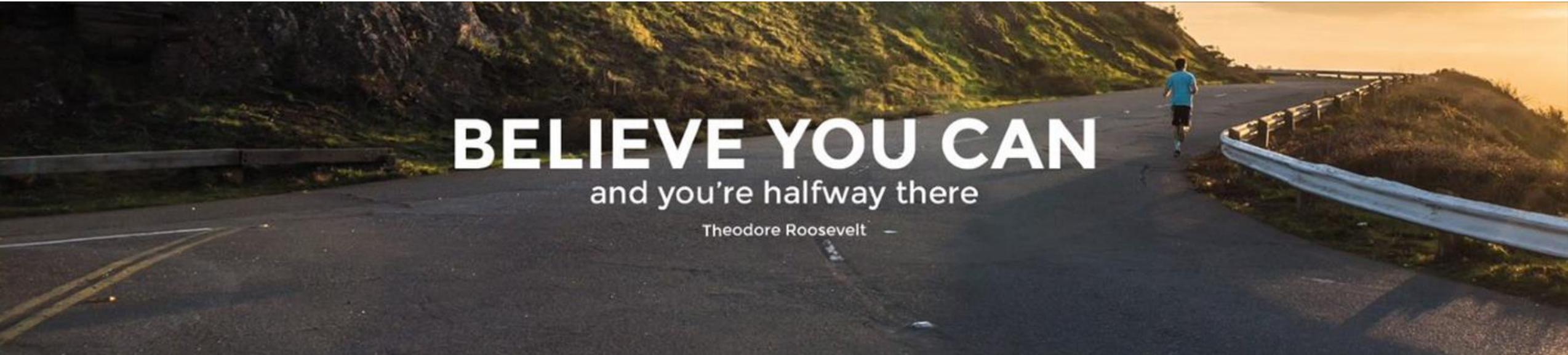


# EB Education Revision Guide



## How to work with Cell Biology: Part 1 Cell Structure

# Prokaryotic Cells

## Prokaryotic Cell (Bacterial Cell)

All living things are made of cells.  
Cells can be either PROKARYOTIC or EUKARYOTIC.

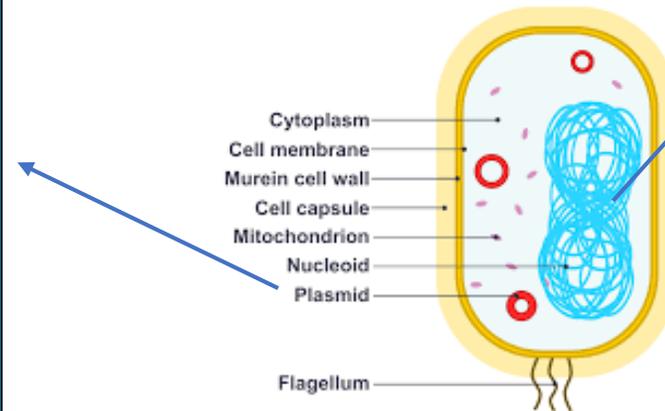
Prokaryotic cells are smaller and simpler. Their cell structure is simpler than the cells of eukaryotes and cells are smaller, most are  $0.2\mu\text{m} - 2.0\mu\text{m}$ .

These cells do not contain membrane bound **organelles** such as a nucleus and mitochondria.

Bacterial cells are **prokaryotic cells**.

Plasmid DNA (small loops of extra DNA). These contain genes for things like drug resistance and can pass between bacteria

Chromosomal DNA (this is one large circular chromosome) controls the cell's activities and replication. It is NOT in a nucleus

