

Topic	Topic 1 Biological Molecules, Carbohydrates Lipids	Topic 1 Water and Inorganic Ions	Topic 1 Proteins and Enzymes	Topic 1 Nucleic Acids	Topic 4 DNA, genes and chromosomes and protein synthesis	Topic 4 Genetic Diversity – mutations, meiosis and natural selection	Topic 4 Species and taxonomy, biodiversity	Topic 4 Investigati ng diversity
Web links	<p>Chemistry of life: https://www.abpischools.org.uk/topic/chemistryoflife/1/1</p> <p>Formation of glycosidic bond from alpha glucose: https://www.youtube.com/watch?v=fPxl-9GscY8</p> <p>Formation of glycosidic bond from beta glucose: https://www.youtube.com/watch?v=yDWp1-O8C78</p> <p>Formation of peptide bond between amino acids: https://www.youtube.com/watch?v=Q2WZFqfbCck</p> <p>Biochemical tests: http://www.mrothery.co.uk/module1/Mod%201%20techniques.htm</p>	<p>Water: https://www.khanacademy.org/science/biology/water-acids-and-bases#concept-intro</p>	<p>Proteins: http://www.bcconline.com/biol10rs/Pearson-Animations/protein_structure.swf https://www.abpischools.org.uk/topic/chemistryoflife/9/1</p> <p>Amino acid chromatography: http://www.biotopics.co.uk/as/amino_acid_chromatography.html</p> <p>Enzymes: https://www.abpischools.org.uk/topic/enzymes_16plus/1/1</p> <p>pH & log: https://www.youtube.com/watch?v=zzu2POfYvOY</p>	<p>ATP: https://www.abpischools.org.uk/topic/chemistryoflife/11/1</p> <p>DNA & RNA: https://www.abpischools.org.uk/topic/chemistryoflife/12/1</p> <p>DNA Replication: https://www.abpischools.org.uk/topic/chemistryoflife/13/1</p> <p>RNA: https://www.abpischools.org.uk/topic/chemistryoflife/14/1</p> <p>DNA Meselson & Stahl Experiment: http://www.sumanasinc.com/webcontent/animations/content/meselson.html</p> <p>DNA Zoom in: http://www.yourgenome.org/video/zoom-in-on-your-genome</p>	<p>Protein Synthesis: http://www.yourgenome.org/video/from-dna-to-protein-flash</p> <p>Transcription: http://highered.mheducation.com/sites/9834092339/student_view0/chapter15/stages_of_transcription.html</p> <p>Splicing: http://highered.mheducation.com/sites/9834092339/student_view0/chapter15/how_splicing_works_rna.html</p> <p>Translation: http://highered.mheducation.com/sites/9834092339/student_view0/chapter15/how_translation_works.html</p>	<p>Mutations: https://www.abpischools.org.uk/topic/celldivision/5/1</p> <p>Meiosis: http://www.cellsalive.com/meiosis_js.htm http://www.sumanasinc.com/webcontent/animations/content/meiosis.html http://highered.mheducation.com/sites/0072495855/student_view0/chapter28/animation_how_meiosis_works.html https://www.abpischools.org.uk/topic/celldivision/7</p> <p>Chromosome mutations: http://www.sumanasinc.com/webcontent/animations/content/mistakesmeiosis/mistakesmeiosis.swf</p>	<p>Species: https://www.khanacademy.org/science/biology/her/tree-of-life/v/species</p> <p>Tree of life: http://www.open.edu/openlearn/nature-environment/natural-history/tree-life</p> <p>Courtship behaviour: http://www.bbc.co.uk/nature/adaptations/Courtship_display#p005wkms</p> <p>Phylogenetics trees: https://www.khanacademy.org/science/biology/her/tree-of-life/a/phylogenetic-trees</p>	<p>Comparison of DNA sequence: https://www.youtube.com/watch?v=S5SfmaARy7Qw</p> <p>DNA hybridisation: https://www.youtube.com/watch?v=WrlGOXnYhZU</p> <p>mRNA and amino acids: https://www.youtube.com/watch?v=3400mPif9FM</p> <p>Immunological techniques: https://www.youtube.com/watch?v=2GvfRJkoyMA</p>
Practice Qs	Use the question booklets you have been given. Spare ones are on the intranet.							
