



Year 7 Biology – Cells, tissues, and organs

Learning about this topic is important because: Cells are the building blocks of life! All living organisms are made up of cells, there are lots of different types of cells with different jobs. It is vitally important we have a good knowledge of cells as this is **fundamental to all studies in Biology**. You will also find out how we can view cells using a microscope and how developments in technology have enabled scientists to increase their understanding of cellular Biology. You will learn about cells grouping together to form tissues, organs and organ systems, studies will focus on the digestive system, key principles of diffusion and development of thinking, mathematical and practical skills.

This builds on: Knowledge of the functions of different parts of a flowering plant, the digestive system and some of the parts of the circulatory system from primary school. We will use your prior learning as a benchmark for your studies throughout the course.

This leads to: Learning about Human and Plant reproduction in Y7, where you will learn about the gametes (sex cells) in both animals and plants. In Y8, you will use your knowledge of plant cells to explore their adaptations for photosynthesis. In Y9, you will learn more about cells, and compare eukaryotic (plant and animal cells) with prokaryotic cells, you will continue to develop microscopy and biological drawing skills, as well as the ability to evaluate the use of electron microscopes. You will also find out how cells divide by mitosis. In the organisation unit of work, you will build upon your knowledge of tissues and organs to explore the digestive and circulatory systems. In Y10, you will learn about the cells involved in immune response to defend against disease and the nervous system, investigating how neurones work together to allow you to respond to your surroundings. In Y11, you will learn about gametes (sex cells), meiotic cells division and how genetic material (contained in the nucleus) is inherited.

We will learn:

- Cells as the fundamental unit of living organisms, including how to observe, interpret and record cell structure using a light microscope
- The functions of the cell wall, cell membrane, cytoplasm, nucleus, vacuole, mitochondria, and chloroplasts
- The similarities and differences between plant and animal cells
- The role of diffusion in the movement of materials in and between cells
- The structural adaptations of some unicellular organisms
- The hierarchical organisation of multicellular organisms: from cells to tissues to organs to systems to organisms

We will develop/practise skills including:

- Curiosity - ask questions and develop a line of enquiry based on observations of the real world alongside prior knowledge and experience.
- Make predictions
- Evaluate risks
- Apply mathematical concepts and calculate results
- Make and record observations
- Use and derive simple equations and carry out appropriate calculations.
- Use appropriate techniques, apparatus and materials during lab work paying attention to health and safety
- Pay attention to objectivity and concern for accuracy, precision, repeatability, and reproducibility
- Present observations and data using appropriate methods, including tables and graphs.
- Present reasoned explanations, including explaining data in relation to predictions and hypotheses.



Year 7 Biology – Cells, tissues, and organs

The tissues and organs of the human digestive system, including adaptations to function and how the digestive system digests food (enzymes simply as biological catalysts)	- Mathematical skills – magnification calculations and graph work - Practical skills – microscopy and biological drawing - Creating – modelling cells and their adaptations / modelling enzymes - Analysing data - Linking concepts and ideas
Some of the vocabulary that we will use includes: Cell, cell membrane, cytoplasm, nucleus, vacuole, chloroplast, cell wall, mitochondria, tissues, organs, organ systems, enzyme, diffusion.	You could learn more about this topic by: Read: What are cells? Animal and plant cells - KS3 Biology - BBC Bitesize - BBC Bitesize Watch: GCSE Biology - Cell Types and Cell Structure #1 - YouTube Listen: In Our Time - The Microscope - BBC Sounds
Your teacher will assess your knowledge & understanding throughout the topic by looking at your work, questioning, discussion and giving you feedback in lots of different ways. The key pieces of work in this topic are: HOME LEARNING: Find out who invented the microscope, the development of their ideas, including further work by other scientists. This is teacher assessed. - Microscopy skills, biological drawing, graph work and maths skills – assessed in lessons HOME LEARNING: Make a 3D model of a specialised cell (2-week task), complete the extended response worksheet to accompany your model cell. This is teacher assessed. - End of topic assessment. This is teacher assessed.	

