Pearson Level 3 Alternative Academic Qualification

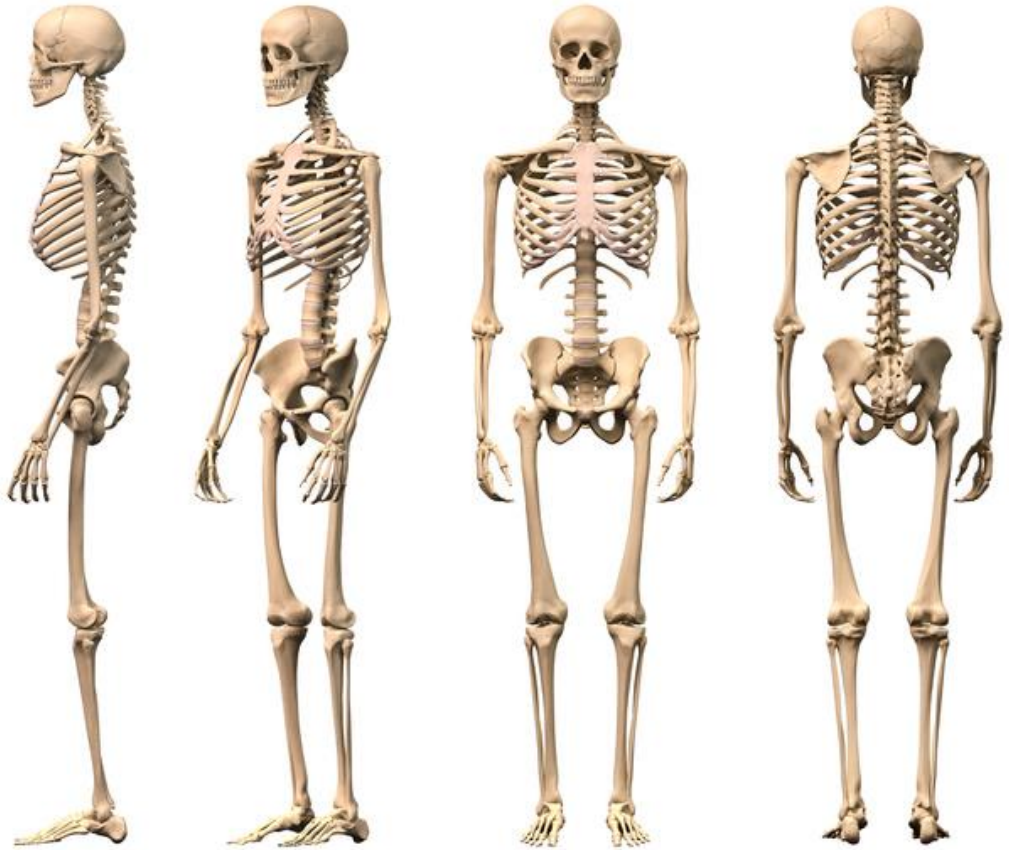
L3

BTEC National in

Medical Science (Extended Certificate)


Biology Quiz
shape of cell
number of
shape
nu
chromosomes
mitochondria
nuclei
vacuoles
A+