Teacher tips	Remember to learn the different structures and different types of bonds that these form. Learn the difference between hydrolysis and condensation.	Learn the properties of water and why they are useful biologically.	Remember the enzyme's active site and substrate are complementary – form an enzyme-substrate complex . Enzymes are denatured NOT killed .	Learn the structure of DNA, RNA and ATP and their functions. Be able to analyse experiments about discovering the structure of DNA. DNA contains a sequence of bases, which codes for amino acids. DNA replication uses complementary base pairings. DNA polymerase joins DNA nucleotides as a strand NOT complementary base pairing. Energy can only be released NOT produced.	Do not confuse the two threads (chromatids) of a chromosome with the two strands of the double helix. Learn the key steps of transcription and translation and remember splicing only happens in eukaryotes. ATP has two roles in translation. Proteins are a sequence of amino acids.	Relate the key steps of natural selection to any information they have given you in the question. Remember meiosis 1 halves the chromosome number. Independent segregation and cross over are why meiosis creates genetic variation.	Make sure know what a species is – members of the same species are capable of breeding to produce fertile offspring. You should also know what a hierarchy is and how we classify organisms. Remember animals do not think like humans for courtship. Species richness measures the number of species. Species diversity take into account the number of species and their relative abundance.	Remember the 5 different ways you can analyse species relatedness – observable characteristics, DNA, mRNA, amino acid sequenced and immunological comparison.
Quizlet	https://quizlet.com/193309185/as-aqa-biology-topic-1-flash-cards/				https://quizlet.com/193310387/as-aqa-biology-topic-4-flash-cards/			

Topic	Topic 2 Cell Structure & Studying cells	Topic 2 The cell cycle	Topic 2 Transport across membranes	Topic 2 Cell recognition and the immune system	Topic 3 SA:Vol and Gas Exchange	Topic 3 Digestion & absorption	Topic 3 Mass Transport in animals	Topic 3 Mass Transport in plants
Web links	<p>Cell structure: https://www.abpischools.org.uk/topic/cellbiology/3/1</p> <p>http://learn.genetics.utah.edu/content/cells/insideacell/</p> <p>http://www.cellsalive.com/cells/cell_model.js.htm</p> <p>Bacterial cell: http://www.cellsalive.com/cells/bactcell.htm</p> <p>Microscopes: https://www.abpischools.org.uk/topic/cellbiology/2/1</p> <p>Light microscopy: https://bigpictureeducation.com/video-light-microscopy</p> <p>Electron microscopy: https://bigpictureeducation.com/video-electron-microscopy</p> <p>Cell size & scale: http://learn.genetics.utah.edu/content/cells/scale/</p> <p>Cell fractionation: http://www.sumanasic.com/webcontent/animations/content/cellfractionation.html</p> <p>https://www.youtube.com/watch?v=SjaFUJhY9Q</p>	<p>Cell cycle: http://www.cellsalive.com/cell_cycle_e.htm</p> <p>http://highered.mheducation.com/sites/0072495855/student_view0/chapter2/animation_how_the_cell_cycle_works.html</p> <p>Mitosis: http://www.cellsalive.com/mitosis.htm</p> <p>https://www.abpischools.org.uk/topic/cellbiology/1/1</p> <p>Cancer development: http://www.yourgenome.org/video/cancer-rogue-cells</p> <p>https://www.abpischools.org.uk/topic/celldiv-cancer/</p> <p>Binary fission: http://www.classzone.com/books/hssc/sc/bio_07/animated_biology/bio_ch05_0149_ab_fission.html</p> <p>Viral replication: http://sites.fas.harvard.edu/~biotext/animations/lytic_cycle.html</p>	<p>Fluid mosaic model: http://glencoe.mheducation.