

AS Biology Summer Work 2015

You will be following the OCR Biology A course and in preparation for this you are required to do the following for September 2015:

Activity to complete	Date done
Purchased a lever arch file with dividers	
Purchased an AS textbook letter (see letter)	
Completed the summer worksheets on the Cell and built a 3-D model of an animal cell with labels of the structure linked to a key with the functions	
Found the OCR website which contains the exam specification, past papers and marked into favourites	

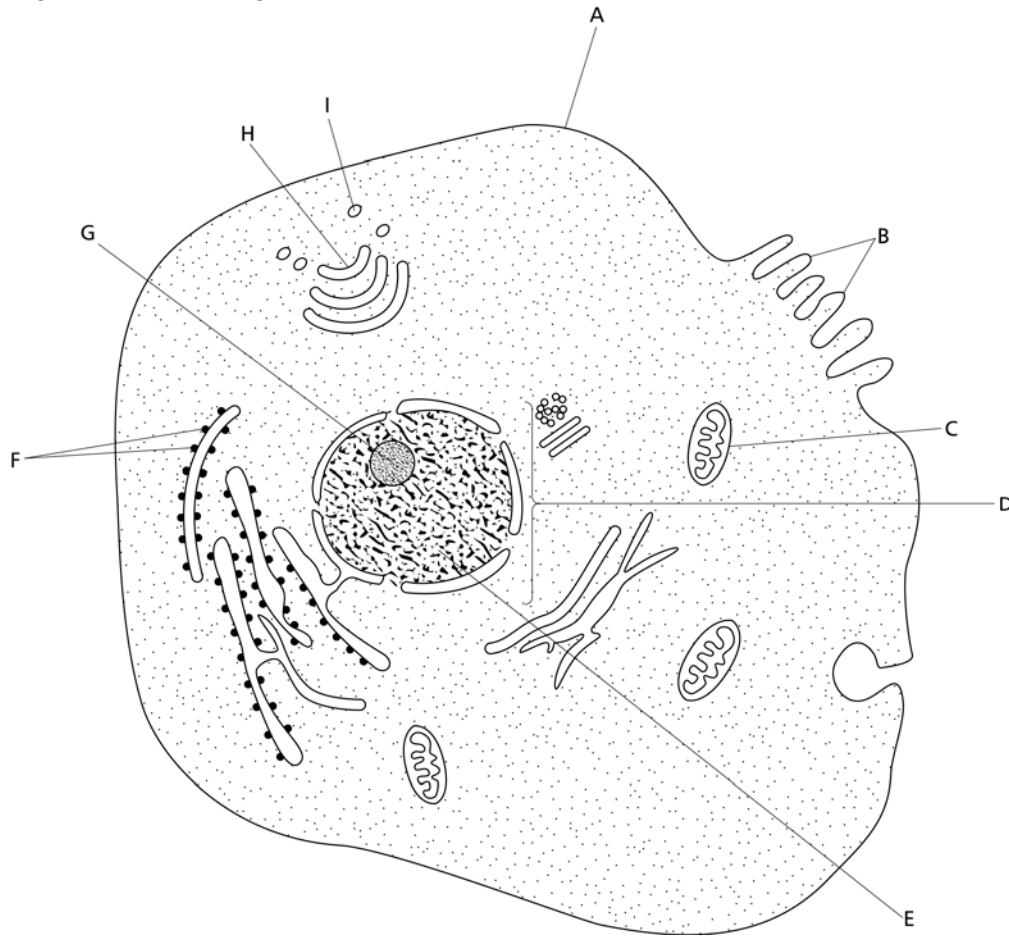
AS Biology
Summer Work
OCR Biology A
2015



EXCELLENCE IN EVERYTHING

Animal cell ultrastructure

Fig. 1.5.1 shows the general structure of an animal cell as seen with an electron microscope.



Match the letters on the diagram with their structures and with each structure's correct function.

Choose structures from the list below:

<i>smooth endoplasmic reticulum</i>	<i>nucleolus</i>	<i>nucleus</i>
	<i>microvilli</i>	
<i>microtubule</i>	<i>cell membrane</i>	<i>nuclear envelope with pores</i>
	<i>ribosome</i>	
<i>Golgi apparatus</i>	<i>centriole</i>	<i>rough endoplasmic reticulum</i>
	<i>lysosome</i>	
<i>mitochondrion</i>	<i>vesicle</i>	<i>chromatin</i>