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



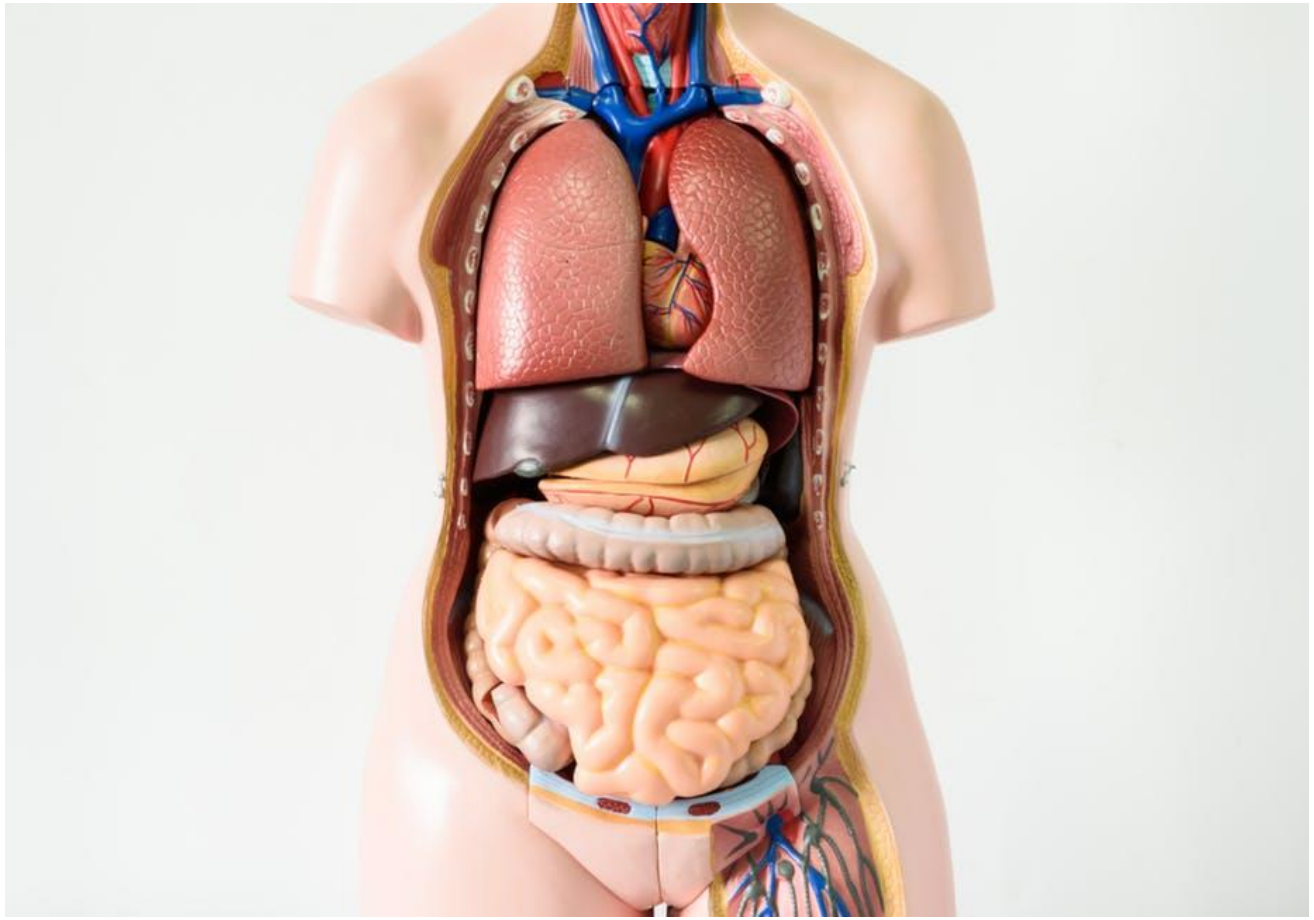
A. Tibia

B. Fibula

C. Femur

D. Phalanges

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



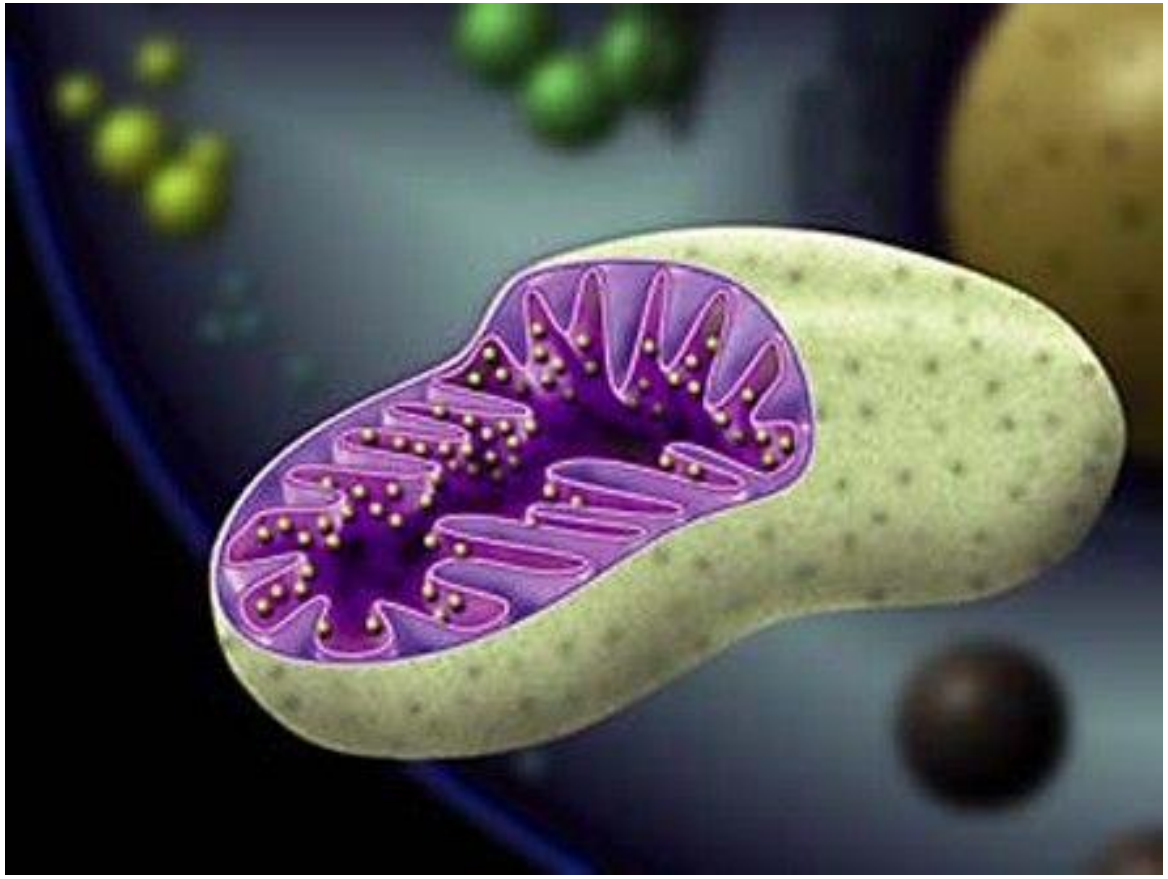
A. Lungs

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?

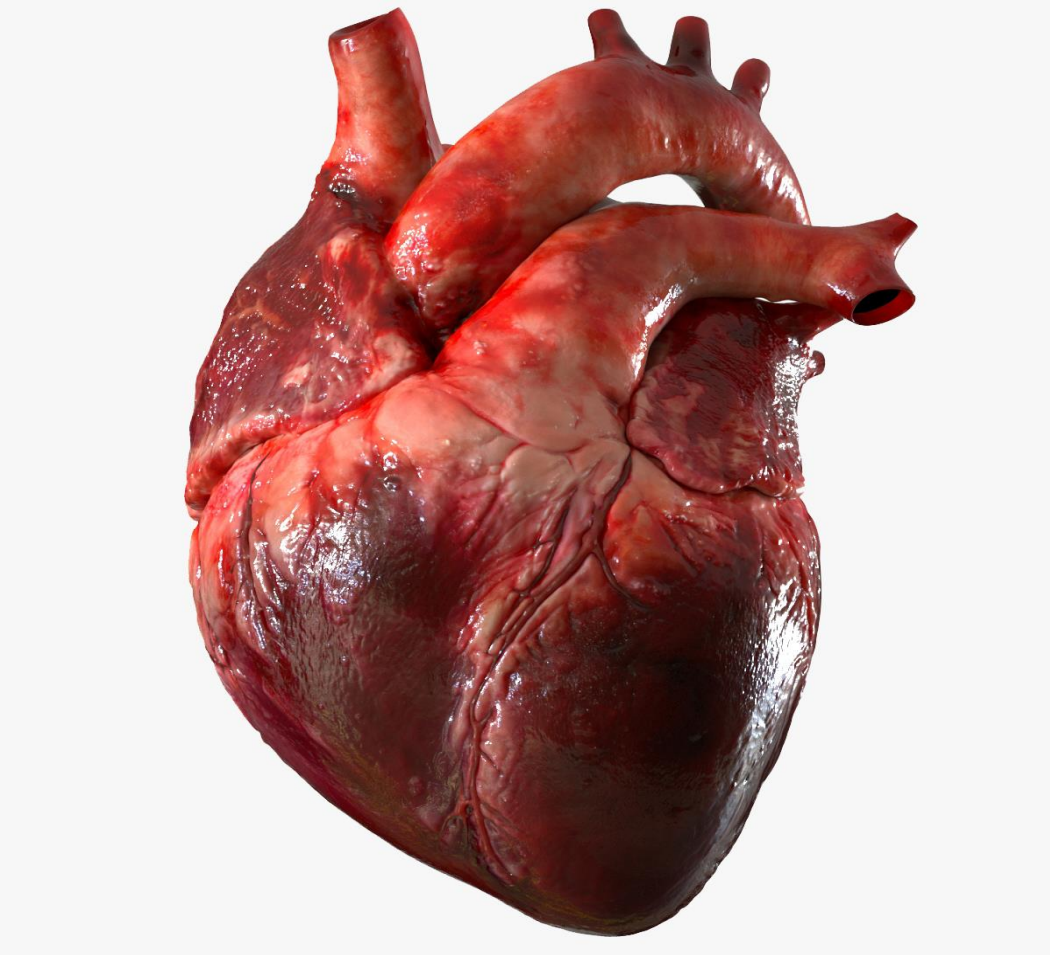
A. Antigens

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?