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::sites/dl/free/0078802849/383931/Plasma_Membrane_The_Fluid_Mosaic_Model.swf::The%20Fluid%20Mosaic%20Model</p> <p>Transport through membranes: https://www.abpischools.org.uk/topic/cellbiology/5/1</p> <p>Osmosis: http://highered.mheducation.com/sites/0072495855/student_view0/chapter2/animation_how_osmosis_works.html</p> <p>Facilitated diffusion: http://highered.mheducation.com/sites/9834092339/student_view0/chapter5/how_facilitated_diffusion_works.html</p> <p>Active transport: http://highered.mheducation.com/sites/9834092339/student_view0/chapter5/primary_active_transport.html</p>	<p>Immune System: https://www.abpischools.org.uk/topic/pathogens/1/1</p> <p>http://highered.mheducation.com/sites/0072507470/student_view0/chapter22/animation_the_immune_response.html</p> <p>http://highered.mheducation.com/sites/0072495855/student_view0/chapter24/animation_the_immune_response.html</p> <p>https://www.youtube.com/watch?v=AucZlvEv29Y</p> <p>Phagocytosis: http://highered.mheducation.com/sites/0072495855/student_view0/chapter2/animation_phagocytosis.html</p> <p>http://www.dnatable.com/video/116/Neutrophil-attacks-on-bacteria</p> <p>Cell mediated immunity: http://www.sbs.utexas.edu/psaxena/Microbiology_Animations/Animations/Cell-MediatedImmunity/micro_cell-mediated.swf</p> <p>Humoral immunity: http://www.sbs.utexas.edu/psaxena/Microbiology_Animations/Animations/HumoralImmunity/micro_humoral.swf</p> <p>HIV replication: http://highered.mheducation.com/sites/0072495855/student_view0/chapter24/animation_hiv_replication.html</p> <p>https://www.youtube.com/watch?v=odRyv7V8LA</p> <p>https://www.youtube.com/watch?v=17pfZUIAqow</p> <p>ELISA: http://www.sumanasic.com/webcontent/animations/content/pregtest.html</p> <p>http://www.sumanasic.com/webcontent/animations/content/ELISA.html</p> <p>https://www.youtube.com/watch?v=RRbuz3VQ100</p>	<p>http://www-school.co.uk/a-level/biology/gas-exchange</p> <p>Gas exchange in fish: https://www.youtube.com/watch?v=gkG3_AbWQm8</p> <p>http://www-school.co.uk/a-level/biology/gas-exchange/revise-it/gas-exchange-in-fish</p> <p>http://www.kscience.co.uk/animations/anim_3.htm</p> <p>Gas Exchange in Humans: http://highered.mheducation.com/sites/0072495855/student_view0/chapter25/animation_gas_exchange_during_respiration.html</p>	<p>Digestive system in images: https://bigpictureeducation.com/anatomy-digestive-system-images</p> <p>Digestive system: https://www.youtube.com/watch?v=heipMThMaEA</p> <p>Lipid digestion and absorption: https://www.youtube.com/watch?v=c2VcMcBIA2U</p>	<p>Cardiac Cycle: https://www.youtube.com/watch?v=YORzb6oGVbW</p> <p>Haemoglobin & Oxygen dissociation curves: http://www.johnwiley.net.au/highered/interaction/media/Respiration/content/Respiration/resp3a/screen0.swf</p> <p>https://www.youtube.com/watch?v=vj8c2jiY12g</p> <p>Heart blood vessels and cardiac cycle: https://www.youtube.com/watch?v=d4hwN19V9gk</p> <p>Heart contraction: https://www.nhlbi.nih.gov/health/topics/hhw/contraction</p> <p>Blood system: http://www.kscience.co.uk/animations/blood_system.swf</p>	<p>Transport in plants: http://www.saps.org.uk/attachments/article/1274/index_animation4.html</p> <p>Phloem loading: http://highered.mheducation.com/sites/9834092339/student_view0/chapter38/animation_phloem_loading.html</p>
Practice Qs	Use the question booklets you have been given. Spare ones are on the intranet.							
