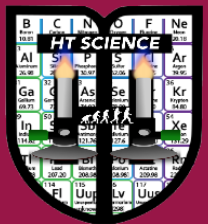


A-Level Biology Induction

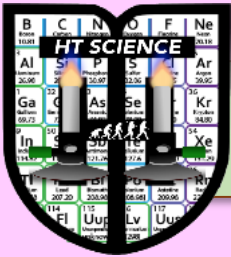
Silent Starter

- ❑ Explain why you have chosen A-Level Biology.
- ❑ What is your favorite area of Biology?
- ❑ Where do you think/hope Biology will take you?
- ❑ Give three facts about yourself.



Learning objectives:

- ❑ Discuss the AQA Biology specification and understand the structure of A-Level Biology
- ❑ Brief introduction to monosaccharides and disaccharides



A-Level Biology Induction

Learning objectives

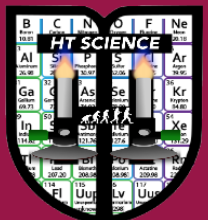
- ❑ Discuss the AQA Biology specification and understand the structure of A-Level Biology
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Key words:

Monosaccharide
Disaccharide
Glucose
Glycosidic bond
Isomer
Polymer

Learning objectives:

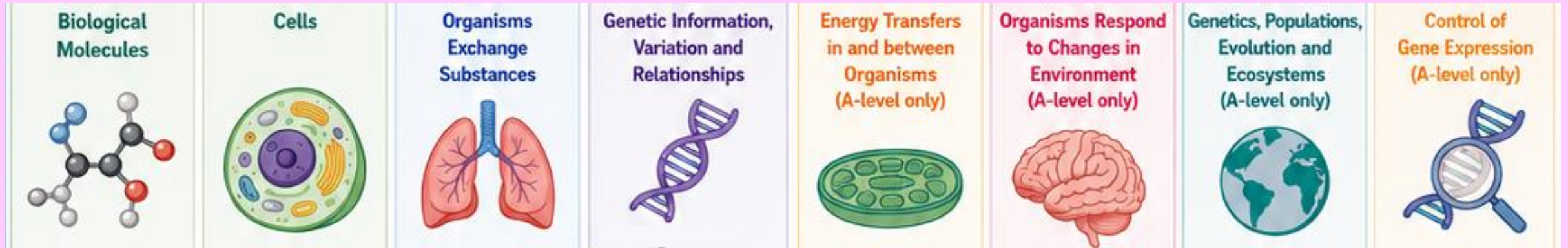
- ❑ Discuss the AQA Biology specification and understand the structure of A-Level Biology
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Explanation

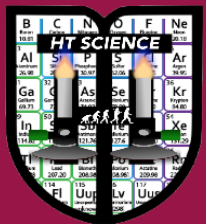
The AQA Spec

? 8 units



? 12 required practicals

? Ideal if you are interested in medicine, veterinary science, biomedical sciences, environmental science, genetics, psychology, sports science and other life-science related careers.



Learning objectives:

- Discuss the AQA Biology specification and understand the structure of A-Level Biology
- Brief introduction to monosaccharides and disaccharides

Explanation

Examination

PAPER 1

What's assessed

Any content from Units 1–4, including relevant practical skills

- 🕒 Written exam: 2 hours
- 📄 91 marks
- 📊 35% of A-level

Questions

- **76 marks:** a mixture of short and long answer questions
- **15 marks:** extended response questions

PAPER 2

What's assessed

Any content from Units 5–8, including relevant practical skills

- 🕒 Written exam: 2 hours
- 📄 91 marks
- 📊 35% of A-level

Questions

- **76 marks:** a mixture of short and long answer questions
- **15 marks:** comprehension question

PAPER 3

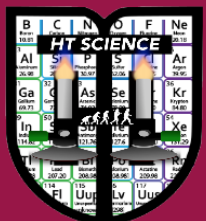
What's assessed

Any content from Units 1–8, including relevant practical skills

- 🕒 Written exam: 2 hours
- 📄 78 marks
- 📊 30% of A-level

Questions

- **38 marks:** structured questions, including practical techniques
- **15 marks:** critical analysis of given experimental data
- **25 marks:** one essay from a choice of two titles



Learning objectives:

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Explanation

Assessment objectives

AO1: Knowledge and Understanding (~30-35%)

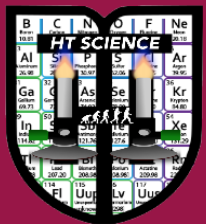
Demonstrate knowledge and understanding of scientific ideas, processes, techniques and procedures.

AO2: Application (~40-45%)

Apply scientific knowledge and understanding in theoretical and practical contexts, including when working with qualitative data, quantitative data and in practical contexts.

AO3: Analysis and Evaluation (~25-30%)

Analyse, interpret and evaluate scientific information and evidence to make judgements, draw conclusions, and improve practical methods and procedures.



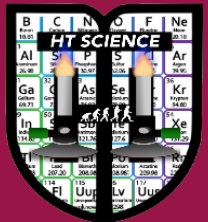
Learning objectives:

- Discuss the AQA Biology specification and understand the structure of A-Level Biology
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Explanation Paper 3: Essay

- 25-mark essay question
- Pick **one** of **two** essay questions in the exam
- Around **45 mins** in 2-hour exam

- Opportunity to bring together all you've learnt across the 2-year course
- Tests ability to bring together principles from **4 or more** areas of the course
- Requires students to present a coherent and logical argument
- 13 marks AO1 and 12 marks AO2
- Top marks must show evidence of **wider reading/research**



Learning objectives:

- Discuss the AQA Biology specification and understand the structure of A-Level Biology
- Brief introduction to monosaccharides and disaccharides

Explanation

Paper 3: Essay example

Section B

Answer **one** question.

