



This year in biology we will be learning:		This links to:	Key Vocabulary:		
HT1	Cell Transport (B1) & Cell Division (B2) <ul style="list-style-type: none"> The roles of osmosis and active transport in the movement of materials in and between cells. How cells divide by mitosis to produce new body cells. The importance of stem cells in development. The arguments for and against using stem cells in medical treatments. 	The cellular basis of life <i>Organisms are made of one or more cells, which need a supply of energy and molecules to carry out life processes.</i> <ul style="list-style-type: none"> Diffusion is the movement of molecules from an area of high concentration to an area of low concentration (down a concentration gradient). It is important for moving substances in and out of cells (Y7 & Y9). Cells work together to form tissues, organs and organ systems (Y7 & Y9). Organisms are made of many different types of specialised cells (Y7 & Y9). 	<ul style="list-style-type: none"> Concentration gradient Diffusion Osmosis Partially permeable Turgid Plasmolysis Isotonic Hypotonic Hypertonic Active transport 	<ul style="list-style-type: none"> Cell cycle Mitosis DNA Chromosomes Differentiate Adult stem cell Embryonic stem cell Meristem cells Therapeutic cloning 	
	HT2	Organisation and digestion (B3) <ul style="list-style-type: none"> How to calculate the rate of enzyme activity. How the pH of the digestive system is adjusted to ensure that enzymes are at their optimum pH. 	<ul style="list-style-type: none"> Cells work together to form tissues, organs and organ systems (Y7 & Y9). The structure and function of the digestive system (Y7). How the structure of an enzyme relates to its function (Y9) Factors that affect enzyme activity (Y9) 	<ul style="list-style-type: none"> Enzyme Active site Denature Carbohydrates Protein Lipid Amino acid Fatty acid 	<ul style="list-style-type: none"> Glycerol Protease Amylase Lipase Biuret solution Iodine solution Benedict's reagent . Bile Emulsify
		HT3	Communicable disease (B6), Preventing the spread of disease (B7) & Non-communicable disease (B8) <ul style="list-style-type: none"> The cause, spread a prevention of the following diseases: measles, HIV, tobacco mosaic virus, salmonella, gonorrhoea, rose black spot and malaria. How new drugs are discovered and tested. How different diseases of the heart can be treated. How uncontrolled cell division can lead to cancer. 	Health and disease <i>Organisms must stay in good health to survive and thrive; the health of an individual results from interactions between its body, behaviour, environment and other organisms</i> <ul style="list-style-type: none"> Risk factors and causes of disease (Y7 & Y9). The body's defence against disease (Y9). Methods of preventing and treating disease: antiseptics, good hygiene, antibiotics, painkillers, vaccines (Y9). The structure and function of the circulatory system. (Y7 & Y9) How cells divide by mitosis (B2). 	<ul style="list-style-type: none"> Communicable Pathogen Bacteria Virus Fungi Protist Vaccination Immune Antibodies Antibiotics Clinical trials Placebo

Target Grade:

AP1:

AP2:

AP3:



This year in biology we will be learning:		This links to:	Key Vocabulary:	
HT4	<p>Plant transport (B5) & Photosynthesis (B9)</p> <ul style="list-style-type: none"> Factors that affect the rate of photosynthesis. How to measure the rate of photosynthesis (<i>required practical</i>). How a plant uses the glucose made during photosynthesis. 	<ul style="list-style-type: none"> The arrangement of tissues in a leaf (Y8) The basic principles of photosynthesis (Y8). Translocation is the movement of sugars around a plant (Y9). Water moves through plants via the transpiration stream (Y9). How evaporation and transpiration are controlled in plants (Y9). 	<ul style="list-style-type: none"> Palisade mesophyll Spongy mesophyll Xylem Phloem Chlorophyll 	<ul style="list-style-type: none"> Glucose (C₆H₁₂O₆) Endothermic Limiting factor
HT5	<p>Animal transport (B4) & Respiration (B10)</p> <ul style="list-style-type: none"> Why cellular respiration is important. How the body responds to an increased demand for energy during exercise. How an oxygen debt builds up during anaerobic respiration in your muscles (H). 	<ul style="list-style-type: none"> The structure and function of the circulatory system. (Y7 & Y9). The structure and function of the human gas exchange system (Y7 & Y9). The mechanism of breathing and the importance of ventilating lungs to maintain a steep concentration gradient. (Y7 & Y9). The differences between aerobic and anaerobic respiration (Y8) 	<ul style="list-style-type: none"> Aerobic Anaerobic Exothermic 	<ul style="list-style-type: none"> Energy Glycogen Lactic acid Oxygen debt (H) Metabolism
HT6	<p>The nervous system (B11) & The endocrine system (B12)</p> <ul style="list-style-type: none"> Why it is important to control your internal environment. The role of receptors, neurones, the central nervous system and effectors in responding to changes in the environment. Methods for investigating the effect of a factor on human reaction time (<i>required practical</i>) The roles of hormones in controlling the body's internal environment. The role of hormones in puberty and reproduction. The use of hormones in contraception and IVF. 	<ul style="list-style-type: none"> The basic structure of a neurone/nerve cell (Y7 & Y9). The basic process of human reproduction (Y7). 	<ul style="list-style-type: none"> Homeostasis Neurones Central nervous system (CNS) Stimulus Sensory neurone Receptor Motor neurone Effector Reflex arc 	<ul style="list-style-type: none"> Hormone Adrenaline Thyroxine Negative feedback (H) Insulin Glucagon Glycogen Diabetes FSH Oestrogen LH Pituitary gland Ovaries Testes Testosterone Ovulation Contraception IVF (H)

