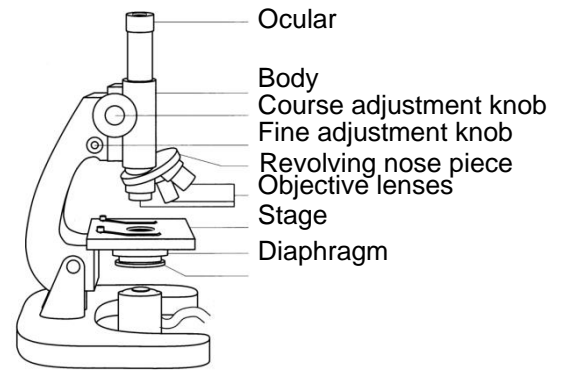
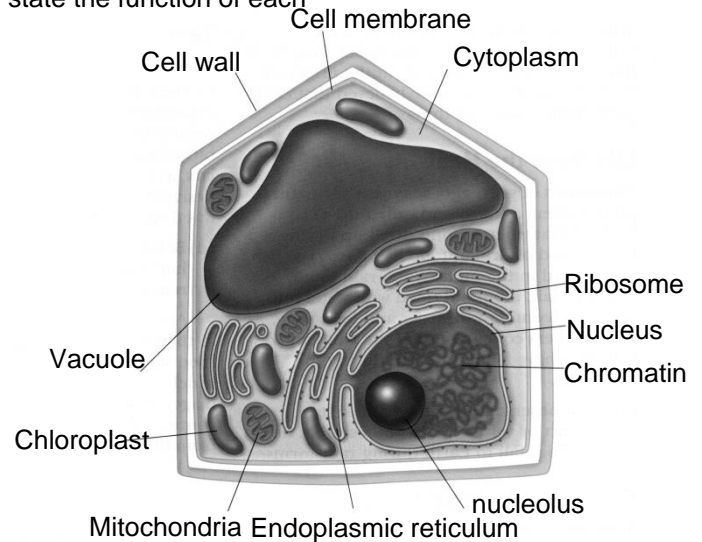
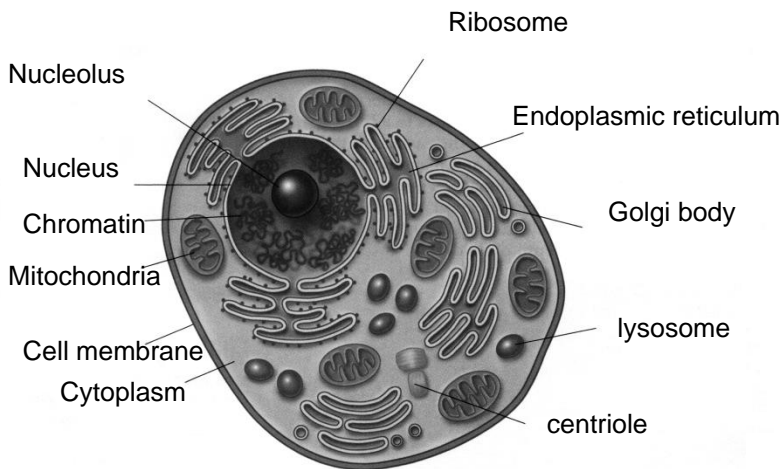


1. Label the parts of the microscope and state the function of each



2. Label the following parts of the cell in the diagrams below and state the function of each



Organelle	Function
Cell membrane	Separates the inside of the cell from the external environment and controls the flow of materials in and out of the cell
Cell wall	A tough, rigid structure which provides support for a plant cell
centriole	Help with nuclear division
Chloroplasts	Trap energy from the sun to make glucose (only in plant cells)
Cytoplasm	Includes the cytosol, the organelles, and other life-supporting materials, such as sugar and water, all contained by the cell membrane
Cytoskeleton	Filaments and tubules that provide a framework for the cell, helping it maintain its structure
Endoplasmic reticulum	A network of membrane-covered channels that transport materials made in the cell
Golgi body	Sorts and packages proteins and other molecules for transport out of the cell
Lysosome	Digest macromolecules, excess or worn-out organelles, bacteria, viruses or other waste
Nucleus	Controls all cell activities
Nucleolus	Make ribosomes
Mitochondria	Where energy is released from glucose to fuel cell activities
Ribosomes	Help to produce proteins,
Vacuoles	Contain water and other materials and are used to store or transport small molecules
Vesicles	Stores and transports cellular products and digests metabolic wastes
Vesicles	Transport and/or store materials and sometimes help these materials cross the cell membrane

3. State three differences between plant and animal cells

- Plant cells have a cell wall animal cells don't
- Plant cells have a large central vacuole while animals cells have many small ones
- Animal cells contain centrioles and lysosomes plant cells don't

4. DNA

a. What is DNA? (where do you find it, what does it look like, what is its function)

Deoxyribonucleic acid is the genetic material that control the cell's activities and much of its structure by controlling what proteins are made and when

b. List the four nucleotides and explain how they pair.

