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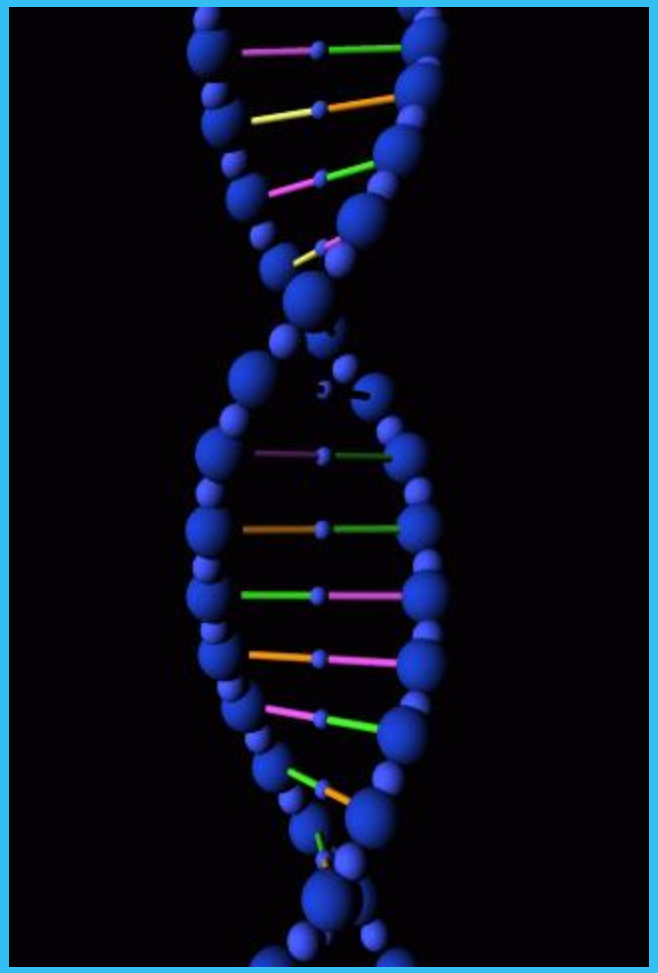
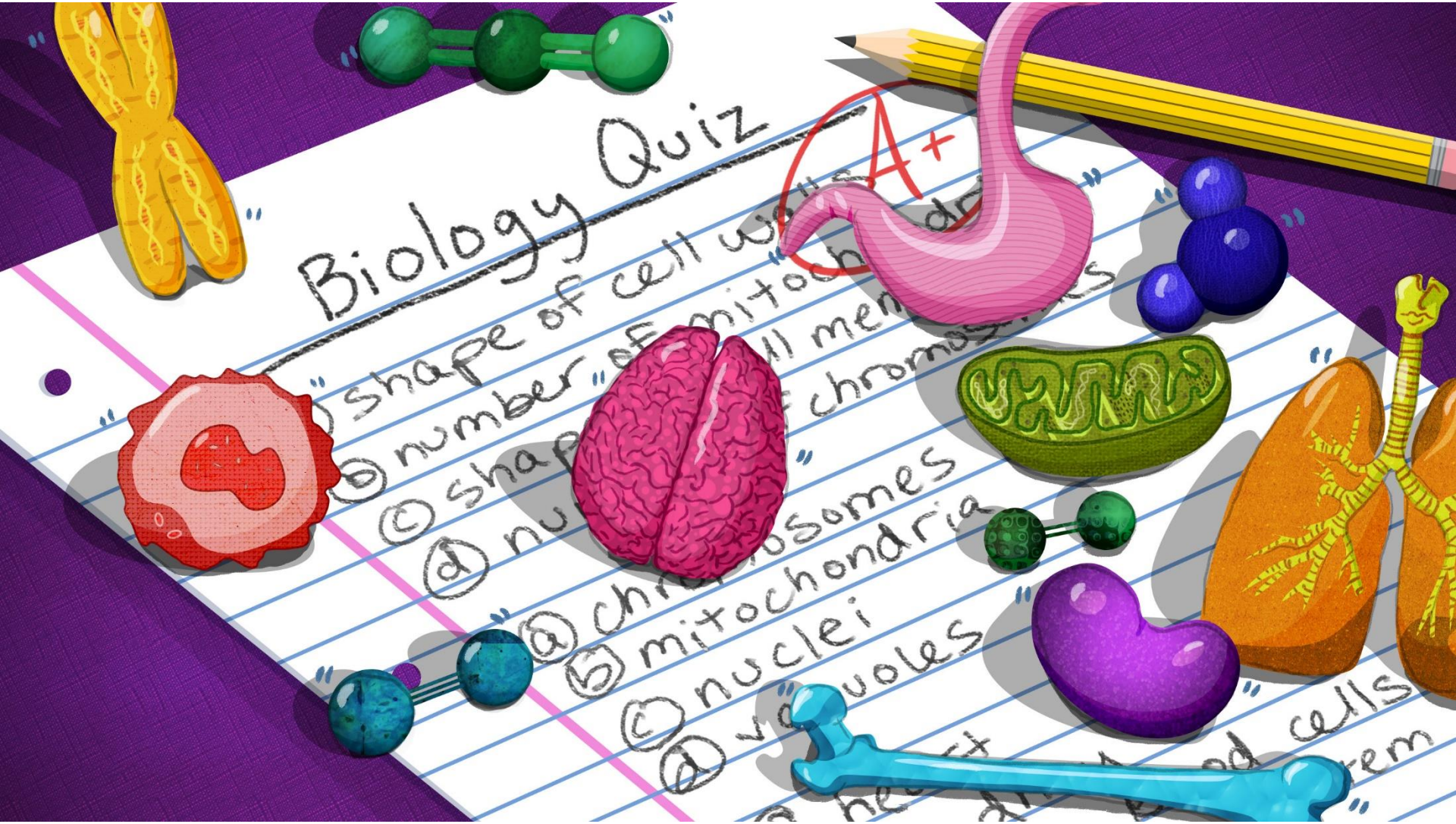
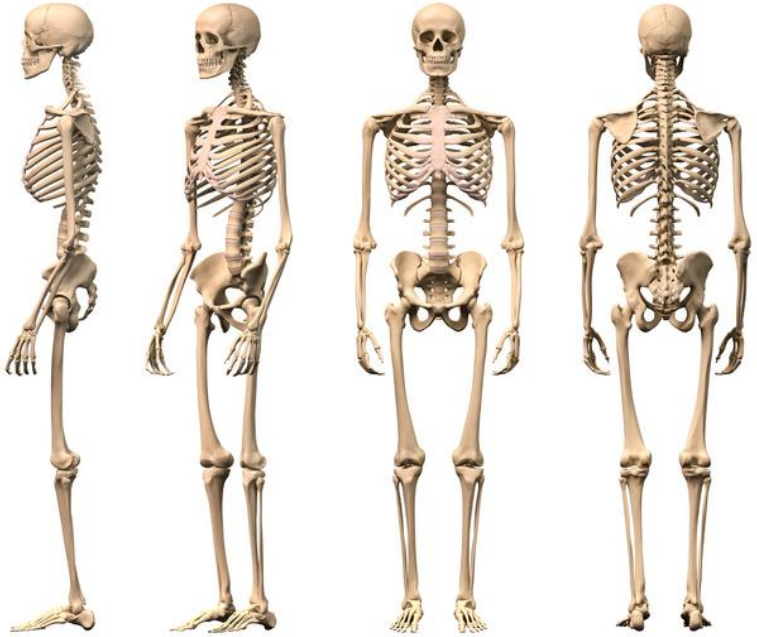


Welcome to A-level Biology


Biology Quiz
A+
shape of cell
number
mitochondria
nuclei
vacuoles

Q.1. What is the longest bone in the body?



