EMMANUEL COLLEGE
CORE KNOWLEDGE

What I will know and understand in biology by the end of Year 9

	This year in biology we will be learning:	This links to:	Key Vocabulary:	
HT1	**5B – Cells** • The similarities and differences between eukaryotic and prokaryotic cells. • How to prepare, view and draw specimens using a light microscope (required practical). • The advantages and disadvantages of using light and electron microscopes. • How to calculate magnification. • Why diffusion is important in living things and factors that will affect the rate of diffusion. • How to calculate surface area:volume ratios.	**The cellular basis of life** *Organisms are made of one or more cells, which need a supply of energy and molecules to carry out life processes.* • The basic structure of cells (Y7). • Similarities and differences between plant and animal cells (Y7). • The role of diffusion in the movement of materials between cells (Y7).	• Eukaryote • Prokaryote • Organelle • Nucleus • Cell membrane • Mitochondria • Ribosomes	• Cytoplasm • Cell wall • Vacuole • Chloroplast • Specialised cell • Magnification • Resolution • Diffusion
HT2	**6B – Organisation (The Digestive System)** • The basic structure of carbohydrates, lipids and proteins. • Testing food samples for carbohydrates, lipids and proteins (required practical). • How the structure of an enzyme relates to its function. • Factors that affect enzyme activity.	• Cells work together to form tissues, organs and organ systems (Y7). • The basic structure and function of the digestive system (Y7). • The role of enzymes in digestion (Y7).	• Tissue • Organ • Organ system • Villi • Enzyme • Active site • Denature • Carbohydrates • Protein • Lipid	• Amino acid • Fatty acid • Glycerol • Protease • Amylase • Lipase • Biuret solution • Iodine solution • Benedict's reagent
HT3 HT3	**7B – Organisation (Exchange and transport systems)** • The structure and function of the human circulatory system. • Adaptations of the alveoli and lungs for efficient gas exchange. • The importance of ventilating lungs and gills to maintain a steep concentration gradient. • How sugars (food) and water are transported in plants. • How evaporation and transpiration are controlled in plants.	• The basic structure and function of the circulatory system. (Y7). • The basic structure and function of the human gas exchange system (Y7). • The mechanism of breathing (Y7). • The structure of a leaf and the role of the stomata in gas exchange in plants (Y8).	• Plasma • White blood cells • Red blood cells • Haemoglobin • Platelets • Arteries • Veins • Capillaries • Atrium • Ventricle • Vena cava	• Aorta • Trachea • Bronchi • Bronchioles • Alveoli • Xylem • Phloem • Stomata • Guard cell • Transpiration • Translocation
HT5 HT6	**8B – Disease** • The impact of obesity, smoking and alcohol on human health. • How to interpret data to understand the effect of lifestyle factors on the incidence of non-communicable disease. • The role of pathogens in causing disease. • The body's defences against disease. • Methods of preventing and treating disease. • How to safely grow an uncontaminated culture of bacteria in the lab (*required practical*).	**Health and disease** *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* • Nutrients and balanced diets (Y7). • The effects of smoking, alcohol and drugs (Y7&Y8)	• Non-communicable • Risk factor • Carcinogen • Communicable • Pathogen • Bacteria	• Virus • Binary fission • Aseptic technique • Vaccination • Herd immunity • Immune • Antibodies • Antitoxins • Antibiotics

Target Grade:		AP1:		AP2:		AP3:	