Your new learning will continue to build on the ideas from KS2 and enable you make exciting links throughout your studies in Biology. We will build on practical skills, mathematical skills and ability to write scientifically, as well as being able to apply your knowledge, think for yourselves and challenge you!



Year 7 Biology – Human reproduction

Learning about this topic is important because: It is critical to understand the process of reproduction in humans, as one of life's processes (MRS GREN). You will gain knowledge and understanding of the reproductive systems, the menstrual cycle and how the stages of human reproduction are connected. You will be able to explain how variation arises as a result of sexual reproduction, the advantage of this, and have the opportunity to evaluate technologies in fertility treatments. Throughout the unit you will continue to make progress with important practical skills such as recording observations and identifying variables. You will also continue to develop your mathematical, thinking and research skills throughout this unit of work.

This builds on: You will already have knowledge of life processes from KS2, where you will have studied reproduction in some plants and animals. You will also build on your knowledge of life process, cells, and organs from the first topic in Y7. We will use your prior learning as a benchmark for your studies throughout the course.

This leads to: There will be links to reproduction in the cells & microscopes topic studied in Y9, cell division and the hormonal control of the menstrual cycle in Y10. In Y11, you will study different types of reproduction, and will be able to use your knowledge from Y7 to help determine the advantages of plants reproducing sexually in comparison to asexual reproduction.

We will learn:

- About reproduction in humans (as an example of a mammal)
- The function of the male and female reproductive systems
- About the stages of the menstrual cycle
- That the fusion of gametes leads to fertilisation,
- About gestation and birth, to include the effect of maternal lifestyle on the foetus through the placenta
- Hereditary as the process by which genetic information is transmitted from one generation to the next
- Differences between species
- That variation between individuals within a species can be continuous or discontinuous, to include measurement and graphical representation of variation

We will develop/practise skills including:

- Curiosity - ask questions and develop a line of enquiry based on observations of the real world alongside prior knowledge and experience.
- Make predictions
- Evaluate risks
- Apply mathematical concepts and calculate results
- Make and record observations
- Use and derive simple equations and carry out appropriate calculations.
- Use appropriate techniques, apparatus and materials during lab work paying attention to health and safety
- Pay attention to objectivity and concern for accuracy, precision, repeatability, and reproducibility
- Present observations and data using appropriate methods, including tables and graphs.
- Present reasoned explanations, including explaining data in relation to predictions and hypotheses.
- Analysing data
- Linking concepts and ideas



Year 7 Biology – Human reproduction

Some of the vocabulary that we will use includes:

Inheritance, variation, continuous, discontinuous, puberty, menstrual cycle, adolescence, ovulation, fertilised/fertilisation, period/menstruation, gametes, egg, sperm, embryo, foetus, amniotic fluid, placenta, umbilical cord, uterus, ovary, cervix, vagina, scrotum, sperm ducts, penis, urethra, testes, glands, chromosomes

You could learn more about this topic by:

Read: [Reproduction - KS3 Biology - BBC Bitesize](#) (variety of reading material, video clips and quizzes.)

Watch: [Sexual Reproduction Humans | Genetics | Biology | FuseSchool - YouTube](#)

Listen: [GCSE Biology - What is IVF? How Does IVF Work and What Are The Risks? IVF Explained #62 - YouTube](#) (extending learning)

Your teacher will assess your knowledge & understanding throughout the topic by looking at your work, questioning, discussion and giving you feedback in lots of different ways. The key pieces of work in this topic are:

- **HOME LEARNING:** EYE COLOUR OR TONGUE ROLLING – results table & graph. Teacher assessed.
- **EXTENDED WRITING TASK:** Describe the journey of the sperm cell, from the place where it is made, to the place where it might fertilise an egg cell. Explain why so many sperm are produced. Teacher assessed.
- **TASK:** How a baby develops – graph and follow-up questions. Teacher assessed.
- **HOME LEARNING:** Write a short report 'MY LIFE IN THE WOMB'. Peer assessed.
- End of topic assessment. This is teacher assessed.

Your new learning will continue to build on the ideas from KS2 and enable you make exciting links throughout your studies in Biology. We will build on practical skills, mathematical skills and ability to write scientifically, as well as being able to apply your knowledge, think for yourselves and challenge you!