



# Isaac Biology

Lewis Thomson

# Isaac Biology resources



**isaac You work it out.**

About Isaac Question finder Concepts News Events Books Help Log out

My Isaac Explore by learning stage 11-14 GCSE A Level University Explore by subject Physics Maths Chemistry Biology

This site is still under construction. You can [learn more](#) [Feedback here.](#)

Welcome back, L. Thomson!

Dashboard view Teacher Student

**Manage group progress**

- Isaac Biology Challenge
- Teacher Symposium 2025
- 2025 STEM SMART Phase 1 Biology
- 2024 Biology CEB STEMbridge
- 2024 Biology NST STEMbridge

[See all groups](#)

**View scheduled work**

- STEM SMART Biology Week 20 - Circulatory Systems 2 Due in 3 days 2025 STEM SMART Phas...
- STEM SMART Biology Week 21 - Plant Growth & Reproduction Due on Sun, 13 Jul 2025 2025 STEM S...
- STEM SMART Biology Week 22 - Plant Nutrient & Water Transport

[See all assignments](#) [See all tests](#)

**Explore our books**

All

- Step into Physics
- Step Up to GCSE Physics
- Essential GCSE Physics

[See all books](#)

**More in My Isaac**

- Teacher features
- Manage groups
- Set assignments
- Assignment schedule
- Assignment progress
- Set / manage tests

My account

# A Level Biology homepage



 A Level Biology

Try a random question! [Get a different question ↗](#)

 **The Fructose Survival Switch**  
Biology | Biochemistry | Carbohydrates

 A Level Challenge 1   
Further A Practice 1 

 **Question finder**  
Find A Level Biology questions to try by topic and difficulty level.  
[Find questions](#)

 **Question decks by topic**  
Practise specific topics by using our ready-made question decks.  
[View topic question decks](#)

 **Concepts**  
Review the key concepts for A Level Biology.  
[Explore concepts](#)

 **Glossary**  
Use the glossary to understand the vocabulary you need for A Level Biology.  
[Browse the glossary](#)

 **Tests**  
Use tests to practise a range of topics. These tests are available for you to freely attempt.  
[Find a test](#)

 **Biology extension**  
Stretch your understanding of biology with our extension questions that make you think outside the box.  
[View extension questions](#)

# Question finder



A Level Biology >

## Question finder

The questions shown on this page have been filtered to only show those that are relevant to A Level Biology.

[Browse all questions →](#)

**Search questions**

**Filter questions by**

**Learning Stage**

A Level  Further A

**Topic**

Cell Biology  Biochemistry  Genetics  Physiology  Ecology  Evolution  Maths Skills

Showing 30 of 336. [Shuffle questions](#)

<b>A Bacterial Planet</b> Biology   Cell Biology   Mitosis	A Level Challenge 3 Further A Challenge 1
<b>A Biological Rubik's Cube: Levinthal's Paradox of Protein Folding</b> Biology   Biochemistry   Proteins	A Level Challenge 3 Further A Practice 3
<b>ATP and NAD</b> Biology   Biochemistry   Respiration	A Level Practice 3
<b>Action Potentials</b> Biology   Physiology   Sense & Movement	A Level Practice 3
<b>Active Transport</b> Biology   Cell Biology   Membrane Transport	A Level Practice 1
<b>Adaptive Immunity</b> Biology   Physiology   Disease & Immunity	A Level Practice 2
<b>Adenosine Triphosphate (ATP)</b>	A Level Practice 3

# Questions



- Original questions (majority)
- Exam past papers (OCR, CIE)
- Natural Sciences Admissions Assessment (NSAA) past papers

# Questions: topics



## Cell Biology

- Cell Structure
- Mitosis
- Meiosis
- Viruses
- Membrane Transport
- Tissues

## Biochemistry

- Proteins
- Carbohydrates
- Lipids
- Respiration
- Photosynthesis

## Genetics

- DNA replication
- Transcription
- Translation
- Genes & Alleles
- Inheritance
- Biotechnology

## Physiology

- Plants
- Breathing & Circulation
- Hormones
- Digestion & Excretion
- Sense & Movement
- Disease & Immunity

## Ecology

- Populations
- Ecosystems
- Nutrient Cycles
- Biodiversity

## Evolution

- Variation
- Theory
- Phylogenetics

## Maths Skills

- Statistical Tests

# Questions: difficulty



## Difficulty

[Learn more about difficulty levels](#)

Practice 1

Practice 2

Practice 3

Challenge 1

Challenge 2

Challenge 3

- Practice:

- Recall of information, basic calculations
- Common question types
  - Drag & drop
  - Short answer (1 or 2 word)
  - Reorder

- Challenge

- Application, logic & reasoning, problem-solving
- Common question types
  - Item (multiple choice with multiple correct options)
  - Calculation

# Questions: learning stage



## Learning Stage

A Level

- Further A
- More than just A Level biology required
  - May require A Level maths or chemistry



This question involves using exponentials and logarithms , which are part of A Level Maths. For more information please check with your teacher.