You are advised to spend no more than 45 minutes on this section.

0 7 Write an essay on **one** of the topics below.

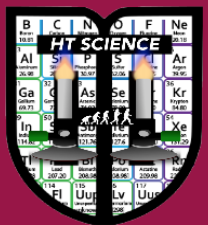
Either

0 7 . 1 The importance of interactions between organisms and their environment. **[25 marks]**

Or

0 7 . 2 The importance of membranes in the functioning of cells. **[25 marks]**

(Summer 2023)

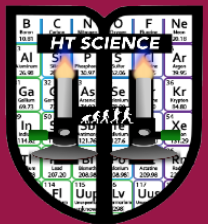


Learning objectives:

- Discuss the AQA Biology specification and understand the structure of A-Level Biology
- Brief introduction to monosaccharides and disaccharides

Explanation **Mathematical skills**

- ? Plotting and interpreting graphs
- ? Margins of error
- ? Converting units
- ? Decimals and standard form
- ? Ratios, fractions and percentages
- ? Probability
- ? Mean, median and mode
- ? Algebraic equations
- ? Circumference, surface area, volume
- ? Statistics



Learning objectives:

- Discuss the AQA Biology specification and understand the structure of A-Level Biology
- Brief introduction to monosaccharides and disaccharides

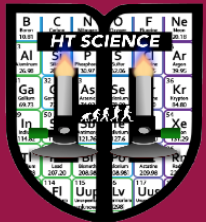
Explanation

Practical Assessment

‘Overall, at least 15% of the marks for an A-level Biology qualification will require the assessment of practical skills.’

Practical Endorsement

- ❑ Pass or fail result that appears alongside the overall A-Level award
- ❑ Assessed by teachers against the Common Practical Assessment Criteria (CPAC)
- ❑ Lab books to record practical work and associated activities
- ❑ Involves researching and referencing



Learning objectives:

- ❑ Discuss the AQA Biology specification and understand the structure of A-Level Biology
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Explanation

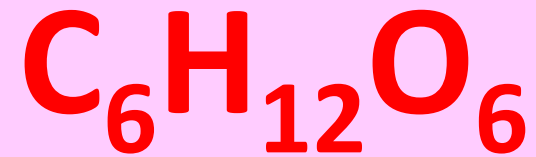
Required Practicals

1. Effect of a variable on rate of enzyme-controlled reaction	2. Identifying stages of mitosis in plant cells	3. Producing a dilution series to produce a calibration curve to identify water potential of plant tissue
4. Effect of a variable on permeability of cell-surface membranes	5. Dissection of animal or plant gas exchange system	6. Use of aseptic technique to investigate effect of antimicrobial substances
7. Chromatography to investigate pigments in plants	8. Effect of variable on rate of dehydrogenase activity in extracts of chloroplasts	9. Effect of variable on rate of respiration in single-celled organisms
10. Effect of environmental variable on movement of an animal (choice chamber or maze)	11. Producing a dilution series to produce a calibration curve to identify glucose concentration in 'urine'	12. Effect of environmental factor on distribution of a given species

Explanation

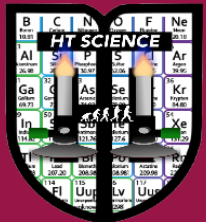


What is the chemical formula for glucose?



Learning objectives:

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- Brief introduction to monosaccharides and disaccharides

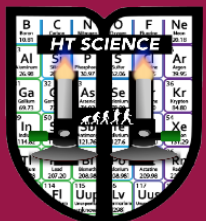
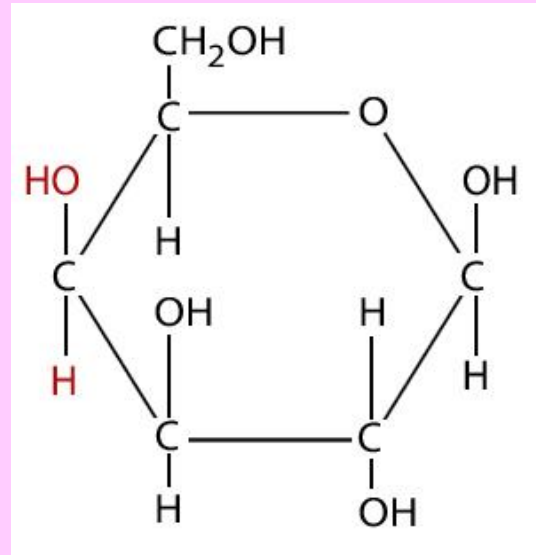


Explanation Monosaccharides

- ❑ Monosaccharides are the simplest form of carbohydrates
- ❑ Single simple sugars
- ❑ Monomers

