The IB Biology 2 class takes a review quiz EVERY DAY based on the review schedule posted below. Quizzes will be based on the most frequently tested syllabus statements for each topic of the IB syllabus. The five most commonly tested statements for each topic are shown below. You will be asked to answer question(s) related to one (or more) of the five during the daily quiz.

See this blog post about why quizzing everyday is such a powerful learning tool. Benefits to frequent quizzing includes (click for source):

- Aid later retention
- Identifies gaps in knowledge
- Causes students to learn more from the next study episode
- Produces better organization of knowledge
- Improves transfer of knowledge to new contexts
- Can facilitate retrieval of material that was not tested
- Improves metacognitive monitoring
- Prevents interference from prior material when learning new material
- Provides feedback to instructors
- Encourages students to study

MONDAY: "Multiple Choice Monday" - Mondays are always a 5 question multiple choice on the review material for that day and the Saturday and Sunday before the quiz. The questions are all from past Paper 1 IB exams. *5 minute maximum.*

TUESDAY/WEDNESDAY: "Table Team Tuesday" and "We Wisdom Wednesday." Tuesday and Wednesday quizzes are a table team effort. Students will collaborate to answer a data-based question from paper 2 or paper 3. *10 minute maximum.*

THURSDAY: "Thinking Thursday" - On Thursday, students have to put on their thinking caps to individually respond to an extended response question from a past paper 2 or 3 IB exam. *5 minute maximum.*

FRIDAY: "Figure Friday" - The Friday quiz will involve drawing and/or labeling biological figures, as is often required in questions from paper 2 or 3 of the IB exam. *5 minute maximum.*

The raw scores for these quizzes are recorded in a grade book category that is "no count," meaning the raw scores on the daily quizzes do not directly impact the class grade. However, at each midpoint and end of a grading period (mid-terms and ends of quarters), the cumulative overall percentage for the daily quizzes in the grade period will be used to calculate a quiz score that does count. So, over a semester there are four daily quiz scores that will count and be recorded in the regular quiz category. In order to recognize and reward improvement over time, if a student scores higher on the daily quiz cumulative score throughout the semester, than the earlier cumulative scores will be marked "no count" and will not impact the final grade.

If a student is absent for a daily quiz, they will take the quiz in class the day upon return.

Schedule of Quizzes

The bullet points indicate the 5 most frequently asked syllabus statements on past exams for that topic. Daily quiz questions will be based on one of these bulleted statements.

Day of Month	Topic Quizzed
1	TOPIC 1.1: Introduction to Cells ❏ Calculation of the magnification of drawings and the actual size of structures and ultrastructures shown in drawings or micrographs ❏ Cell Surface to volume is an important limitation to cell size ❏ The capacity of stem cells to divide and differentiate along different pathways is necessary in embryonic development and also makes stem cells suitable for therapeutic uses ❏ Specialized tissues can develop by cell differentiation in multicellular organisms ❏ Use of stem cells to treat Stargardt's disease and one other named condition. TOPIC 1.2: Ultrastructure of Cells ❏ Structure and function of organelles within exocrine gland cells of the pancreas ❏ Drawings of the ultrastructure of prokaryotic cells based on electron micrographs ❏ Interpretations of electron micrographs to identify organelles and deduce the function of specialized cells ❏ Prokaryotes have a simple cell structure without compartmentalization ❏ Prokaryotes divide by binary fission
2	TOPIC 1.3: Membrane Structure ❏ Membrane proteins are diverse in terms of structure, position in the membranes and function ❏ Drawing of the fluid mosaic model ❏ Phospholipids form bilayers in water due to the amphipathic properties of phospholipid molecules ❏ Cholesterol is a component of animal cell membranes ❏ Cholesterol in mammalian membranes reduces membrane fluidity and permeability to some solutes TOPIC 1.4: Membrane Transport ❏ Particles move across membranes by simple diffusion, facilitated diffusion, osmosis and active transport ❏ The fluidity of membranes allows materials to be taken into cells by endocytosis or released by exocytosis. ❏ Vesicles move materials within cells. ❏ Estimation of osmolarity in tissues by bathing samples in hypotonic and hypertonic solutions ❏ Structure and function of the sodium-potassium pumps for active transport and potassium channels for facilitated diffusion in axons
3	TOPIC 1.5: Origin of Cells ❏ The origin of eukaryotic cells can be explained by the endosymbiotic theory. ❏ The first cells must have arisen from non-living material.