The four nucleotides are adenine, thymine, cytosine and guanine
Adenine always pairs with thymine and cytosine always pairs with guanine

c. What is the complementary strand to: TTGAAC

The complementary strand is AACTTG

5. Explain the difference between diffusion and osmosis.

Diffusion is the movement of particles from an area of high concentration to an area of low concentration.
Osmosis is the diffusion of water across a semi-permeable membrane

6. Stages of the cell cycle

Mitosis G1 G2 Cytokinesis DNA replication

a. Put the stage of the cell cycle in order


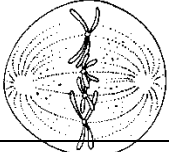
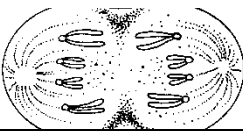
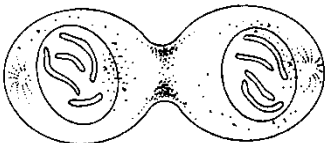
G1, DNA replication, G2 Mitosis, Cytokinesis

b. Explain what occurs during interphase and which stages are part of interphase

Interphase includes G1, DNA replication and G2.
During interphase the cell grows and the DNA is replicated

c. Explain the difference between mitosis and cytokinesis

7. Draw diagrams to represent the four stages of mitosis and write two points about what is happening in each specific stage. Make sure to put the stages in the correct order.

	<p>Prophase</p> <ul style="list-style-type: none"> • The DNA condenses to form chromosomes • The nuclear membrane begins to disappear • Centrosomes head toward opposite ends of the cell
	<p>Metaphase</p> <ul style="list-style-type: none"> • Chromosomes line up along the centre of the cell • Spindle fibers attach to centromeres
	<p>Anaphase</p> <ul style="list-style-type: none"> • Centromeres break apart • Sister chromatids are pulled to opposite ends of the cell by the spindle fibers
	<p>Telophase</p> <ul style="list-style-type: none"> • Spindle fibers disappear • Nuclear membranes form around two new daughter nuclei • Chromosomes begin to uncoil

Put the terms below in order from the smallest in size to the largest in size.

Cells Tissues Organs Organ Systems Organism

8. Describe the four different types of tissue in the human body and give one example of each

- Epithelial** – line the interior and exterior surfaces of the body
- skin, columnar epithelia cells in small intestine
- Muscle** - change shape by shortening or lengthening
- skeletal muscle (bicep) smooth muscle in walls of internal organs and cardiac muscle in the heart
- Nervous** - neurons which have finger-like projection to receive and transfer signals
- Connective** - strengthens, supports, protects, binds or connects cells and tissues
- bone, fat, blood

9. Digestive system

a. Label the following parts of the digestive system and state the function of each

- Oral cavity (1)
- Epiglottis (2)
- Esophagus (3)
- Duodenum (8)
- Gall bladder (6)
- Large intestine (10)
- Small intestine (9)
- Liver (4)
- Pancreas (7)
- Stomach (5)
- Rectum (11)
- Anus (12)

b. Write the correct order of food passage through the digestive system

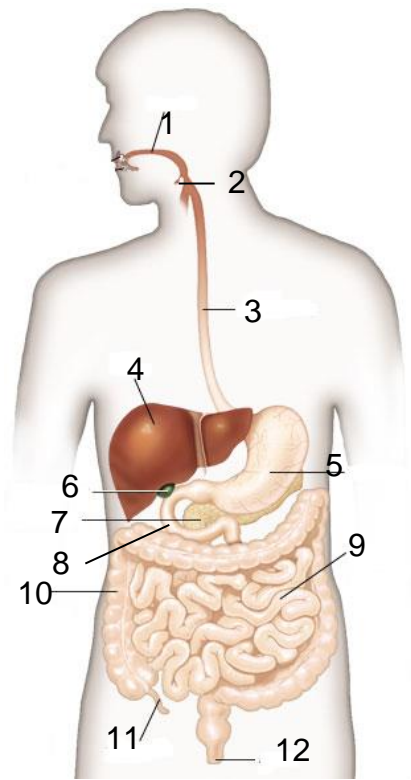
Mouth, esophagus, stomach, duodenum, small intestine, large intestine

c. Name three accessory organs in the digestive system and explain why they are called accessory organs.