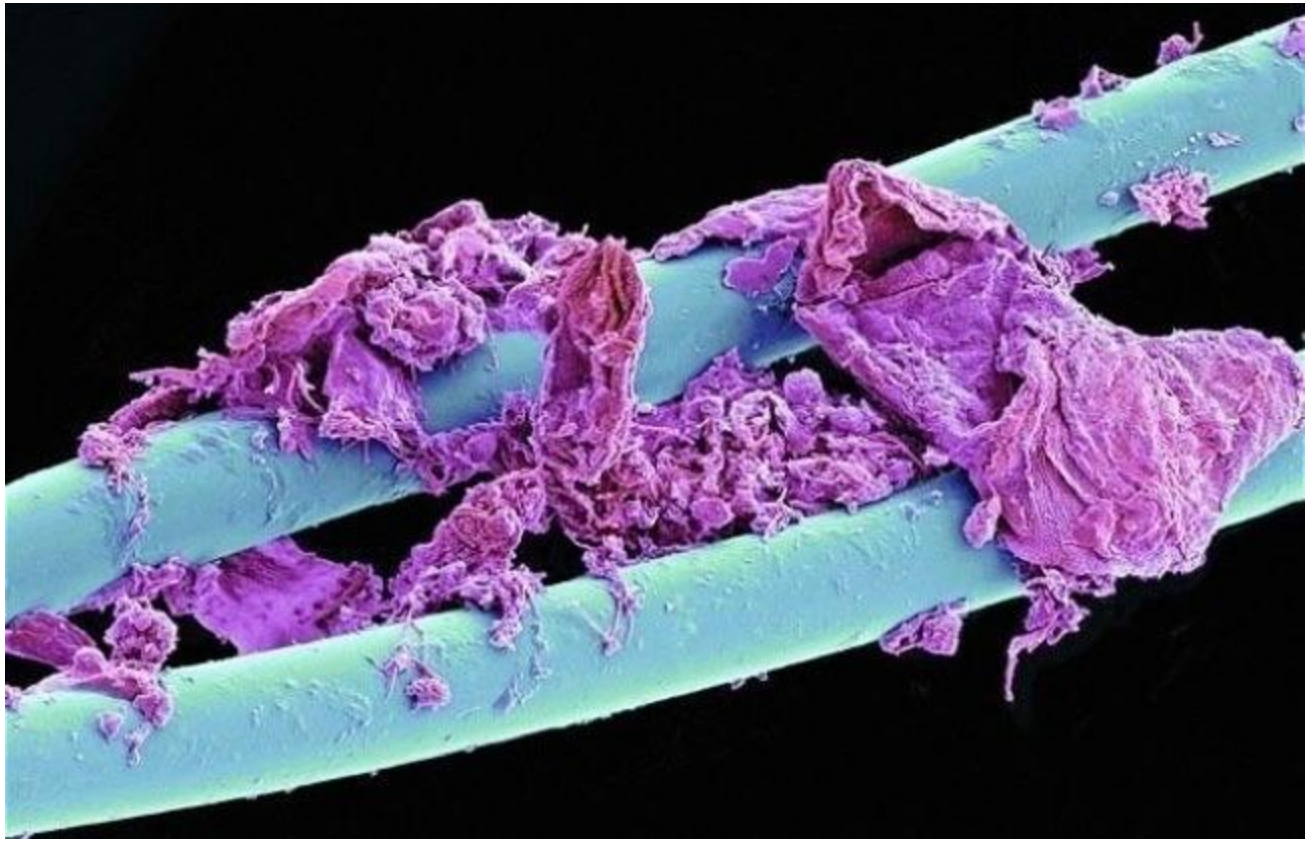
A. Heart

B. Bone marrow

C. Liver

D. Brain

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



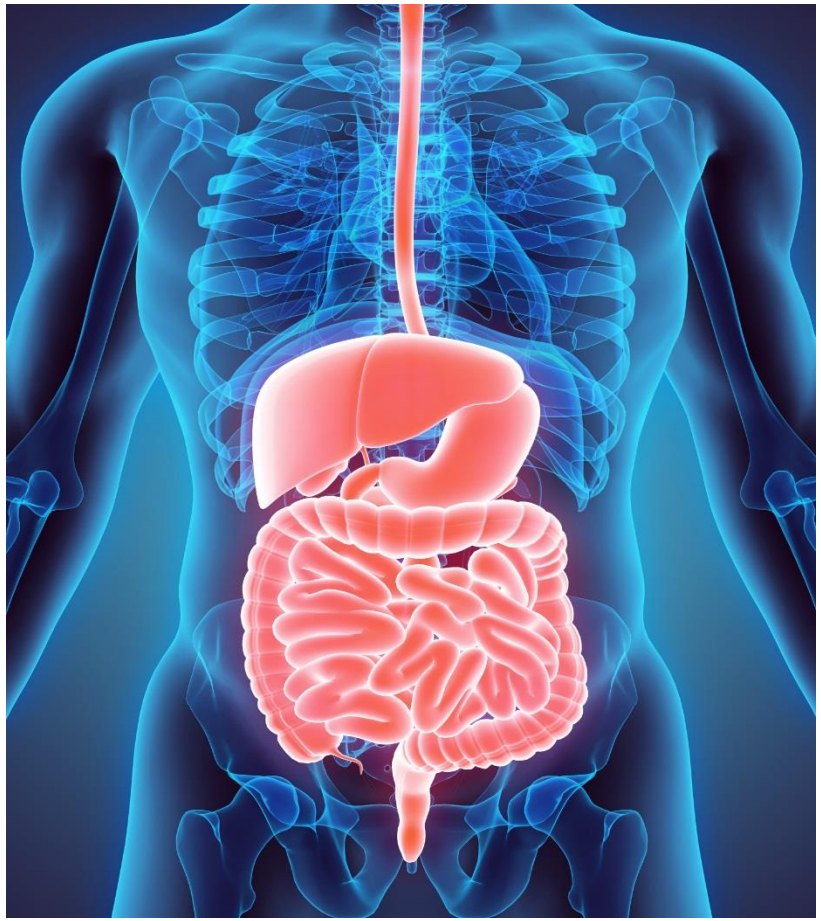
A. Frayed wire

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?



