

Lesson 8 - Comparing Animal and Plant Cells

Science - Biology - Key Stage 3

Cells, Tissues and Organs

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Match the organelle to the function

Organelle
Nucleus
Cell membrane
Cytoplasm
Ribosomes
Mitochondria
Vacuole
Cell wall
Chloroplasts

Function
Jelly-like, where chemical reactions take place
Where cell sap is stored which makes the cell firm
Controls substances in and out of the cell
Contains chlorophyll, the site of photosynthesis
Where respiration takes place
Contains genetic information and controls the activities of the cell
Where protein synthesis takes place
Made of cellulose, keeps the cell strong

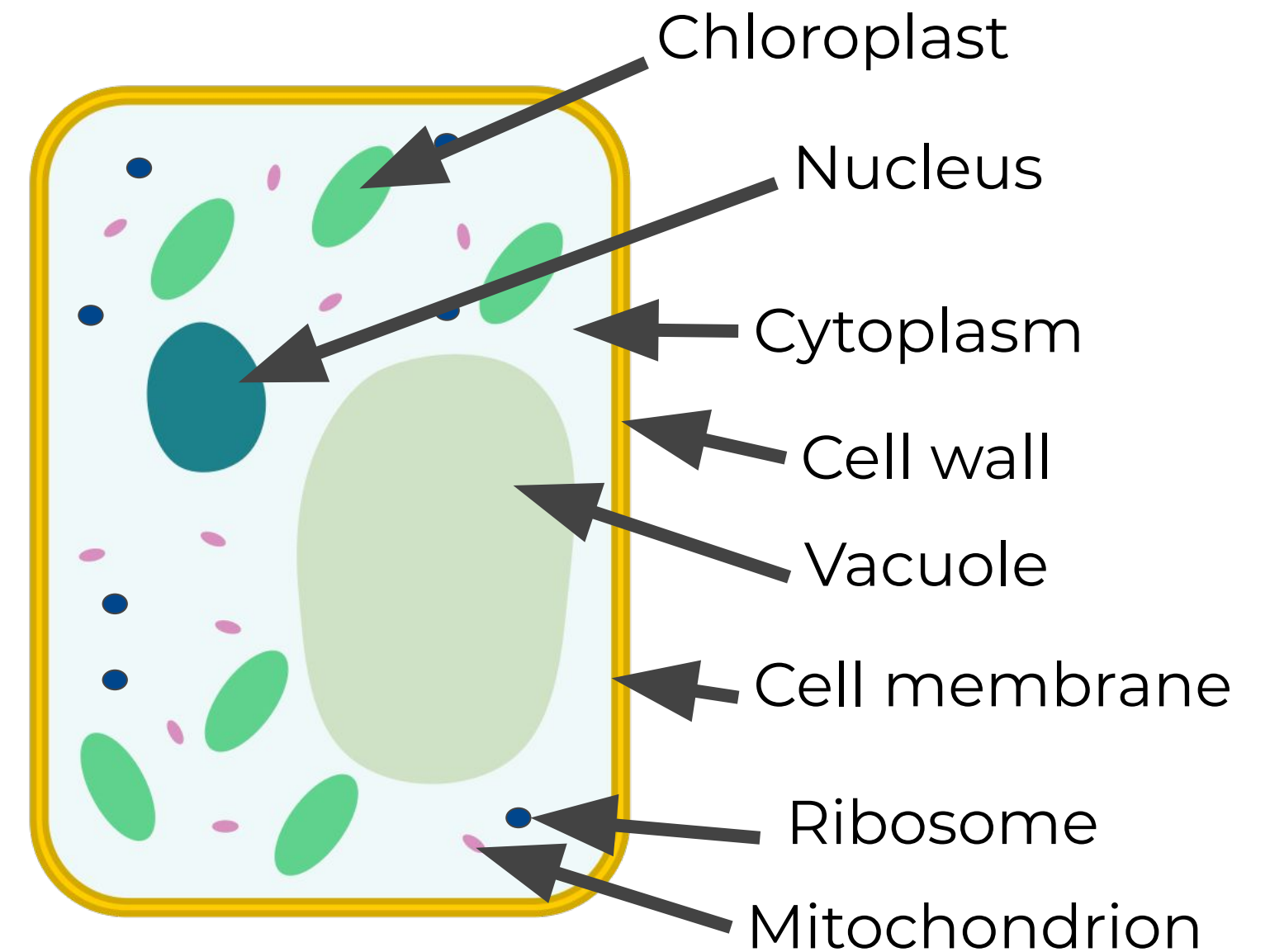
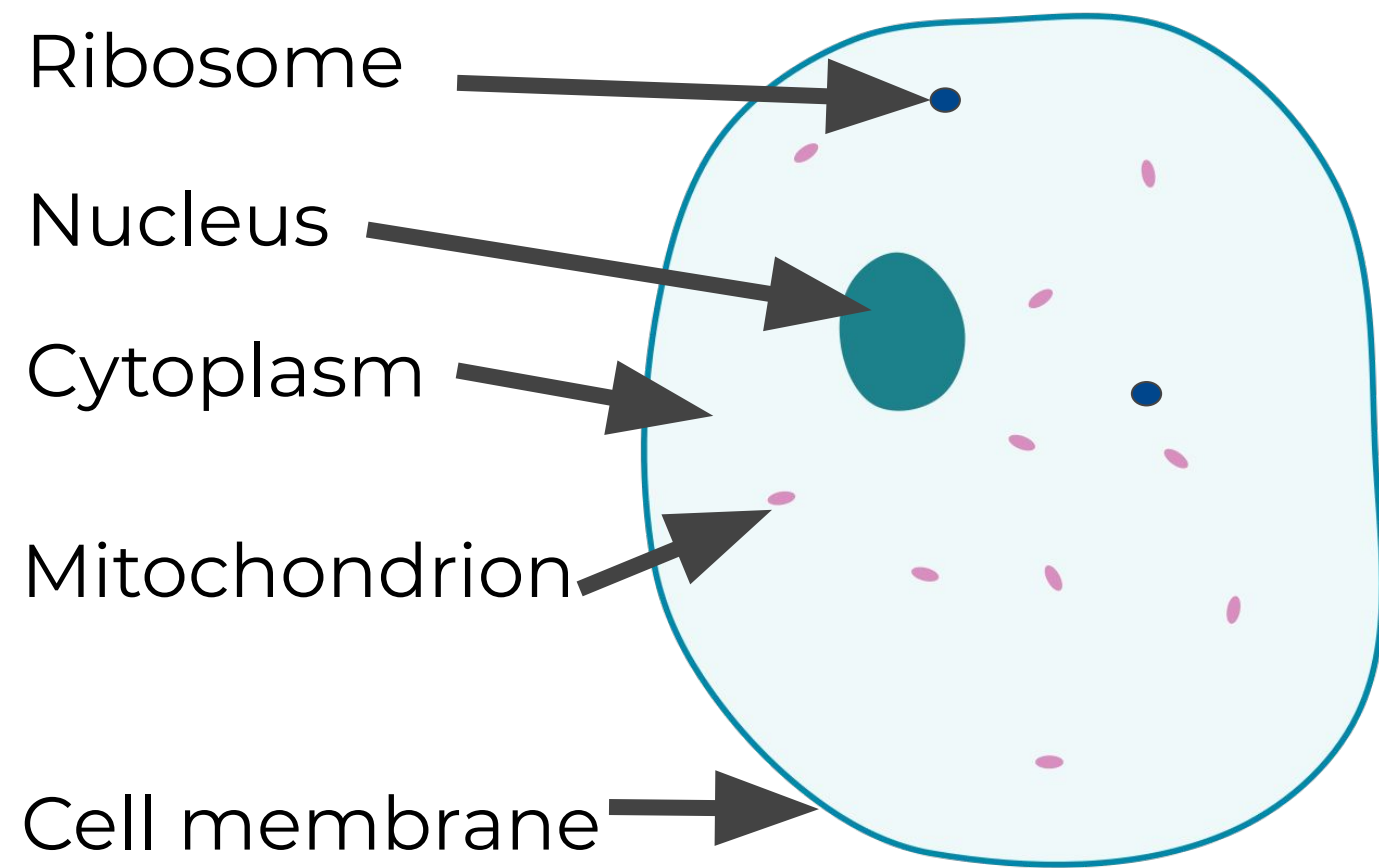