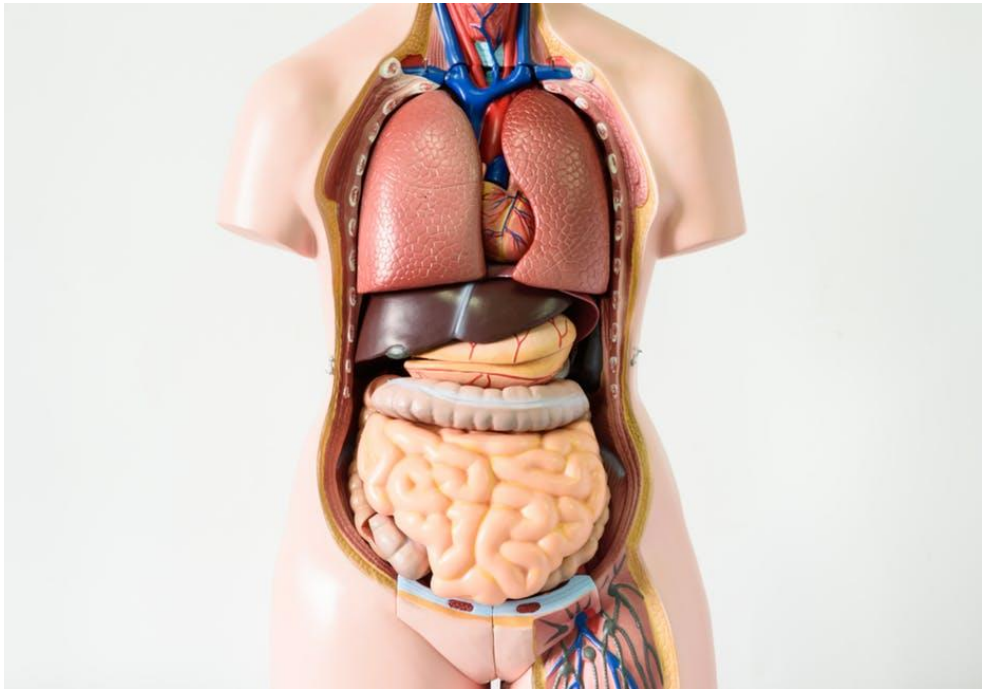
A. Tibia

B. Fibula

C. Femur

D. Phalanges

Q.2. What is the largest internal organ in the body?



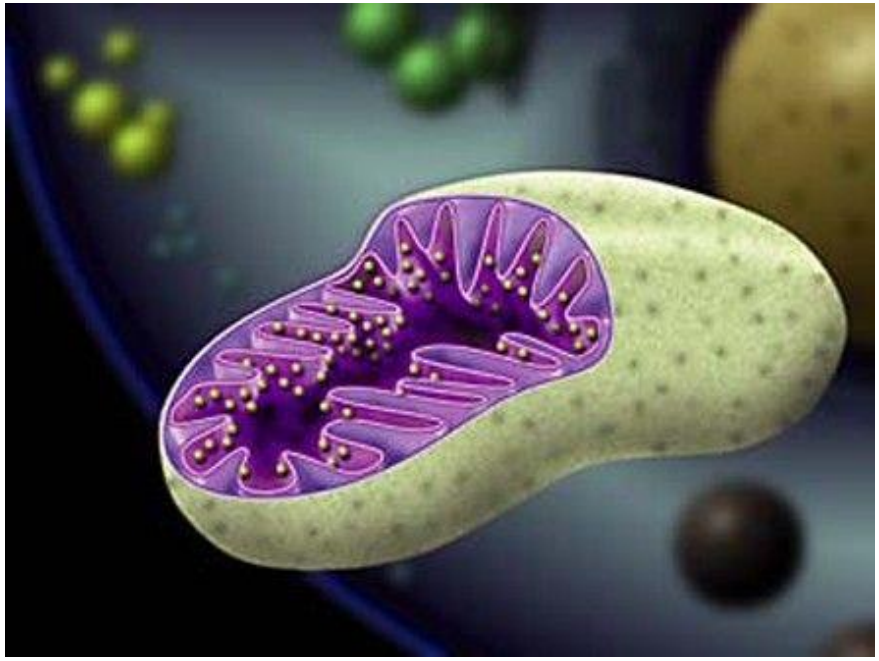
A. Lungs

B. Stomach

C. Liver

D. Intestines

Q.3. What is name of this organelle?



A. Chloroplast

B. Mitochondrion

C. Lysosome

D. Ribosome

Q.4. What am I?

A. Muscle cell

B. Nerve cell

C. Root hair cell

D. Sperm cell

Q.5. How many chromosomes are there in each body cell?

A. 48 pairs

B. 32 pairs

C. 26 pairs

D. 23 pairs

Q.6. What does a vaccine stimulate white blood cells to produce?

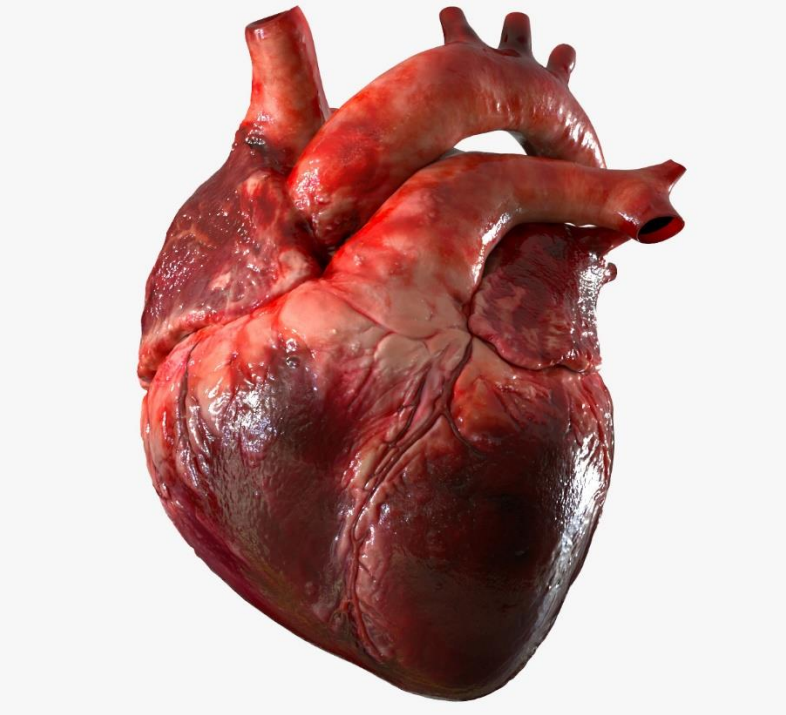
A. Antigens

B. Antitoxins

C. Antivaccines

D. Antibodies

Q.7. The upper chambers of the heart are called …



A. Ventricles

B. Atria

C. Aortic arches

D. Valves

Q.8. Which of these muscles is the strongest?

