Name: _____

Date: _____

Period: _____

SUMMER WORK

Before you return to classes in September you need to complete these two tasks

Task 2.Complete the annotating and filling in the blanks in the following tables on pages 2 to8.

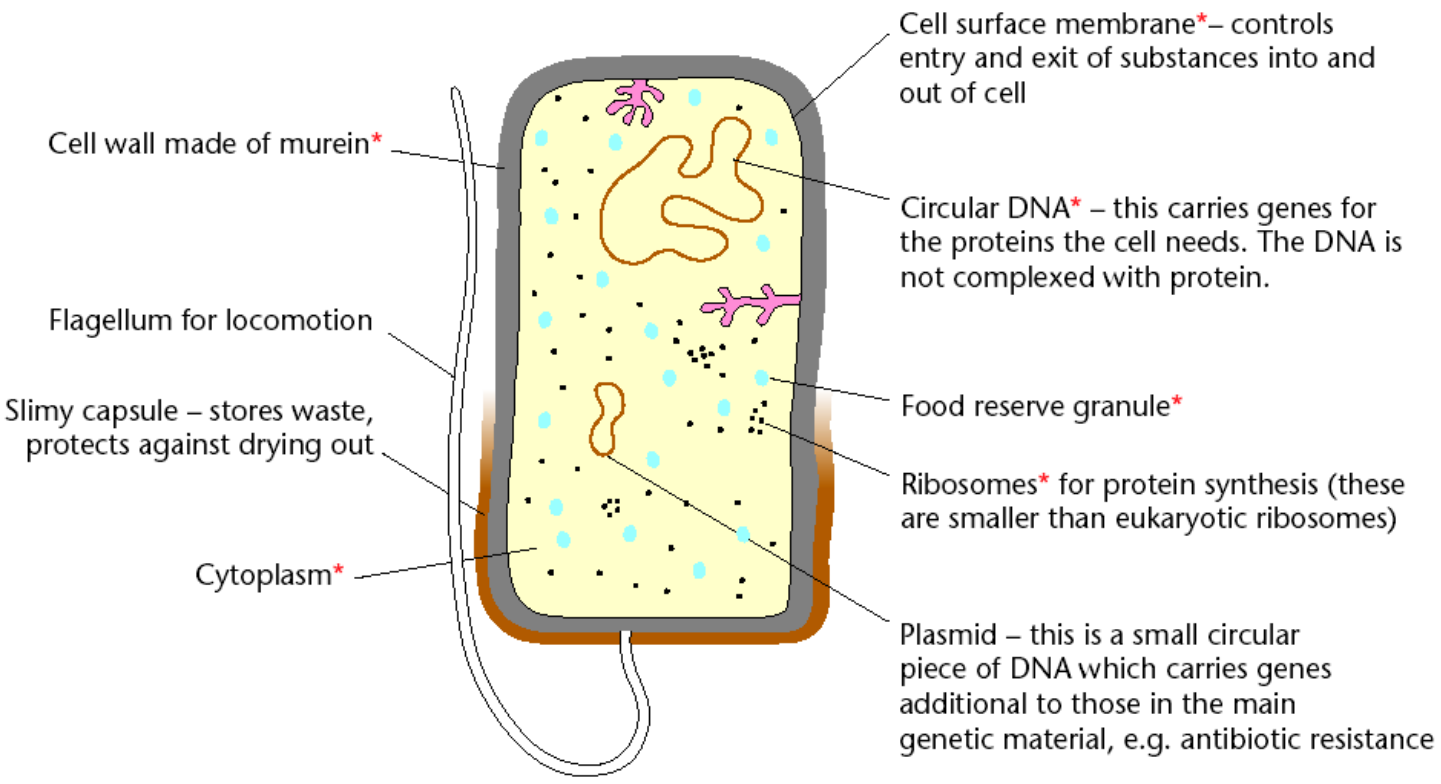
You need to carry out research and find at least one function of the organelles found in the main types of cells - eukaryotic and prokaryotic - as shown in the accompanying diagrams

The prokaryotic cell has had its features labelled and annotated with their functions for you. You need to prepare suitable notes for the organelles of the plant and animal cells so you can complete the diagrams of the two eukaryotic cells yourself.

