

Yr12 Biology – Unit 3.2

MAGHULL HIGH SCHOOL – CURRICULUM MAP



Sequence					
TOPIC (S) Cells	1. Structure of eukaryotic cells 2. Structure of prokaryotic cells and viruses	3. Methods of studying cells 4. All cells arise from other cells	5. Transport across cell membranes 6. Cell recognition and the immune system		
Knowledge & Skills development	<ul style="list-style-type: none"> Recall the structure and function of all organelles in a eukaryotic cell apply their knowledge of organelles features in explaining adaptations of eukaryotic cells. Recall the structure and function of all organelles in a prokaryotic cells Define viruses and describe the structures within them Describe and explain principles and limitations of optical microscopes, transmission electron microscopes and scanning electron microscopes. explain the adaptations of specialised cells in relation to the rate of transport across their internal and external membranes explain how surface area, number of channel or carrier proteins and differences in gradients of concentration or water potential affect the rate of movement across cell membranes. Describe and explain the various ways substances move across cell membranes; osmosis, active transport, cotransport, diffusion and facilitated diffusion Describe the use of antibodies in the ELISA test 		<ul style="list-style-type: none"> Calculate magnification, size of image and size of real object Describe the stages in cell fractionation and ultracentrifugation as used to separate cells Recall the stages in mitosis Describe the behaviour of chromosomes during interphase, prophase, metaphase, anaphase and telophase of mitosis. The role of spindle fibres attached to centromeres in the separation of chromatids. explain the appearance of cells in each stage of mitosis. Describe the stages of binary fission in prokaryotic cells Describe how viruses replicate in host cells Definition of antigen. The effect of antigen variability on disease and disease prevention. Describe and explain phagocytosis Describe and explain the response of T lymphocytes to a foreign antigen (the cellular response). Describe and explain the response of B lymphocytes to a foreign antigen, clonal selection and the release of monoclonal antibodies (the humoral response). Define vaccination Compare and contrast the differences between passive and active immunity Describe and identify the structure of the HIV virus Recall the uses of monoclonal antibodies 		
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	<ul style="list-style-type: none"> 				

<p>SMSC / Promoting British Values (Democracy, Liberty, Rule of Law, Tolerance & Respect)</p>	<ul style="list-style-type: none"> Ethical issues associated with the use of vaccines and monoclonal antibodies.
<p>Reading opportunities</p>	<ul style="list-style-type: none"> Recommended Read: The Lives of a Cell: Notes of a Biology Watcher.
<p>Key Vocabulary</p>	<p>Independent Variable, Dependent Variable, Control Variables, Method, Conclusion, Precaution, Evaluation, Reliable, Precision, Valid, Anomaly, Describe, Explain, Compare, Analyse, Calculate, Suggest, Absolute, Uncertainty, Error, Resolution, Cell fractionation, Homogenation, Ultracentrifugation, Graticule, Eukaryote, Organelle, Mitochondria, Chloroplast, Rough endoplasmic reticulum, Smooth endoplasmic reticulum, Golgi, Lysosome, Ribosome, Vacuole, Prokaryote, Plasmid, Flagellum, Capsid, Mitosis, Chromatid, Centromere, Interphase, Prophase, Metaphase, Anaphase, Telophase, Cytokinesis, Centrioles, Binary Fission, Phospholipid, Glycoprotein, Cholesterol, Diffusion, Osmosis, Active transport, Co-transport, Pathogen, Lymphocyte, Phagocyte, Phagocytosis, Monoclonal antibodies, Vaccination</p>
<p>Digital Literacy</p>	<p>The use of excel to plot graphs and analyse data MSOffice35 apps including SharePoint</p>
<p>Cross-Curricular Links</p>	<p>Numeracy/Maths – averages (means), reading scales, graph plotting, lines of best fit, using and rearranging equations, using scientific calculators</p>
<p>Careers</p>	<p>Lab technician, biology teacher, cellular biology, microbiologist, molecular biologist,</p>