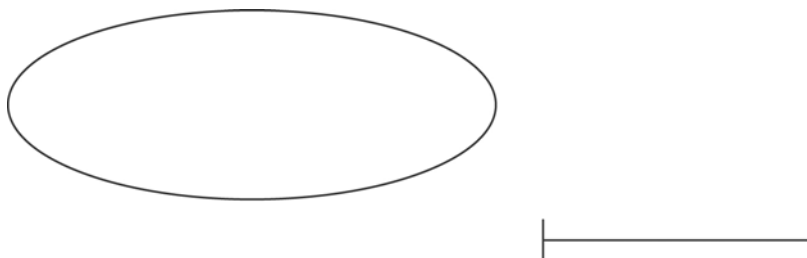


Support worksheet – Chapter 2

- 1 a** Arrange the following structures in order of size, putting the largest first: (2)
mitochondrion, cell, thickness of a cell membrane, molecule, virus
- b** The shape below represents a structure seen under a light microscope. The scale bar represents a distance of 10 μm . Use the scale bar to calculate the size of the structure. Show your answer in mm. (3)

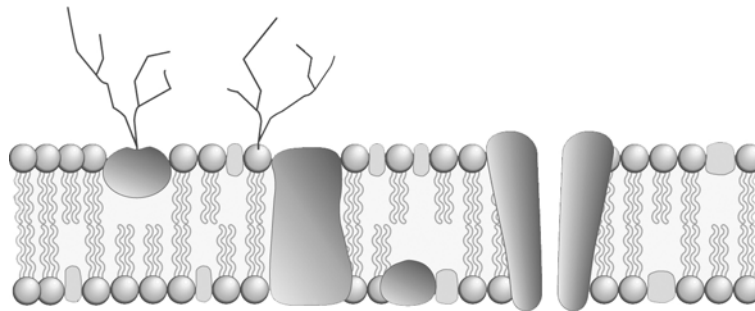


- c** The width of a human hair is 0.1 mm. What is its width in μm ? Choose one of the following values: (1)
10 μm , 100 μm , 1000 μm , 10 000 μm
- d** Explain why small organisms can rely on diffusion for the exchange of gases. (2)
- e i** What is the unique property of stem cells that makes them useful in medical treatment? (1)
- ii** Give an example of a stem cell therapy. (1)
- 2 a** Copy and complete this table to compare the structure of prokaryotic and eukaryotic cells. (4)

Structure	Prokaryote	Eukaryote
DNA		
nucleus		
mitochondria		
ribosomes		

- b** State whether the following statements are true or false.
- i** Plant cells have cellulose walls. (1)
- ii** Animal cells do not have vacuoles. (1)
- iii** Chloroplasts are not found in animal cells. (1)

- 3 a** What do the terms 'hydrophilic' and 'hydrophobic' mean? (2)
- b** Why is the model of the cell membrane referred to as:
- i** fluid (1)
 - ii** a mosaic? (1)
- c** On this diagram of a membrane, label an intrinsic protein, a phospholipid and a hydrophilic protein channel. (3)



- d** Suggest a molecule that enters the cell through the hydrophilic protein channel. (1)
 - e** Suggest a function for the intrinsic protein. (1)
- 4 a** Outline the difference between osmosis and diffusion. (1)
- b** How does active transport:
- i** resemble facilitated diffusion (1)
 - ii** differ from facilitated diffusion? (1)
- c** The hormone insulin leaves a cell via exocytosis. Describe the process of exocytosis. (3)

- 5 a Indicate the stage of the cell cycle when each of the following processes occurs. (4)

Process	Stage of the cell cycle
DNA condenses to form chromosomes	
cell growth	
attachment of centromeres to spindle	
replication of DNA	

- b Arrange the following events of mitosis in the correct sequence: (2)

anaphase, prophase, telophase, metaphase

- c If a parent cell has 20 chromosomes, how many chromatids would be present during metaphase of mitosis? (1)

- d Identify the stage of mitosis when each of the following events takes place. (4)

Event	Stage of mitosis
chromosome centromeres attach to the spindle	
spindle apparatus disappears	
nuclear membrane disintegrates	
sister chromatids are split and move apart	

- e Which of the following processes involve mitosis? (2)

growth
repair of tissues
production of hormones
embryonic development
respiration
asexual reproduction