- ❑ Common monosaccharides:
 - Glucose
 - Fructose
 - Galactose

Glucose, fructose and galactose all have the formula $C_6H_{12}O_6$

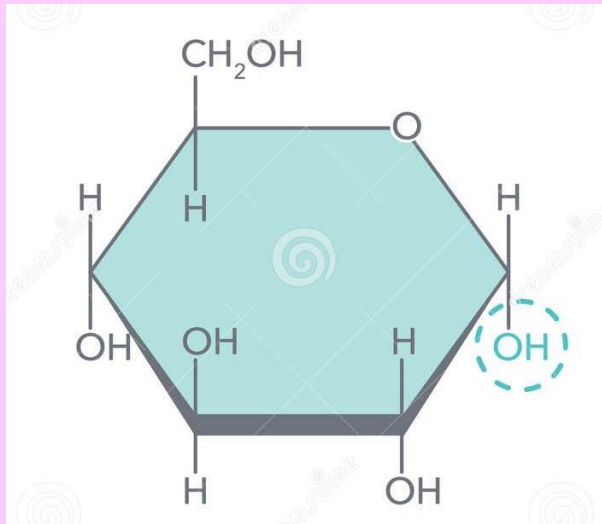


Learning objectives:

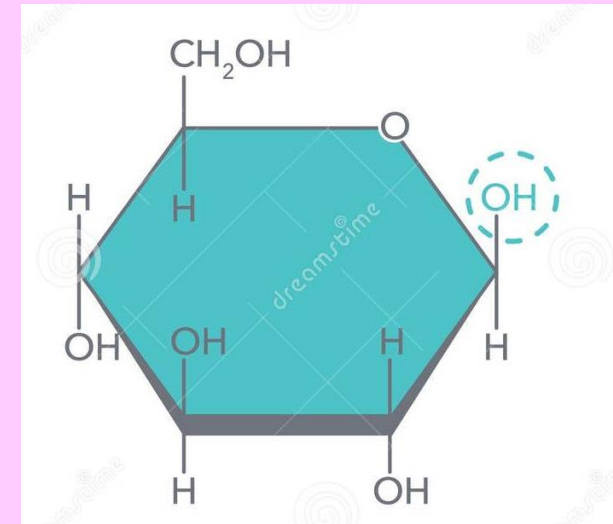
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Explanation Alpha & Beta Glucose

☐ Glucose exists in 2 forms



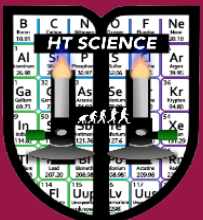
α -glucose



β -glucose

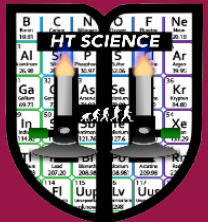
Learning objectives:

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Explanation Disaccharides

- ❑ Dimers consisting of two monosaccharides
- ❑ Bonds form between monomers in a **condensation reaction**:
 - This releases a water molecule
- ❑ Bonds between 2 monosaccharides are called **glycosidic bonds**
- ❑ Maltose, sucrose and lactose are examples of disaccharides



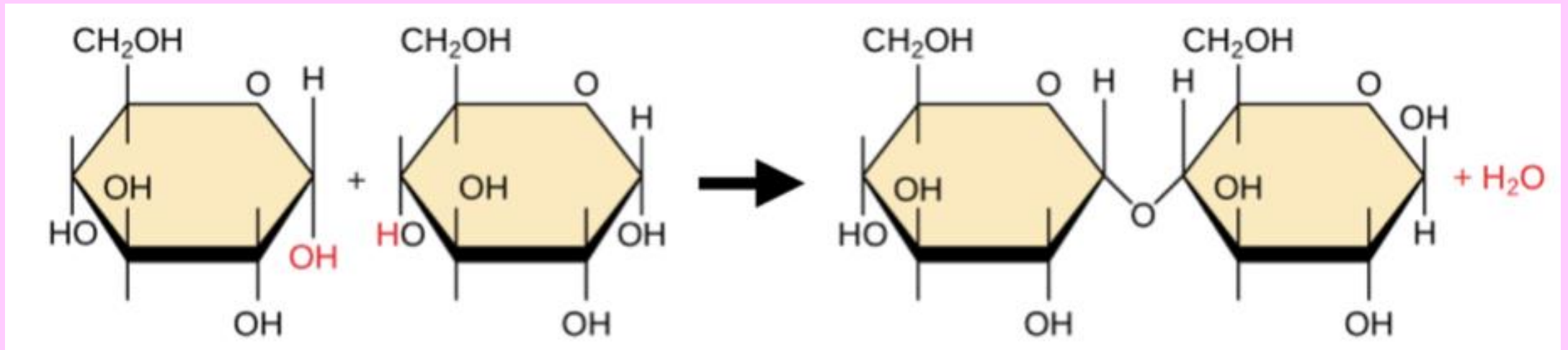
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Explanation

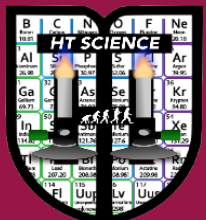
Disaccharides - Maltose

- ? 2 molecules of α -glucose
- ? Interaction between hydroxyl groups
- ? Water molecule is released
- ? 1-4 glycosidic bond is formed