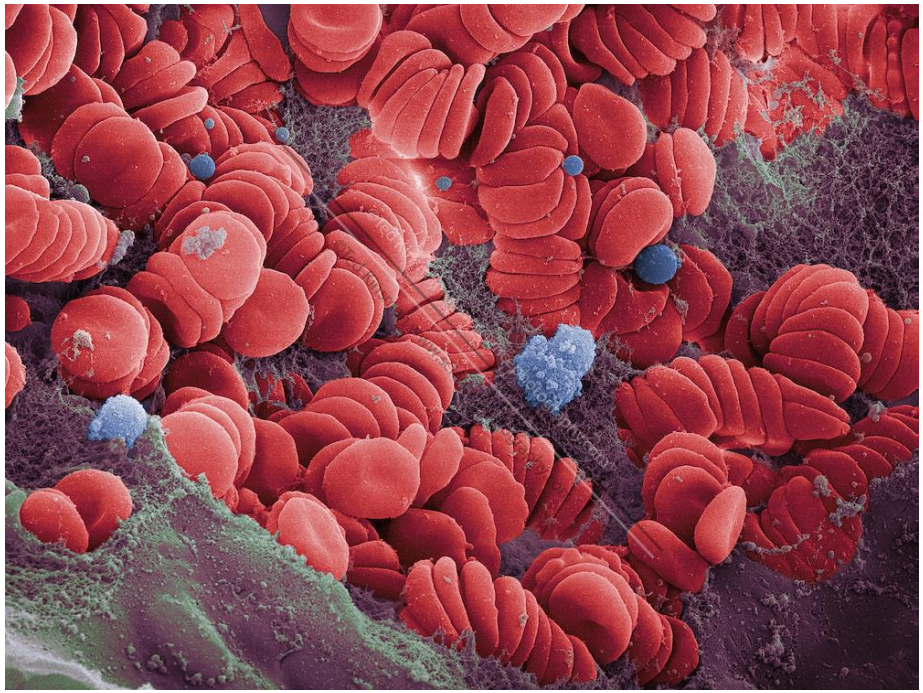
A. Biceps

B. Jaw

C. Hamstring

D. Buttocks

Q.9. Where in the body are red blood cells made?



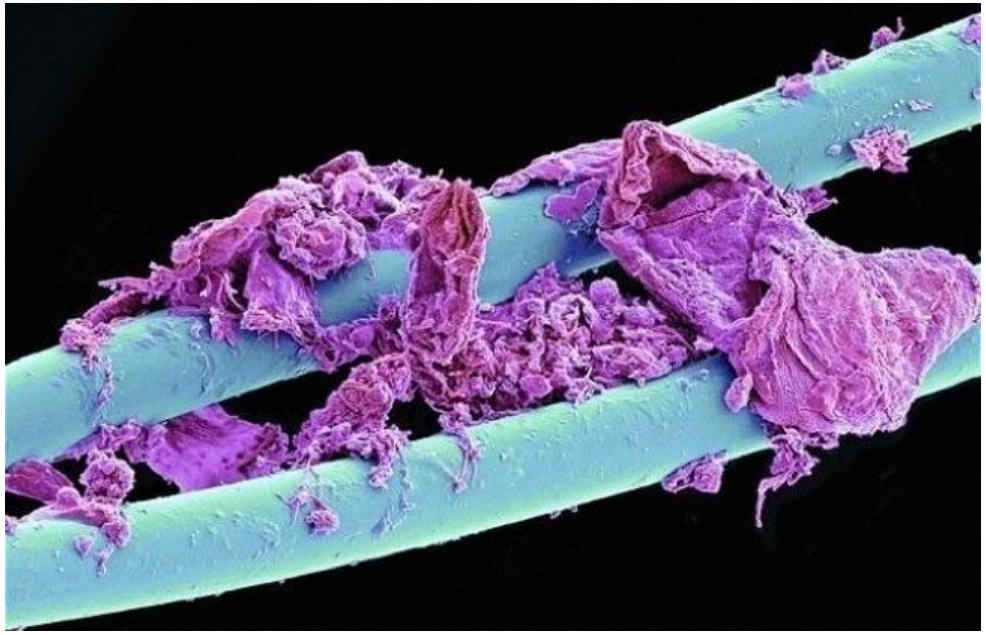
A. Heart

B. Bone marrow

C. Liver

D. Brain

Q.10. What does this scanning electron microscope image show?



A. Frayed wire

B. Hair follicle covered in shampoo

C. Used dental floss

D. Chopsticks with satay sauce

Q.11. Which of the following is not part of the digestive system?

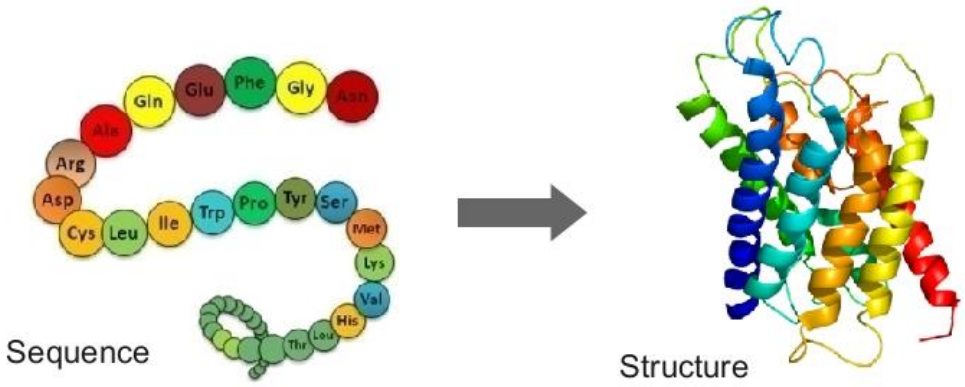
A. Trachea

B. Oesophagus

C. Intestine

D. Stomach

Q.12. Proteins are made up of …



A. Glycerol

B. Sugars

C. Fatty acids

D. Amino acids

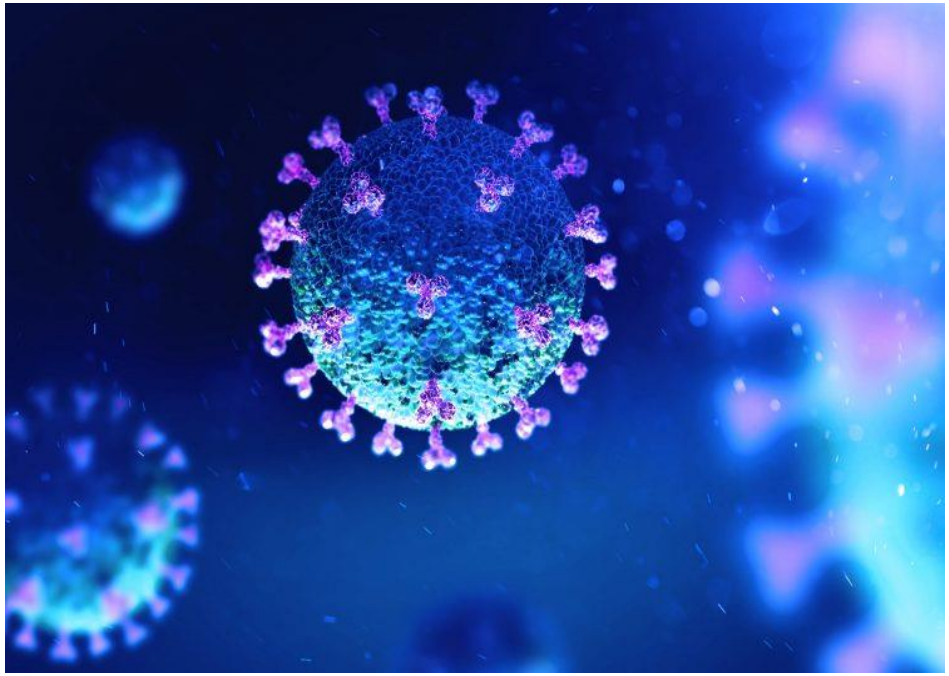
Q.13. It is impossible for a human to …

A. Swallow upside down

B. Sneeze with eyes open

C. Lick your elbow

Q.14. What is a pandemic?



