

	Half term 1	Half term 2	Half term 3	Half term 4	Half term 5	Half term 6
<b>Year 13 Biology</b>	<p><b>Content delivered:</b> <b>Unit 4.2:</b> Biodiversity Sampling techniques Measuring species richness Simpsons Index of Diversity Genetic biodiversity Maintaining biodiversity <i>In-situ</i> and <i>ex-situ</i> methods <b>Unit 5.2:</b> Chloroplast structure Photosynthetic pigments Light dependent reaction Light independent reaction Factors affecting photosynthesis Cellular respiration Mitochondrion structure Glycolysis, link reaction and Krebs cycle Chemiosmotic theory</p>	<p><b>Content delivered:</b> <b>Unit 4.2:</b> Biological classification Binomial system 3 domains of life Classification and phylogeny Evolution by natural selection Types of variation Statistics and variation Adaptation <b>Unit 5.2:</b> Respiratory substrates RQ <b>Unit 4.1:</b> Phagocytes B and T lymphocytes Pathogens Opsonins, agglutinins and anti-toxins Active &amp; passive immunity Vaccination</p>	<p><b>Content delivered:</b> <b>Unit 6.1.1:</b> Gene mutations and their effects Regulating gene expression Genetic control of body plans Mitosis and apoptosis <b>Unit 6.2.1:</b> Cloning plants Micropropagation Cloning animals SCNT Arguments for and against artificial cloning Using microorganisms in biotechnological processes Using microorganisms in human food production Aseptic techniques Growth curves</p>	<p><b>Content delivered:</b> <b>Unit 6.1.2:</b> Environment and genetic factors in phenotypic variation Sexual reproduction leading to variation Linkage and epistasis Monohybrid and dihybrid crosses Genetic bottlenecks Continuous and discontinuous variation Factors affecting evolution Allele frequencies Artificial selection <b>Unit 6.3.1:</b> Biotic and abiotic factors in ecosystems Biomass transfers Nitrogen cycle Carbon cycle Succession <b>Unit 6.3.2:</b> Factors affecting population size Interactions between populations Conservation and preservation Managing ecosystems Managing environmental resources</p>	<p><b>Content delivered:</b> <b>Unit 6.1.3:</b> DNA sequencing Gene sequencing DNA profiling PCR Electrophoresis Genetic engineering Genetic manipulation Gene therapy</p>	
<b>Key Words</b> <b>Level 2</b> <b>Level 3</b>	<p><b>4.2:</b> Biodiversity, habitat, species, allele, locus, polymorphic gene locus, monoculture, keystone species, conservation <i>in situ</i>, conservation <i>ex situ</i> <b>5.2:</b> Granum, photosystem, stroma, thylakoid, electron carrier, photophosphorylation, independent variable, dependent variable, control variable, validity, reliability, reproducibility, glycolysis, cristae, mitochondrial matrix, decarboxylation, dehydrogenation, substrate-level phosphorylation, chemiosmosis, oxidative phosphorylation, respiratory substrate, respirometer</p>	<p><b>4.2:</b> Binomial system, classification, phylogeny, natural selection, continuous variation, discontinuous variation, interspecific, intraspecific, correlation coefficient, anatomical, behavioural, physiological, adaptation <b>5.2:</b> Glycolysis, cristae, mitochondrial matrix, decarboxylation, dehydrogenation, substrate-level phosphorylation, chemiosmosis, oxidative phosphorylation, respiratory substrate, respirometer <b>4.1:</b> Pathogen, transmission, vector, callose, inflammation, mucous membrane, primary defences, antibodies, clonal expansion, interleukins, regulator cells, agglutinins, opsonins, epidemic, immunity, vaccination, antibiotic</p>	<p><b>6.1.1:</b> Point mutation, silent mutation, missense, nonsense, indel, frameshift, exon, intron, operon, transcription factor, apoptosis, conserved, homeobox sequence, <i>Hox</i> gene <b>6.2.1:</b> Pathogen, transmission, vector, callose, inflammation, mucous membrane, primary defences, antibodies, clonal expansion, interleukins, regulator cells, agglutinins, opsonins, epidemic, immunity, vaccination, antibiotic</p>	<p><b>6.1.2:</b> Genotype, phenotype, allele, heterozygous, homozygous, monogenic, dihybrid, codominance, autosomal linkage, epistasis, chi-squared, continuous variation, discontinuous variation, directional selection, founder effect, genetic bottleneck, stabilising selection, allopatric speciation, sympatric speciation <b>6.3.1:</b> Abiotic, biotic, ecosystem, biomass transfer, trophic level, productivity, saprotroph, ammonification, nitrification, denitrification, decomposition, absorption, chemo autotrophic, climax community, deflected succession, pioneer species, quadrat, transect <b>6.3.2:</b> Carrying capacity, limiting factor, interspecific competition, intraspecific competition, conservation, preservation</p>	<p><b>6.1.3:</b> DNA sequencing, bioethics, nanotechnology, polymorphism, primer, oncogenes, polymerase chain reaction, electrophoresis, DNA ligase, electroporation, plasmid, recombinant DNA, restriction enzyme, vector, electrofusion, methylated, germ line gene therapy, somatic cell gene therapy</p>	
<b>Where previous knowledge has occurred and future development</b> KS2 → KS3 → KS4 → <b>KS5</b>	<p>KS2: KS3: Y7 – Cells KS3: Y8 – Ecology KS4: Y10 – Cell structure (B1) KS4: Y10 – Photosynthesis (B4) KS4: Y11 – Ecology (B7) KS5: Ecology, ultrastructure of cells</p>	<p>KS2: KS3: Y9 – Genetics KS4: Y10 – Pathogens and disease (B3) KS4: Y11 – Genetics (B6) KS4: Y11 – Adaptations (B7) KS5: Cell ultrastructure, respiration</p>	<p>KS2: KS3: KS4: Y11 Protein synthesis (B6) KS4: Y11 – Biotechnology (B7) KS5: Protein synthesis, prokaryotic structures</p>	<p>KS2: KS3: Y8 – Ecology KS3: Y9 – Genetics KS4: Y11 – Sexual and asexual reproduction (B6) KS4: Y11 – Genetic crosses (B6) KS4: Y11 – Ecology (B7) KS5: Ecology, statistical analysis</p>	<p>KS2: KS3: Y7 - Cells KS3: Y9 – Genetics KS4: Y10 – Cells (B1) KS4: Y11 – Genetics (B6) KS4: Y11 – Genetic engineering (B6) KS5: Nucleotides, protein synthesis, replication</p>	
<b>Common Misconceptions</b>	<p>4.2: Conservation is only in zoos and Africa 5.2: Only light affects photosynthesis</p>	<p>4.2: Evolution is a fast process 4.1: All disease is infectious</p>	<p>6.1.1: Mutations are negative 6.2.1: Cloning isn't commercially available</p>	<p>6.1.2: Heterozygous crosses produce an in-between 6.3.1: Biomass and mass are the same thing</p>	<p>6.1.3: Genetic engineering produces mutants</p>	
<b>Literacy</b>	<p>Scientific writing (HSW): PAG 3 Scientific writing (HSW): PAG 6 NHTW reviews as starter activities</p>	<p>Scientific writing (HSW): PAG 11 Writing to describe: Evolution NHTW reviews as starter activities</p>	<p>Scientific writing (HSW): PAG 7 Writing to argue: Arguments for and against cloning NHTW reviews as starter activities</p>	<p>Writing to argue: Ethical considerations surrounding the use of artificial selection NHTW reviews as starter activities</p>	<p>Writing to evaluate: Evaluating the impact of genetic engineering NHTW reviews as starter activities</p>	
<b>Numeracy</b>	<p>Calculating means Statistical analysis Drawing and interpreting graphs</p>	<p>Statistical analysis Rearranging formulae</p>	<p>Statistical analysis Standard form Logs</p>	<p>Statistical analysis Drawing and interpreting graphs Standard form</p>	<p>Standard form</p>	