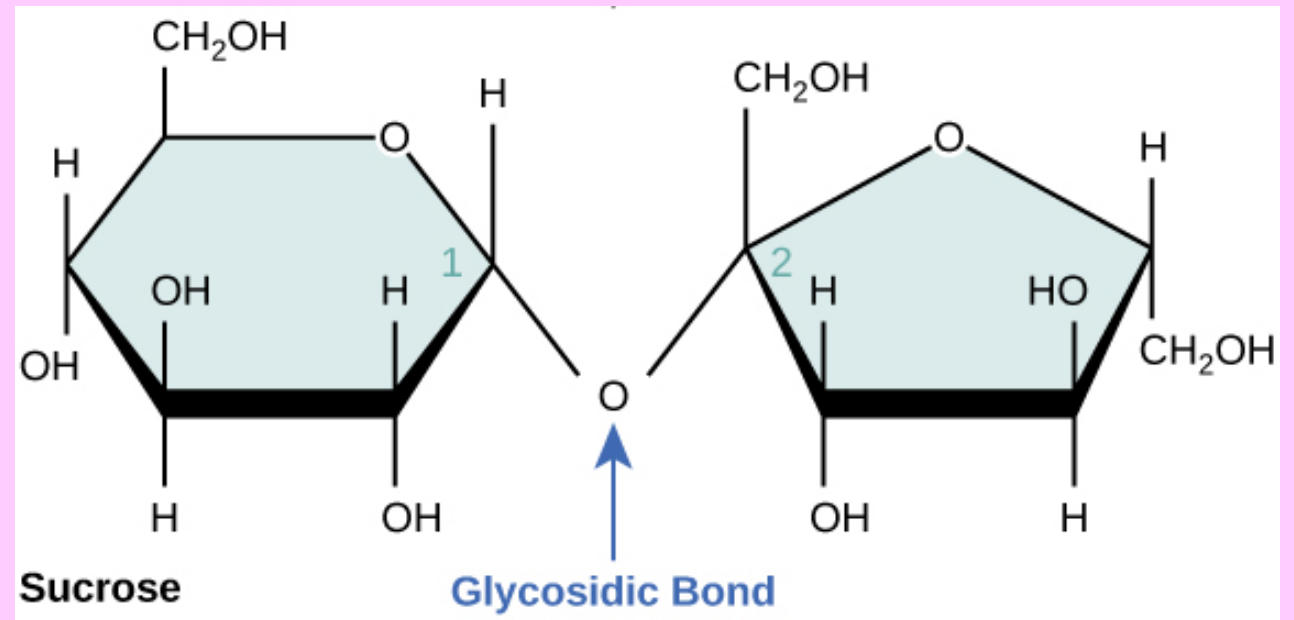
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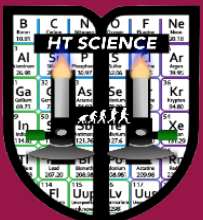
Explanation Disaccharides – Sucrose

- ❑ Molecules of α -glucose and fructose
- ❑ Condensation reaction
- ❑ 1-2 glycosidic bond is formed



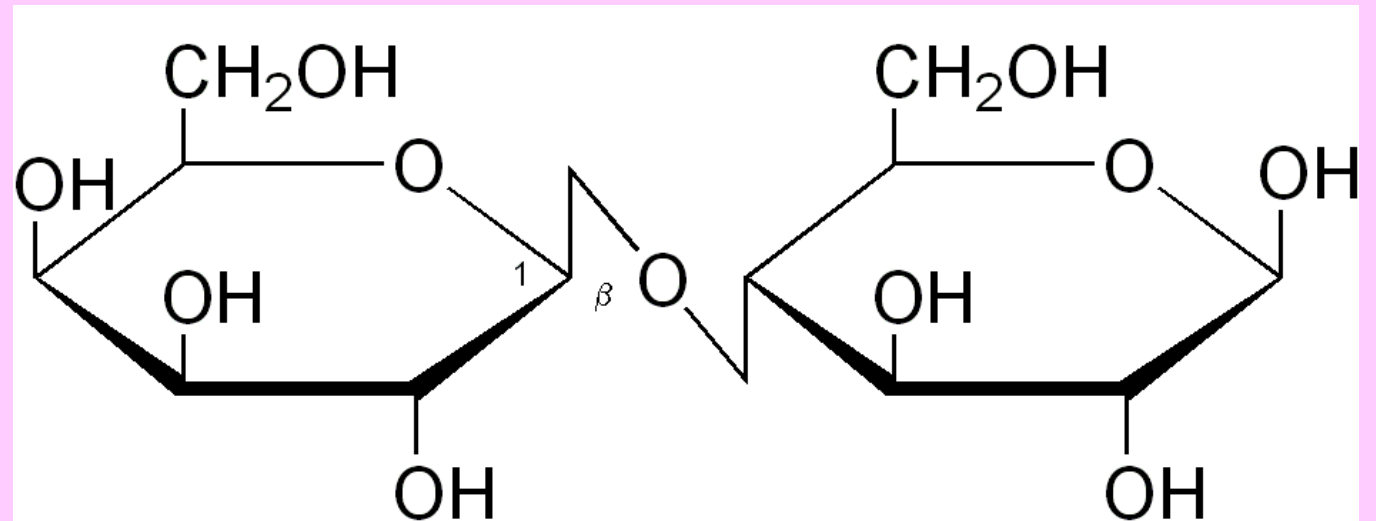
Learning objectives:

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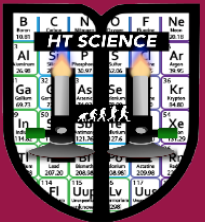
Explanation Disaccharides – Lactose