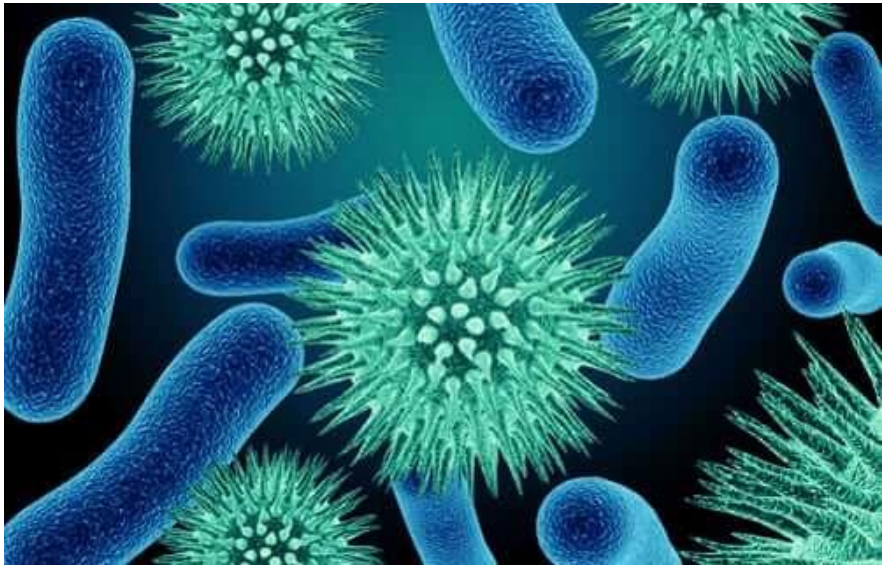
A. An outbreak of disease in one country

B. An outbreak that is confined to one area

C. An outbreak of disease in several countries

D. An outbreak of disease in pandas

Q.15. What is a pathogen?



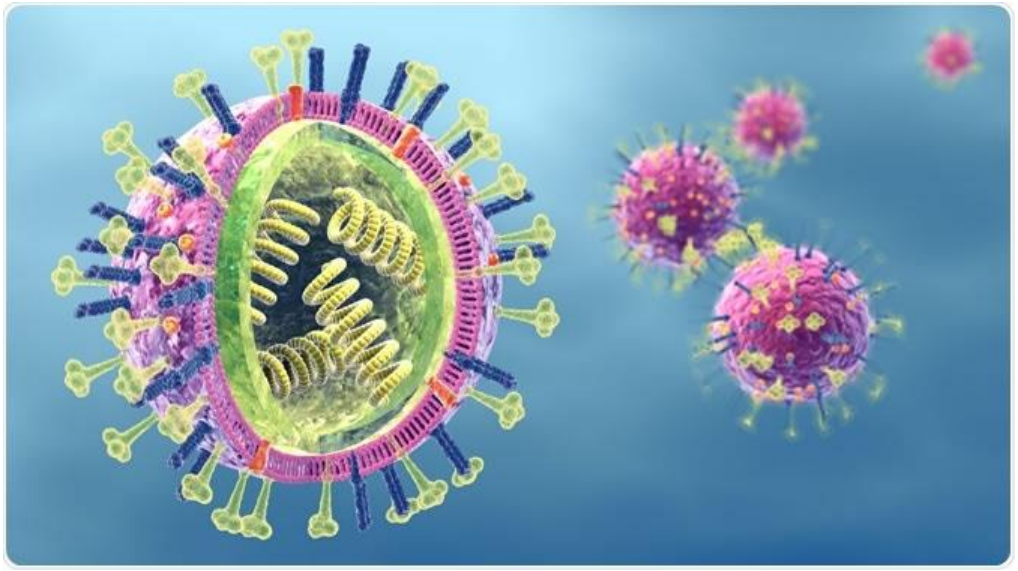
A. A biological catalyst

B. A microorganism that causes disease

C. A harmful chemical

D. A macrophage

Q.16. Which group of pathogens can only exist by hijacking a cell?



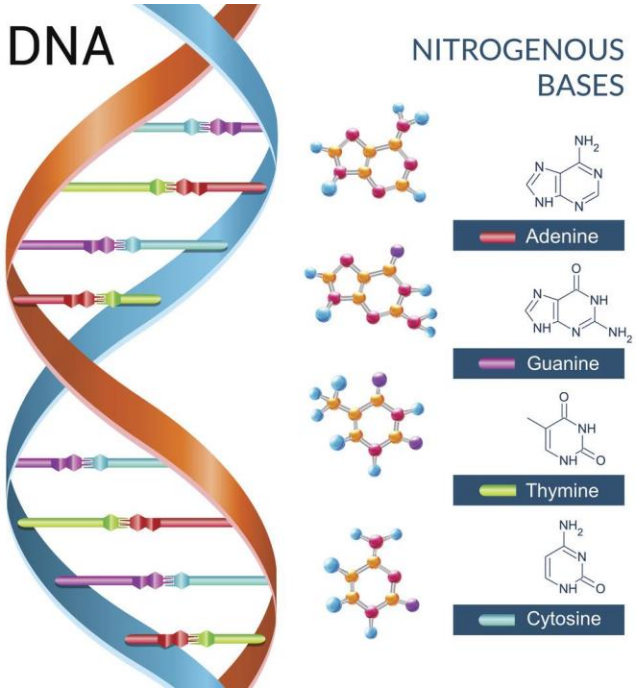
A. Bacteria

B. Viruses

C. Protista

D. Fungi

Q.17. Where would you find most of the DNA in a cell?



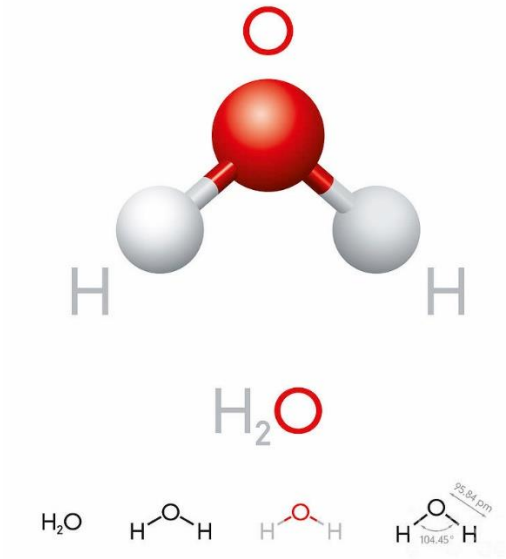
A. Ribosome

B. Mitochondrion

C. Nucleus

D. Cytoplasm

Q.18. What is the name of the process where water moves down a concentration gradient?



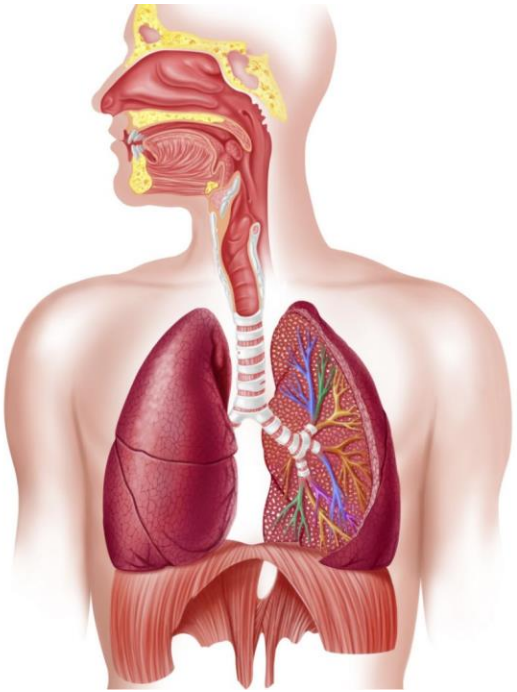
A. Diffusion

B. Active Transport

C. Osmosis

D. Hydration

Q.19. Which structure does air not pass through on its way to the lungs?



