

Summer Induction Work

Biology (AQA)



HAZELEY 6TH FORM

CHARACTER, CONFIDENCE & CREATIVITY

Deadline: Friday 11th
September

The Hazeley Academy

A Level Biology

Exam Board: AQA

Specification code: 7401

Specification references: 2.1.1, 2.1.2, 2.1.3

3.2.1 and 3.1.2

Objectives

Must: Produce notes on cell structure and carbohydrates

Should: Produce presentation on organelles in cells and writing up a practical report.

Could: Complete an online A Level Biology Taster lesson.

Tasks

Task 1:

Produce a set of notes on 3.2.1 Cell Structure and 3.1.2 Carbohydrates (simple and complex; animal and plant). Please use the student examples as guidance (see last page).

(2 hours)

Task 2:

Produce a Power Point presentation on “The structure and function of organelles in eukaryotic cells and compare to prokaryotic cells”. This will need to be presented to the whole class in September. Images of organelles made using electron microscopes are particularly relevant to this task.

(3 hours)

Task 3:

To write up a practical method for using biochemical tests to identify different carbohydrates. You should focus on Benedict's solution for reducing sugars and non-reducing sugars, and iodine/potassium iodide for starch.

You should also include:

- Equipment list
- Risk assessment
- What your expected results would be

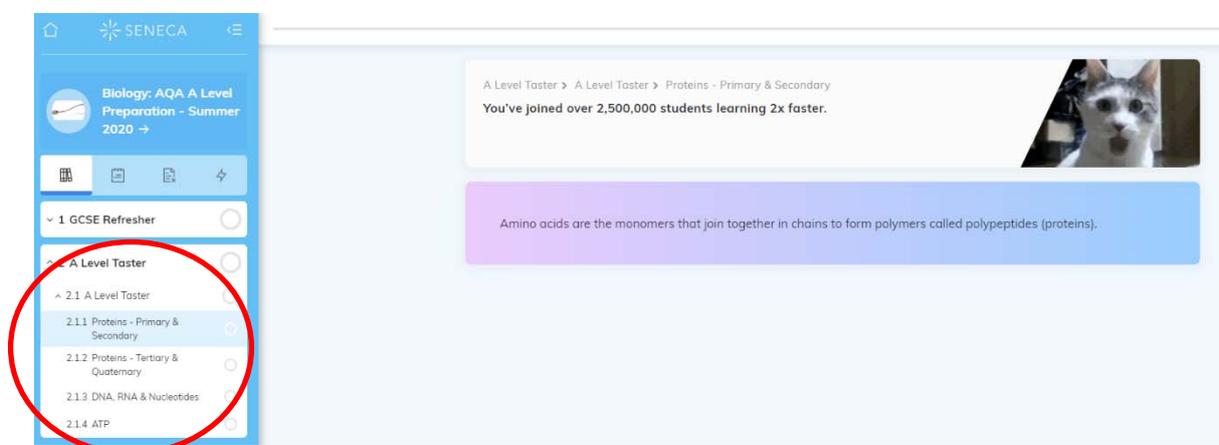
(2 hours)

4. Task 4:

Complete an online training course: [SENECA- AQA A Level Biology Taster Lessons](https://app.senecalearning.com/classroom/course/76917ca0-ac10-43c9-8742-e49b861417b2?utm_source=email&utm_medium=email&utm_campaign=uk&utm_content=lucy-biology-alevel-prep). Use the link below:

https://app.senecalearning.com/classroom/course/76917ca0-ac10-43c9-8742-e49b861417b2?utm_source=email&utm_medium=email&utm_campaign=uk&utm_content=lucy-biology-alevel-prep

1. Select the A level taster tab on the left of the screen (see below).
2. Complete 2.1.1-Proteins (Primary and Secondary), 2.1.2-Proteins (Tertiary and Quaternary) and 2.1.3- DNA, RNA and Nucleotides lessons.
3. Optional – Complete 2.1.4 – ATP and GCSE Refresher lessons.