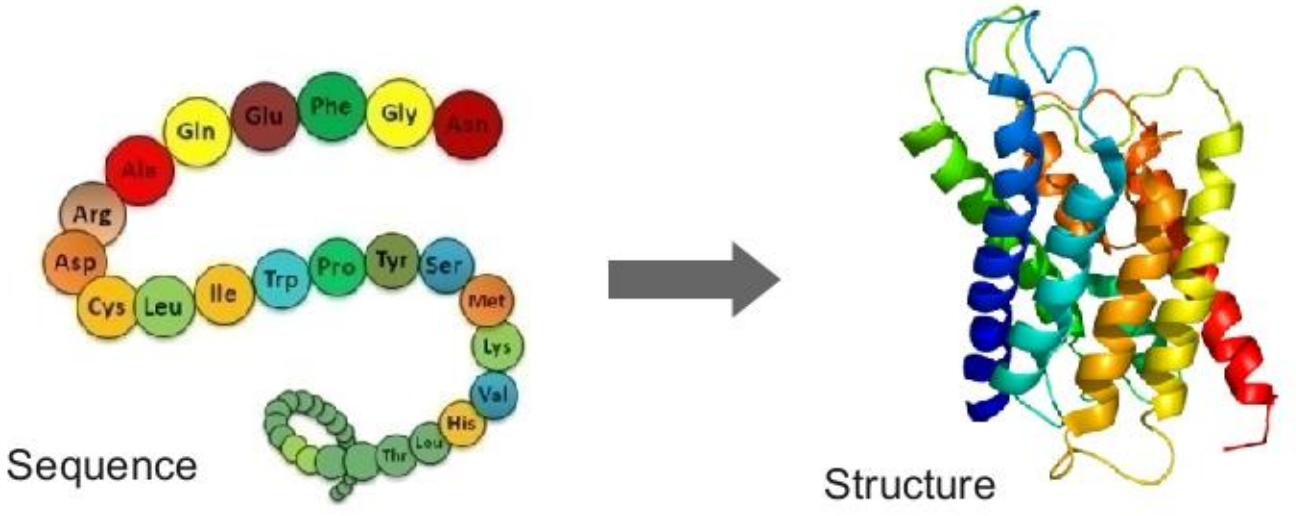
A. Trachea

B. Oesophagus

C. Intestine

D. Stomach

Q.12. Proteins are made up of …



A. Glycerol

B. Sugars

C. Fatty acids

D. Amino acids

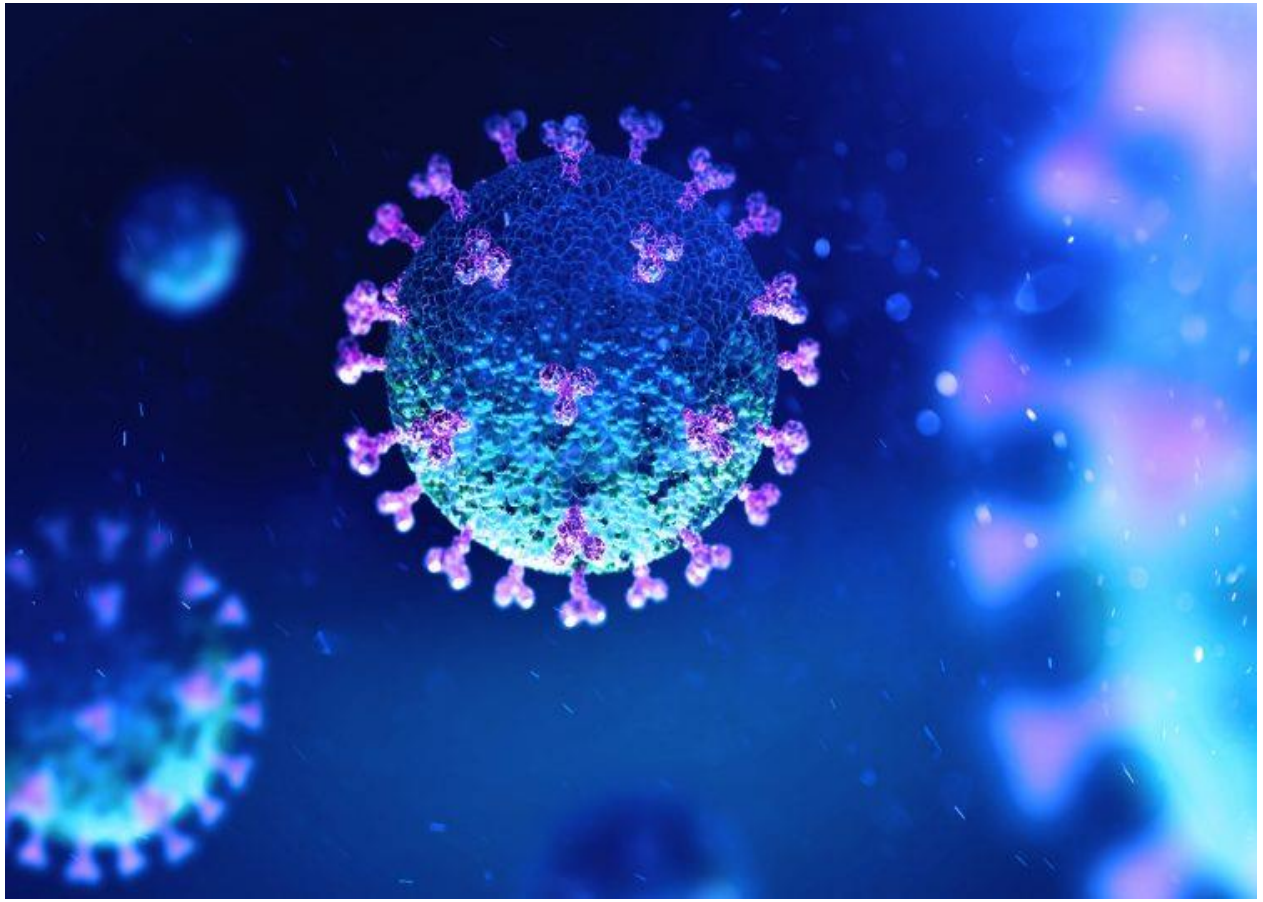
Q.13. It is impossible for a human to …

A. Swallow upside down

B. Sneeze with eyes open

C. Lick your elbow

Q.14. What is a pandemic?



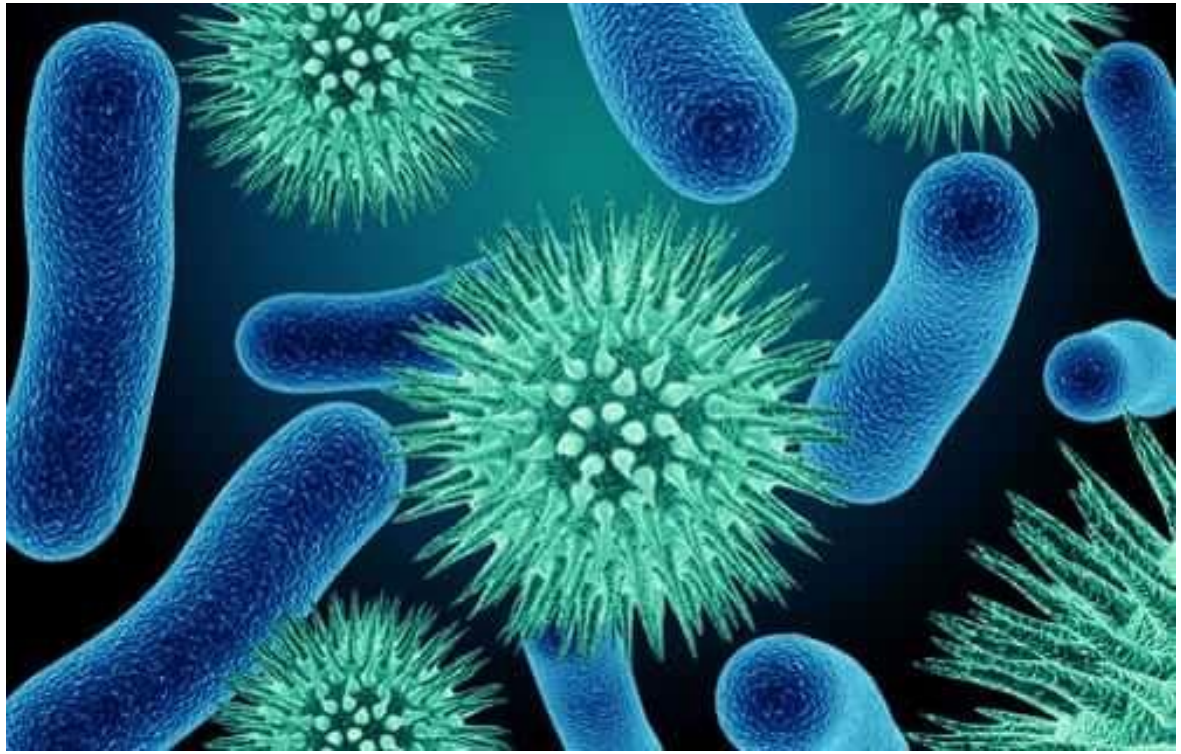
A. An outbreak of disease in one country

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?