	❏ Evidence from Pasteur's experiments that spontaneous generation of cells and organisms does not now occur on Earth. ❏ Cells can only be formed by division of pre-existing cells. ❏ Testing the general principles that underlie the natural world- the principles that cells only come from pre-existing cells needs to be verified. TOPIC 1.6: Cell Division ❏ Mitosis is division of the nucleus into two genetically identical daughter nuclei. ❏ Identification of phases of mitosis in cells viewed with a microscope or in a micrograph. ❏ Interphase is a very active phase of the cell cycle with many processes occurring in the nucleus and cytoplasm. ❏ Cytokinesis occurs after mitosis and is different in plants and animal cells. ❏ Cyclins are involved in the control of the cell cycle.
4	TOPIC 2.1: Molecules to Metabolism ❏ Drawing molecular diagrams of glucose, ribose, a saturated fatty acid and a generalized amino acid ❏ Anabolism is the synthesis of complex molecules from simpler molecules including the formation of macromolecules from monomers by condensation reactions ❏ Catabolism is the breakdown of complex molecules into simpler molecules including the hydrolysis of macromolecules into monomers ❏ Identification of biochemical such as sugars, lipids, or amino acids from molecular drawings ❏ Metabolism is the web of all the enzyme-catalyzed reactions in a cell or organism TOPIC 2.2: Water ❏ Hydrogen bonding and dipolarity explain the cohesive, adhesive, thermal and solvent properties of water ❏ Water molecules are polar and hydrogen bonds form between them ❏ Modes of transport of glucose, amino acids, cholesterol, fats, oxygen, and sodium in blood in relations to their solubility in water ❏ Use of water as a coolant in sweat ❏ Substances can be hydrophilic or hydrophobic
5	TOPIC 2.3: Carbohydrates and Lipids ❏ Structure and function of cellulose and starch in plants and glycogen in humans ❏ Lipids are more suitable for long term energy storage in humans than carbohydrates ❏ Fatty acids can be saturated, monounsaturated and polyunsaturated ❏ Unsaturated fatty acids can be cis or trans isomers ❏ Triglycerides are formed by condensation from three fatty acids and one glycerol OPTION D.1: Nutrition ❏ Essential nutrients cannot be synthesized by the body, therefore they have to be included in the diet. ❏ Dietary minerals are essential chemical elements. ❏ Vitamins are chemically diverse carbon compounds that cannot be synthesized by the body.

	❏ Overweight individuals are more likely to suffer hypertension and type II diabetes. ❏ Cause and treatment of phenylketonuria (PKU). ❏ Lack of Vitamin D or calcium can affect bone mineralization and cause rickets or osteomalacia
6	TOPIC 2.5: Enzymes ❏ Temperature, pH,and substrate concentration affect the rate of activity of enzymes ❏ Enzymes have an active site to which specific substrates bind ❏ Methods of production of lactose-free milk and its advantages ❏ Enzymes are denatured ❏ Enzyme catalysis involves molecular motion and the collision of substrates with the active site TOPIC 8.1: Metabolism ❏ Enzymes lower the activation energy of the chemical reactions that they catalyse ❏ Enzyme inhibitors can be competitive or non-competitive. ❏ Metabolic pathways can be controlled by end-product inhibition. ❏ Distinguish different types of inhibition from graphs at specified substrate concentration ❏ Metabolic pathways consist of chains and cycles of enzyme-catalysed reactions
7	TOPIC 2.6: Structure of DNA and RNA ❏ DNA is a double helix made of two antiparallel strands of nucleotides linked by hydrogen bonding between complementary base pairs ❏ The nucleic acids DNA and RNA are polymers of nucleotides ❏ DNA differs from RNA in the number of strands present, the base composition and the type of pentose ❏ Drawing simple diagrams of the structure of single nucleotides of DNA and RNA, using circles, pentagons, and rectangles to represent phosphates, pentoses and bases ❏ Crick and Watson's elucidation of the structure of DNA using model making TOPIC 3.1: Genes ❏ The causes of sickle cell anemia, including a base substitution mutation, a change to the base sequence of mRNA transcribed from it and a change to the sequence of a polypeptide in hemoglobin ❏ New alleles are formed by mutation ❏ A gene is a heritable factor that consists of a length of DNA and influences a specific characteristic ❏ The various specific forms of a gene are alleles ❏ The entire base sequence of human genes was sequenced in the Human Genome Project
8	TOPIC 2.7: DNA Replication, Transcription and Translation ❏ Transcription is the synthesis of mRNA copied from the DNA base sequences by RNA polymerase ❏ Translation depends on complementary base-pairing between codons on mRNA and anticodons on tRNA ❏ Translation is the synthesis of polypeptides on ribosomes

