



Isaac Biology

Lewis Thomson

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Session plan



- Overview of Isaac Biology resources
- Try some tricky problems
- Worked example(s)

Isaac Biology resources



You work it out.

[About Isaac](#) [Question finder](#) [Concepts](#) [News](#) [Events](#) [Books](#) [Help](#) [Settings](#) [Log out](#)

LT

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](#) [A Level Biology](#) [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



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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
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Review the key concepts for A Level Biology.
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[View extension questions](#)

Question finder





A Level Biology >

 **Question finder**

Help

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](#) ↻

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

☐ Practice 2 2 green hexagons followed by 1 white hexagon.

☐ Practice 3 3 green hexagons.

☐ Challenge 1 1 orange square followed by 2 white squares.

☐ Challenge 2 2 orange squares followed by 1 white square.

☐ Challenge 3 3 orange squares.

- 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

Decks by subject

Physics

Chemistry

Maths

Biology

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.

- 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, "3×P, 6×C" 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	2×P, 5×C 	View question deck
Enzymes	1×P, 5×C 	View question deck
Carbohydrates	6×P 	View question deck
Lipids	2×P, 5×C 	View question deck
Respiration 1	7×P 	View question deck
Respiration 2	6×P, 1×C 	View question deck
Photosynthesis 1	5×P, 1×C 	View question deck
Photosynthesis 2	5×P, 2×C 	View question deck



Cell Biology ^

Topic	What it contains	Link
Cell Structure 1	10×P	View question deck

Concept pages



A Level Biology >



Concepts

Search concepts

e.g. Cell



Filter by topic

All 6

Cell Biology 1

Evolution 1

Maths Skills 4

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

[Browse all concepts](#) →



Showing 6 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.



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

e.g. Cell



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

#

[5' cap](#)

A methylated guanine nucleotide connected to the 5' end of an mRNA molecule via a 5' to 5' triphosphate linkage.

A

[Active transport](#)

The movement of ions/molecules across a membrane up/against their concentration gradient (i.e. from a low concentration to a high concentration).

[ADP](#)

(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.

[Alga](#)

(plural: algae) A member of the algae group.

[Algae](#)

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.

[Allele](#)

One of several (two or more) versions of a gene that exist in a population.

[Amino acid](#)

An organic molecule that contains an amino group (NH_2) and a carboxyl group (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 →



Biology Admissions Practice 1

View test



Biology Admissions Practice 2

View test



Biology Admissions Practice 3

View test



Biology Admissions Practice 4

View test



Biology Admissions Practice 5

View test



Biology Admissions Practice 6

View test



Biology Admissions Practice 7

View test



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Extension questions



Biology Extension Questions

[Go to homepage](#)



On this page you can find 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](#)

If you would like to give us feedback on any of these questions, please do so using [this form \(external link\)](#).

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?](#)



Cell Biology ^

[Measuring the Endoplasmic Reticulum](#)



Ecology ^

A Level Biology homepage



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Biology Sample Questions



25 IPTS: Biology Sample Questions



Types of Cells

Biology | Cell Biology | Cell Structure

A Level Practice 1



Cell Division and Cell Numbers

Biology | Cell Biology | Mitosis

A Level Challenge 1



Enzymes

Biology | Biochemistry | Proteins

A Level Practice 1



Protein Primary Structure

Biology | Biochemistry | Proteins

A Level Challenge 1



Mutations: Types & Effects

Biology | Genetics | Genes & Alleles

A Level Practice 2



Dominant and Recessive Conditions

Biology | Genetics | Inheritance

A Level Challenge 2



Energy Transfer Efficiency

Biology | Ecology | Ecosystems

A Level Practice 2



Evolutionary Relationships

Biology | Evolution | Phylogenetics

A Level Challenge 2



Sarcomere Structure

Biology | Physiology | Sense & Movement

A Level Practice 3



The Resting Membrane Potential

Biology | Physiology | Sense & Movement

A Level Challenge 3



Biology Tricky Problems

slido.com
#3229 470



25 IPTS: Biology Tricky Problems



Sexual Reproduction & Genetic Variation

Biology | Evolution | Variation



Virus vs Host Cell Comparisons

Biology | Cell Biology | Viruses



SA:V Ratio and Gas Exchange

Biology | Physiology | Breathing & Circulation



Human Antibody Diversity

Biology | Physiology | Disease & Immunity



Premature Stop Codons

Biology | Genetics | Genes & Alleles



Plotting Exponential Growth

Biology | Ecology | Populations



Tertiary Structure Interactions 1

Biology | Biochemistry | Proteins



Tertiary Structure Interactions 2

Biology | Biochemistry | Proteins



DNA Packaging

Biology | Genetics | DNA replication



Cardiovascular Physiology in Space

Biology | Physiology

- Quantifying the variation that meiosis produces
- Quantifying the differences between viruses and host cells
- Quantifying the relationship between size and SA:V ratio
- Quantifying the number of possible antibodies
- Investigating the consequences of mutations
- Understanding the need for logs (and how to use them)
- Identifying amino acids that will form particular bonds/interactions
- Identifying amino acids that will form particular bonds/interactions
- Understanding how DNA is packed into small nuclei
- Understanding the effects of zero gravity on human physiology

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!

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