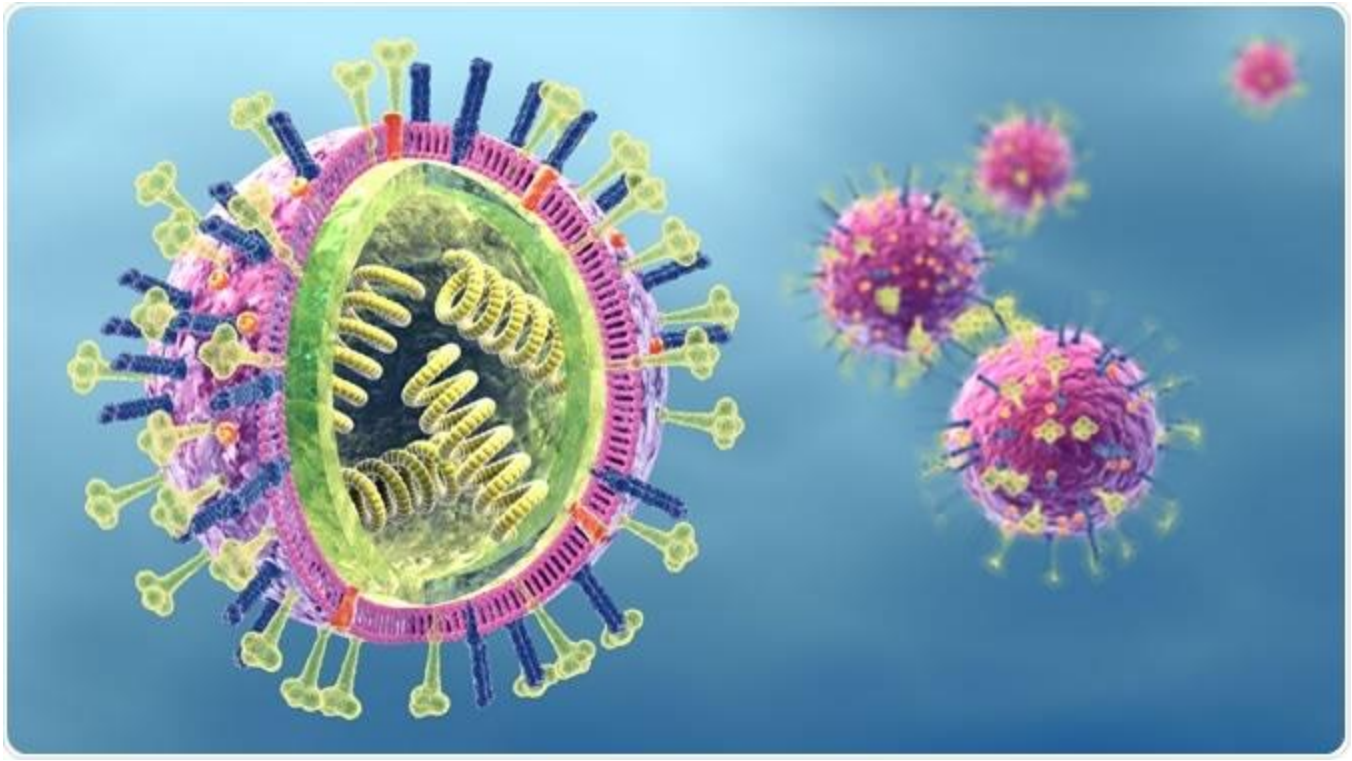
A. A biological catalyst

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?