Note that some of the organelles are common to different types of cell.

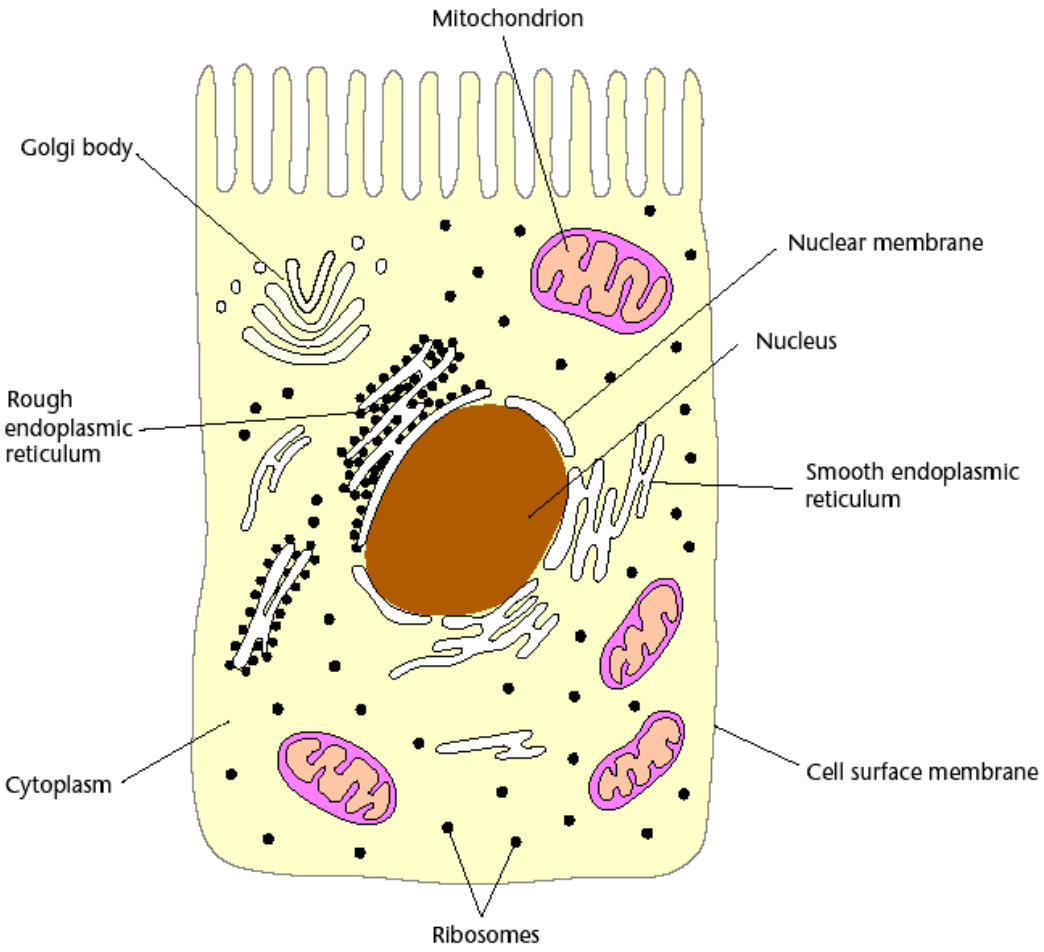
DO NOT USE CUT-AND PASTE FOR ANY PART OF THE HOMEWORK