Accessory organs help with digestion but are not part of the digestive tract. The pancreas, liver and gall bladder are all accessory organs

d. Describe the structure and function of villi.

The villi are the interior folds in the small intestine. They maximize the surface area over which nutrients and water can be absorbed into the bloodstream

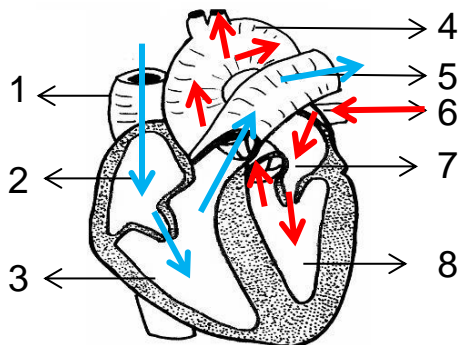


10. Circulatory System

a. State five functions of the circulatory system

- Transports oxygen to the cells of the body
- Transports nutrients to the cells of the body
- Removes wastes and carbon dioxide from the body
- Transports chemical messages around the body
- Maintains body temperature

b. Label the following structures in the diagram of the heart



- Right atrium (2)
- Left atrium (7)
- Right ventricle (3)
- Left ventricle (8)
- Aorta (4)
- Vena cava (1)
- Pulmonary vein (6)
- Pulmonary artery (5)

c. Show the path that the oxygenated blood takes through the heart (use red), and show the path that the deoxygenated blood takes through the heart (use blue)

d. Explain the difference between arteries, veins and capillaries. (include their function and structure)

Arteries carry blood away from the heart. Arteries have thicker more muscular walls and the blood leaving the heart is under higher pressure

Veins carry blood to the heart. Veins have thin walls and contain valves to prevent the backflow of blood.

Capillaries are extremely small, thin-walled blood vessels that allow substances such as oxygen, carbon dioxide and nutrients to pass through.

e. Describe the different parts of blood (plasma, red blood cells, white blood cells and platelets)

Plasma – the liquid part of the blood

Red blood cells – transport oxygen throughout the body

White blood cells – destroy invading objects (ie bacteria)

Platelets – help form blood clots

11. Respiratory System

a. Label the following parts of the respiratory system

- Alveoli (1)
- Bronchi (5)
- Bronchioles (6)
- Diaphragm (7)
- Larynx (3)
- Lungs
- Nasal cavity (2)
- Pharynx
- Trachea (4)

b. List the structures, in order, from outside the body to inside the body that a molecule of oxygen travels through on its way to the bloodstream.

Nasal cavity, Pharynx, Larynx, Trachea, Bronchi, Bronchioles, Alveoli

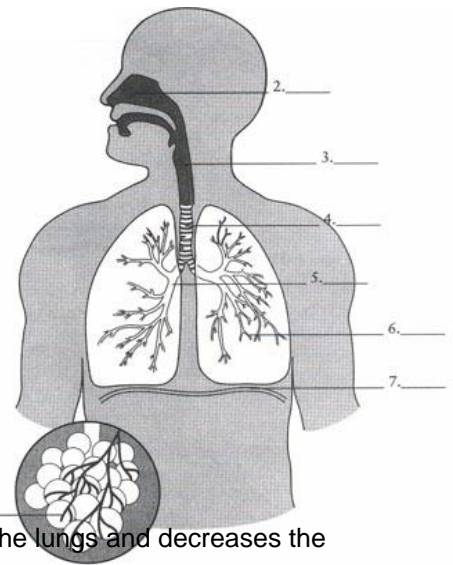
c. Where in the respiratory system does the exchange of gas occur?

Gas exchange takes place in the alveoli

d. Explain how the diaphragm controls your breathing.

When the diaphragm contracts it pushes down which increases the volume of the lungs and decreases the pressure in the lungs causing air to rush into the lungs

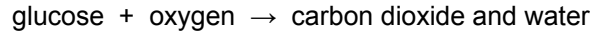
When the diaphragm relaxes it decreases the volume of the lungs and increases the pressure in the lungs forcing air out of the lungs



12. How do the circulatory, respiratory and digestive systems relate to each other?

The respiratory system brings oxygen into the body. The digestive system brings nutrients such as glucose into the body. The circulatory system distributes both of these to the body cells.

sugar and glucose are used by mitochondria in cells to produce energy in a process called cellular respiration



waste materials such as carbon dioxide are then collected by the blood to be removed by either the respiratory system or the excretory system