	❏ DNA polymerase links nucleotides together to form a new strand, using a pre-existing strand as a template ❏ The replication of DNA is semi-conservative and depends on complementary base pairing TOPIC 7.1: DNA Structure and Replication ❏ DNA replication is carried out by a complex system of enzymes. ❏ Nucleosomes help to supercoil the DNA. ❏ DNA polymerases can only add nucleotides to the 3' end of a primer. ❏ State that DNA replication is initiated at many points in eukaryotic chromosomes. ❏ Some regions of DNA do not code for proteins but have other important functions
9	TOPIC 7.2: Transcription and Gene Expression ❏ Eukaryotic cells modify mRNA after transcription. ❏ Gene expression is regulated by proteins that bind to specific base sequences in DNA ❏ Distinguish between the sense and antisense strands of DNA. ❏ Transcription occurs in a 5' to 3' direction ❏ Splicing of mRNA increases the number of different proteins an organism can produce TOPIC 3.5: Genetic Modification and Biotechnology ❏ Gene transfer in bacteria using plasmids makes use of restriction endonucleases and DNA ligases ❏ Use of DNA profiling in paternity and forensic investigations ❏ Assessment of potential risks and benefits associated with genetic modification of crops ❏ PCR can be used to amplify small amounts of DNA ❏ Gel electrophoresis is used to separate proteins or fragments of DNA according to size
10	TOPIC 2.4: Proteins ❏ The amino acid sequence determines the three-dimensional conformation of a protein ❏ Rubisco, insulin immunoglobulins, rhodopsin, collagen and spider silk as examples of the range of protein functions ❏ Drawing molecular diagrams to show the formation of a peptide bond ❏ Denaturation of proteins by heat or by deviation of pH from the optimum ❏ Amino Acids are linked together by condensation to form polypeptides TOPIC 7.3: Translation ❏ Initiation of translation involves assembly of the components that carry out the process ❏ Synthesis of the polypeptide involves a repeated cycle of events ❏ The use of molecular visualization software to analyse the structure of eukaryotic ribosomes and tRNA molecules ❏ Bound ribosomes synthesize proteins primarily for secretion or use in lysosomes ❏ Free ribosomes synthesize proteins for use primarily within the cell
11	TOPIC 3.2: Chromosomes ❏ Use karyograms to deduce sex and diagnose Down Syndrome in humans ❏ Sex is determined by sex chromosomes and autosomes are chromosomes that do not determine sex