Target Grade:

AP1:

AP2:

AP3:



This year in biology (triple) we will be learning:		This links to:	Key Vocabulary:	
HT1	<p>Cell Transport (B1) & Cell Division (B2)</p> <ul style="list-style-type: none"> The roles of osmosis and active transport in the movement of materials in and between cells. How cells divide by mitosis to produce new body cells. The importance of stem cells in development. The arguments for and against using stem cells in medical treatments. 	<p>The cellular basis of life</p> <p><i>Organisms are made of one or more cells, which need a supply of energy and molecules to carry out life processes.</i></p> <ul style="list-style-type: none"> Diffusion is the movement of molecules from an area of high concentration to an area of low concentration (down a concentration gradient). It is important for moving substances in and out of cells (Y7 & Y9). Cells work together to form tissues, organs and organ systems (Y7 & Y9). Organisms are made of many different types of specialised cells (Y7 & Y9). 	<ul style="list-style-type: none"> Concentration gradient Diffusion Osmosis Partially permeable Turgid Plasmolysis Isotonic Hypotonic Hypertonic Active transport 	<ul style="list-style-type: none"> Cell cycle Mitosis DNA Chromosomes Differentiate Adult stem cell Embryonic stem cell Meristem cells Therapeutic cloning
	<p>Organisation and digestion (B3)</p> <ul style="list-style-type: none"> How to calculate the rate of enzyme activity. How the pH of the digestive system is adjusted to ensure that enzymes are at their optimum pH. 	<ul style="list-style-type: none"> Cells work together to form tissues, organs and organ systems (Y7 & Y9). The structure and function of the digestive system (Y7). How the structure of an enzyme relates to its function (Y9) Factors that affect enzyme activity (Y9) 	<ul style="list-style-type: none"> Enzyme Active site Denature Carbohydrates Protein Lipid Amino acid Fatty acid 	<ul style="list-style-type: none"> Glycerol Protease Amylase Lipase Biuret solution Iodine solution Benedict's reagent . Bile Emulsify
HT3	<p>Communicable disease (B6), Preventing the spread of disease (B7) & Non-communicable disease (B8)</p> <ul style="list-style-type: none"> The cause, spread a prevention of the following diseases: measles, HIV, tobacco mosaic virus, salmonella, gonorrhoea, rose black spot and malaria. How new drugs are discovered and tested. How different diseases of the heart can be treated. How uncontrolled cell division can lead to cancer. How monoclonal antibodies are produced and their use in the diagnosis and treatment of disease. 	<p>Health and disease</p> <p><i>Organisms must stay in good health to survive and thrive; the health of an individual results from interactions between its body, behaviour, environment and other organisms</i></p> <ul style="list-style-type: none"> Risk factors and causes of disease (Y7 & Y9). The body's defence against disease (Y9). Methods of preventing and treating disease: antiseptics, good hygiene, antibiotics, painkillers, vaccines (Y9). How micro-organisms can be grown in the lab (Y9). The structure and function of the circulatory system. (Y7 & Y9) How cells divide by mitosis (B2). 	<ul style="list-style-type: none"> Communicable Pathogen Bacteria Virus Fungi Protist Vaccination Immune Antibodies Antibiotics Clinical trials Placebo 	<ul style="list-style-type: none"> Tumour Benign Malignant Non-communicable Risk factor Carcinogen Stent Statin Valve Pacemaker Monoclonal antibody Chlorosis

Target Grade:

AP1:

AP2:

AP3:



This year in biology (triple) we will be learning:		This links to:	Key Vocabulary:	
HT4	<p>Pant transport (B5) & Photosynthesis (B9)</p> <ul style="list-style-type: none"> Factors that affect the rate of photosynthesis. How to measure the rate of photosynthesis (<i>required practical</i>). How a plant uses the glucose made during photosynthesis. 	<ul style="list-style-type: none"> The arrangement of tissues in a leaf (Y8) The basic principles of photosynthesis (Y8). Translocation is the movement of sugars around a plant (Y9). Water moves through plants via the transpiration stream (Y9). How evaporation and transpiration are controlled in plants (Y9). 	<ul style="list-style-type: none"> Palisade mesophyll Spongy mesophyll Xylem Phloem Chlorophyll 	<ul style="list-style-type: none"> Glucose (C₆H₁₂O₆) Endothermic Limiting factor
HT5	<p>Animal transport (B4) & Respiration (B10)</p> <ul style="list-style-type: none"> Why cellular respiration is important. How the body responds to an increased demand for energy during exercise. How an oxygen debt builds up during anaerobic respiration in your muscles (H). (H). 	<ul style="list-style-type: none"> The structure and function of the circulatory system. (Y7 & Y9). The structure and function of the human gas exchange system (Y7 & Y9). The mechanism of breathing and the importance of ventilating lungs to maintain a steep concentration gradient. (Y7 & Y9). The differences between aerobic and anaerobic respiration (Y8) 	<ul style="list-style-type: none"> Aerobic Anaerobic Exothermic 	<ul style="list-style-type: none"> Energy Glycogen Lactic acid Oxygen debt (H) Metabolism
HT6	<p>The nervous system (B11) & The endocrine system (B12)</p> <ul style="list-style-type: none"> Why it is important to control your internal environment. The role of receptors, neurones, the central nervous system and effectors in responding to changes in the environment. Methods for investigating the effect of a factor on human reaction time (<i>required practical</i>) The main parts of the brain and how scientists study the brain. The main parts of the eye, how it focusses and how glasses can be used to correct long and short sightedness. The roles of hormones in controlling the body's internal environment. The role of hormones in puberty and reproduction. The use of hormones in contraception and IVF. The role of hormones in plant responses. 	<ul style="list-style-type: none"> The basic structure of a neurone/nerve cell (Y7 & Y9). The basic process of human reproduction (Y7). 	<ul style="list-style-type: none"> Homeostasis Neurones Central nervous system (CNS) Stimulus Sensory neurone Receptor Motor neurone Effector Reflex arc Cerebral cortex Cerebellum Medulla Accommodation Myopia Hyperopia Hormone Adrenaline Thyroxine Negative feedback (H) Insulin Glucagon 	<ul style="list-style-type: none"> Glycogen Diabetes FSH Oestrogen LH Pituitary gland Ovaries Testes Testosterone Ovulation Contraception IVF (H) Phototropism Gravitropism Auxin Gibberellins ADH Thermoregulatory centre Vasodilation Vasoconstriction Selective reabsorption Dialysis Transplant

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This year in biology we will be learning:		This links to:	Key Vocabulary:		
HT1	Variation (B14) and Evolution (B15) <ul style="list-style-type: none"> How organisms may change over time due to; natural selection, selective breeding and genetic modification. The advantages and disadvantages of selective breeding and genetic modification. What evidence exists to support the theory of evolution? The causes of extinction and how a single catastrophic event may lead to mass extinction. How organisms are named and classified and why this has changed over time. 	Evolution <i>Differences between organisms cause species to evolve by natural selection of better adapted individuals. The great diversity of organisms is the result of evolution.</i> <ul style="list-style-type: none"> Variation in a population leads to natural selection (Y8). Extinction and preservation of biodiversity (Y8) Classification of vertebrates and invertebrates (Y8) 	<ul style="list-style-type: none"> Evolution Mutations Natural selection Alleles Selective breeding Genetic modification 	<ul style="list-style-type: none"> Fossil Extinction Antibiotic resistance Classification Species Domain Evolutionary tree Binomial 	
	HT2	Adaptations, interdependence and competition (B16) <ul style="list-style-type: none"> Competition between organisms for resources and the adaptations that result from natural selection enabling them to compete successfully in specific environments. Factors that may affect the abundance and distribution of organisms. Methods for measuring the abundance and distribution of organisms within their habitat (<i>required practical</i>). 	Organisms and their Environments <i>All organisms, including humans, depend on, interact with and affect the environments in which they live and other organisms that live there.</i> <ul style="list-style-type: none"> Adaptations (Y8) Natural selection (B14) 	<ul style="list-style-type: none"> Population Community Interdependence Biotic Abiotic Abundance Distribution 	<ul style="list-style-type: none"> Quadrat Transect Compete Adaptations Extremophiles
		HT3	Organising an ecosystem (B17) <ul style="list-style-type: none"> Feeding relationships within a community. How materials are recycled within an ecosystem. 	<ul style="list-style-type: none"> Food chains and food webs (Y8) The carbon cycle (Y8) Photosynthesis and respiration (Y10) 	<ul style="list-style-type: none"> Biomass Predator Prey Producer Consumer Decomposers Precipitation Percolation
	HT4	Biodiversity and ecosystems (B18) <ul style="list-style-type: none"> How human population growth is affecting biodiversity. Ways that we can reduce the impact of human activities on ecosystems and maintain biodiversity. 	<ul style="list-style-type: none"> Extinction and preservation of biodiversity (Y8) . The carbon cycle (B17). 	<ul style="list-style-type: none"> Biodiversity Pollution Acid rain Smog Deforestation Peat bog 	<ul style="list-style-type: none"> Greenhouse effect Global warming

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