Teacher tips	Ensure you can use the magnification formula and can rearrange it. Convert units to the same unit before calculating. Know the function of each organelle. Cell fractionation – solution prevents organelles bursting/shrinking!	Understand the stages of mitosis and where this fits in the cell cycle. The replication of DNA takes place during interphase before the nucleus and the cell divide.	Learn the definitions of diffusion, facilitated diffusion, osmosis and active transport! Remember to include co-transporters if applicable. Be prepared to carry out water potential calculations. All water potential values are negative. The highest water potential is zero (at atmospheric pressure).	Be clear about the roles of B cells and T cells and the steps involved in humoral immunity and cell-mediated immunity. People commonly use the terms antigen, antibody and antibiotic. When talking about immunity put antibiotics out of your mind!! B cells with complementary antibody to an antigen are present from birth. Being present, they multiply in response to a pathogen. Agglutination is possible because each antibody has 2 binding sites.	Understand Fick's law and the counter-current gas exchange in fish. Substances not only move into cells through the cell-surface membrane but also into organelles. The mitochondria of a cell has the lowest oxygen concentration.	Learn the definition for diffusion and make sure you know which enzyme digests which substrates, where they are produced and act. Remember the absorption of lipids is different! Don't confuse villi and microvilli!	Be prepared to analyse Haemoglobin dissociation curves and the cardiac cycle graph. The left and right sides of the heart both contract together. Pressure and volume are inversely related. Fluids move from a greater to lower pressure.	Learn the difference between the xylem and phloem and the key details of how transpiration and translocation occur. Be prepared to explain evidence for transpiration and translocation.
Quizlet	https://quizlet.com/193328323/as-aqa-biology-topic-2-flash-cards/				https://quizlet.com/193344976/as-aqa-biology-topic-3-flash-cards/			

Year 12 Biology links

Topic	Topic 5 Photosynthesis	Topic 5 Respiration	Topic 5 Energy and Ecosystems	Topic 5 Nutrient Cycles	Topic 6 Stimuli, Receptors and Control of Heart Rate	Topic 6 Nervous Co-ordination – Nerve Impulses, Synapses	Topic 6 Skeletal muscles	Topic 6 Homeostasis and negative feedback, blood glucose concn and blood water potential
Web links	<p>Light dependent reaction: https://www.youtube.com/watch?v=VUUC8aENWwI https://www.youtube.com/watch?v=yNv-8oKWOWw</p> <p>Light independent reaction: https://www.youtube.com/watch?v=s_1MbHFBetA</p>	<p>ATP Accounting: https://www.youtube.com/watch?v=qsR-lkeTmjQ</p> <p>Glycolysis: https://www.youtube.com/watch?v=NIQ86_25KOW</p> <p>Anaerobic respiration: https://www.youtube.com/watch?v=mlI9AGDrkSk</p> <p>Link Reaction: https://www.youtube.com/watch?v=JZpi7a163vU</p> <p>Krebs Cycle: https://www.youtube.com/watch?v=qz-nT7Ez6xk</p> <p>Oxidative Phosphorylation: https://www.youtube.com/watch?v=OROpEMYFdqc</p> <p>Chemiosmosis: https://www.youtube.com/watch?v=25ds5W15efw</p>	<p>Energy and Ecosystems: https://www.youtube.com/watch?v=gvkiLYrh12o</p>	<p>Nitrogen Cycle: Nitrogen fixation https://www.youtube.com/watch?v=iMbMgppvDvo&index=1&list=PL2CHLqDY7PcMil4Z-gDA2Lmb2I220YxbS</p> <p>Nitrification & Denitrification: https://www.youtube.com/watch?v=fLd9Jei9V0Y&index=2&list=PL2CHLqDY7PcMil4Z-gDA2Lmb2I220YxbS</p> <p>Nutrient Cycles: https://www.youtube.com/watch?v=5Ct81j6GVA</p>	<p>Taxes and kinesis: https://www.youtube.com/watch?v=rRDovcEf_ks</p> <p>Phototropism: https://www.youtube.com/watch?v=2A_LKrLhxE</p> <p>Control of heart rate: https://www.youtube.com/watch?v=9PD6ESiqVZg</p>	<p>Synapses: http://outreach.mcb.harvard.edu/animations/synapse.swf</p> <p>Resting and action potentials: http://www.s-cool.co.uk/a-level/biology/nervous-and-hormonal-control/revision/formation-and-transmission-of-impulses</p>	<p>Activating muscles and Sliding filament theory: http://highered.mheducation.com/sites/0072495855/student_view0/chapter10/animations_action_potentials_and_muscle_contraction.html</p> <p>http://highered.mheducation.com/sites/0072495855/student_view0/chapter10/animations_myofilament_contraction.html</p>	<p>Kidneys: https://www.abpischools.org.uk/topic/homeostasis-kidneys/1/1 https://www.youtube.com/watch?v=vNvZaGclzEo</p> <p>Blood glucose: https://www.abpischools.org.uk/topic/homeostasis-sugar</p> <p>Action of insulin and diabetes: http://www.youtube.com/watch?v=X0ezy1t6N08</p>
Practice Qs	Use the question booklets you have been given. Spare ones are on the intranet.							