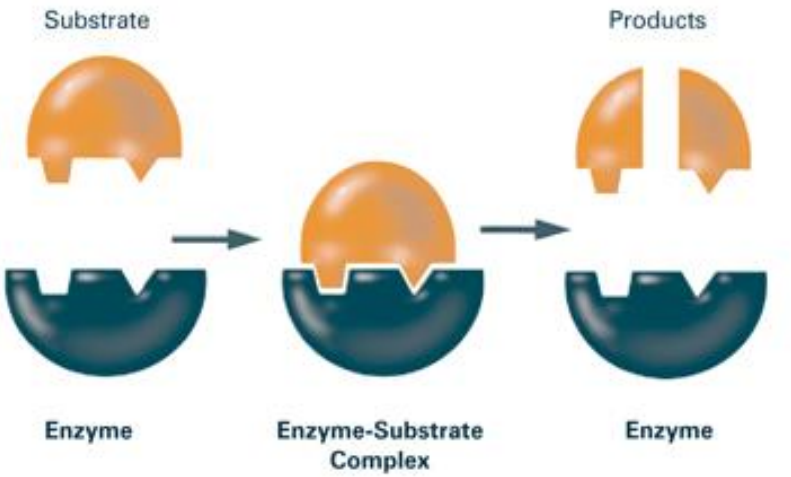
A. Trachea

B. Heart

C. Pharynx

D. Bronchus

Q.20. What is an enzyme?



A. A carbohydrate

B. A catalyst

C. The speed of a reaction

D. The initial energy of a reaction

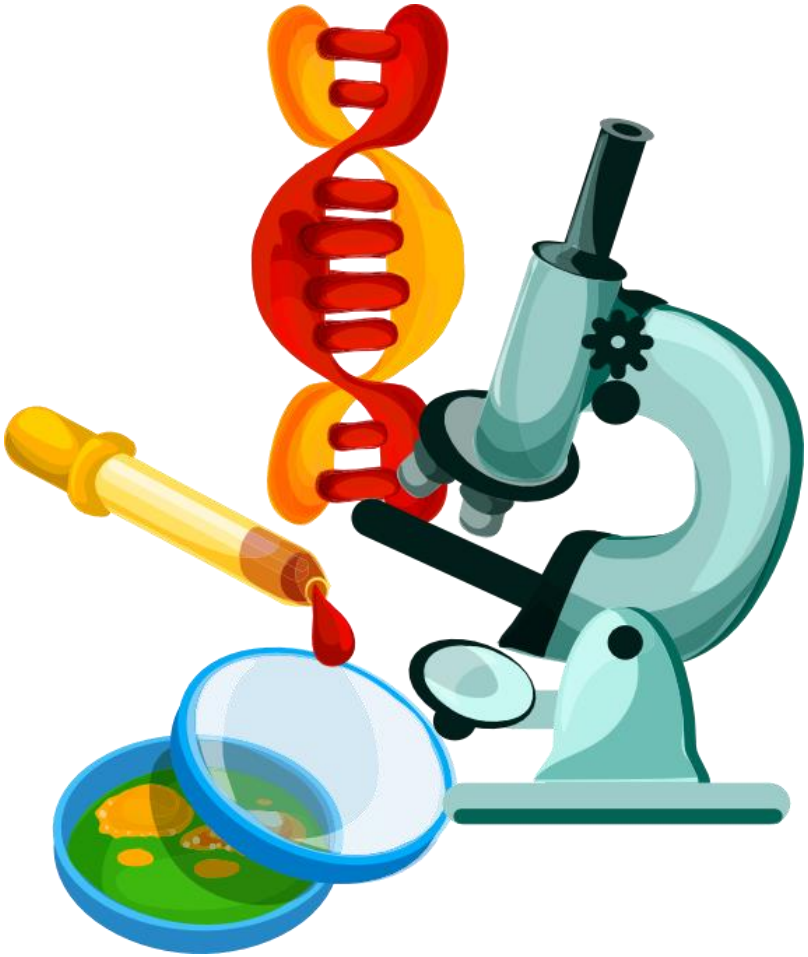
Why study Biology?

The best answer is because you are interested in the subject and want to learn more.

Why study Biology?

Biology is relevant to our everyday experience:

- Medical advances
- Addressing the needs of a growing population
- Meeting the challenges of a reduced biodiversity
- Biotechnology advances



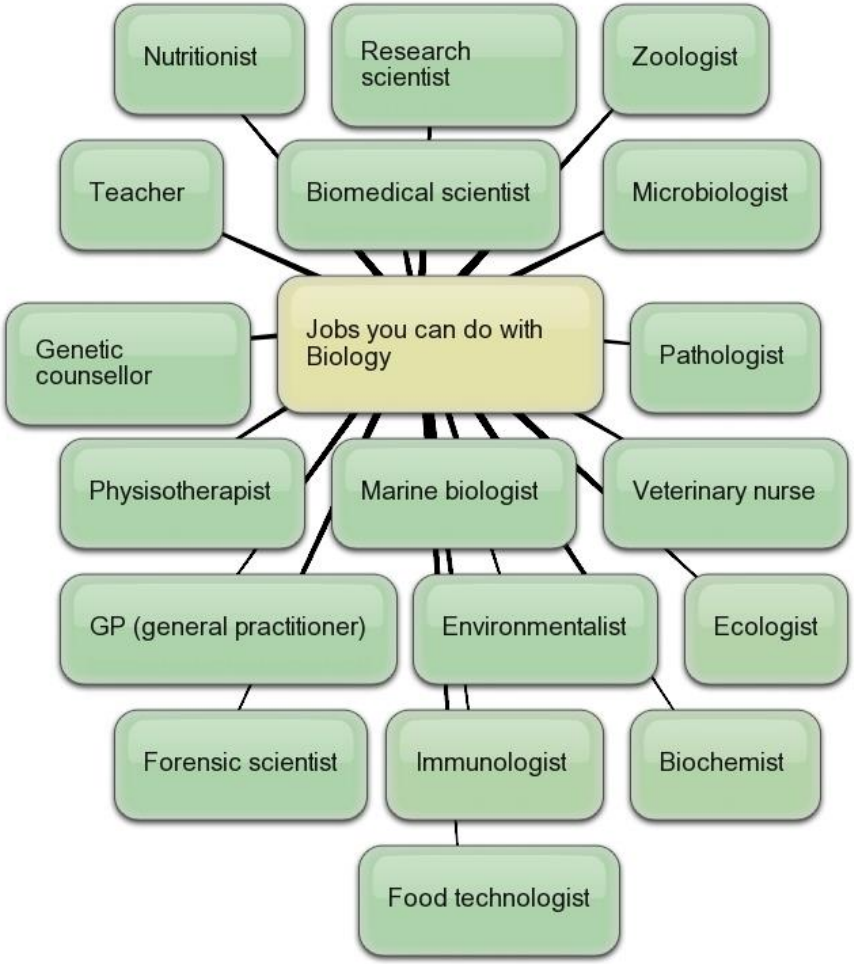
Transferable Skills

- A-level Biology gives you a detailed insight into the key concepts and principles that underpin our understanding of living organisms and the way they interact with each other and their surroundings.