- ❑ Molecules of glucose and galactose
- ❑ Sugar found in milk
- ❑ Condensation reaction
- ❑ 1-4 glycosidic bond is formed



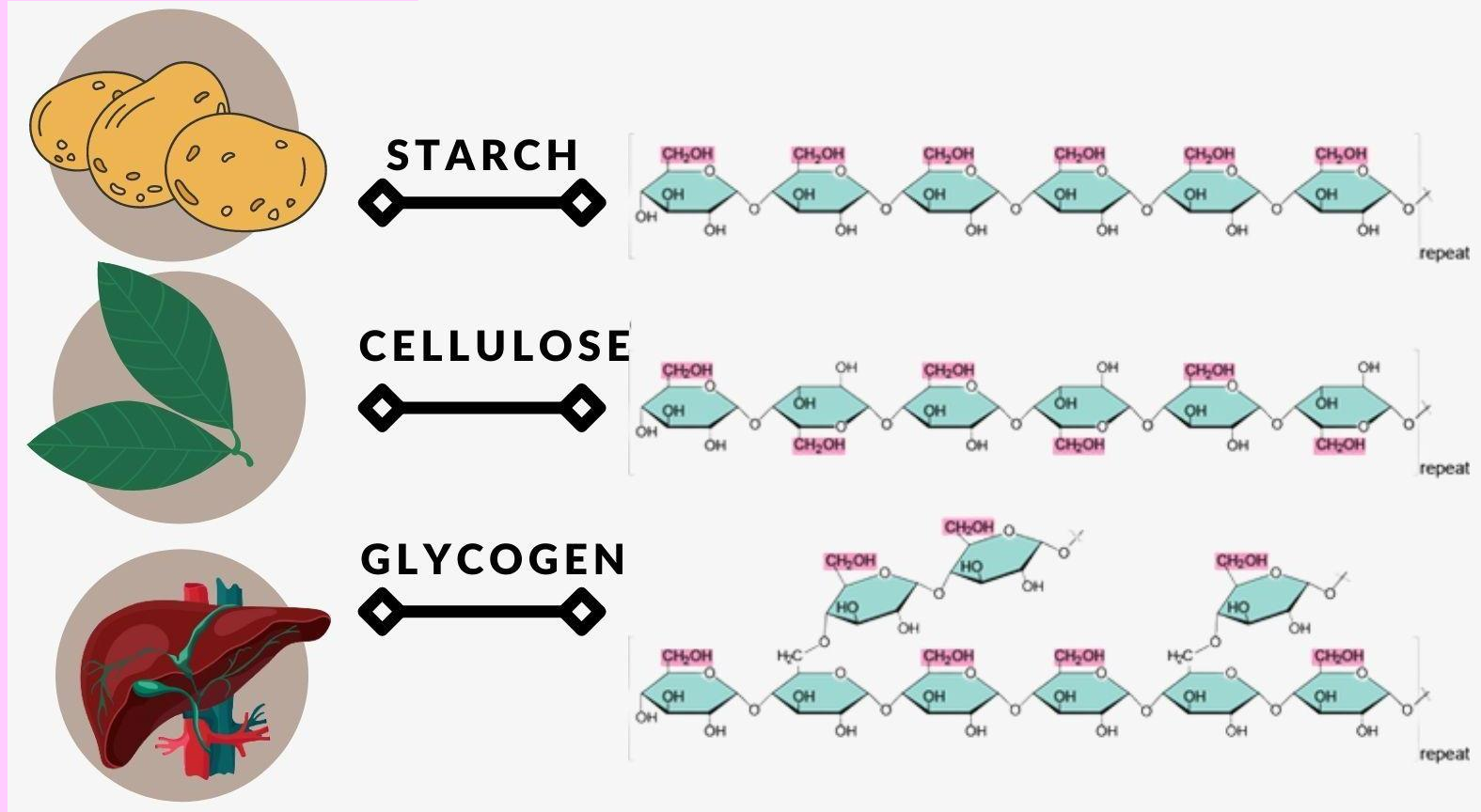
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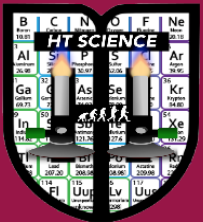
Explanation Polysaccharides

- ? Storage molecules
- ? Polymers of glucose molecules
- ? Chains linked by 1-4 glycosidic bonds



Learning objectives:

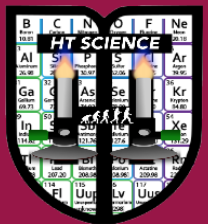
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Explanation