	❏ Homologous chromosomes carry the same sequence of genes but not necessarily the same alleles of those genes ❏ A karyogram shows the chromosomes of an organisms in homologous pairs of decreasing length ❏ Eukaryote chromosomes are linear DNA molecules associated with histone proteins
12	TOPIC 3.3: Meiosis ❏ Drawing diagrams to show the stages of meiosis resulting in the formation of four haploid cells ❏ One of diploid nucleus divides by meiosis to produce four haploid nuclei ❏ Nondisjunction can cause Down syndrome and other chromosome abnormalities ❏ Description of the methods used to obtain cells for karyotype analysis e.g. chorionic villus sampling and amniocentesis and the associated risks ❏ Crossing over and random orientation promotes genetic variation TOPIC 10.1: Meiosis ❏ Homologous chromosomes separate in meiosis I ❏ Chiasmata formation between non-sister chromatids can results in an exchange of alleles ❏ Independent assortment of genes due to random orientation of homologous chromosomes pairs in meiosis I ❏ Crossing over produces new combinations of alleles on the chromosomes of the haploid cells ❏ Sister chromatids separate in meiosis II
13	TOPIC 3.4: Inheritance ❏ Construction of Punnett grids for predicting the outcomes of monohybrid genetic crosses ❏ Analysis of pedigree charts to deduce the pattern of inheritance of genetic diseases ❏ Re-green colour blindness and haemophilia as examples of sex-linked inheritance ❏ Inheritance of ABO blood groups ❏ Some genetic diseases are sex-linked. The pattern of inheritance is different with sex-linked genes due to to their location on sex chromosomes TOPIC 10.2: Inheritance ❏ Completion and analysis of Punnett squares for dihybrid traits ❏ Identification of recombinants in crosses involving two linked genes ❏ Polygenic traits such as human height may be influenced by environmental factors ❏ The phenotypes of polygenic characteristics tend to show continuous variation ❏ Gene loci are said to be linked if on the same chromosome
14	TOPIC 2.8: Cellular Respiration ❏ Use of anaerobic cell respiration in yeasts to produce ethanol and carbon dioxide in baking ❏ Aerobic cell respiration requires oxygen and gives a large yield of ATP from glucose ❏ Anaerobic cell respiration gives a small yield of ATP from glucose ❏ Lactate production in humans when anaerobic respiration is used to maximize the power of muscle contractions

	❏ Cell respiration is the controlled release of energy from organic compounds to produce ATP TOPIC 8.2: Cell Respiration ❏ In aerobic cell respiration pyruvate is decarboxylated and oxidized, and converted into acetyl compound and attached to coenzyme A to form acetyl coenzyme A in the link reaction ❏ In glycolysis, glucose is converted to pyruvate in the cytoplasm ❏ In chemiosmosis protons diffuse through ATP synthase to generate ATP ❏ Annotations of a diagram of mitochondrion to indicate the adaptations to its function ❏ Transfer of the electrons between carriers in the electron transport chain in the membrane of the cristae is coupled to proton pumping
15	TOPIC 2.9: Photosynthesis ❏ Temperature, light intensity and carbon dioxide concentration are possible limiting factors on the rate of photosynthesis ❏ Drawing an absorption spectrum for chlorophyll and an action spectrum for photosynthesis ❏ Oxygen is produced in photosynthesis from the photolysis of water ❏ Chlorophyll absorbs red and blue light most effectively and reflects green light more than other colours ❏ Changes to the Earth's atmosphere, oceans and rock deposition due to photosynthesis TOPIC 8.3: Photosynthesis ❏ In the light-independent reaction a carboxylase catalyses the carboxylation of ribulose-bisphosphate ❏ Absorption of light by photosystems generates excited electrons ❏ The structure of the chloroplast is adapted to its function in photosynthesis ❏ ATP synthase in thylakoids generates ATP using the proton gradient ❏ Annotation of a diagram to indicate the adaptations of a chloroplast to its function
16	TOPIC 4.1: Species, communities and ecosystems ❏ Species have either an autotrophic or heterotrophic method of nutrition (a few species have both methods) ❏ A community is formed by populations of different species living together and interacting with each other ❏ Detritivores are heterotrophs that obtain organic nutrients from detritus by internal digestion ❏ Members of a species may be reproductively isolated in separate populations ❏ Species are groups of organisms that can potentially interbreed to produce fertile offspring TOPIC 4.2: Energy Flow ❏ Energy released from carbon compounds by respiration is used in living organisms and converted to heat ❏ Quantitative representations of energy flow using pyramids of energy ❏ Heat is lost from ecosystems