PROKARYOTIC CELL

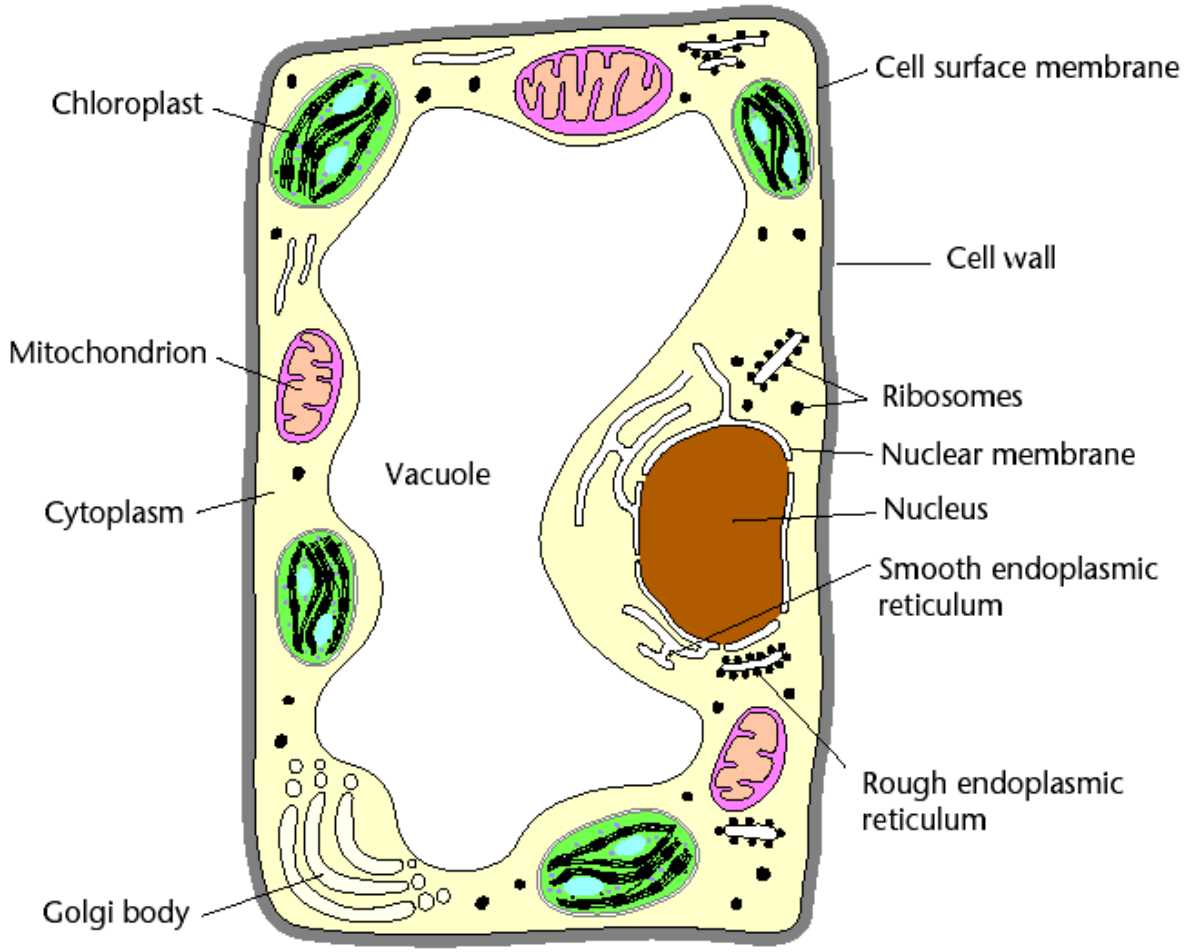


* Found in all bacterial cells

EUKARYOTIC CELLS (ANIMALS)



EUKARYOTIC CELLS (PLANTS)



Here is some information about the features (organelles) found in cells. Please read the table and compare the information with the structures in the diagram.