- It will challenge and develop your *problem solving, numeracy, communication, experimentation, analytical and teamwork skills*.

- It is one of the subjects most commonly required or preferred by universities as an entry requirement for degree courses.

What can you do with a Biology degree?



Entry Requirements

- Grade 6 or higher for GCSE Biology (or grade 6/6 in GCSE Combined Science).
- Grade 5 or higher for GCSE Mathematics.
- The course has some overlap with A-Level Mathematics, with up to 10% of the marks available within written assessments involving maths skills.

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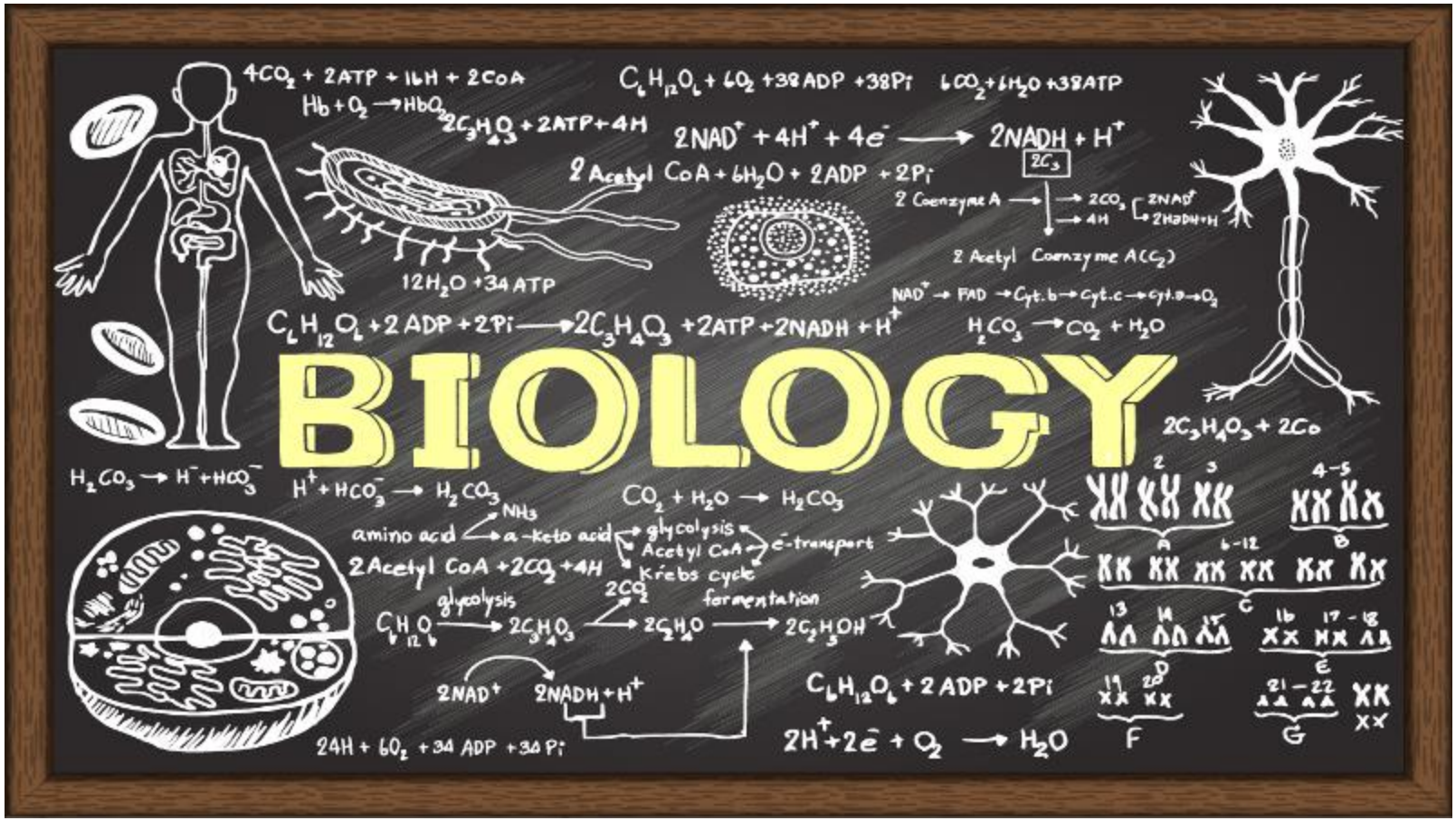
What you will study …



Year 1

- **Biological molecules** (monomers & polymers, carbohydrates, proteins, lipids, nucleic acids, ATP, water)
- **Cells** (structure of prokaryotic and eukaryotic cells; viruses; methods of studying cells; the cell cycle and cell division, transport across membranes, cell recognition and the immune system)
- **Exchange** (surface area to volume ratio, gas exchange, digestion and absorption, mass transport)
- **Genetics** (DNA, genes & chromosomes, DNA & protein synthesis, genetic diversity, taxonomy, biodiversity)

Year 2

- **Energy transfers between organisms** (photosynthesis, respiration, energy and ecosystems, nutrient cycles)
- **Responses to environment** (survival and response; receptors; control of heart rate; the nervous system; muscle structure and function, homeostasis)
- **Population genetics & evolution** (inheritance; populations; speciation; ecosystems)
- **Control of gene expression** (mutation; totipotency; transcription & translation; cancer genetics; genome research)

Terminal Assessment

Assessments

markssphysicshelp MPH

Paper 1	Paper 2	Paper 3
What's assessed • Any content from topics 1– 4, including relevant practical skills	**What's assessed** • Any content from topics 5–8, including relevant practical skills	**What's assessed** • Any content from topics 1–8, including relevant practical skills
Assessed • written exam: 2 hours • 91 marks • 35% of A-level	**Assessed** • written exam: 2 hours • 91 marks • 35% of A-level	**Assessed** • written exam: 2 hours • 78 marks • 30% of A-level
Questions • 76 marks: a mixture of short and long answer questions • 15 marks: extended response questions	**Questions** • 76 marks: a mixture of short and long answer questions • 15 marks: comprehension question	**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

Practical Endorsement

A separate endorsement of practical skills will be taken alongside the A-level.

This will be assessed by teachers and will be based on direct observation of students' competency in a range of skills that are not assessable in written exams.

Practical Endorsement

The application of knowledge gained from the practicals is assessed during the written exams.

Each practical will be formally recorded in your laboratory book and it is essential that these are kept up to date – you will be given guidance on how to do this in your first practical lesson.

If you successfully complete all the required practicals, you will receive a practical endorsement from the exam board in addition to your A-level grade.

A practical endorsement is a requirement of some universities when studying Science-related courses.

Practical Endorsement

The following practicals must be carried out by all students taking this course. Written papers will assess knowledge and understanding of these, and the skills exemplified within each practical.

