

# GCSE Biology (Separate and Trilogy)

## Success Criteria: Cell structures and microscopes



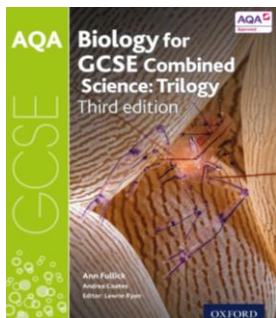
<i>I can...</i>	
Identify the organelles in an animal cell (membrane, cytoplasm, nucleus, mitochondria and ribosomes)	
Explain the function of each organelle	
Recognise the additional organelles that are present in plant cells (cellulose wall, vacuole and sometimes chloroplasts)	
Explain the function of these additional organelles.	
Identify organelles from images based on their appearance and relative size (eg. mighty mitochondrion are sausage shaped with folded internal membranes)	
Identify the structural adaptations of specialised cells that enable them to carry out specific roles effectively, giving examples of specialised animal cells (sperm, nerve and muscle) and plant cells (root hair, xylem and phloem)	
Categorise animal and plant (and fungi) cells as Eukaryotes because they are large and have a nucleus + other membrane bound organelles	
Identify the main features of a prokaryotic cells eg. bacteria (small cells with a cell wall, membrane, cytoplasm, loop of DNA, ribosomes + sometimes plasmids, flagella, capsule)	
Explain the function of each prokaryotic feature.	
Compare the structures of eukaryotes and prokaryotes (similarities and differences).	
Compare the size and scale of cells including order of magnitude calculations (powers of 10)	
Describe the relationship between mm, $\mu\text{m}$ and nm.	
Convert values into different units (smaller unit = larger value!)	
Convert ordinary numbers in to standard form ( $A \times 10^{-B}$ ) AND vice versa.	
Describe the structure of a light microscope (name the different parts) AND explain the function of each part.	
Define the term 'magnification' AND explain the determining factor of magnification in a light microscope.	
Calculate the total magnification of a light microscope by multiplying the magnification of the eyepiece lens and the objective lens.	
Describe how to prepare a slide of a biological specimen INCLUDING the use of an appropriate chemical stain.	
Describe how to produce a focused image of a prepared slide using a light microscope.	
Produce a quality biological drawing of a microscope image AND appreciate the quality of drawings produced by others.	
<b>Required practical – MICROSCOPY.</b> Use a light microscope to observe, draw and label a selection of plant and animal cells. A magnification scale must be included.	
Define the term 'resolution' AND explain the determining factor of resolution.	
Compare the light microscope and the transmission electron microscope, TEM (advantages and disadvantages of each microscope type).	
Recognise the cell structures visible with a light microscope and an electron microscope.	
Calculate the magnification of an image when provided with the actual size of the object ( $M = I / A$ )	
Calculate the actual size of an object when provided with an image and the magnification ( $A = I / M$ )	

## AQA exam specification:

- 4.1.1.1 Eukaryotes and Prokaryotes
- 4.1.1.2 Animal and Plant Cells
- 4.1.1.3 Cell Specialisation
- 4.1.1.5 Microscopy

## Additional support:

Access the appropriate textbook on kerboodle.com, create your own revision notes of the key points of the topic and attempt the summary questions.

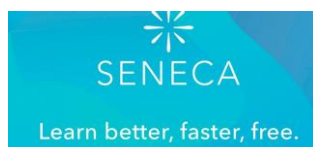


Combined science GCSE textbook  
Pages 2-14



Separate Biology GCSE textbook  
Pages 2-14

Utilise online revision resources to support your class notes, such as...



Attempt past paper questions using [www.physicsandmathstutor.com](http://www.physicsandmathstutor.com) and self-mark your answers using the official exam mark schemes.

## Extension work/extra challenge:

Ask your teacher for extension tasks...

**Pack 1 Topic 1-** A very Hungry Eukaryote (4.1.1)

**Pack 1 Topic 2-** The Life and Times of Good Bacteria (4.1.1)

**Pack 1 Topic 3-** Microscopes- from Spectacles to Single Atoms (4.1.1)

