**UNIT OVERVIEW:** Nucleotides and Nucleic acid

**ENQUIRY:** To what extent does DNA determine our characteristics?

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| **Unit intention:**  |
| **Unit Intention:** The cells of all living organisms are composed of biological molecules. Proteins, carbohydrates and lipids are three of the key groups of biological macromolecules that are essential for life. A study of the structure of these macromolecules allows a better understanding of their functions in living organisms. |  |  |
| **Success criteria:**  | 🗸 | X |
| **2.1.3 Nucleotides and nucleic acids****Learning Checklist, I can:**

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| Describe the structure of a nucleotide as the monomer from which nucleic acids are made. |
| Explain the synthesis and breakdown of polynucleotides by the formation and breakage of phosphodiester bonds  |
| Describe the structure of ADP and ATP as phosphorylated nucleotides. Comprising a pentose sugar (ribose), a nitrogenous base (adenine) and inorganic phosphates. |
| I can the structure of DNA deoxyribonucleic acid |
| I can analyse semi-conservative DNA replication. To include the roles of the enzymes helicase and DNA polymerase,  |
| I can describe the nature of the genetic code. To include the triplet, non-overlapping, degenerate and universal nature of the code and how a gene determines the sequence of amino acids in a polypeptide (the primary structure of a protein). |
| I can explain transcription and translation of genes resulting in the synthesis of polypeptides. To include, the roles of RNA polymerase, messenger (m)RNA, transfer (t)RNA, ribosomal (r)RNA. |

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| **Unit summative and formative assessment details:**Weekly Seneca, factual re-call Extended writing Practical ResearchEnd of unit test  |
| **Home Learning (What and how often):** **Home Learning (What and how often):**Homework once a week (flip learning and Seneca)Revisit class content (make notes)Research activities for practical  |
| **Topic Sequence**1. The structure of Nucleotides
2. Synthesis of polynucleotides
3. Semi conservative replication
4. Genetic code
5. ATP
6. Protein synthesis
7. DNA purification PAG 9
 | **Recommended reading:** Junk DNA-Nessa Carey‘Life Story’, also re-named ‘The Race for the Double Helix’ (BBC Horizon, 1987**Great Discoveries in Science: The Double Helix** (Howard Hughes Medical Institute).<https://dnalc.cshl.edu/resources/3d/09-5-dna-has-4-units.html><http://brilliantbiologystudent.weebly.com/biuret-test-for-protein.html><https://jcp.bmj.com/content/jclinpath/25/10/892.full.pdf>**Places to visit:**Centre of the cell |

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| **Success criteria** – Have you met them? Show your evidence in the boxes below. |
| **1.** |
| **2.** |
| **3.** |
| **4.** |
| **5.** |
| **6.** |
| **How will you improve your work?** |

**End of Unit EVALUATION**