# Summer exams

<b>Homework</b>	Completion of Doddle section quizzes	Completion of Doddle section quizzes	Completion of Doddle section quizzes	Completion of Doddle section quizzes	Completion of Doddle section quizzes
<b>Assessment this half-term</b>	PAG 3 PAG 6 5.2 Mini test	Mock exam: Papers 1, 2 & 3 PAG 11	Mock exam: Papers 1, 2 & 3 PAG 7	Mock exam: Papers 2 & 3 PAG 3	Practice papers 1, 2 & 3 PAG 12
<b>Career opportunities Employment Links</b>	LIFE SKILLS: Understanding how conservation programmes work EMPLOYMENT: Environment Agency	LIFE SKILLS: Understanding how diseases spread EMPLOYMENT: Immunologist	LIFE SKILLS: EMPLOYMENT:	LIFE SKILLS: EMPLOYMENT:	LIFE SKILLS: Understanding the role of GM foods EMPLOYMENT: Research scientist
<b>Enrichment</b>	Chester Zoo visit			Nancy Rothwell Award	
<b>Practical activities/HSW</b>	PAG 3: Ecology PAG 6: TLC Factors affecting photosynthesis	PAG 11: Investigating heart rate	PAG 7: Aseptic techniques	PAG 3: Ecology	PAG 12: Research project
<b>Employability Skills</b>	<b>Aiming high</b> Creativity <b>Leadership</b> Listening Presenting <b>Problem solving</b>	<b>Literacy</b> Numeracy Independence Communication Teamwork Staying positive	<b>Aiming high</b> Creativity <b>Leadership</b> Listening Presenting <b>Problem solving</b>	<b>Literacy</b> Numeracy Independence Communication Teamwork Staying positive	<b>Aiming high</b> Creativity <b>Leadership</b> Listening Presenting <b>Problem solving</b>
<b>IT Skills</b>	IT1 & IT2: Appropriate websites and research for homework as well as recall quizzes	IT1 & IT2: Appropriate websites and research for homework as well as recall quizzes	IT1 & IT2: Appropriate websites and research for homework as well as recall quizzes	IT1 & IT2: Appropriate websites and research for homework as well as recall quizzes	IT1 & IT2: Appropriate websites and research for homework as well as recall quizzes
<b>Notes/developments /standardisation comments</b>					