Match the organelle to the function

Organelle	Function
Nucleus	Jelly-like, where chemical reactions take place
Cell membrane	Where cell sap is stored which makes the cell firm
Cytoplasm	Controls substances in and out of the cell
Ribosomes	Contains chlorophyll, the site of photosynthesis
Mitochondria	Where respiration takes place
Vacuole	Contains genetic information and controls the activities of the cell
Cell wall	Where protein synthesis takes place
Chloroplasts	Made of cellulose, keeps the cell strong



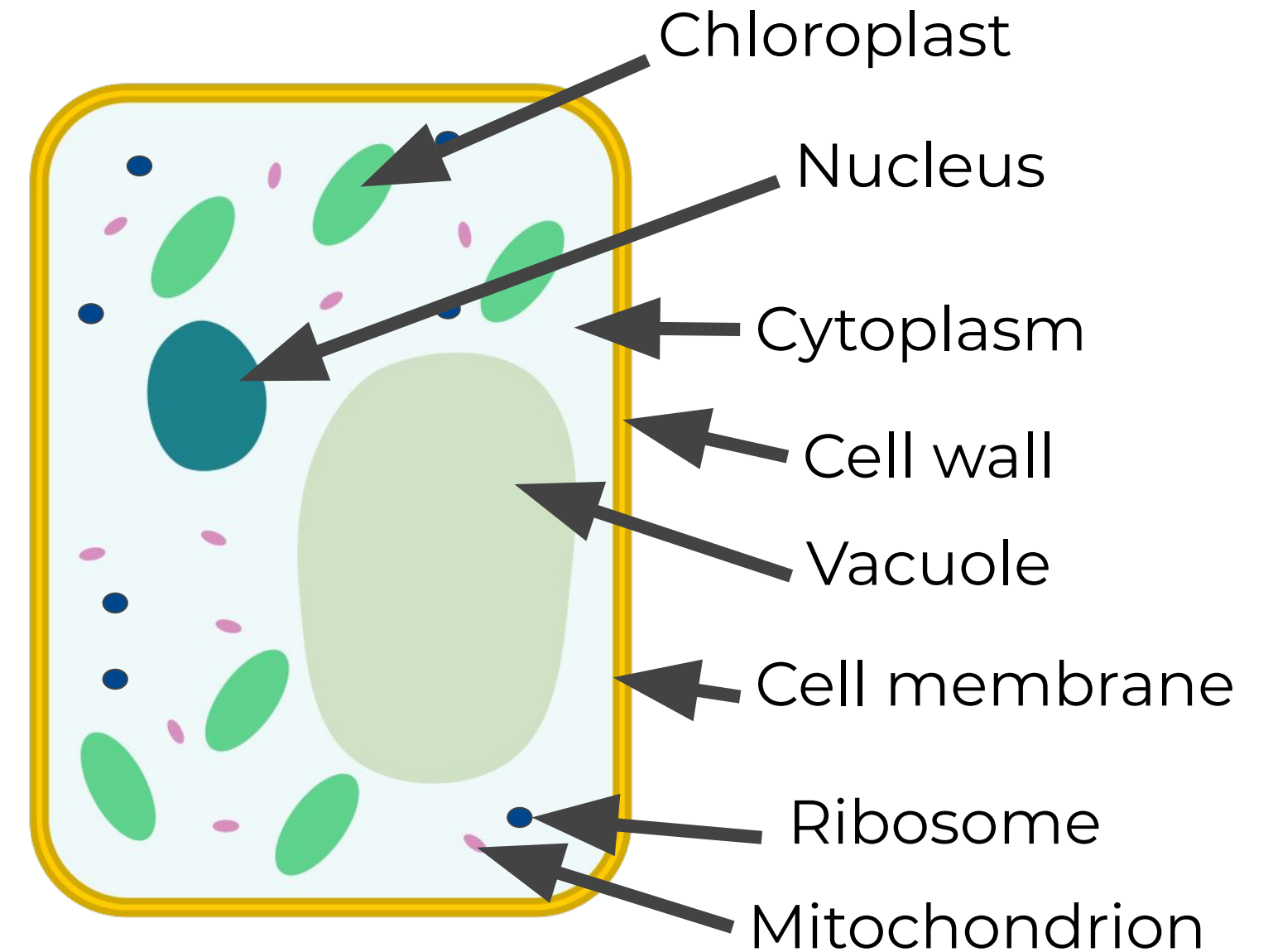
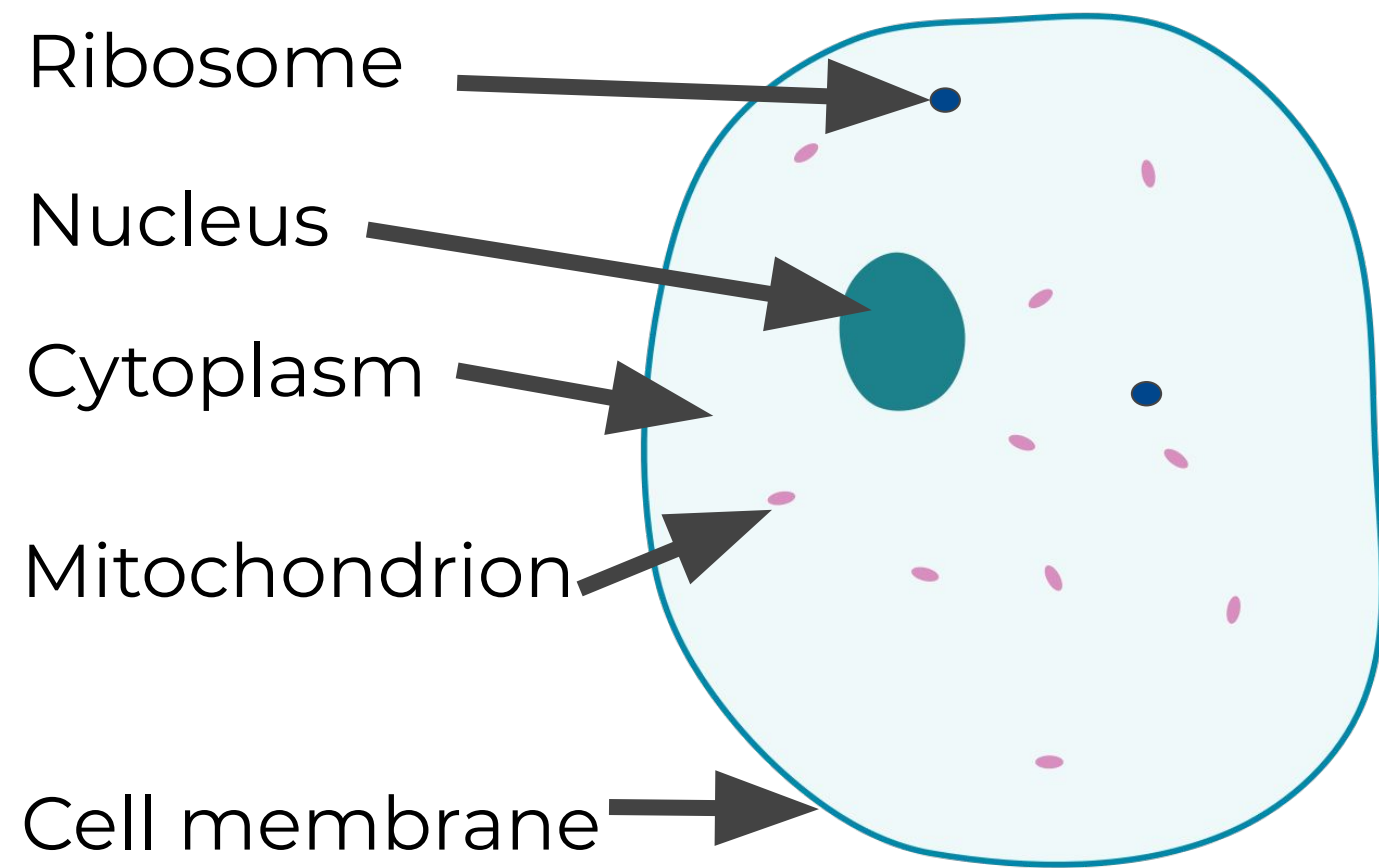
Comparing animal and plant cells



