



MAGHULL HIGH SCHOOL – CURRICULUM MAP

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| Unit: Biological Molecules | 1. Monomers & Polymers 2. Carbohydrates 3. Lipids | 4. Proteins 5. Many proteins are enzymes 6. Structure of DNA and RNA | 7. DNA replication 8. ATP 9. Water 10. Inorganic ions |
| LESSONS | | | |
| Knowledge & Skills Development | <ul style="list-style-type: none"> Define monomers, polymers, monosaccharides, condensation reaction and hydrolysis Describe how monosaccharides are formed by two condensation reaction of two monosaccharides. Polysaccharides are formed by the condensation of many glucose units. Recall the biochemical test using Benedict's solution for reducing sugars and non-reducing sugars and iodine/potassium iodide for starch. Describe how triglycerides are formed by the condensation of one molecule of glycerol and three molecules of fatty acid. recognise, from diagrams, saturated and unsaturated fatty acids explain the different properties of triglycerides and phospholipids. Define and draw the structure of amino acids Recall how dipeptides and polypeptides are formed Recall and carry out the biuret test for proteins Explain the role of hydrogen bonds, ionic bonds and disulphide bonds in the structure of proteins | | |
| | <ul style="list-style-type: none"> appreciate how models of enzyme action have changed over time appreciate that enzymes catalyse a wide range of intracellular and extracellular reactions that determine structures and functions from cellular to whole-organism level. Describe the effects of the following factors on the rate of enzyme-controlled reactions – enzyme concentration, substrate concentration, concentration of competitive and of non-competitive inhibitors, pH and temperature. Describe and label the structure of DNA and RNA. Compare them. appreciate that the relative simplicity of DNA led many scientists to doubt that it carried the genetic code. Recall the process of semi-conservative replication of DNA evaluate the work of scientists in validating the Watson–Crick model of DNA replication. Describe and label the structure of ATP Describe and explain how ATP is resynthesised Recall the several properties of water that make it so important in Biology recognise the role of ions in the following topics: hydrogen ions and pH; iron ions as a component of haemoglobin; sodium ions in the co-transport of glucose and amino acids; and phosphate ions as components of DNA and of ATP | | |
| Assessment / Feedback Opportunities | Formative Assessment Teacher questioning Quizzes Exam style questions Essays | | Summative assessment Topic assessment Exam questions in future end of topic assessments to assess recall |

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| Key Vocabulary | <p>Independent Variable, Dependent Variable, Control Variables, Method, Conclusion, Precaution, Evaluation, Reliable, Precision, Valid, Anomaly, Describe, Explain, Compare, Analyse, Calculate, Suggest, Absolute, Uncertainty, Error</p> <p>Covalent, Ionic, Hydrogen, Monomer, Polymer, Polymerisation, Condensation, Hydrolysis, Monosaccharide, Disaccharide, Triglyceride, Phospholipid, Hydrophilic, Hydrophobic, Double helix</p> |
| Literacy/Reading Opportunities | <p>Subject specific vocabulary introduced before reading of related texts</p> <p>Word etymology from Latin and Greek roots</p> <p>Reading of simple and complex sentences, paragraphs, articles</p> <p>Scientific writing including structuring methods, comparisons and evaluations</p> <p>Synoptic essay writing</p> |
| Cross Curricular Themes | Numeracy/Maths – averages (means), reading scales, graph plotting, lines of best fit, using and rearranging equations, using scientific calculators, significant figures |
| Personal Development (Including British Values, RSE, Citizenship) | None |
| Career Opportunities | Forensics, anthropology, archaeology, biological scientists, microbiology, biochemistry |