Required activity	Apparatus and technique reference
1. Investigation into the effect of a named variable on the rate of an enzyme-controlled reaction	a, b, c, f, l
2. Preparation of stained squashes of cells from plant root tips; set-up and use of an optical microscope to identify the stages of mitosis in these stained squashes and calculation of a mitotic index	d, e, f
3. Production of a dilution series of a solute to produce a calibration curve with which to identify the water potential of plant tissue	c, h, j, l
4. Investigation into the effect of a named variable on the permeability of cell-surface membranes	a, b, c, j, l
5. Dissection of animal or plant gas exchange or mass transport system or of organ within such a system	e, h, j
6. Use of aseptic techniques to investigate the effect of antimicrobial substances on microbial growth	c, i
7. Use of chromatography to investigate the pigments isolated from leaves of different plants, eg leaves from shade-tolerant and shade-intolerant plants or leaves of different colours	b, c, g
8. Investigation into the effect of a named factor on the rate of dehydrogenase activity in extracts of chloroplasts	a, b, c
9. Investigation into the effect of a named variable on the rate of respiration of cultures of single-celled organisms	a, b, c, i
10. Investigation into the effect of an environmental variable on the movement of an animal using either a choice chamber or a maze	h
11. Production of a dilution series of a glucose solution and use of colorimetric techniques to produce a calibration curve with which to identify the concentration of glucose in an unknown 'urine' sample	b, c, f
12. Investigation into the effect of a named environmental factor on the distribution of a given species	a, b, h, k, l

Field Trip

The fieldwork aspect of the course will be completed at Woolley Firs Environmental Centre in Maidenhead during early October.

Students will gain experience in using a range of fieldwork equipment and methods of sampling to obtain data which will then be statistically analysed.

The cost of the trip is £15.

To succeed at A-level Biology

- Be interested and enthusiastic
- Be organised
- Consolidate your learning

  Commit to spending one hour of independent study time per hour of teacher contact time
- Take responsibility for your own learning
- Ask for help and attend Biology clinic
- Conduct wider reading

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Too Much Information?

Hyperventilating …

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Transition Tasks

Transition Tasks

The transition pack contains several tasks to prepare you for the start of your course in September.

- **Task 1: Entry test**
- **Task 2: Essay**
- **Task 3: Book review**
- **Task 4: Textbook and folder check**

You are expected to complete all of the above tasks.

They should be submitted to your teacher at the start of your first Biology lesson in September.

Task 1: Entry Test

You will be required to write an Entry test in your first Biology lesson in September.

The test will check your knowledge of key GCSE concepts.

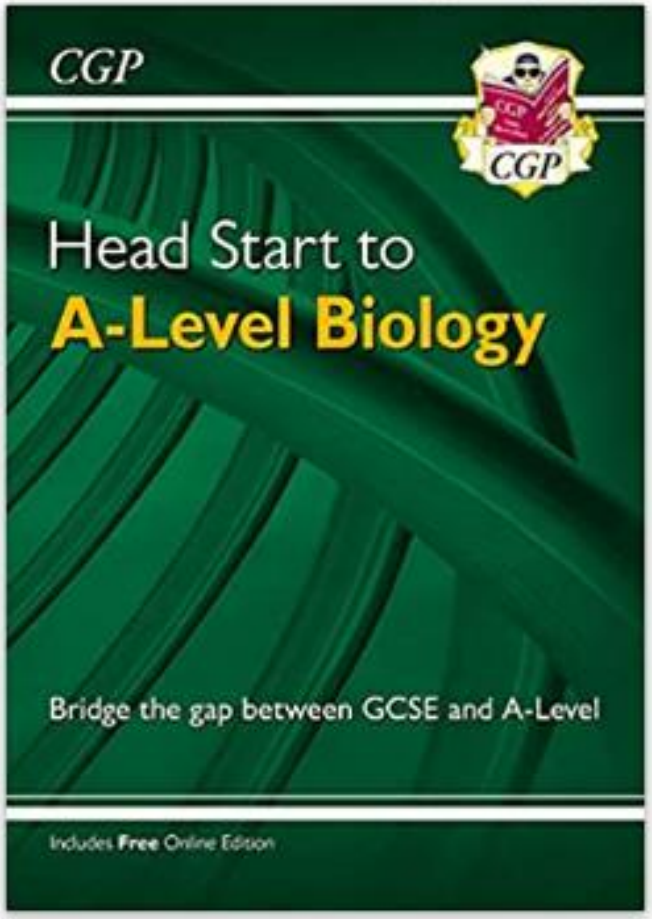
Please ensure that you revise your GCSE topics during the summer holidays. This will ensure a smooth transition to A-level Biology.

Task 1: Entry Test

A very good resource is “Head Start to A-level Biology” published by CGP and available from Amazon. This guide bridges the gap between GCSE and A-level Biology knowledge.

https://www.amazon.co.uk/Head-Start-level-Biology-Level

A digital copy has been uploaded for easy access.



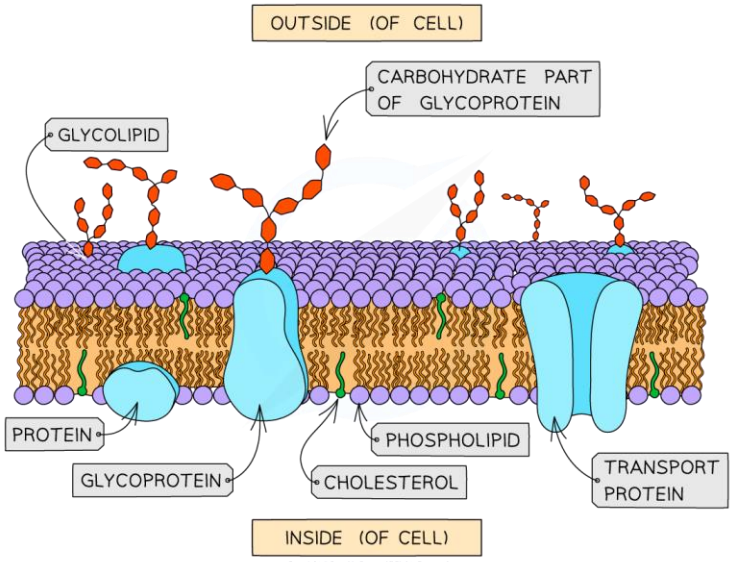
Task 1: Entry Test

- Work through the resource and make revision notes for each section of work in the exercise book provided.
- Answer and self-mark (in a different coloured pen) the questions at the bottom of each page. The answers to the questions can be found at the back of the resource.
- Complete the A-level Biology student transition sheet.
- Hand your exercise book and the completed transition sheet to your teacher in your first Biology lesson in September.

Task 2: Essay

You will be required to write an essay on "The Structure and Function of the Cell-Surface Membrane".

This essay will prepare you for the topic on cell structures.



Task 2: Essay

- The essay should be **1000 words** in length and should be written in good English.
- This must be your own, **independent** piece of work. Please ensure that you do not copy from the Internet – we will be checking for this. **Plagiarism and the use of AI will be heavily penalised**.

- You should include an **annotated diagram** to show the structure of the cell-surface membrane.
- The following **key terms should also be explained** within the say:
- *Plasma membrane; phospholipids; bilayer; proteins; cholesterol; glycoproteins and glycolipids; permeability; fluid-mosaic model; diffusion (simple and facilitated); osmosis; active transport; carrier proteins; ATP; Concentration gradient; water potential.*

Task 3: Book Review

In order to improve your knowledge of Biology beyond the specification, we would like you to read at least one “popular science” book on some aspect of biology and/or its applications.

A reading list is available on the Furze Platt website.

Prepare a short, written book review to share with the class during the first week in September.