1. Which organelles do both cells have?
2. Which features do only plant cells have?



Comparing animal and plant cells



1. Which organelles do both cells have?

Nucleus, cytoplasm, cell membrane, ribosomes and mitochondria

2. Which features do only plant cells have?

Vacuole, cell wall, chloroplasts



Task - Compare an animal and plant cell

*Example: A plant and animal cell both need to make proteins, **so** they both have ribosomes. **However**, a plant cell has a cell wall for strength and support - animals have bones or exoskeleton for this **so** do not need a cell wall.*

- A plant cell has... because...
- However, an animal cell... because...
- They both...

Include 3 differences and 3 similarities

Key words: cytoplasm, chloroplasts, vacuole, ribosomes, mitochondria, cell wall, cell membrane, nucleus

Linking words: however, but, so, therefore, whereas, because



Compare an animal and plant cell

Plant cell	Animal cell
Has a vacuole	Does not need a vacuole as animals do not store water in the same way as plants
Has cytoplasm for chemical reactions	Has cytoplasm for chemical reactions
Has ribosomes, to make proteins	Has ribosomes, to make proteins
Has a cell wall for strength and support	Does not have cell wall, has exoskeleton or bones
Has mitochondria for respiration	Has mitochondria for respiration
Has chloroplasts for photosynthesis	No chloroplasts, eats for food
Cell membrane; allow substances in and out	Cell membrane; allow substances in and out
Has a nucleus to contain genetic information and control cell's activities	Has a nucleus to contain genetic information and control cell's activities



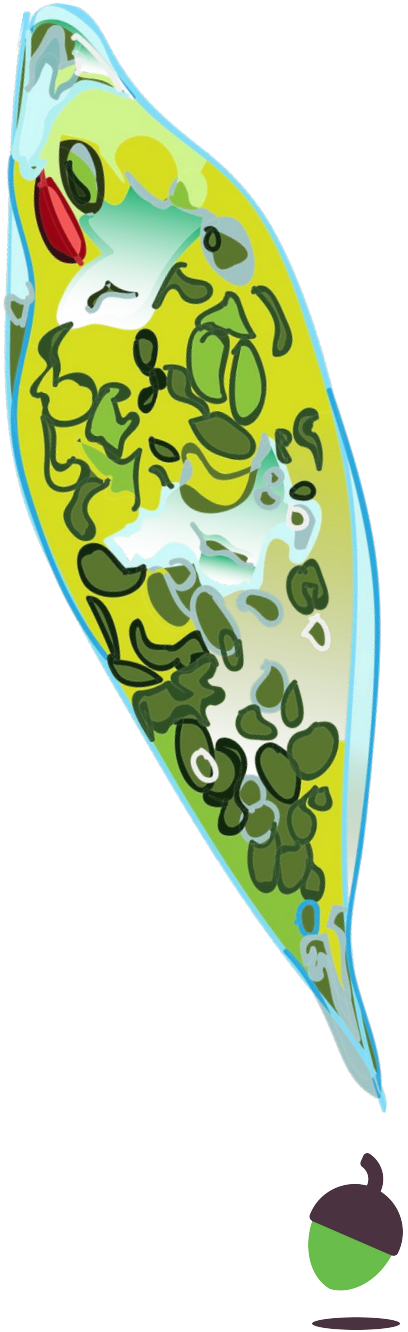
Task

Euglena, has characteristics of both plants and animals. As a result, it is a single-celled organism that is difficult to classify. Use the evidence below to form a reasoned argument for and against the euglena being a plant or animal.

Euglena can be argued to be a plant because it has a ...

Euglena, however, has a _____, therefore could be an animal ...