	❏ Most ecosystems rely on a supply of energy from sunlight ❏ Light energy is converted to chemical energy in carbon compounds by photosynthesis ❏ Chemical energy in carbon compounds flows through food chains by means of feeding
17	TOPIC 4.3: Carbon Cycle ❏ Construct a diagram of the carbon cycle ❏ Analysis of data from air monitoring stations to explain annual fluctuations ❏ Carbon dioxide is produced by respiration and diffuse out of organisms into water or the atmosphere ❏ Peat forms when organic matter is not fully decomposed because of acidic and/or anaerobic conditions in waterlogged soils ❏ Autotrophs convert carbon dioxide into carbohydrates and other carbon compounds TOPIC 4.4: Climate Change ❏ There is a correlation between rising atmospheric concentrations of carbon dioxide since the start of the industrial revolution 200 years ago and average global temperatures ❏ Global temperatures and climate patterns are influenced by concentrations of greenhouse gases ❏ Recent increases in atmospheric carbon dioxide are largely due to increases in the combustion of fossilized organic matter ❏ Threats to coral reefs from increasing concentrations of dissolved carbon dioxide ❏ Longer wave radiation is absorbed by greenhouse gases that retain heat in the atmosphere
18	TOPIC 5.1: Evidence for Evolution ❏ The fossil record provides evidence for evolution ❏ Comparison of the pentadactyl limb of mammals, birds, amphibians, and reptiles with different methods of locomotion ❏ Evolution occurs when heritable characteristics of species change ❏ Evolution of homologous structures by adaptive radiation explains similarities in structure when there are differences in function ❏ Selective breeding of domesticated animals shows that artificial selection can cause evolution ❏ Development of melanistic insects in polluted areas TOPIC 5.2: Natural Selection ❏ Mutation, meiosis and sexual reproduction cause variation between individuals in a species ❏ Natural selection increases the frequency of characteristics that make individuals better adapted and decreases the frequency of other characteristics leading to changes within the species ❏ Evolution of antibiotic resistance in bacteria ❏ Natural selection can only occur if there is variation among members of the same species ❏ Individuals that are better adapted tend to survive and produce more offspring while the less well adapted tend to die or produce fewer offspring
19	TOPIC 5.3: Classification of Biodiversity

	❏ The principal taxa for classifying eukaryotes are kingdom, phylum, class, order, family and genus and species ❏ Recognition features of bryophyte, filicinophyta, coniferophyta, and angiospermophyta ❏ Recognition features of porifera, cnidaria, platyhelminthes, annelida, Mollusca, arthropoda and chordata ❏ Recognition of features of birds, mammals, amphibians, reptiles and fish ❏ Construction of dichotomous keys for use in identifying specimens TOPIC 5.4: Cladistics ❏ Evidence for which species are part of a clade can be obtained from the base sequences of a gene or the corresponding amino acid sequence of a protein ❏ Analysis of cladograms to deduce evolutionary relationships ❏ Evidence from cladistics has shown that classifications of some groups based on structure did not correspond with the evolutionary origins of a group or species ❏ Traits can be analogous or homologous ❏ A clade is a group of organisms that have evolved from a common ancestor
20	TOPIC 6.1: Digestion ❏ Enzymes digest most macromolecules in food into monomers in the small intestine ❏ Villi increase the surface area of epithelium over which absorption is carried out ❏ Different methods of membrane transport are required to absorb different nutrients ❏ Production of an annotated diagram of the digestive system ❏ Identification of tissue layers in transverse sections of the small intestine viewed with a microscope or in a micrograph OPTION D.2: Digestion ❏ Exocrine glands secrete to the surface of the body or the lumen of the gut. ❏ Nervous and hormonal mechanisms control the secretion of digestive juices. ❏ The structure of cells of the epithelium of the villi is adapted to the absorption of food. ❏ Materials not absorbed are egested. ❏ Helicobacter pylori infection as a cause of stomach ulcers.
21	TOPIC 6.2: The Blood System ❏ Recognition of the chambers and valves of the heart and the blood vessels connected to it in dissected hearts or in diagrams of heart structure ❏ The heart rate can be increased or decreased by impulses brought to the heart through two nerves from the medulla of the brain ❏ Identification of the blood vessels as arteries, capillaries or veins from the structure of their walls ❏ Pressure changes in the left atrium, left ventricle and aorta during the cardiac cycle ❏ The sinoatrial node sends out an electrical signal that stimulates contraction as it is propagated through the walls of the atria and then the walls of the ventricles OPTION D.4: Heart ❏ Analysis of epidemiological data relating to the incidence of coronary heart disease. (causes and effects of heart disease) ❏ Causes and consequences of hypertension and thrombosis.