Teacher tips	<p>Make sure you know the three ways in which something can be oxidised or reduced. Reduced NADP is the most important product of the light-dependent reaction.</p>	<p>In glycolysis for each molecule of glucose, two molecules of triose phosphate are produced. Therefore the yields must be doubled (4 ATP & 2 reduced NAD). Carbon dioxide is formed directly from molecules involved in the link reaction and the Krebs cycle. Chemiosmotic theory: the flow of H⁺ causes a change of shape in the protein ATP synthase and leads to ATP synthesis. Oxygen is the final acceptor of hydrogen atoms at the end of the electron transfer chain and is used to form water.</p>	<p>Learn simple definitions of ecological terms. When making calculations involving energy transfer, remember energy cannot be created or destroyed. NPP=GPP – R & N = I – (F + R)</p>	<p>Make sure you use the term nitrogen correctly. Nitrogen is an element that forms a part of ions, such as nitrites and nitrates (nitrogen-containing ions), as well as part of complex molecules such as proteins and nucleic acids (nitrogen-containing molecules).</p>	<p>For reflex arcs remember the sequence: stimulus, receptor, sensory neurone, intermediate neurone, motor neurone, effector, response.</p>	<p>Where sodium and potassium ions are actively transported through carrier proteins, it is known as the sodium-potassium pump. The refractory period limits the strength of stimulus that can be detected.</p>	<p>The dark band is the A-band and the light band is the I-band. The arrangement of sarcomeres into a long line means that when one sarcomere contracts a little the line as a whole contracts a lot! The lines of sarcomeres running parallel to each other means that all the force is generated in one direction.</p>	<p>Negative feedback in the context of hormones means that the secretion of a hormone leads to a reduction in the secretion of that hormone.</p> <p>In the second messenger model of hormone action, the hormone has its effect inside a cell even though it never enters the cell. Hormones only affect their target cells because they have specific protein receptors that are complementary to the shape of that specific hormone. Make sure you know about ultrafiltration, reabsorption of water by the proximal convoluted tubule, how the loop of Henle concentrates urine and how the distal convoluted tubule and collecting duct help to reabsorb water.</p>
Quizlet	https://quizlet.com/193349817/a2-aqa-biology-topic-5-flash-cards/				https://quizlet.com/193350308/a2-aqa-biology-topic-6-flash-cards/			

Topic	Topic 7 Inheritance	Topic 7 Populations and Hardy Weinberg	Topic 7 Evolution & Speciation	Topic 7 Populations in ecosystems	Topic 8 Mutations	Topic 8 Gene Expression, regulation of transcription & translation, and cancer	Topic 8 Genome Projects	Topic 8 Recombinant DNA Technology, DNA probes, hybridisation and DNA fingerprinting
Web links	<p>Inheritance https://www.youtube.com/watch?v=o9mo_62bFZO</p> <p>Epistasis: http://learn.genetics.utah.edu/content/pigeons/epistasis/</p> <p>Dihybrid inheritance: https://www.youtube.com/watch?v=HxxVnoRlZg</p> <p>Autosomal linkage: https://www.youtube.com/watch?v=yGOgxv4lw6U</p>	<p>Allele frequency: https://www.khanacademy.org/science/biology/her/heredity-and-genetics/v/allele-frequency</p> <p>Hardy Weinberg principle: https://www.khanacademy.org/science/biology/her/heredity-and-genetics/v/hardy-weinberg</p> <p>Hardy-Weinberg: https://www.youtube.com/watch?v=oG7ob-MtO8c</p>	<p>Evolution: http://www.sumanasinc.com/webcontent/animations/content/evolution/evolution.html</p> <p>Types of selection: http://bcs.whfreeman.com/webpub/Ektron/po11e/Animated%20Tutorials/at1501/at_1501_natural_selection.html</p> <p>Genetic drift: https://www.youtube.com/watch?v=dik24hBhmcw http://nortonbooks.com/college/biology/animations/ch16a01.htm</p> <p>Tree of life: https://www.youtube.com/watch?v=H6lrUUDboZo</p> <p>Allopatric