# Question decks by topic



## Question decks by topic

### Decks by stage

A Level

### Published ↗

The Biology topics below are ordered to allow for progression of ideas from one question deck to the next (within each section). To find a question deck on a specific topic, use `Ctrl+F` in your browser. You can also click on the links below to jump to the relevant section.

### Decks by subject

Physics

Chemistry

Maths

Biology

- Biochemistry
- Cell Biology
- Ecology
- Evolution
- Genetics
- Physiology
- Statistics in Biology

The "What it contains" column lists the [difficulty levels](#) of the questions and how many there are: for example, "3xP, 6xC" means three "Practice" questions and six "Challenge" questions. Generally, "Practice" questions are recall-based questions that test basic knowledge of a topic, while "Challenge" questions are application-based questions that test the ability to apply that knowledge to an unfamiliar scenario. Some ratings are preliminary and subject to change, so feedback from teachers is very welcome. The table also shows which question types are used in each question deck:

- MCQ: multiple-choice with only one correct answer
- Item: multiple-choice with multiple correct options to select
- Numeric: enter a number (with or without units)
- Symbolic: enter an algebraic expression
- Chemistry: enter a chemical formula or chemical equation
- Short-answer: type a word or combination of words
- Drag-and-drop: drag pre-loaded options into gaps in text or a table
- Reorder: drag pre-loaded options into the correct order

### Biochemistry ^



### Biochemistry ^

Topic	What it contains	Link
Proteins	2xP, 5xC 	<a href="#">View question deck</a>
Enzymes	1xP, 5xC 	<a href="#">View question deck</a>
Carbohydrates	6xP 	<a href="#">View question deck</a>
Lipids	2xP, 5xC 	<a href="#">View question deck</a>
Respiration 1	7xP 	<a href="#">View question deck</a>
Respiration 2	6xP, 1xC 	<a href="#">View question deck</a>
Photosynthesis 1	5xP, 1xC 	<a href="#">View question deck</a>
Photosynthesis 2	5xP, 2xC 	<a href="#">View question deck</a>



### Cell Biology ^

Topic	What it contains	Link
Cell Structure 1	10xP	<a href="#">View question deck</a>

# Concept pages



A Level Biology >

## Concepts

The concepts shown on this page have been filtered to only show those that are relevant to A Level Biology. You can browse all concepts [here](#).

Search concepts

Filter by topic

All 7

- Cell Biology 1
- Evolution 2
- Maths Skills 4

Showing 7 results

- An Introduction to Statistics in Biology**  
Why we use statistical tests, when to use each test, and how to interpret the results.
- Chi-squared Tests in Biology**  
When and how to use chi-squared tests in biology.
- Phylogenetic Trees**  
How to interpret phylogenetic trees
- Spearman's Rank Correlation Coefficient in Biology**  
When and how to use Spearman's rank correlation coefficient in biology.
- Student's t-test (Unpaired Samples) in Biology**  
When and how to use Student's t-test (unpaired samples) in biology.
- The Eukaryotic Cytoskeleton**  
The structures that make up the eukaryotic cytoskeleton and their functions in the cell
- The Hardy-Weinberg Principle**  
What the Hardy-Weinberg principle is, and how to use it to calculate expected genotype frequencies.

# Glossary



A Level Biology >

## A Level Biology Glossary

Use our glossary to find definitions of important words and phrases.

∞ ⌂

Search glossary

Switch learning stage

A Level

# A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

#	<b>#</b>	<u><a href="#">5' cap</a></u>	A methylated guanine nucleotide connected to the 5' end of an mRNA molecule via a 5' to 5' triphosphate linkage.
A	<b>A</b>	<u><a href="#">Active transport</a></u>	The movement of ions/molecules across a membrane up/against their concentration gradient (i.e. from a low concentration to a high concentration).
		<u><a href="#">ADP</a></u>	(adenosine diphosphate) A nucleotide composed of the nitrogenous base adenine, a pentose sugar, and two phosphate groups. Formed by the hydrolysis of ATP in a reaction that also produces inorganic phosphate and releases energy.
		<u><a href="#">Alga</a></u>	(plural: algae) A member of the algae group.
		<u><a href="#">Algae</a></u>	A group of photosynthetic eukaryotic organisms (including both unicellular and multicellular organisms). The term can also be used to refer to organisms within this group.
		<u><a href="#">Allele</a></u>	One of several (two or more) versions of a gene that exist in a population.
		<u><a href="#">Amino acid</a></u>	An organic molecule that contains an amino group ( $\text{NH}_2$ ) and a carboxyl group ( $\text{COOH}$ ).

