Yr13 Biology – Unit 3.8

MAGHULL HIGH SCHOOL – CURRICULUM MAP

	Sequence		
TOPIC (S) **The control of gene expession**	1. Alteration of the sequence of bases in DNAcan 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	Exam questions – teacher assessed	Exam questions – self assessed	Extended writing task – teacher assessed	Deep marking of required practical in lab books	Topic assessment
Cultural Capital	• •				

SMSC / Promoting British Values **(Democracy, Liberty, Rule of Law, Tolerance & Respect)**	• 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 • evaluate evidence showing correlations between genetic and environmental factors and various forms of cancer
Reading opportunities	• Recommended Read:
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
Digital Literacy	The use of excel to plot graphs and analyse data MSOffice35 apps including SharePoint
Cross-Curricular Links	Numeracy/Maths – averages (means), reading scales, graph plotting, lines of best fit, using and rearranging equations, using scientific calculators
Careers	Geneticist, farmer, plant breeders, genetic screening, oncologist, endocronologists