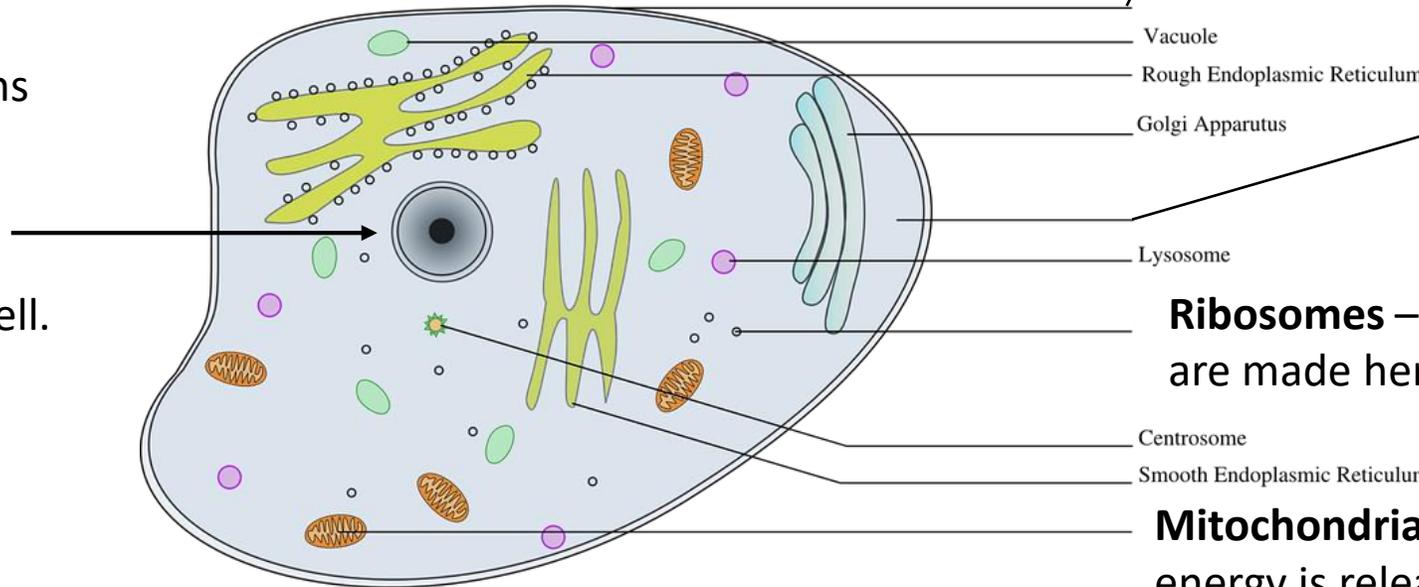


Flagellum – this is a long structure, like a hair. It makes the bacterium move either away from harmful substances or towards beneficial substances by rotating

# Eukaryotic Cells: Animal Cell

The different parts of a cell are known as organelles or subcellular structures.

**Nucleus** – contains DNA arranged in chromosomes. Controls the activities of the cell.



**Cell membrane** – this controls what goes in and out of the cell.

**Cytoplasm** – where most chemical reactions take place.

**Ribosomes** – proteins are made here

Centrosome  
Smooth Endoplasmic Reticulum

**Mitochondria** – this is where most energy is released during the process of respiration



# Eukaryotic Cells: Plant Cell

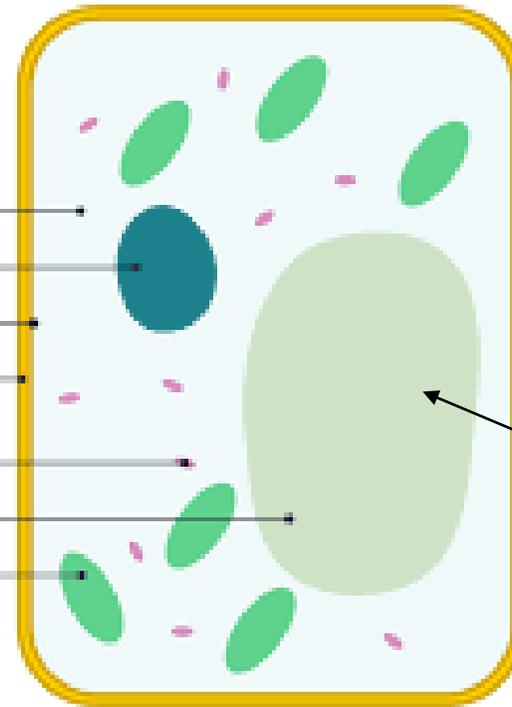
Plant cells have all the organelles that are found in animal cells, but also have some additional organelles.

Made from cellulose. Helps give the cell shape and support it.

Photosynthesis is when plants use carbon dioxide and water to produce glucose and oxygen.