Speciation: http://wps.pearsoncustom.com/wps/media/objects/3014/3087289/Web_Tutorials/18_A01.swf</p> <p>Speciation: https://www.khanacademy.org/science/biology/her/tree-of-life/v/allopatric-and-sympatric-speciation</p>	<p>Succession: https://www.youtube.com/watch?v=xY2A5-pCv94</p> <p>Sampling: https://www.youtube.com/watch?v=ly4ot67-1e8</p>	<p>Mutations: https://www.khanacademy.org/test-prep/mcat/biomolecules/genetic-mutations/v/introduction-to-genetic-mutations</p>	<p>Stem Cells: https://www.abpiscschools.org.uk/topic/stem-cells/2/1</p> <p>Protein Synthesis and control of gene expression: https://www.abpiscschools.org.uk/topic/cellbiology/7/1</p> <p>Epigenetics: http://learn.genetics.utah.edu/content/epigenetics/intro/ http://learn.genetics.utah.edu/content/epigenetics/twins/</p> <p>Oestrogen: https://www.youtube.com/watch?v=l4Smtm9HESo</p> <p>Gene mutations & cancer: https://www.abpiscschools.org.uk/topic/celldiv-cancer/5</p>	<p>Human Genome Project: http://www.yourgenome.org/video/how-the-human-genome-was-sequenced</p> <p>Sanger Sequencing: https://www.dnalc.org/view/15479-Sanger-method-of-DNA-sequencing-3D-animation-with-narration.html https://www.dnalc.org/view/15922-Early-DNA-sequencing.html</p> <p>http://www.yourgenome.org/video/sanger-dna-sequencing</p> <p>Updated methods: http://www.yourgenome.org/video/sequencing-at-speed</p>	<p>Restriction endonucleases: https://www.dnalc.org/resources/animations/restriction.html</p> <p>Genetic Engineering: https://www.abpiscschools.org.uk/topic/genetic-engineering/5</p> <p>Gene Therapy: https://www.abpiscschools.org.uk/topic/biotech/6/1</p> <p>PCR: http://learn.genetics.utah.edu/content/labs/pcr/ http://www.yourgenome.org/facts/what-is-pcr-polymerase-chain-reaction</p> <p>Replica plating: https://www.youtube.com/watch?v=LfzBnJWH8KA&list=P_L2CHLqDY7PcPGo_iWzNJfYDNkM9KFPE-S&index=2</p> <p>DNA Fingerprinting: https://www.pbslearningmedia.org/asset/tdc02_int_creatdnafp2/</p>
Practice Qs	Use the question booklets you have been given. Spare ones are on the intranet.							
Teacher tips	Not all genes code for a polypeptide – some code for rRNA or tRNAs. Know the difference between gene and allele. In diploid cells, there are two copies of each allele. Be prepared to give evidence from genetic diagrams about what type of inheritance or condition is shown.	Know how to use $p + q = 1$ and $p^2 + 2pq + q^2 = 1$	Make sure you know the difference between discontinuous and continuous variation. Apply your knowledge of natural selection or speciation to the information given in the question. Some environmental factors may influence the overall mutation rate but that mutation is a general and random process.	The size of a population is determined by a limiting factor. The climax community in succession is determined by the limiting abiotic factor. In questions on succession, relate the details given to the stages of succession and features of each stage that you have learnt.	The effect of a mutation caused by a change to a single base is often used as an example. In practice it is often more than one base involved.	Differentiation results from differential gene expression. For epigenetics therapy we could use PCR to make double-stranded RNA from a DNA template. Be able to explain what happens if a proto-oncogene or tumour suppressor gene mutate.	A primer is essential to start DNA synthesis because it makes a double strand of DNA and DNA polymerase only works on double-stranded DNA. Recall the reasons that determining the genome and proteome of prokaryotes is easier than determining organisms that are more complex.	Each restriction endonuclease recognises and cuts DNA at a specific sequence of bases. Remember the importance of the temperature changes in PCR. With genetic screening, the donor's DNA must be made single stranded to allow DNA probes to hybridise. Gel electrophoresis – smallest DNA fragments travel the furthest.