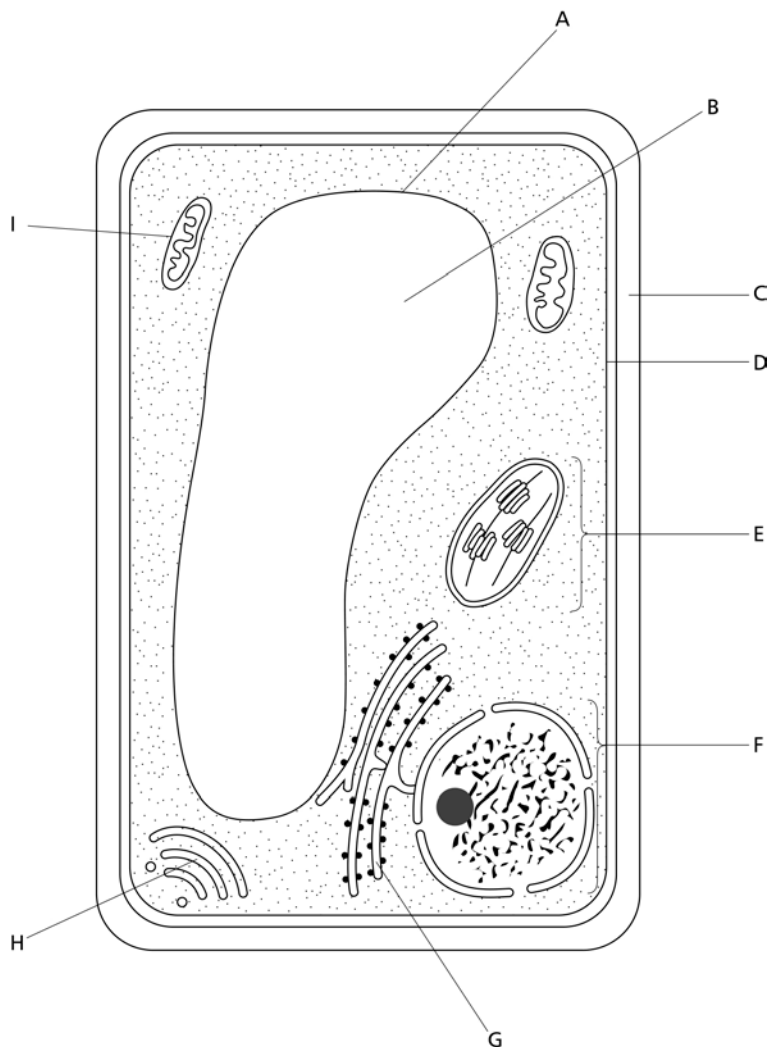
Functions

1	Controls movement of substances into and out of the cell. Contains marker molecules, usually glycoproteins or glycolipids, so that the body's immune system can recognise them as self (or non-self in the case of transplanted cells). Has receptor sites for hormones and neurotransmitters.
2	Where the aerobic stages of respiration occur. The link reaction and Krebs cycle occur in the matrix and oxidative phosphorylation occurs on the cristae.
3	These consist of two sub-units, one large and one small. In eukaryote cells they are 80s type. They are the sites of protein synthesis.
4	Here proteins are modified, by addition of carbohydrates, to form glycoproteins. Lipids are modified and stored and lysosomes are formed. Secretory enzymes are produced here.
5	Releases enzymes to the outside of the cell by exocytosis
6	Increases the surface area for absorption
7	Made of DNA and protein and found in the nucleoplasm. Will form chromosomes when the cell is dividing.
8	Makes ribosomal RNA and ribosomes. It is a highly organised sub compartment of the nucleus that disappears during mitosis and reforms after nuclear division.
9	Retains the chromatin and controls the cell's activities.

Letter on diagram	Name of structure	Function of structure (as indicated by number of textbox)
A		
B		
C		
D		
E		
F		
G		
H		
I		

Plant cell ultrastructure

Fig. 1.6.1 is a diagram showing the general structure of a plant cell.



Match the letters on the diagram with their structures and with each structure's correct function