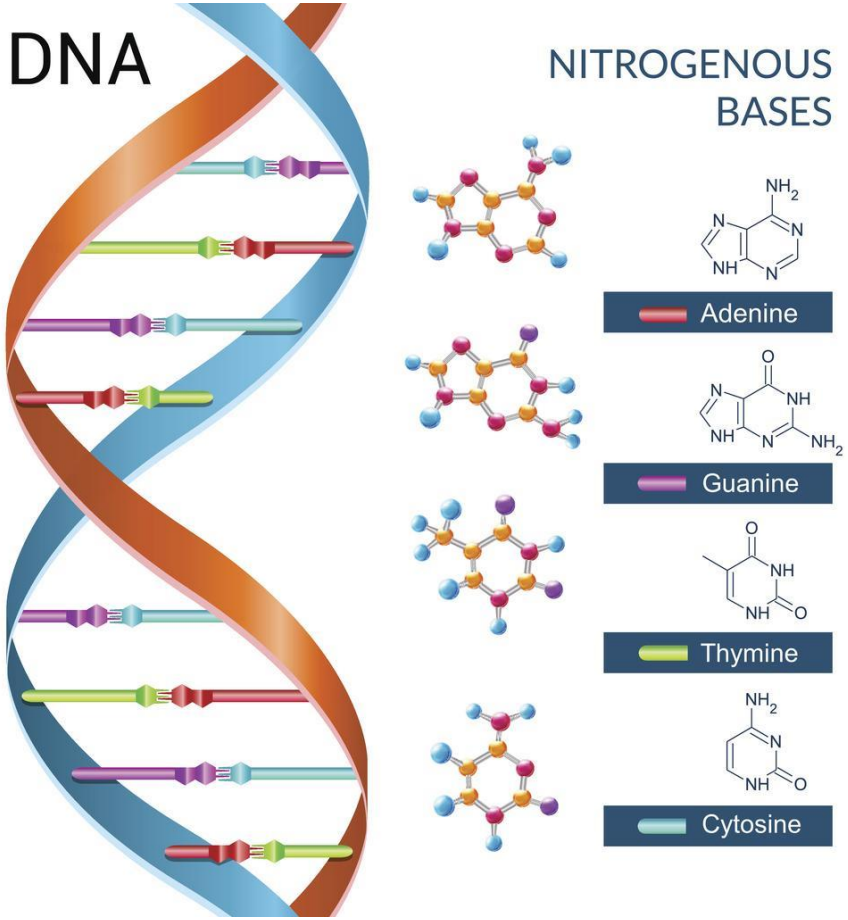
A. Bacteria

B. Viruses

C. Protista

D. Fungi

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



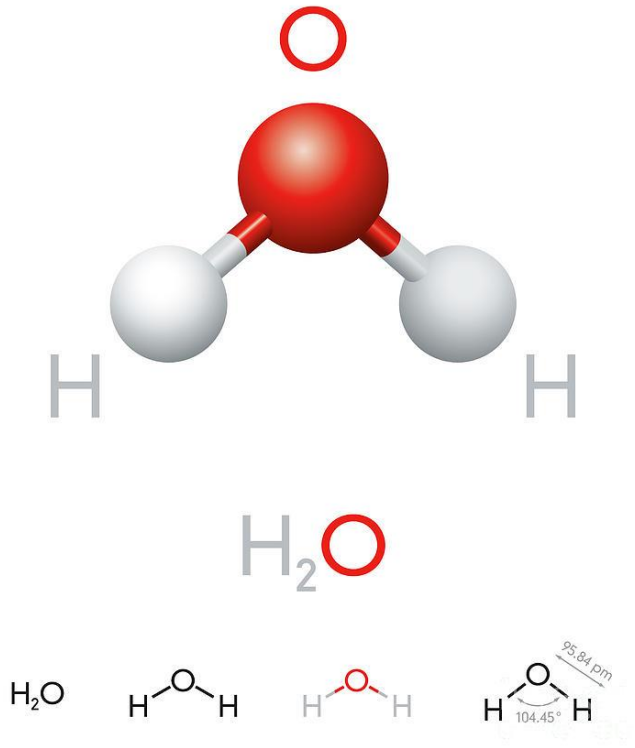
A. Ribosome

B. Mitochondrion

C. Nucleus

D. Cytoplasm

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



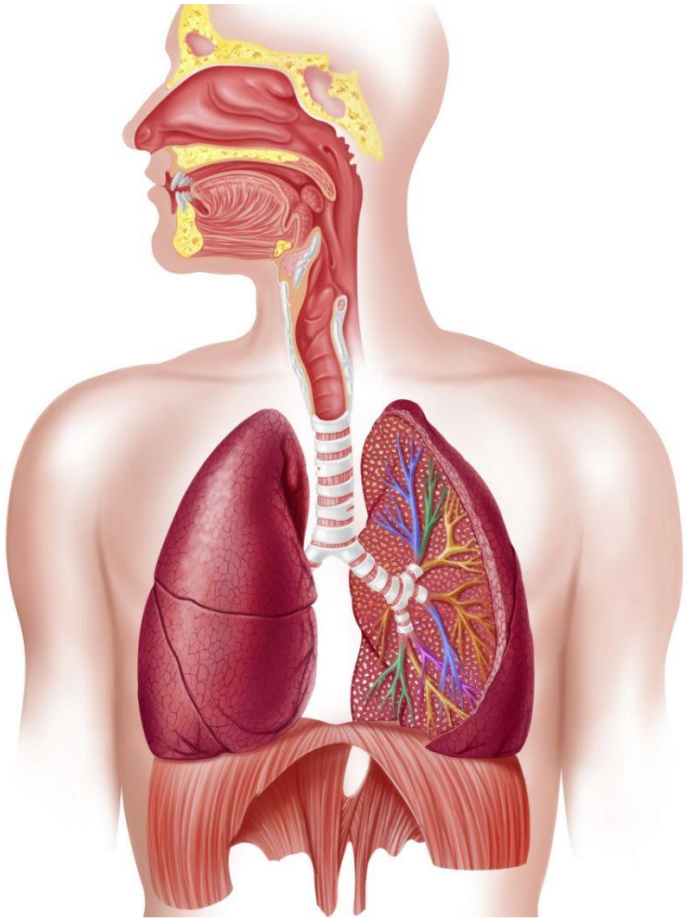
A. Diffusion

B. Active Transport

C. Osmosis

D. Hydration

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



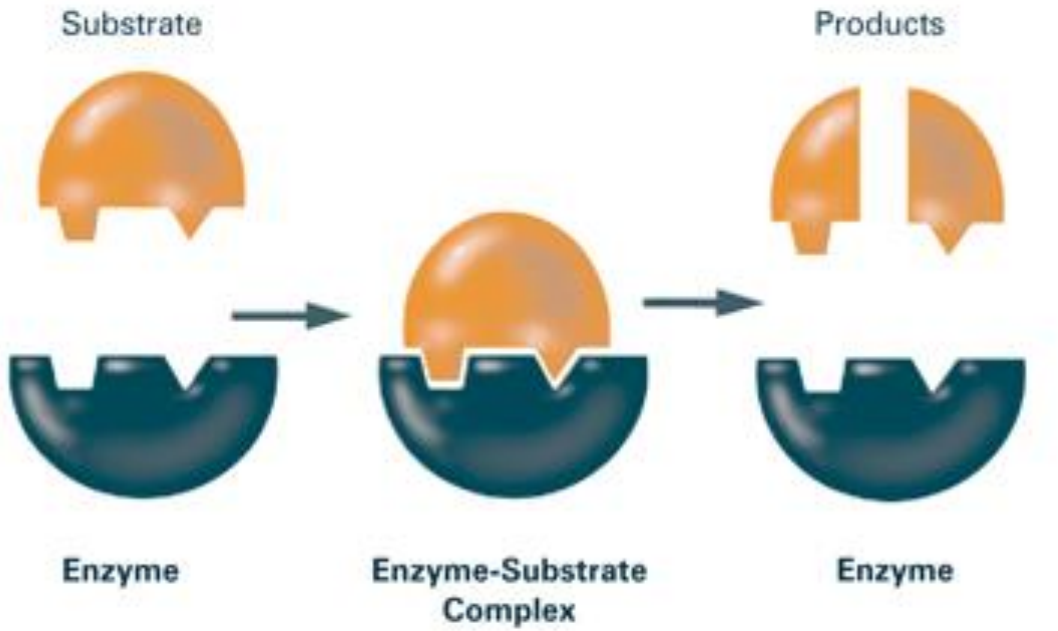
A. Trachea

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

FURZE PLATT SENIOR SCHOOL

What is a BTEC?

BTEC is an established and highly successful qualification which is designed to provide learners with a more practical, real-world approach to learning together with specialist knowledge, understanding and skills that they need to prepare them for employment or higher education.

Future Pathways of Study

The Medical Science AAQ forms the foundation of the Health and Science sectors:

- Health and Social Care
- Sport Science
- Nursing
- Midwifery
- Occupational Health
- Pathology
- Forensics

There is the opportunity to work in a range of settings including hospitals, private clinics, industry, research institutes and community healthcare.

Universities will not accept this qualification for entry to medicine, dentistry or veterinary science.

Entry Requirements

At least a grade 4 in GCSE Biology (Separate Science) or at least a grade 4/4 in Combined Science. A high level of literacy is desirable.

You need to be prepared to work hard, work independently (only a limited amount of teacher input is permitted) and meet stringent deadlines.

This is not an easy option!

Advantages over a traditional A-level subject

- A reduced examined element makes it more accessible for those who prefer coursework to written examinations
- A slightly lowered entry requirement than A-level Biology
- Will appeal to those students who work hard but find exams a challenge

The BTEC Award

The Extended Certificate is a two-year course that is equivalent to one A-level and as such, attracts UCAS tariff points.

- Comprises 58% assessment and 42% coursework.
- BTEC units are graded individually; each unit is graded Pass, Merit or Distinction, according to how you perform against a set of criteria.
- Once you have completed all units, Pearson calculates an overall Pass, Merit, Distinction or Distinction* grade.

Time Commitments

There will be 9 hours of contact time (teaching) per fortnight.

You will be expected to commit to at least 9 additional hours of independent study PER FORTNIGHT outside of your timetabled lessons.

Course Structure

Year 12

Unit 1: Principles of Human Physiology, Anatomy & Pathology

Unit 3: Practical Microbiology & Infectious Diseases

Year 13

Unit 2: Health Issues & Scientific Reporting

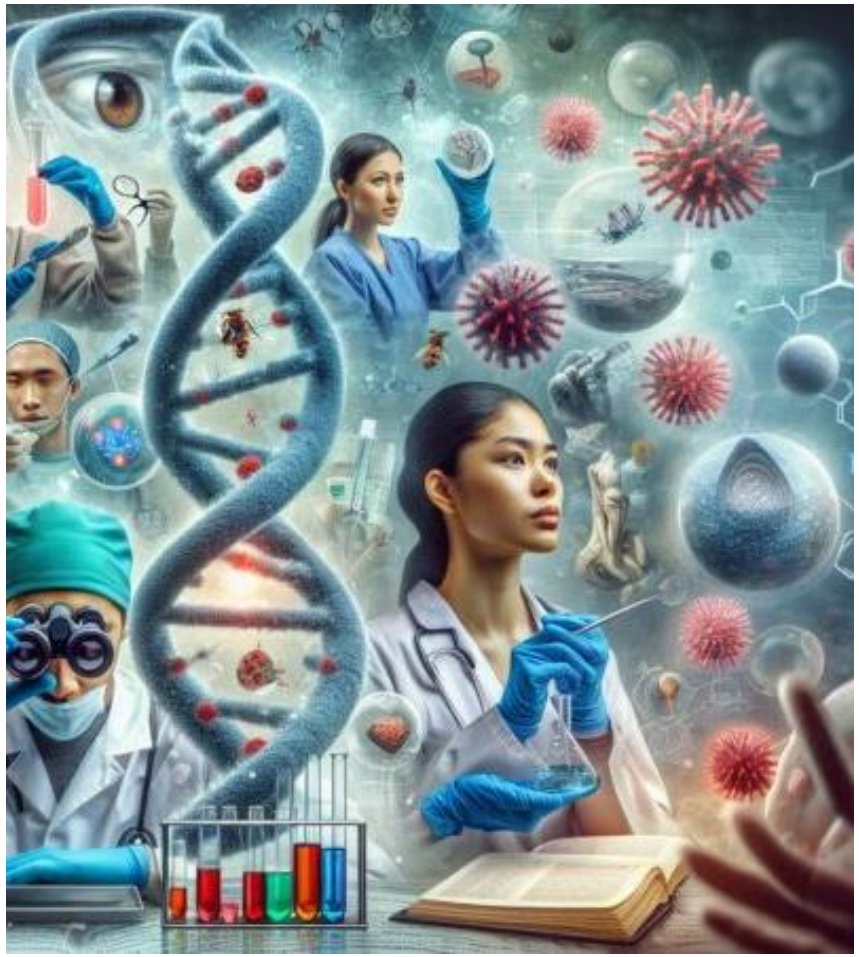
Unit 4: Diseases, Disorders, Treatments & Therapies

Transferable skills valued by employers and universities:

- Self-reflection
- Critical thinking
- Collaborative work
- Presentation skills
- Analytical skills

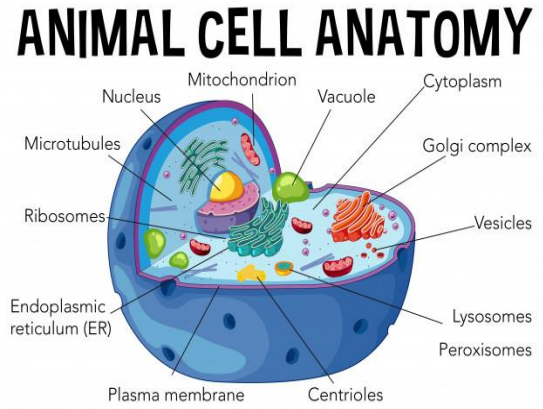
Unit 1: Principles of Human Physiology, Anatomy & Pathology

Knowing how the human body works is key to learning how you can make a difference to others in the field of medical science.



