YEAR 13 BIOLOGY

MAGHULL HIGH SCHOOL – CURRICULUM MAP

Unit: **Control of Gene Expression** **LESSONS**	1. Alteration of the sequence of bases in DNA can alter the structure of proteins 2. Most of a cell's DNA is not translated 3. Regulation of transcription and translation	4. Gene expression and cancer 5. Using genome projects 6. Recombinant DNA technology	7. Differences in DNA between individuals of the same species can be exploited for identification and diagnosis of heritable conditions 8. Genetic fingerprinting
Knowledge & Skills Development	• relate the nature of a gene mutation to its effect on the encoded polypeptide. • evaluate the use of stem cells in treating human disorders. • Define unipotent & multipotent • interpret data provided from investigations into gene expression • evaluate appropriate data for the relative influences of genetic and environmental factors on phenotype. • Determine the genome of simpler organisms • Define recombinant gene technology • Describe how fragments of DNA can be produced by several methods • interpret information relating to the use of recombinant DNA technology • evaluate the ethical, financial and social issues associated with the use and ownership of recombinant DNA technology in agriculture, in industry and in medicine • balance the humanitarian aspects of recombinant DNA technology with the opposition from environmentalists and anti-globalisation activists	• relate recombinant DNA technology to gene therapy. • Define benign and malignant • Describe the role of tumour suppressor gene and oncogenes • Explain how increased oestrogen may lead to breast cancer. • evaluate evidence showing correlations between genetic and environmental factors and various forms of cancer • interpret information relating to the way in which an understanding of the roles of oncogenes and tumour suppressor genes could be used in the prevention, treatment and cure of cancer. • evaluate information relating to screening individuals for genetically determined conditions and drug responses. • explain the biological principles that underpin genetic fingerprinting techniques • interpret data showing the results of gel electrophoresis to separate DNA fragments • explain why scientists might use genetic fingerprinting in the fields of forensic science, medical diagnosis, animal and plant breeding.	
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	
Key Vocabulary	Independent Variable, Dependent Variable, Control Variables, Method, Conclusion, Precaution, Evaluation, Reliable, Precision, Valid, Anomaly, Describe, Explain, Compare, Analyse, Calculate, Suggest, Absolute, Uncertainty, Error Mutation, Deletion, Translocation, Inversion, Addition, Duplication, Totipotent, Pluripotent, Multipotent, Epigenetics, Methylation, Acetylation, Malignant, Benign, Metastasis, Epigenome, liposome, Genetic fingerprinting		

Literacy/Reading Opportunities	Subject specific vocabulary introduced before reading of related texts Word etymology from Latin and Greek roots Reading of simple and complex sentences, paragraphs, articles Scientific writing including structuring methods, comparisons and evaluations Synoptic essay writing
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	Geneticist, farmer, plant breeders, genetic screening, oncologist, endocrinologist