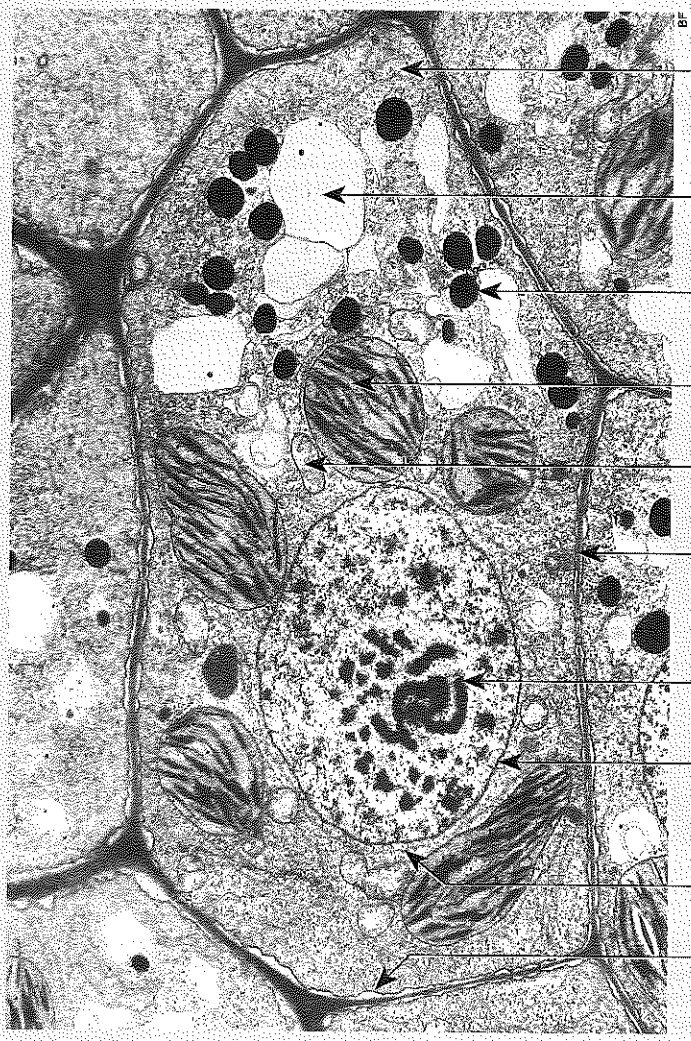
RA 2

Identifying Cell Structures

1. Study the diagrams on the previous pages to become familiar with the various structures found in plant and animal cells. Identify and label the 10 structures in the cell below using the following list of terms: *nuclear membrane, cytoplasm, endoplasmic reticulum, mitochondrion, starch granules, chromosome, vacuole, cell membrane, cell wall, chloroplast*



(a)

(b)

(c)

(d)

(e)

(f)

(g)

(h)

(i)

(j)

2. State how many cells, or parts of cells, are visible in the photograph above: _____

3. State what **type** of cell is illustrated above (bacteria cell, plant cell or animal cell). Give a reason for your answer:

_____

_____

4. (a) Explain where cytoplasm is found in the cell: _____

_____

(b) Describe what cytoplasm is made up of: _____

_____

_____

5. **Lysosomes** are found in plant and animal cells. Describe two important functions they perform:

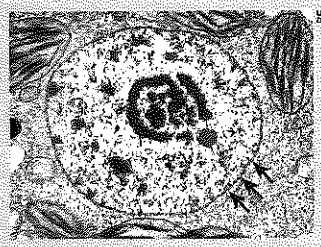
(a) _____

_____

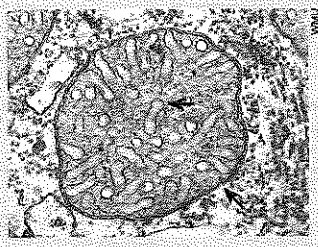
(b) _____

The Structure of Membranes

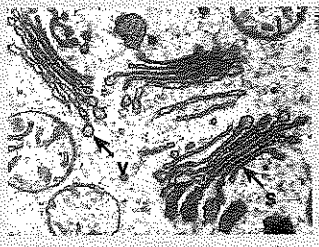
All cells have a cell membrane that forms the outer limit of the cell. Bacteria, fungi, and plant cells have a cell wall outside this, but it is quite distinct and lies outside the cell membrane. Cell membranes are also found inside eukaryote cells, making up the membranous **organelles** (e.g. mitochondria, chloroplasts, endoplasmic reticulum, vesicles, vacuoles, and golgi apparatus). These membranes control the entry and exit of substances from the organelle. Membranes also fulfill a role in recognition and communication between cells. Some membranes are involved in the transport of materials while others perform a storage function. Above all, the cell's plasma membrane is the edge of life, separating the cell from its non-living surroundings.



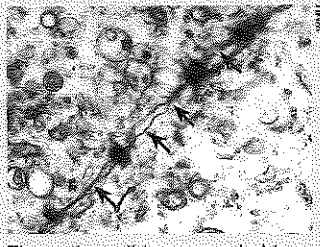
The **nuclear membrane** that surrounds the nucleus helps to control the passage of genetic information to the cytoplasm. It may also serve to protect the DNA.



