

## Year 12 Induction Task



**Subject: Biology**

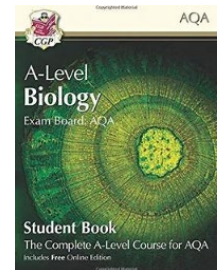
### **Course materials:**

All students completing the AS level Biology course will need to purchase the course textbook. There are 2 options and excellent results can be achieved with both.

#### **Option 1**

Available from the school office – we get a reduced price of £18

CGP AQA A-Level Biology Student Book ISBN 978178293143



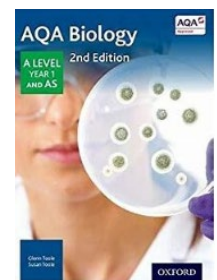
#### **Option 2**

You can buy in a bookshop or online.

AQA Biology 2<sup>nd</sup> Edition, A Level Year 1 and AS (You will then need book 2 in Yr13)

Publisher: Oxford Authors: Glenn Toole Susan Toole

ISBN 978-0-19-835176-4



It is advisable to use a course textbook as a starting point in your research for this induction task.

**Prior knowledge: GCSE Science**

- Animal cells have a nucleus, cytoplasm, ribosomes, mitochondria and cell membrane. In addition to these, plants also have chloroplasts, a cell wall and a permanent vacuole.
- Yeast cells have a nucleus, cytoplasm and cell membrane surrounded by a cell wall.
- Cells may be specialised to a particular function.

### **Induction task: The Ultrastructure of Cells**

**Biology 3.2.1.1 Structure of eukaryotic cells specification guidance:**

#### **Learning Outcomes**

- explain what is meant by a eukaryotic cell and the defining characteristics of a eukaryotic cell
- explain the roles of different components and organelles within eukaryotic cells
- interpret pictures, diagrams and electron micrographs to identify cell organelles

## The structure of eukaryotic cells, restricted to the structure and function of:

- cell-surface membrane
- nucleus (containing chromosomes, consisting of protein-bound, linear DNA, and one or more nucleoli)
- mitochondria
- chloroplasts (in plants and algae)
- Golgi apparatus and Golgi vesicles
- lysosomes (a type of Golgi vesicle that releases lysozymes)
- ribosomes
- rough endoplasmic reticulum and smooth endoplasmic reticulum
- cell wall (in plants, algae and fungi)
- cell vacuole (in plants).

In complex multicellular organisms, eukaryotic cells become specialised for specific functions. Specialised cells are organised into tissues, tissues into organs and organs into systems.

### Outcomes:

#### A Level grade E-D students should be able to:

- recognise the organelles in a eukaryotic cell and label a diagram of its ultrastructure;
- describe the roles of all of the organelles listed above.

#### A Level Grade A-C students should also be able to:

- deduce the role of a cell by looking at the number and size of the organelles that it contains.
- apply their knowledge of the function of organelles to explain the adaptations of several cells;
- speculate which organelle may be the most critical in the functioning of a eukaryotic cell and support this idea with evidence from the research that you have completed.

**FINAL OUTCOME: A word-processed report of up to 4 sides of A4, including images.**

**DEADLINE: This is to be assessed in the first Biology lesson of the new academic term.**

**SUGGESTED PREPARATORY TASKS:**

1. Use the learning outcomes above to write success criteria for your report. The success criteria should be instructions describing what your report should contain. Look at the graded outcomes and select the ones that you feel apply to the grade that you are aiming for.
2. Research the ultrastructure of a eukaryotic cell. Use three sources of research including a relevant Biology article/journal.
3. Find a labelled diagram of the ultrastructure of a cell. Also include labelled diagrams of all the organelles mentioned in the specification details.
4. Write a detailed description of the function of each of the cell organelles that you are studying.
5. Find four diagrams of specialised cells that have structural adaptations. Look at the type and number of organelles found within each cell. Explain how variation in organelle number and type can be used to indicate the function of the cell.
6. Using the evidence that you have collected, identify an organelle other than the cell nucleus that you feel is the next most critical in the functioning of a cell. Construct an argument supporting your view of the importance of your chosen organelle.

**KEY WORDS (find the definition of each of these and include it in your report) :**

**ultrastructure organelle**

**eukaryotic**

**ASSESSMENT:** you will initially be peer assessed against your own success criteria. You will be given feedback based on the **quality of your independent work/research**, your ability to **present** information and the **application of your biology-based understanding** to deduce the roles of unfamiliar cells. Ensure you write in your own words, using **good spelling, punctuation and grammar**.