

Unit 1: Principles and Applications of Biology I

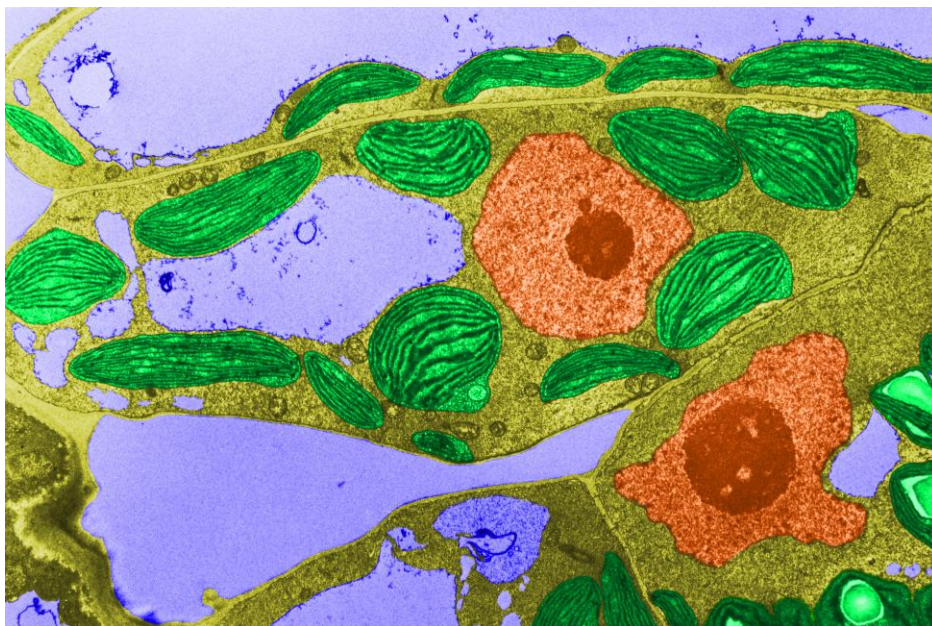
Activity  
Sheet 2

## ULTRASTRUCTURE OF EUKARYOTIC CELLS

LEARNING AIM A: Understand the microscopic structure and the functions of eukaryotic cells and tissues

<b>Skills</b>	Critical thinking, problem solving
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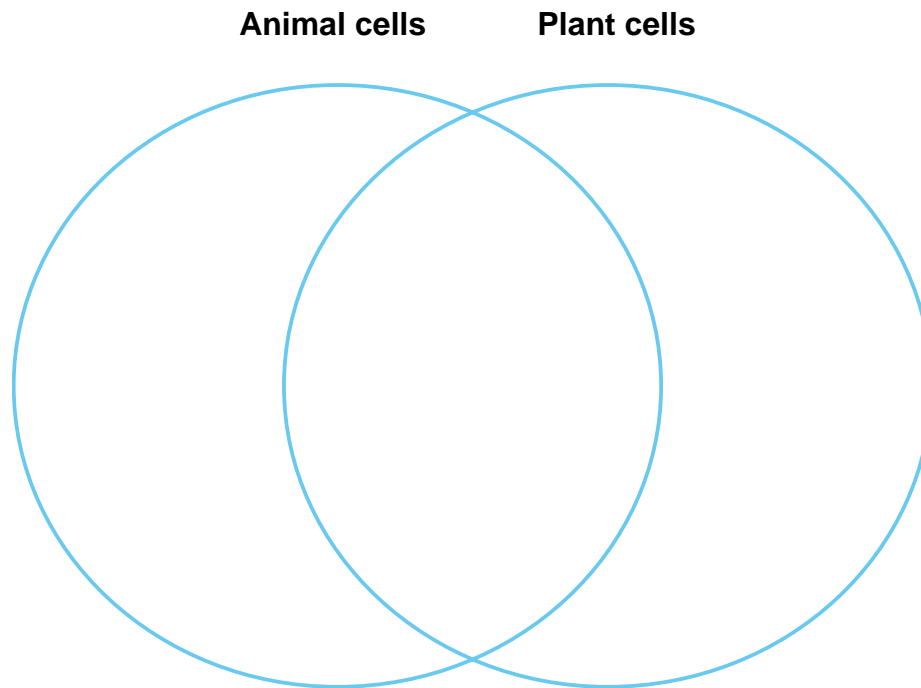
The image below is an electron micrograph showing the ultrastructure of a plant cell.



1. On the electron micrograph, label the following structures:

cell wall	cytoplasm	nucleus
tonoplast	chloroplast	nucleolus
mitochondrion	plasma membrane	vacuole

2. Complete the Venn diagram below to summarise the organelles found in animal cells, plant cells or both.



### Questions

1. Define the term 'organelle'.
2. Describe how the general structure of a plant cell differs from an animal cell and suggest a reason why the shapes are different.
3. What is the function of the large vacuole in a plant cell?
4. What is the function of chloroplasts?
5. How are chloroplasts adapted to perform their specialised function?
6. Name a specialised plant cell that would not contain chloroplasts.
7. Name a specialised plant cell that would contain numerous chloroplasts.
8. How can smooth endoplasmic reticulum be distinguished from rough endoplasmic reticulum?
9. What is the function of the mitochondria?
10. What type of substance makes up the plant cell wall?
11. Explain how the plant cell wall contributes to the overall support of the plant.
12. What are plasmodesmata? Describe their role in the plant cell.

### **TRY THIS**

State the differences between plant and animal eukaryotic cells.

### **STRETCH**

Research the following specialised plant cells, draw diagrams and explain how they are adapted to perform their function:

- palisade cells
- spongy mesophyll cells
- root hair cells
- phloem cells
- xylem cells
- guard cells