	❏ Mapping of the cardiac cycle to a normal ECG trace. ❏ Interpretation of systolic and diastolic blood pressure measurements. ❏ There is a delay between the arrival and passing on of a stimulus at the atrioventricular node.
22	TOPIC 6.3: Defense Against Infectious Disease ❏ Cuts in the skin are sealed by blood clotting ❏ Production of antibodies by lymphocytes in response to particular pathogens gives specific immunity to diseases ❏ Effects of HIV on the immune system and methods of transmission ❏ The skin and mucous membranes form a primary defense against pathogens that cause infectious disease ❏ Antibiotic blocks processes that occur in prokaryotic cells but not in eukaryotic cells TOPIC 11.1: Antibody Production ❏ Vaccines contain antigens that trigger immunity but do not cause the disease ❏ Monoclonal antibodies are produced by hybridoma cells ❏ Activated B cells multiply to form clones of plasma cells and memory cells ❏ B lymphocytes are activated by T lymphocytes in mammals ❏ Plasma cells secrete antibodies
23	TOPIC 6.4 Gas Exchange ❏ Air is carried to the lungs in the trachea and bronchi and then to the alveoli in bronchioles ❏ External and internal intercostal muscles, and diaphragm and abdominal muscles as examples of antagonistic muscle action ❏ Monitoring of ventilation in humans at rest and after mild and vigorous exercise ❏ Muscle contraction cause the pressure changes inside the thorax that force air in and out of the lungs to ventilate them ❏ Type I pneumocytes are extremely thin alveolar cells that are adapted to carry out gas exchange OPTION D.6: Transport of Respiratory Gases ❏ Consequences of high altitude for gas exchange. ❏ The Bohr shift explains the increased release of oxygen by hemoglobin in respiring tissues. ❏ During exercise the rate of ventilation changes in response to the amount of CO2 in the blood. ❏ Carbon dioxide is transformed in red blood cells into hydrogen carbonate ions ❏ Analysis of dissociation curves for hemoglobin and myoglobin.
24	TOPIC 6.5 Neurons and Synapses ❏ When presynaptic neurons are depolarized they release a neurotransmitter into the synapse ❏ An action potential consists of depolarization and repolarization of the neuron ❏ Nerve impulses are action potentials propagated along the axons of neurons ❏ Neurons transmit electrical impulses ❏ Neurons pump sodium and potassium ions across their membranes to generate a resting potential