Research Presentations

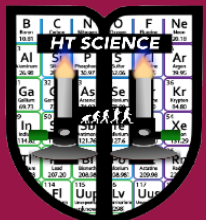
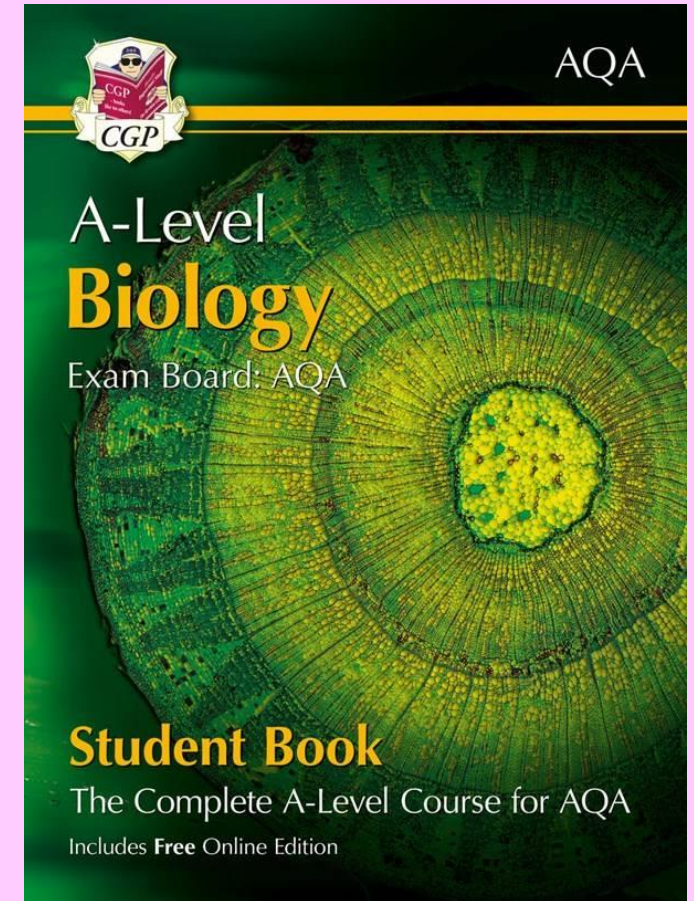
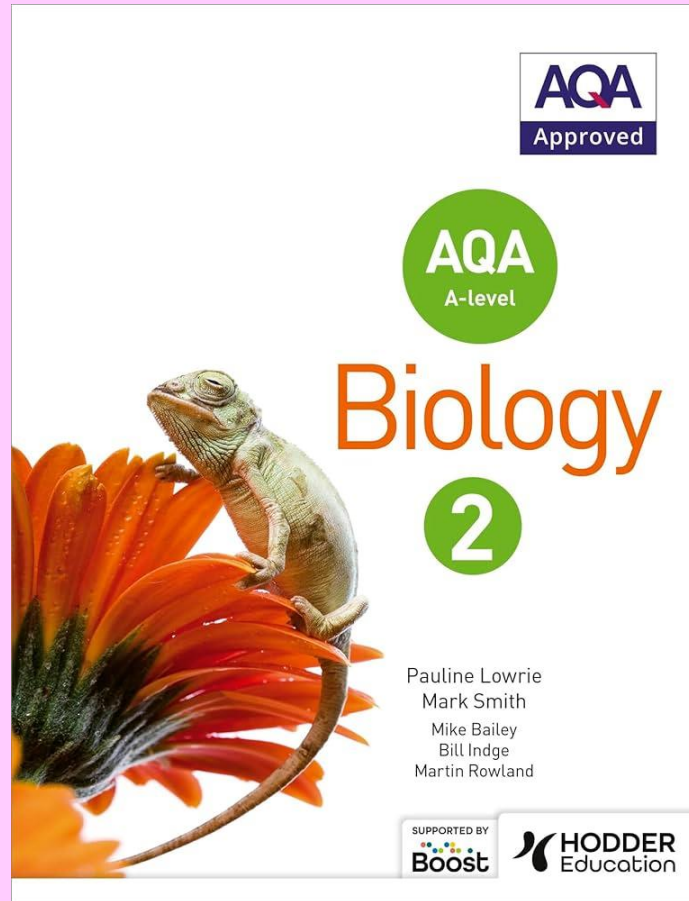
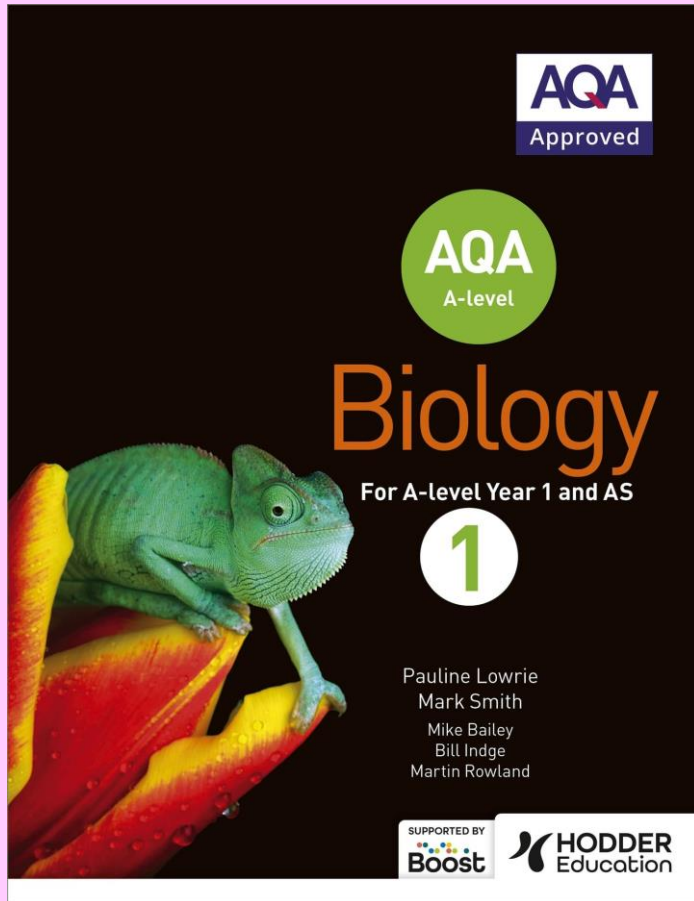
- ❑ Keep up with current biology news/research
- ❑ Each week, someone will explain something they have researched and answer questions
- ❑ Good websites: JSTOR, PubMed, Google Scholar
- ❑ Bookmark anything you find interesting