Mitochondria have an outer membrane that controls the entry and exit of materials involved in aerobic respiration. Inner membranes provide attachment sites for enzyme activity.



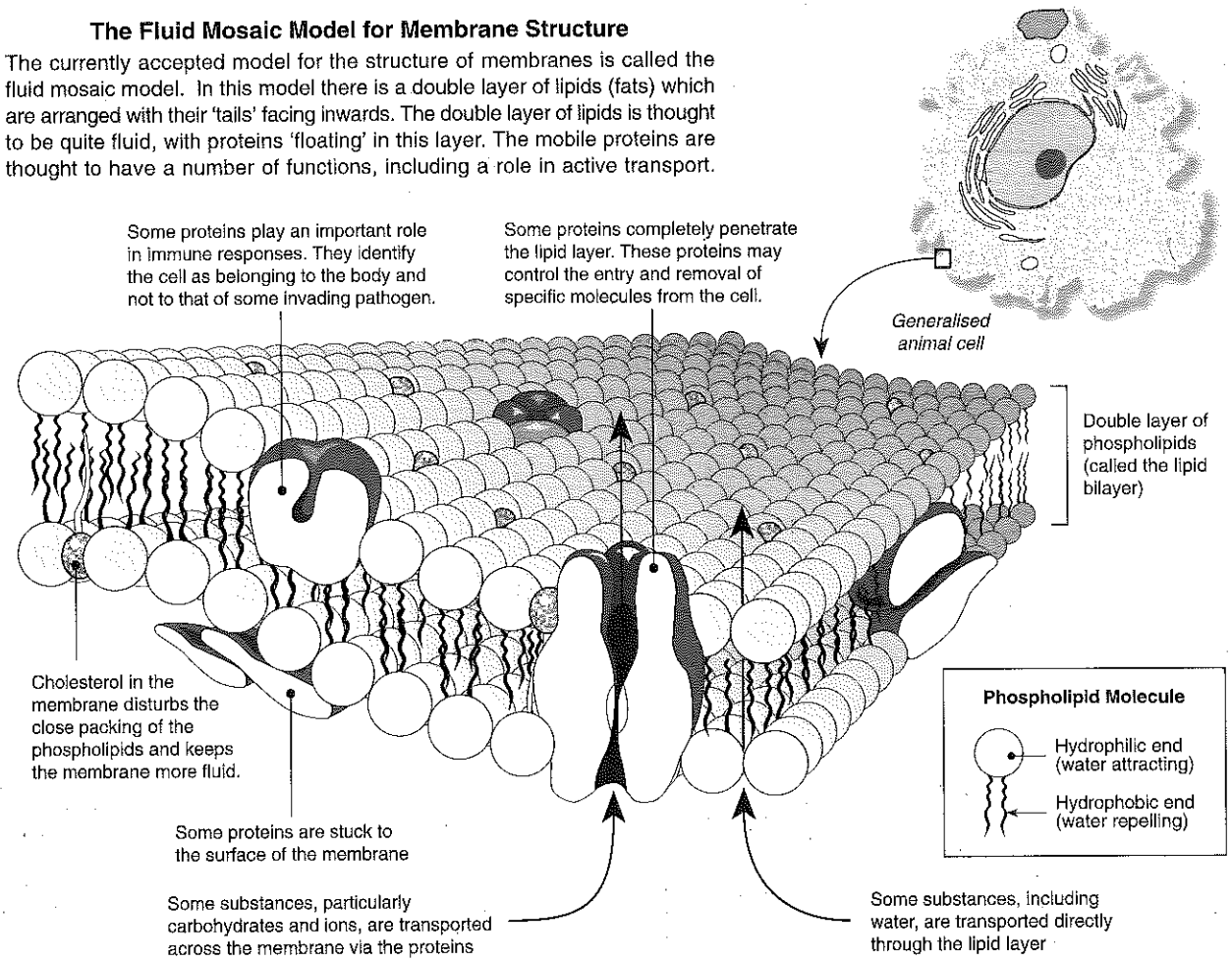
The golgi apparatus comprises stacks of membrane-bound sacs (***s***). It is involved in packaging materials for transport or export from the cell as secretory vesicles (***v***).



The entire cell is surrounded by a **plasma membrane** which controls the movement of most substances into and out of the cell. This photo shows 2 neighbouring cells (arrows).

The Fluid Mosaic Model for Membrane Structure

The currently accepted model for the structure of membranes is called the fluid mosaic model. In this model there is a double layer of lipids (fats) which are arranged with their 'tails' facing inwards. The double layer of lipids is thought to be quite fluid, with proteins 'floating' in this layer. The mobile proteins are thought to have a number of functions, including a role in active transport.



1. Briefly describe what membranes are made of: _____

_____

2. Name two general functions that membranes have in cells: _____

_____

3. (a) Name a cellular organelle that possesses a membrane: _____

(b) Describe the membrane's purpose in this organelle: _____