Contains chloroplasts	Uses a tail-like flagellum for movement	Engulfs tiny particles for nutrition
Does not have a cell wall	Has a cell membrane	Contains a nucleus
Contains a vacuole	Can photosynthesis	Contains cytoplasm



Mark your answer

1. Euglena can be argued to be a plant because it has a vacuole. This structure is only found in a plant cell, because animals do not store cell sap.
2. Euglena has chloroplasts, this organelle is only found in a plant cell for photosynthesis. Animals do not photosynthesise as they can eat and do not need to make their own food. Euglena, however, engulfs nutrients, which is a feature of an animal.
3. Euglena has a cell membrane, cytoplasm, nucleus which are organelles found in a plant cell, but also an animal cell. Euglena, however, does not have a cell wall, which is a typical organelle found in a plant cell.
4. Euglena has a flagellum, which is a feature of some animal cells such as a sperm, these are not seen on plants.
5. In conclusion, I think Euglena is a plant because it has chloroplasts for photosynthesis and a vacuole which animals do not have.



Extension questions

1. Explain why root hair cells do not contain chloroplasts.
2. What is the structure which controls the cell's activities and contains genetic information?
3. Describe the shape of a plant cell.
4. What process takes place in ribosomes?
5. Draw a typical animal cell and label the organelles.
6. Name the 7 life processes.
7. Define multicellular organism.



Extension question answers

1. Explain why root hair cells do not contain chloroplasts.

Root hair cells cannot do photosynthesis as they will not get any sunlight underground.

2. What is the structure which controls the cell's activities and contains genetic information?

Nucleus

3. Describe the shape of a plant cell.

Regular rectangular shape

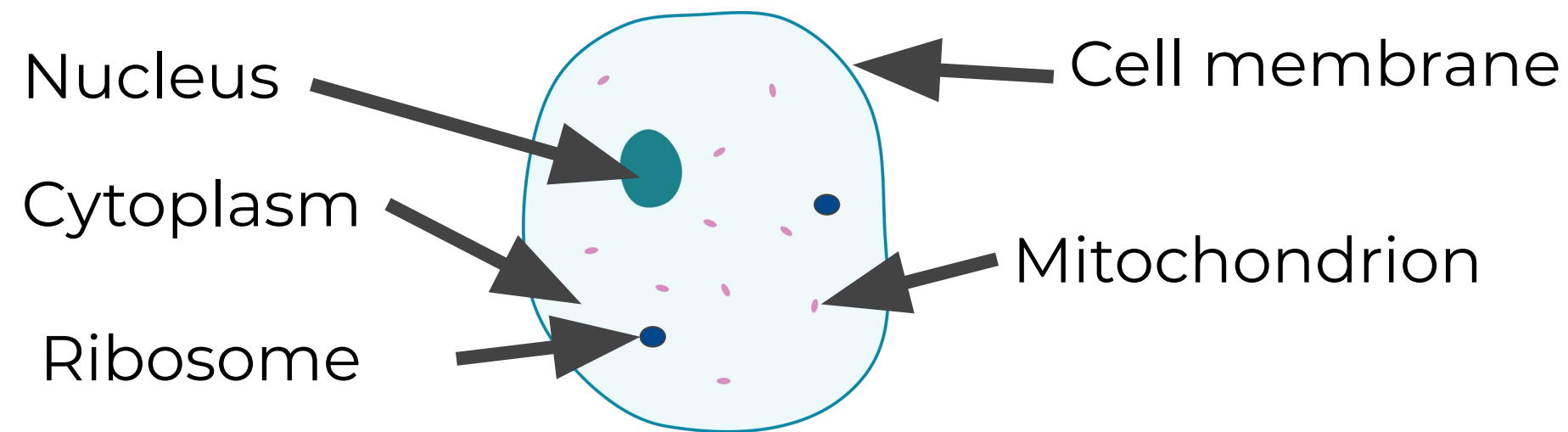
4. What process takes place in ribosomes?

Protein synthesis.



Extension question answers

5. Draw a typical animal cell and label the organelles.



6. Name the 7 life processes.

Movement, Respiration, Sensitivity, Growth, Reproduction, Excretion, Nutrition

7. Define multicellular organism.

An organism made of more than one cell