(2 hours)

Assessment

You will be given a test in September with questions based on the four set tasks. The questions will be based on past AQA A Level questions. The grade boundaries for the test will be:

A = 80%, B= 70%, C= 60%, D= 50% and E= 40%

PLC

You will be given an AS Biology PLC Checklist where you will be able to RAG your learning and progress next to each relevant specification point.

Resources/Research

Books:

AQA Biology: A Level Year 1 and AS (Glenn and Susan Toole)

AQA A- level Biology, Book 1 (Pauline Lowrie and Mark Smith)

Websites

<https://studywise.co.uk/a-level-revision/> A level revision website

<http://www.aqa.org.uk/student-support/for-students/revision/revision-resources> Resource ideas

<https://www.youtube.com/channel/UCyCNsPR1je9aSyMeAtA2N2w> Mr Pollock Teacher Led Lessons

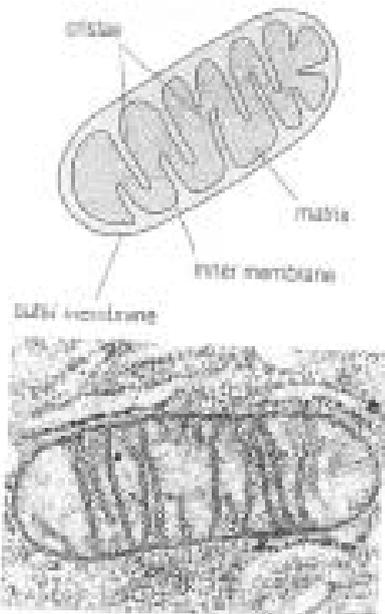
Wider Reading

1. *The Incredible Unlikeliness of Being*, Alice Roberts. Alice Roberts combines embryology, genetics, anatomy, evolution and zoology to tell the incredible story of the human body
2. *The Epigenetics Revolution*, Nessa Carey. A fascinating introduction to epigenetics. If you enjoy this, follow up with *Seed to Seed* (see below).
3. *The Immortal Life of Henrietta Lacks*, Rebecca Skloot. How one woman's cancer cells changed the medical world forever and became a multi-million dollar industry.
4. *Almost Like A Whale*, Steve Jones. Using contemporary science to update Charles Darwin's "The Origin of the Species".
5. *Seed to Seed*, Nicholas Harberd. A research scientist tells the story of ten years of discovery in his own laboratory. A very valuable insight into contemporary genetics and epigenetics research, and what it means to be a scientist.
6. *Life Ascending*, Nick Lane. Where does DNA come from? How did the eye evolve? A reconstruction of evolutionary history through ten of its greatest landmarks.
7. *Genome*, Matt Ridley. 23 human chromosomes in 23 chapters.
8. *The Energy of Life*, Guy Brown. Introduction to the cutting-edge science of Bioenergetics

All work must be submitted by Friday 11th September 2019

If you have any questions email Mr Makoon at dmakoon@thehazeleyacademy.com (term time)

The Mitochondrion



▲ Figure 2 The basic structure of a mitochondrion (top), false-colour TEM of a mitochondrion (bottom)

Mitochondria are **rod-shaped** and **1-10µm** in length.

① Double membrane

- Around the organelle.
- Controls entry/exit of material.
- Inner membrane is folded to form extensions called **cristae**.

② Cristae

- Extensions of inner membrane.
- Provides large surface area for enzymes to attach to.
- Other proteins involved in respiration can attach to them too.

③ Matrix

- Makes up the rest of the mitochondrion.
- Contains proteins/lipids/ribosomes/DNA, allows production of own proteins.

Site of **aerobic stages** of respiration

(Krebs cycle, oxidative phosphorylation pathway)

Produces energy-carrier molecule **ATP** from respiratory substrates e.g. glucose.

- Enzymes involved in respiration are found in matrix.

Epithelial cells + muscle cells need ATP from mitochondria.

Epithelial cells need it bc they absorb substances from the intestine by **active transport**.