Quizlet quizzes	https://quizlet.com/193373257/a2-aqa-biology-topic-7-flash-cards/				https://quizlet.com/193373345/a2-aqa-biology-topic-8-flash-cards/			

Required Practical	1. Investigation into the effect of a named variable on the rate of an enzyme-controlled reaction	2. Preparation of stained squashes of cells from plant root tips; setup and use of an optical microscope to identify the stages of mitosis in these stained squashes and calculation of a mitotic index	3. Production of a dilution series of a solute to produce a calibration curve with which to identify the water potential of plant tissue	4. Investigation into the effect of a named variable on the permeability of cell-surface membranes	5. Dissection of animal or plant gas exchange system or mass transport system or of organ within such a system	6. Use of aseptic techniques to investigate the effect of antimicrobial substances on microbial growth
Web links	http://www.cleapss.org.uk http://www.nuffieldfoundation.org/practical-biology/investigating-enzyme-controlled-reaction-catalase-and-hydrogen-peroxide-concentrat http://www.nuffieldfoundation.org/practical-biology/investigating-effect-ph-amylase-activity http://www.nuffieldfoundation.org/practical-biology/investigating-effect-concentration-activity-trypsin http://www.nuffieldfoundation.org/practical-biology/quantitative-food-test-protein-content-powdered-milk http://www.nuffieldfoundation.org/practical-biology/investigating-effect-ph-amylase-activity http://www.nuffieldfoundation.org/practical-biology/investigating-effect-concentration-activity-trypsin	http://www.nuffieldfoundation.org/practical-biology/investigating-mitosis-allium-root-tip-squash	Serial dilution: https://www.youtube.com/watch?v=JSfjPhRA_gY http://www.nuffieldfoundation.org/practical-biology/investigating-effect-concentration-blackcurrant-squash-osmosis-chipped-potatoes	http://www.nuffieldfoundation.org/practical-biology/investigating-effect-temperature-plant-cell-membranes	http://www.nuffieldfoundation.org/practical-biology/dissection-ventilation-system-locust http://www.nuffieldfoundation.org/practical-biology/dissecting-lungs http://www.nuffieldfoundation.org/practical-biology/looking-heart	Striking a plate: https://www.youtube.com/watch?v=-wrzXH0qgbo
Youtube clip	https://www.youtube.com/watch?v=A8Ts4V_OSVO	https://www.youtube.com/watch?v=K2_FZRdjqH4	https://www.youtube.com/watch?v=k1O9jBHgsxs	https://www.youtube.com/watch?v=Hc3Mg0Yc7kl	https://www.youtube.com/watch?v=VCskwk9b1kk	https://www.youtube.com/watch?v=IGtWG28sKUg

Year 12 Required Practicals

Specification for AQA Biology <http://filestore.aqa.org.uk/resources/biology/specifications/AQA-7401-7402-SP-2015.PDF>

Required Practical	7. Use of chromatography to investigate the pigments isolated from leaves of different plants, eg leaves from shade-tolerant and shade-intolerant plants or leaves of different colours	8. Investigation into the effect of a named factor on the rate of dehydrogenase activity in extracts of chloroplasts	9. Investigation into the effect of a named variable on the rate of respiration of cultures of single-celled organisms	10. Investigation into the effect of an environmental variable on the movement of an animal using either a choice chamber or a maze	11. Production of a dilution series of a glucose solution and use of colorimetric techniques to produce a calibration curve with which to identify the concentration of glucose in an unknown 'urine' sample	12. Investigation into the effect of a named environmental factor on the distribution of a given species
Web links			Respirometers: https://www.youtube.com/watch?v=yfv13Q_67ZQ			
Youtube link	https://www.youtube.com/watch?v=6sZBtANyuZ8	https://www.youtube.com/watch?v=JBQANaPMGao	https://www.youtube.com/watch?v=h3dQ_H0ueN4	https://www.youtube.com/watch?v=FC_RPbMXGm0	https://www.youtube.com/watch?v=s3EiHC8NtDs	https://www.youtube.com/watch?v=zVeg5R2UGHs https://www.youtube.com/watch?v=9BtFuHwvBpk https://www.youtube.com/watch?v=9BtFuHwvBpk

Year 13 Required Practicals

Specification for AQA Biology <http://filestore.aqa.org.uk/resources/biology/specifications/AQA-7401-7402-SP-2015.PDF>