Modelling Cells

Introduction

Cells are the fundamental unit of life (nothing smaller than a cell is considered alive). Cells contain a myriad of internal structures called **organelles** that help them perform the functions of life. Cells can be categorised into different types based on a number of distinguishing characteristics. All cells can be identified as being either prokaryotic (lacking compartmentalisation) or eukaryotic (possessing *membrane-bound* organelles). Eukaryotic cells can be further characterised according to the presence of specific cellular structures (examples include animal, plant and fungal cells).

Aim

The purpose of this activity is to model cells and their internal structures in order to understand the function of the various organelles and to differentiate between the different types of cells.

Method

- Build a model of an animal or plant cell using commonly available materials (can be 2D or 3D).
- All organelles must be correctly identified with an appropriate annotation of its specific function.
- Effort should be taken to ensure all structures are accurately represented in size and shape.
- Suggestions for potential construction materials include styrofoam, felt, pipe cleaners and clay.
- Cells may be constructed from food (jelly, pizza, cake) but cannot be eaten afterwards (safety).

Felt Model (Plant)

Cake Model (Animal)

3D Foam Model

Assessment

Criterion	High (3)	Medium (2)	Low (1)	Not Shown (0)
1. Presentation (creativity, visual flair)				
2. Organelles (accurately represented)				
3. Description (succinctly summarised)				
4. Communication (spelling, referencing)				

TOTAL: _____ out of 10

EXTENSION: Cell Structures

1. Draw an *annotated* diagram of a prokaryotic cell (including a brief description of all structures)

2. Draw an *annotated* diagram of a eukaryotic animal cell (with a brief description of all structures)

3. Outline the key differences between prokaryotic cells (bacteria) and eukaryotic cells

4. Draw an *annotated* diagram of a plant cell, labelling only structures not present in animal cells

5. Complete the following table comparing structures of animal cells, plant cells and fungal cells

	Plant Cell	Fungal Cell	Animal Cell
Cell Wall			
Chloroplasts			
Vacuoles			
Centrioles			
Cilia / Flagella			