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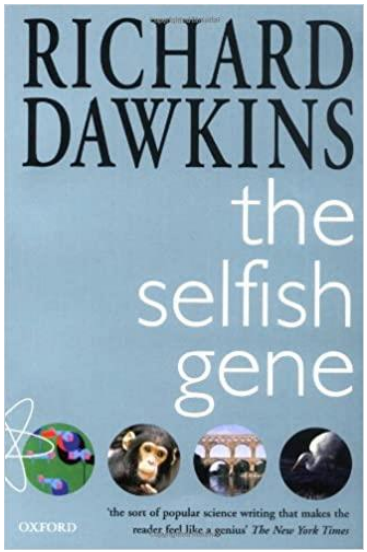
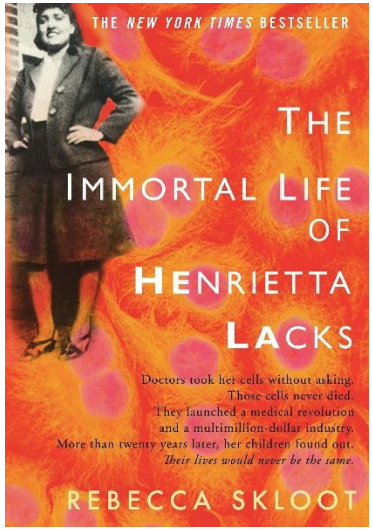
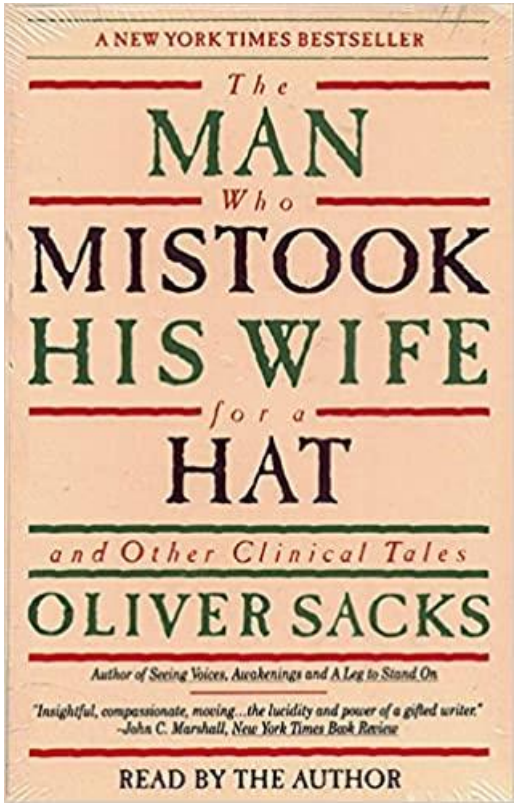
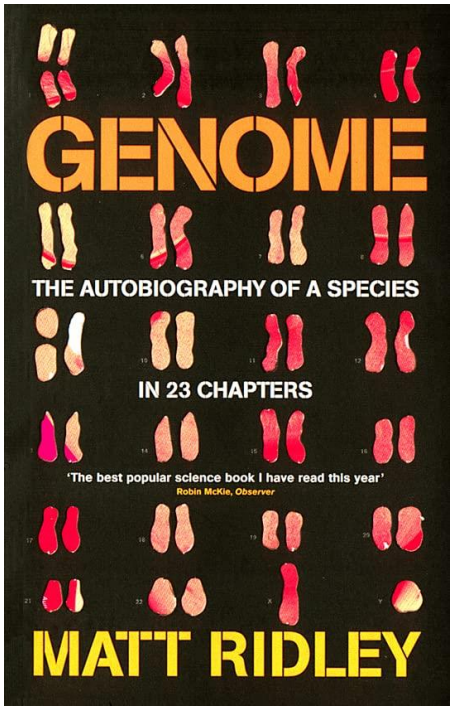




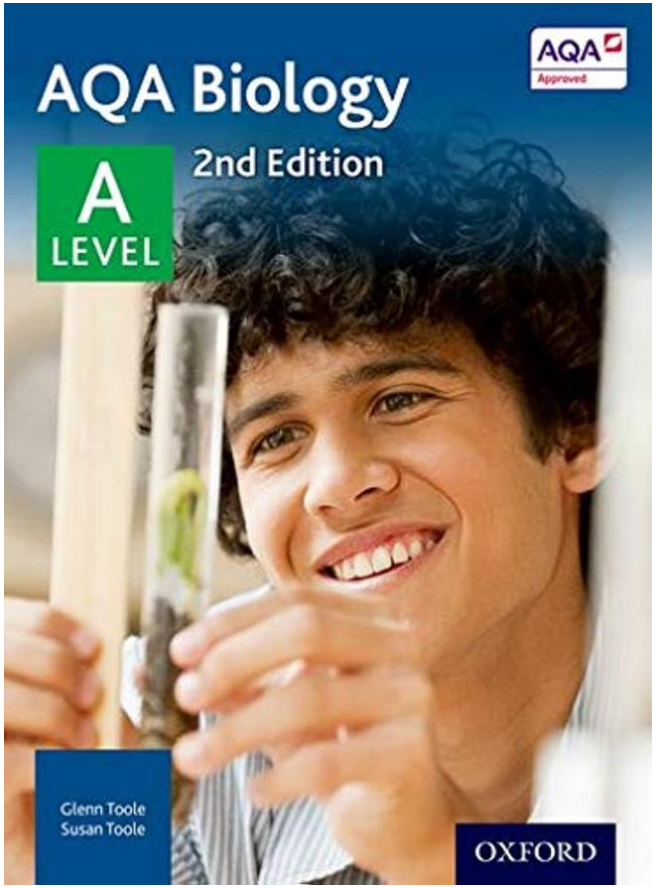




Have you tried a audiobook?

Task 4: Textbook

- **You will require access to the following textbook in all of your Biology lessons:**
- AQA Biology, 2nd Edition (2015) by Glen Toole and Susan Toole, Oxford University Press (ISBN 978-0198351771).
- The course textbook is available from Amazon:
- https://www.amazon.co.uk/AQA-Biology-Level-Student-Book/dp/0198351771
- A digital version of the textbook is available on the Kerboodle website. Please make sure that you bring a laptop (or similar device) to all lessons should you wish to access the digital version of the textbook.



Task 4: Folder Check

There will be a folder check during the first week of September.

We will expect to see the following:

1. Large A4 Lever Arch file (not a day folder)
2. Pack of file dividers
3. A4 paper
4. Print out of the A-level Biology handbook which will be available under the Sixth Form tab on the Furze Platt website

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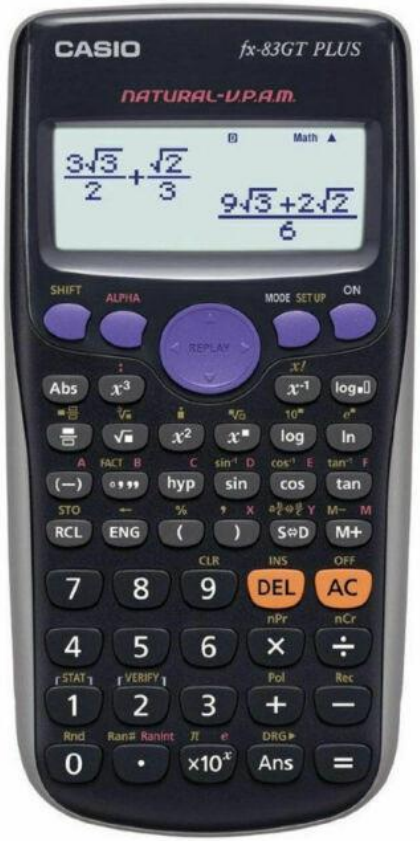
You will also require a scientific calculator as maths skills will be assessed in all topics studied.



Biology Clinic

- We will run a drop-in Biology Clinic each Monday afternoon in S9.
- Students can come and get extra help with any Biology work.
- This could be home learning you are stuck with, it could be some work you have covered in class which you didn't fully understand or it could be revision for a test.
- The idea is you come along with your questions/work and a Biology teacher will help you with it.

Thank you

We look forward to welcoming you in September!