Cytoplasm  
Nucleus  
Cell membrane  
**Cell wall**  
Mitochondrion  
Permanent vacuole

**Chloroplasts -**  
Contain a green pigment called chlorophyll. This is where photosynthesis takes place.

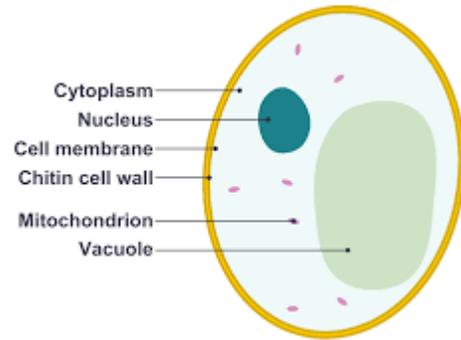


**Vacuole** – filled with cell sap. Helps keep the cell turgid.



# Your turn:

1. The diagram below shows a yeast cell.



Yeast is a microorganism which is used to make bread, and in fermentation to produce alcohol.

a) Name two differences between a yeast cell and a bacterial cell.

.....  
.....  
.....

b) Plant cells can produce glucose. Why are yeast cells not able to produce glucose?

.....  
.....  
.....

2. A variegated leaf is shown below.

The white part of the leaf does not contain any chloroplasts. The green part of the leaf contains cells that have chloroplasts.



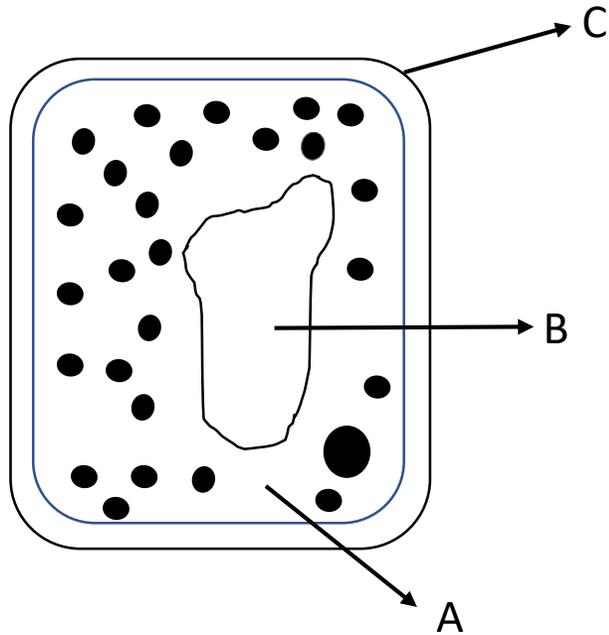
What is the role of the chloroplasts?

.....  
.....  
.....  
.....



# Your turn:

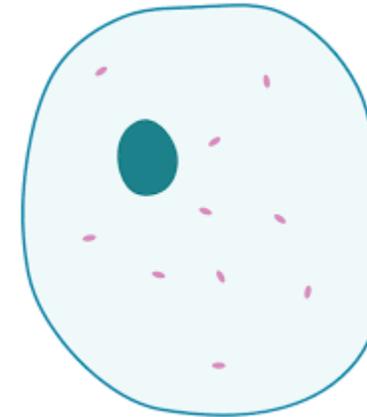
3. Below is a diagram of a leaf cell.



Name A, B and C.

- A .....
- B.....
- C.....

4. Below is a diagram of an animal cell.



a) Label the nucleus, the cytoplasm and the cell membrane.

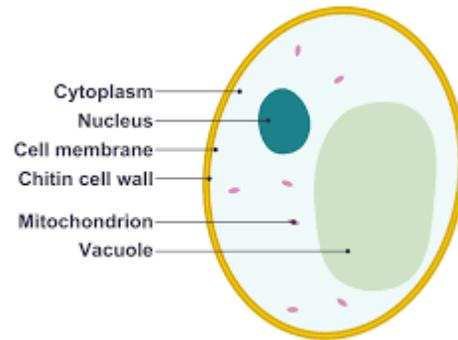
b) State three differences between an animal cell and a plant cell.

- 1. ....
- 2. ....
- 3. ....



# Answers:

1. The diagram below shows a yeast cell.



Yeast is a microorganism which is used to make bread, and in fermentation to produce alcohol.

a) Name two differences between a yeast cell and a bacterial cell.