Unit 1 - Content Areas

- Biological molecules, cells and tissues
- The nervous and endocrine systems
- The musculoskeletal system
- The cardiovascular and respiratory system
- The renal and digestive system



Unit 1 - Assessment

This unit will be assessed through an external written examination worth 80 marks. The examination will last 1 hour and 30 minutes.

Exam dates: January or May/June.

The paper will include a range of question types, including multiple choice, calculations, short answer and long response (9 marks).

Unit 2: Health Issues & Scientific Reporting

Students will further develop their understanding of medical science through learning about health issues while developing knowledge about scientific analysis, evaluation and reporting.

Unit 2 - Content Areas

Diagnostic techniques

- Heart rate
- Blood pressure
- Respiratory rate
- Body temperature
- Tissue perfusion
- Oxygen saturation
- Nervous system function
- Tests for genetic and chromosomal conditions during pregnancy

Unit 2 - Content Areas

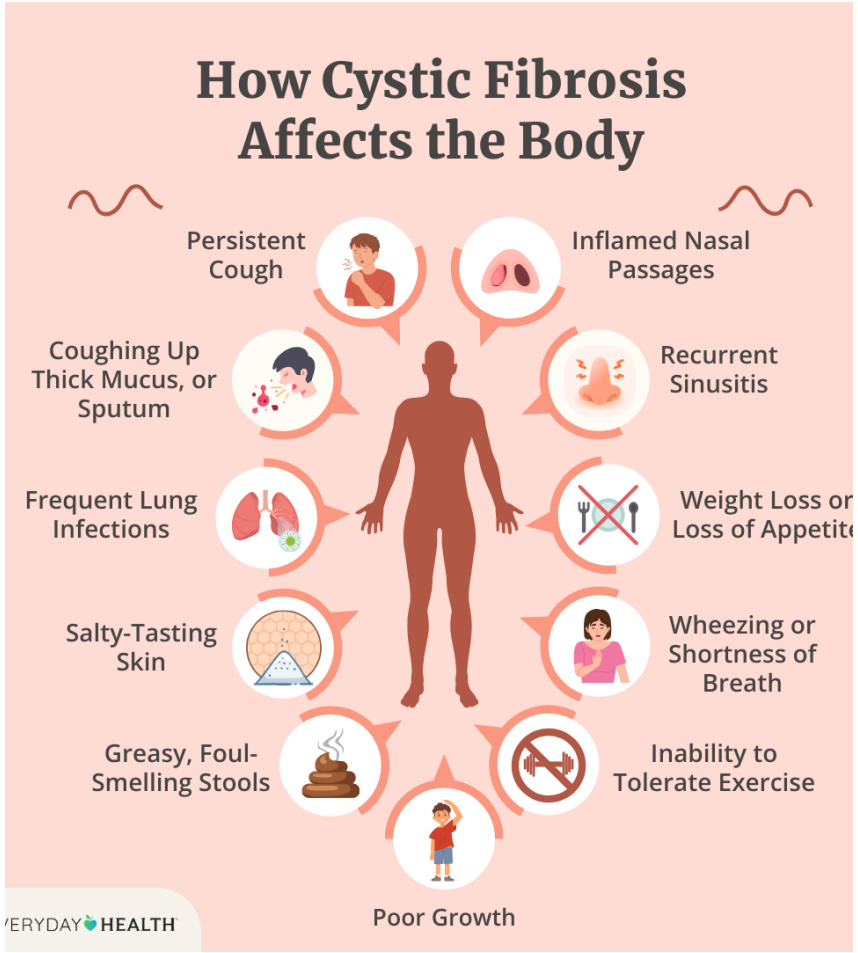
Immune Response and Dysfunction

- Physical defences
- Chemical defences
- Primary and secondary immunity
- Passive immunity
- Autoimmune diseases
- Immunodeficiency diseases
- Allergies and allergens

Unit 2 - Content Areas

Genetics and Health

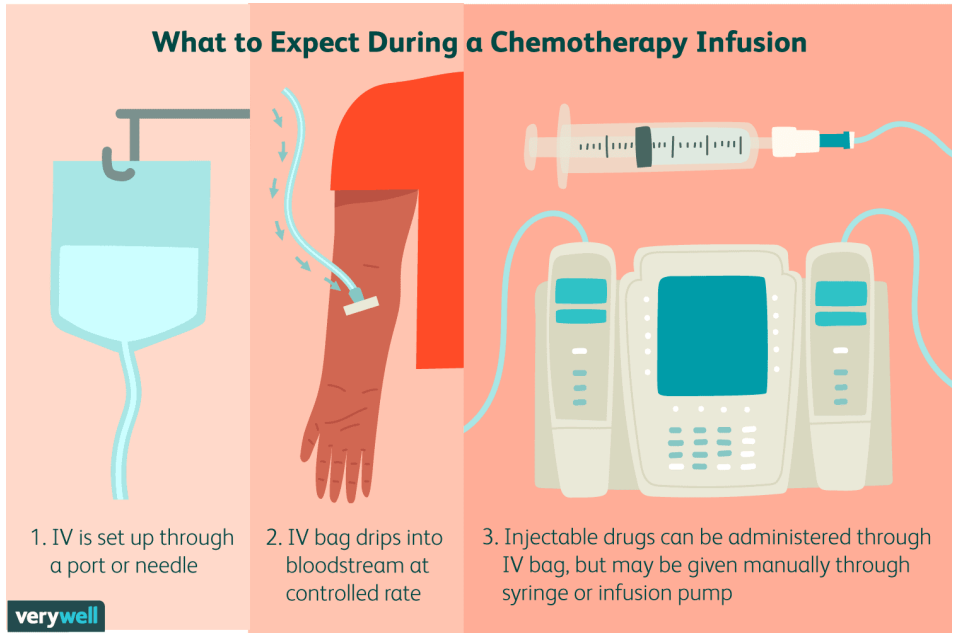
- Gene expression
- Inheritance
- Genetic conditions and genetic screening



Unit 2 - Content Areas

Cancer

- Development of cancer
- Cancer screening and diagnosis
- Cancer treatment



Unit 2 - Content Areas

Interpretation, analysis and evaluation of scientific information

- Quantitative and qualitative evidence
- Interpret, analyse and evaluate scientific information
- Influence of organisations and individuals on health issues

Unit 2 - Assessment

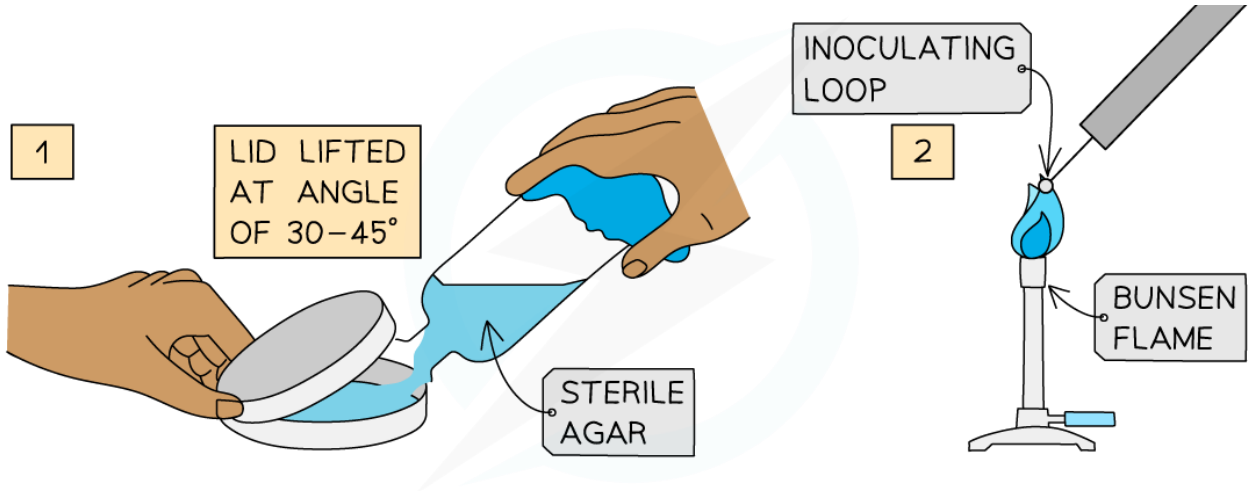
This unit will be assessed through an external written examination worth 80 marks. The examination will last 2 hours.