Structures – choose from the following

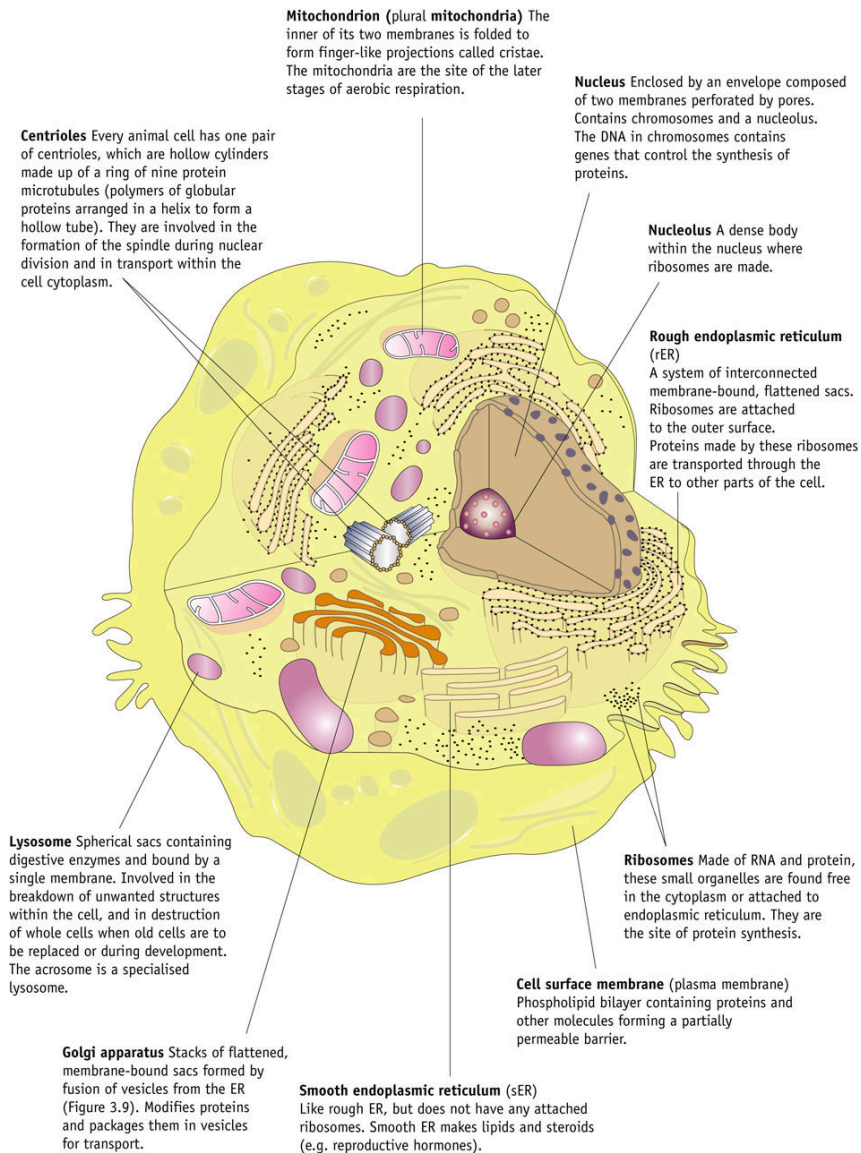
- | | | | | |
|-------------------------------|------------------|------------------------------------|------------------------|------------------|
| <i>nucleus</i> | <i>nucleolus</i> | <i>chloroplast</i> | <i>mitochondrion</i> | <i>polysomes</i> |
| <i>tonoplast membrane</i> | | <i>cell wall</i> | <i>plasma membrane</i> | |
| <i>microtubules apparatus</i> | <i>vacuole</i> | <i>rough endoplasmic reticulum</i> | <i>Golgi</i> | |

Functions

10	Bound by a double membrane or envelope. The inner layer is folded into lamellae. Thylakoid membranes contain chlorophyll and are the site of the light dependent reaction of photosynthesis. The gelatinous matrix, the stroma, is where the light independent stage of photosynthesis takes place.
	Made of cellulose, a polymer of β -glucose. It gives strength and shape to the cell and is totally permeable.
	Contains cell sap – a solution of mineral salts, sugars, oxygen, carbon dioxide, enzymes, pigments and waste products. It helps regulate osmotic properties of the cell.
	Site of aerobic respiration – link reaction, Krebs cycle and oxidative phosphorylation.
	Surrounds the vacuole and regulates entry/exit of substances into/out of the vacuole
	Regulates entry and exit of substances into and out of the cell
	It is here that proteins manufactured in the cell are modified.
	Its surface is covered with ribosomes. Here, newly manufactured proteins pass along the cisternae towards the Golgi apparatus.
	Contains the chromatin. Controls the activities of the cell.

Letter on diagram	Name of structure	Function of structure (as indicated by number of textbox)
A		
B		
C		
D		
E		
F		
G		
H		
I		

Making a 3-D Model of an animal cell



You are to make a 3-D cell. It will be assessed on the following:

How many organelles it has (extra marks will be given for organelles not shown on the picture above)

You must also have a key that describes the functions of the organelles.

Here is a list of the content you will learn in September 2015

Basic components of living things

Specification reference	Checklist questions	
2.1.1 a	Can you use microscopy to observe and investigate different types of cell and cell structure in a range of eukaryotic organisms?	<input type="checkbox"/>
2.1.1 b	Can you prepare and examine microscope slides for use in light microscopy?	<input type="checkbox"/>
2.1.1 c	Can you use staining in light microscopy?	<input type="checkbox"/>
2.1.1 d	Can you draw and annotate diagrams of whole cells or cells in sections of tissue?	<input type="checkbox"/>
2.1.1 e	Can you use and manipulate the magnification formula?	<input type="checkbox"/>
2.1.1 f	Can you explain the difference between magnification and resolution?	<input type="checkbox"/>
2.1.1 g	Can you describe the ultrastructure of eukaryotic cells and the functions of the different cellular components?	<input type="checkbox"/>
2.1.1 h	Can you analyse photomicrographs of cellular components in a range of eukaryotic cells?	<input type="checkbox"/>
2.1.1 i	Can you describe the interrelationship between the organelles involved in the production and secretion of proteins?	<input type="checkbox"/>
2.1.1 j	Can you explain the importance of the cytoskeleton?	<input type="checkbox"/>
2.1.1 k	Can you describe the similarities and differences in the structure and ultrastructure of prokaryotic and eukaryotic cells?	<input type="checkbox"/>