**Yeast cell:**

- Does not have a flagellum
- Has a nucleus
- Does not have a plasmid

**Bacterial cell:**

- Has chromosomal DNA
- Does not have mitochondria

b) Plant cells can produce glucose. Why are yeast cells not able to produce glucose?

They do not have any chloroplasts so cannot photosynthesise.

2. A variegated leaf is shown below.

The white part of the leaf does not contain any chloroplasts. The green part of the leaf contains cells that have chloroplasts.



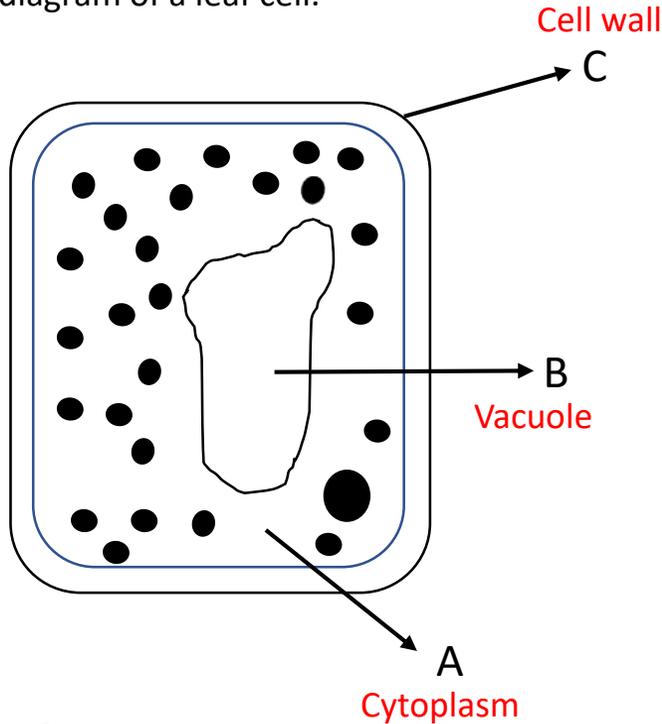
What is the role of the chloroplasts?

Chloroplasts contain chlorophyll which absorbs light. Photosynthesis takes place in the chloroplasts to produce food (glucose/starch).



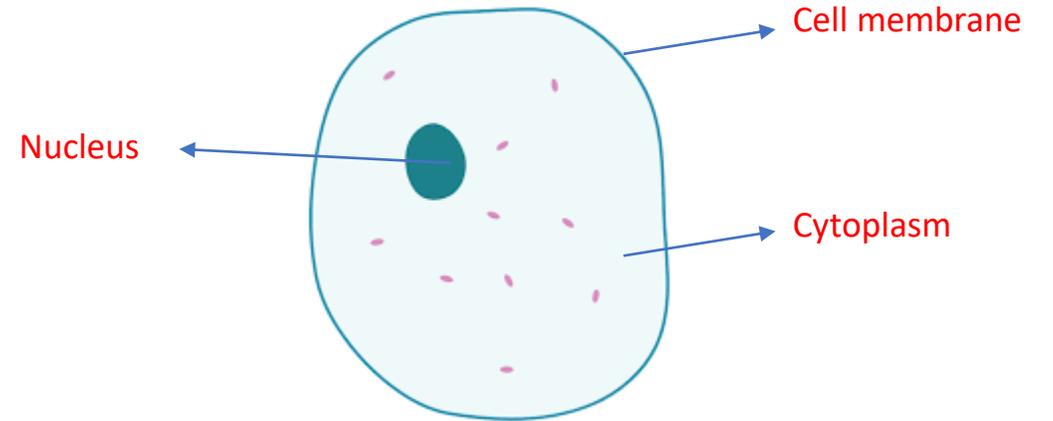
# Answers:

3. Below is a diagram of a leaf cell.



Name A, B and C.

4. Below is a diagram of an animal cell.



a) Label the nucleus, the cytoplasm and the cell membrane.

b) State three differences between an animal cell and a plant cell.

1. Plant cell has chloroplasts, animal cells do not
2. Plant cell has a cell wall, animal cells do not
3. Plant cell has a permanent vacuole, animal cells do not

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[www.ebeducationservices.co.uk](http://www.ebeducationservices.co.uk)

[contact@ebeducationservices.co.uk](mailto:contact@ebeducationservices.co.uk)

0161 442 5270