Learning objectives:

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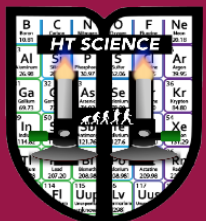
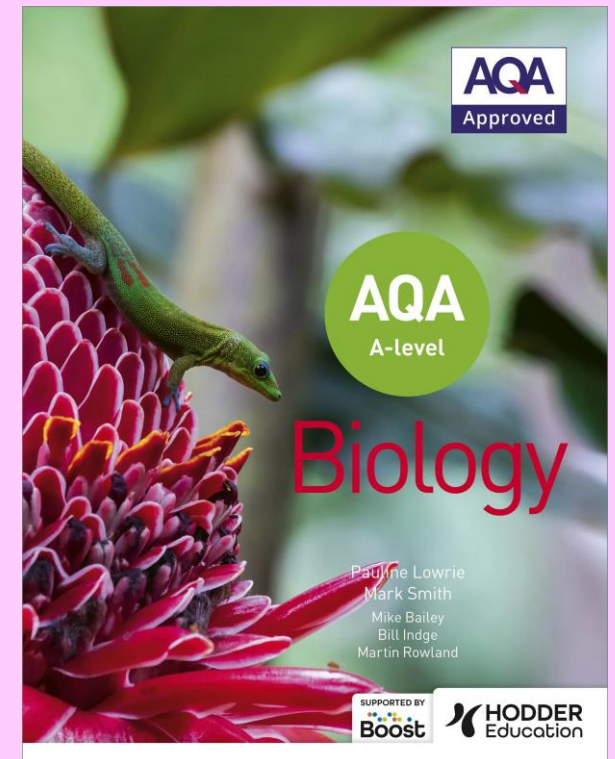
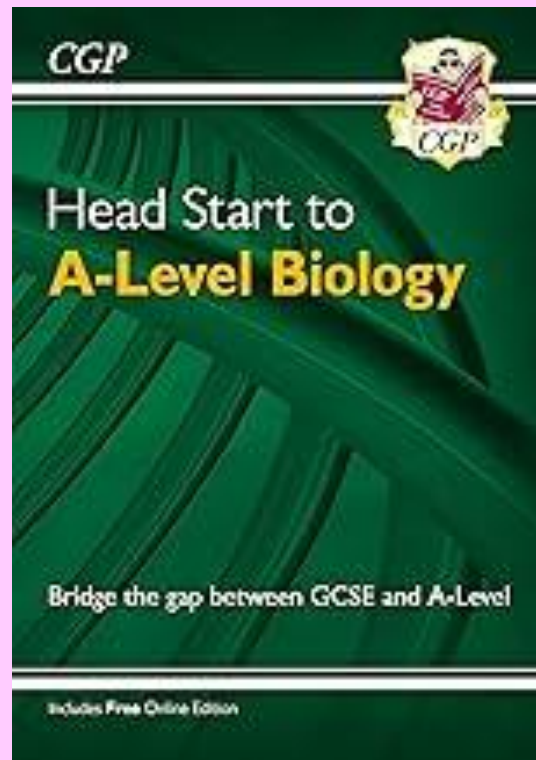
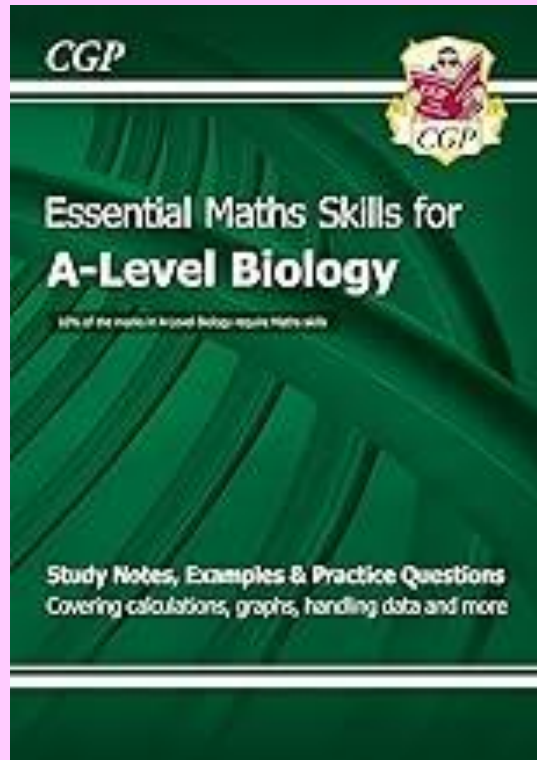
Explanation Textbooks



Learning objectives:

- Discuss the AQA Biology specification and understand the structure of A-Level Biology
- Brief introduction to monosaccharides and disaccharides