# Tests



A Level Biology >

## Practice tests

This page lists tests you can take whenever you'd like to practise your skills and check your understanding.

Search practice tests

e.g. Practice

You can see all of the tests that you have in progress or have completed in your My Isaac:

[My tests →](#)

 <b>Biology Admissions Practice 1</b>	<a href="#">View test</a>
 <b>Biology Admissions Practice 2</b>	<a href="#">View test</a>
 <b>Biology Admissions Practice 3</b>	<a href="#">View test</a>
 <b>Biology Admissions Practice 4</b>	<a href="#">View test</a>
 <b>Biology Admissions Practice 5</b>	<a href="#">View test</a>
 <b>Biology Admissions Practice 6</b>	<a href="#">View test</a>
 <b>Biology Admissions Practice 7</b>	<a href="#">View test</a>

# Extension questions



 **Biology Extension Questions**

[Go to homepage](#) →

On this page you can find A Level (or equivalent) questions that will help you think about biological topics on a deeper level, by exploring interesting questions like 'Why don't humans photosynthesise?' and 'How fast would ET run?'. Each question is split into multiple parts, with each part building on the previous part to help you gradually think through and answer the overall question.

These questions were written by Dr Andrew Catherall-Ostler, supported by the Isaac Newton Trust.

The questions are grouped by field. You can use the links below to jump to the questions within that field.

[Biochemistry](#); [Cell Biology](#); [Ecology](#); [Genetics](#); [Physiology](#); [Mathematical Biology](#)

## New for 2025-26: Isaac Biology Monthly Challenges

Each month, from October to April, two biology extension questions are set as the challenges for that month. Participants who solve these questions will be awarded official Isaac Science certificates to recognise their achievement (Bronze Award = 4 questions solved; Silver Award = 8 questions solved; Gold Award = 12 questions solved; Platinum Award = all 14 questions solved).

If you would like to join this group, you can do so by clicking on the button below and completing the form. Once you have clicked on the button below, please do not share that link with anyone else, as this link will be unique to you.

[Join the Isaac Biology Monthly Challenges group](#)

Biochemistry ▾

[A Biological Rubik's Cube: Levinthal's Paradox of Protein Folding](#)   [How Fast Could an Enzyme Be?](#)   [The Fructose Survival Switch](#)

[Why Don't Humans Photosynthesise?](#)   [Why Don't Plants Get Fat?](#)

# Isaac Biology Monthly Challenges



 **Biology Extension Questions**

[Go to homepage](#) →

On this page you can find A Level (or equivalent) questions that will help you think about biological topics on a deeper level, by exploring interesting questions like 'Why don't humans photosynthesise?' and 'How fast would ET run?'. Each question is split into multiple parts, with each part building on the previous part to help you gradually think through and answer the overall question.

These questions were written by Dr Andrew Catherall-Ostler, supported by the Isaac Newton Trust.

The questions are grouped by field. You can use the links below to jump to the questions within that field.

[Biochemistry](#); [Cell Biology](#); [Ecology](#); [Genetics](#); [Physiology](#); [Mathematical Biology](#)

## New for 2025-26: Isaac Biology Monthly Challenges

Each month, from October to April, two biology extension questions are set as the challenges for that month. Participants who solve these questions will be awarded official Isaac Science certificates to recognise their achievement (Bronze Award = 4 questions solved; Silver Award = 8 questions solved; Gold Award = 12 questions solved; Platinum Award = all 14 questions solved).

If you would like to join this group, you can do so by clicking on the button below and completing the form. Once you have clicked on the button below, please do not share that link with anyone else, as this link will be unique to you.

[Join the Isaac Biology Monthly Challenges group](#)

Biochemistry ▾

[A Biological Rubik's Cube: Levinthal's Paradox of Protein Folding](#)   [How Fast Could an Enzyme Be?](#)   [The Fructose Survival Switch](#)

[Why Don't Humans Photosynthesise?](#)   [Why Don't Plants Get Fat?](#)

# Next steps for Isaac Biology



1. A Level book
2. Expanding to include GCSE content
3. Expanding to include KS3 content



Biology WhatsApp  
group

# Thank you!

Lewis Thomson  
[lewis@isaacscience.org](mailto:lewis@isaacscience.org)