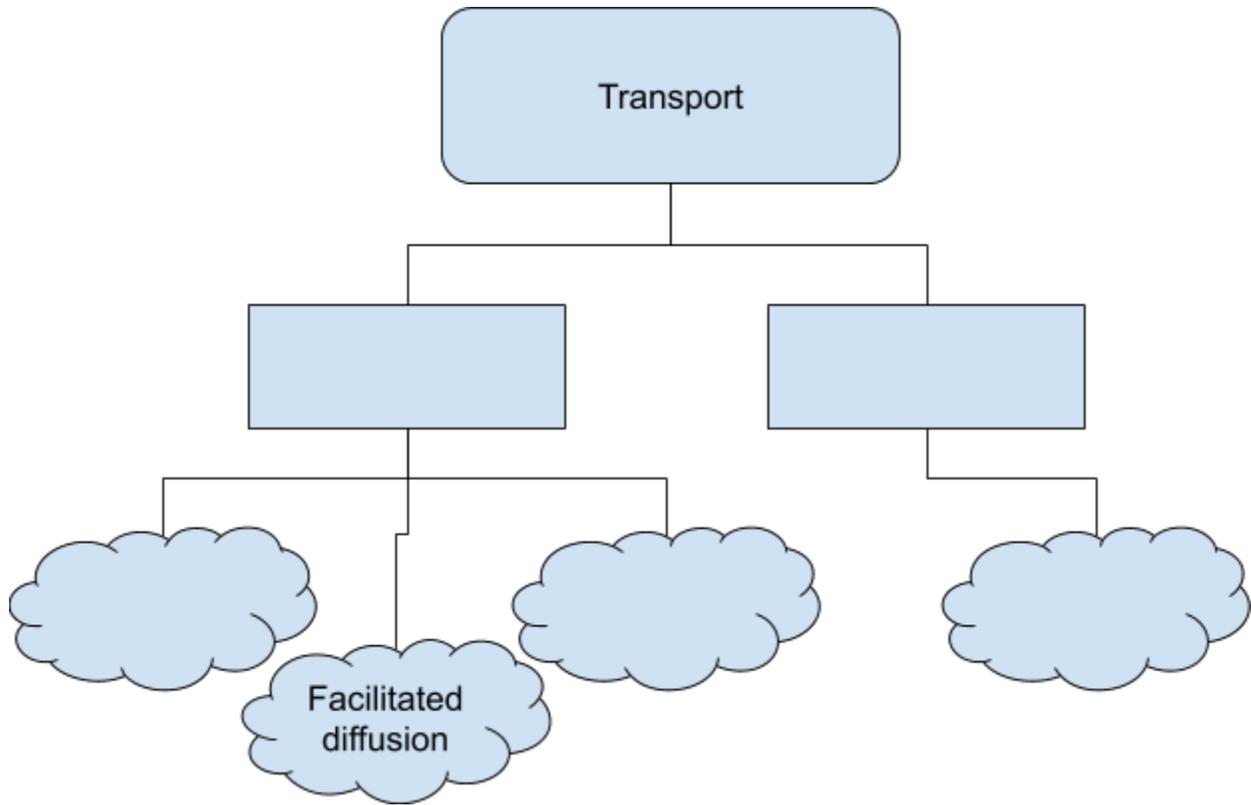
How does the gram stain work in differentiating between cell types? (focus on cell walls)

How do lysozyme and penicillin damage the cell wall?

What part of the phospholipid is hydrophilic in the plasma membrane?

Bacterial plasma membranes are:

- a. Impermeable
- b. Semipermeable
- c. Permeable



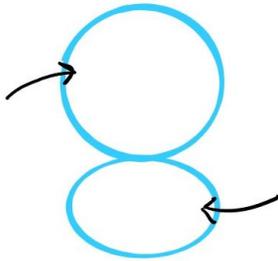
Explain the principles of osmosis.

The nucleoid is found in _____ cells.

What is the plasmid?

Label the ribosome.

fully functional ribosome



What are inclusions?

Part 2 (eukaryotes)

Eukaryotes do not have cell walls.

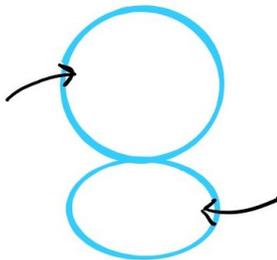
- a. True
- b. False

What does the plasma membrane contain?

What does the cytoplasm include?

Label the ribosome.

fully functional ribosome



List the three types of endocytosis.

What is cytoplasmic streaming?

_____ provide support, shape, and transport of substances.

What is chromatin?

Where is RNA synthesized?

Where are proteins synthesized?

What does the golgi complex do?

Define the following organelles:

- Lysosome →
- Vacuole →
- Mitochondrion →

What are sacs of thylakoid called?

What organelles are part of the endosymbiotic theory?

Chapter 5

Part 1

Differentiate between catabolism and anabolism.

What type of reaction releases energy? What type consumes energy?

Why is a hydrogen cation referred to as a “proton”?

Explain the function of enzymes.

A _____ is a reactant molecule that participates in the reaction.

Dehydration/condensation reactions do what?

Hydrolysis reactions do what?

Define denaturation.

Holoenzymes contain:

What does catalase do?

List the substrate and action of the following enzymes.

- Lactase →
- Penicillinase →

_____ enzymes are always present, while _____ enzymes are not constantly present.

Explain the difference between competitive and noncompetitive inhibition.

Metabolic pathways can be shut down by _____.

List the forms of energy.

What type of energy is in ATP?

Release of chemical energy occurs through the _____ of nutrients.

Explain cellular respiration.

In aerobic respiration, one glucose molecule produces _____ ATP.
ADP is _____ when converting to ATP.

What makes up the ATP molecule?

Define the following.

- Reduction →
- Oxidation →
- Redox reaction →

Name the coenzymes that are electron carriers during cellular respiration.

Part 2

List the steps of aerobic & anaerobic respiration.

Fermentation is a type of cellular respiration.

- a. True
- b. False

What undergoes aerobic respiration?

- a. Eukaryotes
- b. Prokaryotes
- c. Neither
- d. Both

What undergoes anaerobic respiration?

- a. Eukaryotes
- b. Prokaryotes
- c. Neither
- d. Both

What undergoes alcoholic fermentation?

- a. Bacteria
- b. Eukaryotes
- c. Yeasts
- d. B & C
- e. A & C
- f. They all do

What undergoes lactic acid fermentation?

- a. Bacteria
- b. Fungi
- c. Animal muscle cells
- d. Protists
- e. A & B
- f. B & D
- g. A, C, & D
- h. A, B, & C

Where does glycolysis and the citric acid cycle occur in prokaryotes?

In eukaryotes, glycolysis occurs in the _____ and the citric acid cycle occurs in the _____.

What are the products of glycolysis?

What is the net gain of ATP from glycolysis?

What is the final electron acceptor of aerobic respiration?

The two-carbon compound is (oxidized/reduced) during the citric acid cycle.

What joins onto the two-carbon compound before entering the citric acid cycle?

What is the yield from the citric acid cycle?

Explain chemiosmosis.

How is water produced in aerobic ETC?

How is fermentation different from anaerobic respiration?

Which is the chemical equation of photosynthesis?