Explanation Textbooks

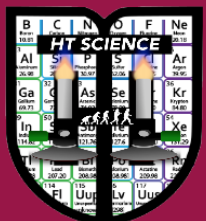
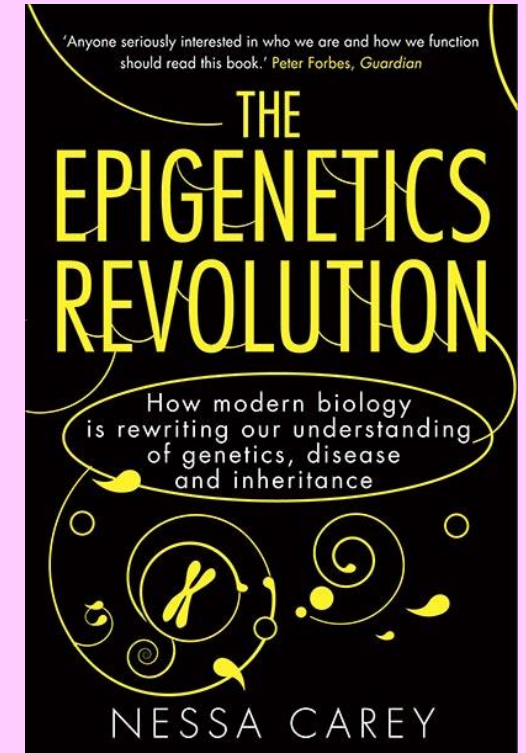
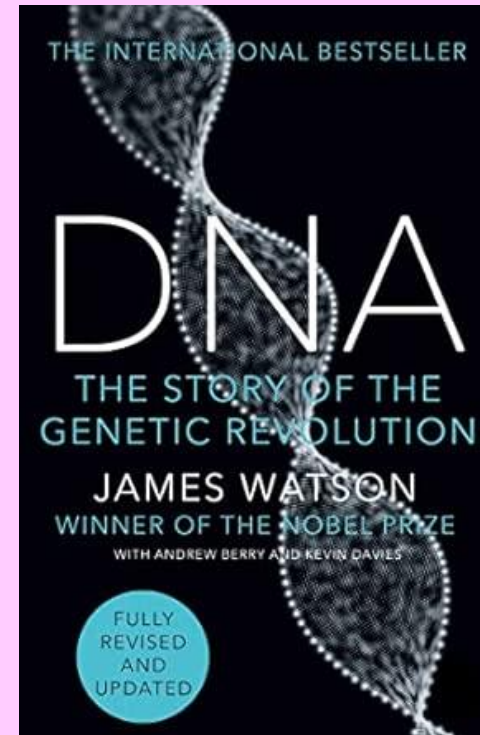
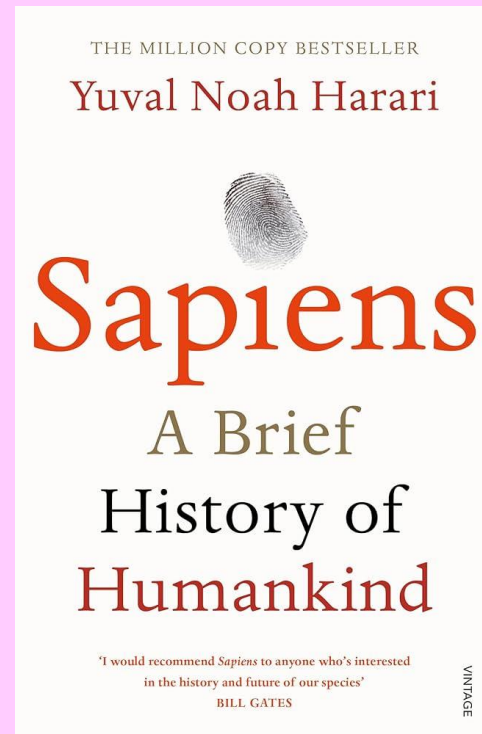
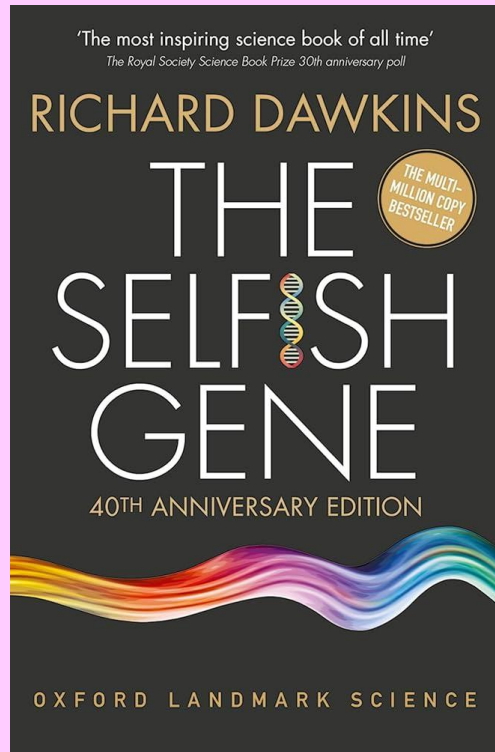


Learning objectives:

- Discuss the AQA Biology specification and understand the structure of A-Level Biology
- Brief introduction to monosaccharides and disaccharides

Explanation

Further Reading



Learning objectives:

- ❑ Discuss the AQA Biology specification and understand the structure of A-Level Biology
- ❑ Brief introduction to monosaccharides and disaccharides