Organelle	Description	Function	Animal, Plant or Both
CELL WALL	Rigid, tough, made of cellulose	Protects and supports the cell	Plant
CELL MEMBRANE	Thin, covering, protects cells	Protects the cell, performs active transport and passive transport, moves materials in and out of the cell, communication	Both
CYTOPLASM	Jelly like substance that contains organelles	Pads and supports organelles inside the cell. Contains enzymes	Both
NUCLEUS	Dense, ball shaped structure, contains DNA	Controls all of the cell's activities	Both
NUCLEAR MEMBRANE	Thin covering over the nucleus	Covers and protects the nucleus	Both
NUCLEOLUS	Small dark area in the nucleus	Produces ribosomes	Both
CHROMATIN	In the nucleus, made of DNA and protein, contains genes	Provides instructions for the cells activities, (growth, reproduction)	Both
ROUGH ENDOPLASMIC RETICULUM	Clear, tubular system of tunnels throughout the cell, covered with ribosomes	Transports materials like proteins around the cell	Both
SMOOTH ENDOPLASMIC RETICULUM	Clear, tubular system of tunnels throughout the cell	Transports materials like lipids around the cell	Both
RIBOSOME	Small specks made of RNA. Found in cytoplasm or on the endoplasmic reticulum	Makes proteins	Both
MITOCHONDRIA	Location in the cytoplasm, bean shaped	Supplies energy or ATP for the cell through cell respiration using glucose and oxygen	Both
VACUOLE	Large open storage area, smaller in animal cells	Storage tank for food, water, wastes or enzymes	Both
CHLOROPLAST	Green structures that contain chlorophyll	Captures sunlight and uses it to produce food through photosynthesis	Plant
GOLGI BODY	Small bags with tubes connecting them	Packages and secrets proteins for use in and out of the cell	Both
LYSOSOME	Small, round structures, containing enzymes	Digests older cell parts, food or other objects	Both
CENTRIOLE	Small cylindrical	Used with the spindle apparatus during mitosis	Animal

Cell Organelles Worksheet
Use the table above to fill in the chart

Complete the following table by writing the name of the cell part or organelle in the right hand column that matches the structure/function in the left hand column. A cell part may be used more than once.

Structure/Function	Cell Part
Stores material within the cell	
Closely stacked, flattened sacs (plants only)	
The sites of protein synthesis	
Transports materials within the cell	
The region inside the cell except for the nucleus	
Organelle that manages or controls all the cell functions in a eukaryotic cell	
Contains chlorophyll, a green pigment that traps energy from sunlight and gives plants their green colour	
Digests excess or worn-out cell parts, food particles and invading viruses or bacteria	
Small bumps located on portions of the endoplasmic reticulum	
Provides temporary storage of food, enzymes and waste products	
Firm, protective structure that gives the cell its shape in plants, fungi, most bacteria and some protests	
Produces a usable form of energy for the cell	
Packages proteins for transport out of the cell	
Everything inside the cell including the nucleus	
Site where ribosomes are made	
The membrane surrounding the cell	
Name for the collection of DNA in the nucleus of eukaryotic cells	
Consist of hollow tubes which provide support for the cell	
Small hair-like structures used for movement or sensing things	
Composed of a phospholipid bilayer	
Longer whip-like structures used for movement	

Task 3. (Compulsory part)

(a) Put a tick in the appropriate column(s) to indicate whether the following organelles are found in plant cells, animal cells or both.

Organelle	Plant Cells	Animal Cells
Cell Wall		
Vesicle		
Chloroplast		
Chromatin		
Cytoplasm		
Cytoskeleton		
Endoplasmic reticulum		
Golgi apparatus		
Lysosome		
Mitochondria		
Nucleolus		
Nucleus		
Plasma membrane		
Central vacuole		
Ribosome		
Vacuole		

(b) Prepare a table showing the main differences between a plant and animal c

EXTENSION WORK

Extension Activities (non-compulsory)

If you want an extra challenge then complete the following

Go to the Open Learning Initiative
https://oli.cmu.edu/jcourse/lms/students/syllabus.do?section=df3e23850a0001dc518491159056b43c

Where you can complete the free Introduction to Biology course. You should aim to complete as much of units 1,3&4 as you can.

Here are some sample exam questions

Below is a list of cell types and their functions

Cell Type	Function
Cardiac muscle cells	Contraction of the heart
Alveolar macrophage cells	To ingest and digest pathogens invading the lungs
Beta cells in islets of Langerhans	To produce insulin (a protein)
Proximal tubule epithelial cells	To reabsorb useful molecules filtered out of the blood by the kidneys.

Name one organelle you would expect to find a lot of in the cardiac muscle cells.
Give a reason for your answer.

Suggest how alveolar macrophage cells are adapted to their function in terms of the organelles that they contain.

Name three organelles you would expect to find **a lot of** in beta cells in the islets of Langerhans

- .
- .
- .

ALL this work will support your lessons and homework set in September.