Exam dates: January or May/June.

Students will be assessed through short- and long-answer questions. Students will need to explore and relate to contexts and data presented. The questions will assess understanding of health issues and associated initiatives and reporting.

Unit 3: Practical Microbiology & Infectious Diseases

Students will investigate the effect of antimicrobial agents on the growth of microorganisms by selecting and applying knowledge of microorganisms and disease. They will draw on their wider scientific understanding and skills to plan and carry out a range of practical investigations.



Unit 3 - Content Areas

Learning aim	Key content areas	Recommended assessment approach
A Understand the classification and nature of microorganisms	**A1** Characteristics of different microorganisms **A2** Methods of pathogenicity **A3** Classification strategies	A portfolio of evidence to include a flow diagram. Details should include annotations of the classification and characterisation of each type of microorganism, including growth patterns and how pathogens can cause damage to tissues and cells in the body.
B Examine the transmission and treatments of infectious diseases	**B1** Classification overview of infectious disease **B2** Transmission of infectious agents **B3** Infectious diseases, signs, symptoms and progression **B4** Prevention and treatment of infectious diseases	A report that includes details of how the chosen diseases are transmitted, how the pathogen attaches to and invades tissue, and how it causes damage to the host. Appropriateness of treatments and future developments should be included in the report. The effectiveness of the treatments should be examined in relation to the type of pathogen, including transmission and control.

Unit 3 - Content Areas

C Explore the application of techniques to culture and identify microorganisms	**C1** Health and safety **C2** Microscopy and staining techniques **C3** Culture of microorganisms	Laboratory notebooks recording the practical work completed plus observations of practical work carried out by suitably qualified staff. Details should include a written report on the practical work that learners have carried out, detailing all of the outcomes, health and safety requirements and an evaluation of the procedures used. Practical work will be supported by appropriate research into the techniques used.
D Investigate the effects of antimicrobial agents on the growth of microorganisms	**D1** Investigating the substances that inhibit the growth of microorganisms **D2** Interpretation, analysis and evaluation	A written report that includes a hypothesis, preliminary work, method, variables, results, analysis and evaluation.

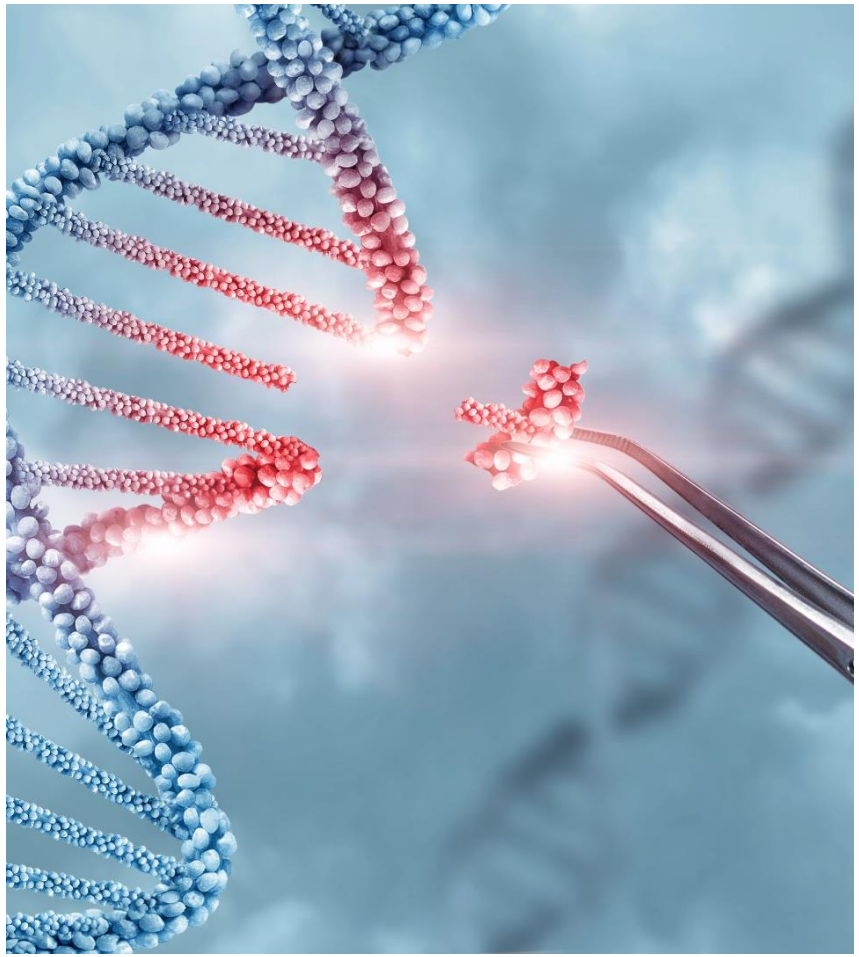
Unit 3 - Assessment

This unit comprises several coursework assignments. The assignments will take the form of a portfolio of evidence and written reports.

All assignments will be internally assessed and externally verified.

Unit 4: Diseases, Disorders, Treatments & Therapies

Students will gain theoretical knowledge of diseases and disorders and will explore various treatments and therapies.



Unit 4 - Content Areas

Learning aim	Key content areas	Assessment approach
A Examine biological molecules and pathways and their effect on the body	**A1** Roles of proteins and lipids in maintaining health **A2** The relationships between changes to molecules and the impacts these have on biological pathways and processes	Undertake research to support the production of an article which evaluates the importance of biological molecules and their impact on human health
B Understand the effects of physiological diseases and disorders and associated treatments	**B1** Physiological diseases and disorders **B2** Treatments for physiological diseases and disorders **B3** Effects on the individual	Undertake research to support the production of materials evaluating the effects of the treatments of different physiological diseases or disorders
C Examine the development of innovative and future types of treatment for physiological diseases and disorders	**C1** Drug and medicine discovery and development **C2** Innovative treatments **C3** Ethical, legal and moral issues	Undertake research to support the production of materials evaluating the development of new drugs

Unit 4 - Assessment

This unit comprises several coursework assignments. The assignments will take the form of a portfolio of evidence and written reports.

All assignments will be internally assessed and externally verified.

Too Much Information?

Hyperventilating …

Stationery Requirements

- Writing implements and A4 paper
- Large lever arch file
- Pack of file dividers
- Scientific calculator

Textbook

- **You will require access to the following textbook in all of your Medical Science lessons for the two-year course:**
- L3 AAQ BTEC National 2025 Medical Science Ext Cert Student Book, Pearson Education Ltd. (ISBN 9781292487090).
- The course textbook is available from Amazon:
- https://www.amazon.co.uk/National-Medical-Science-Student-Print/dp/1292487097

Transition Work

A transition booklet will be made available during the taster session to ensure that you are ready to start your course in September.

You are expected to complete all of the tasks in the transition booklet.

The transition tasks should be completed over the summer holidays.

Completed tasks should be neatly presented and collated. Consider using a project folder or plastic wallet. They should be submitted to your teacher at the start of your first Medical Science lesson in September.

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.

We look forward to welcoming you in September!