	TOPIC 11.2: Muscles and Movement ❏ The contraction of the skeletal muscle is achieved by the sliding of actin and myosin filaments ❏ Annotations of a diagram of the human elbow ❏ Bones and exoskeletons provide anchorage for muscles and act as levers ❏ Drawing labelled diagrams of the structure of a sarcomere ❏ Calcium ions and the proteins tropomyosin and troponin control muscle contractions
25	TOPIC 6.6 Hormones and Homeostasis ❏ Insulin and glucagon are secreted by beta and alpha cells of the pancreas respectively to control blood glucose concentrations ❏ The menstrual cycle is controlled by negative and positive feedback mechanisms involving ovarian and pituitary hormones ❏ Annotate diagrams of the male and female reproductive system to show names of structures and their functions ❏ The use of IVF of drugs to suspend the normal secretion of hormones, followed by the use of artificial doses of hormones to induce superovulation and establish a pregnancy ❏ Causes and treatment of Type I and Type II diabetes OPTION D.5: Hormones and Metabolism ❏ Peptide hormones bind to receptors in the plasma membrane of the target cell. ❏ Steroid hormones bind to receptor proteins in the cytoplasm of the target cell to form a receptor–hormone complex. ❏ Hormones secreted by the pituitary control growth, developmental changes, reproduction and homeostasis. ❏ Endocrine glands secrete hormones directly into the bloodstream. ❏ Binding of hormones to membrane receptors activates a cascade mediated by a second messenger inside the cell.
26	TOPIC 9.1: Transport in the Xylem ❏ Adaptations of plants in deserts and in saline soils for water conservation ❏ Design of an experiment to test hypothesis about the effects of temperatures or humidity on transpiration rates ❏ Active uptake of mineral ions in the roots causes absorption of water by osmosis ❏ The adhesive property of water and evaporation generate tension forces in leaf cell walls ❏ The cohesive property of water and the structure of the xylem vessels allow transport under tension TOPIC 9.2: Transport in the Phloem ❏ Active transport is used to load organic compounds into phloem sieve tubes at the source ❏ Identification of xylem and phloem in microscope images of stem and root ❏ Plants transport organic compounds from sources to sinks ❏ High concentrations of solutes in the phloem at the source lead to water uptake by osmosis ❏ Raised by hydrostatic pressure causes the contents of the phloem to flow toward sinks

27	TOPIC 9.3: Growth in Plants ❏ Auxin influences of cell growth rates by changing the pattern of gene expression ❏ Plant hormones control growth in the shoot apex ❏ Undifferentiated cells in the meristems of plants allow indeterminate growth ❏ Plant shoots respond to the environment by tropisms ❏ Micropropagation of plants using tissue from the shoot apex nutrient agar gels and growth hormones TOPIC 9.4: Reproduction in Angiosperms ❏ Success in plant reproduction depends on pollination, fertilization and seed dispersal ❏ Design of experiments to test hypothesis about factors affecting germination ❏ Drawing of half-views of animal-pollinated flowers ❏ Flowering involves a change in gene expression in the shoot apex ❏ Methods used to induce short-day plants to flower out of season
28	TOPIC 10.3: Gene Pools and Speciation ❏ Reproductive isolation of populations can be temporal, behavioral or geographic ❏ Speciation due to divergence of isolated populations can be gradual ❏ Comparison of allele frequencies of geographically isolated populations ❏ Speciation can occur abruptly ❏ Evolution required that allele frequencies change with time in populations
29	TOPIC 11.3: Kidney and Osmoregulation ❏ The type of nitrogenous waste in animals is correlated with evolutionary history and habitat ❏ The proximal convoluted tubule selectively reabsorbs useful substances by active transport ❏ The ultrastructure of the glomerulus and Bowman's capsule facilitate ultrafiltration ❏ ADH controls reabsorption of water in the collecting duct ❏ Annotations of a diagram of the nephron OPTION D.3: Liver ❏ The breakdown of erythrocytes starts with phagocytosis of red blood cells by Kupffer cells. ❏ Dual blood supply to the liver and differences between sinusoids and capillaries. ❏ Some nutrients in excess can be stored in the liver. ❏ The liver intercepts blood from the gut to regulate nutrient levels. ❏ The liver removes toxins from the blood and detoxifies them. ❏ Endoplasmic reticulum and Golgi apparatus in hepatocytes produce plasma proteins.
30	TOPIC 11.4: Sexual Reproduction ❏ Processes in spermatogenesis and oogenesis result in different numbers of gametes with different amounts of cytoplasm ❏ Fertilization involves mechanisms that prevent polyspermy ❏ HCG stimulates the ovary to secrete progesterone during early pregnancy ❏ Annotation of a diagrams of seminiferous tubule and ovary to show the stages of gametogenesis ❏ Birth is mediated by positive feedback involving estrogen and oxytocin

31	Wildcard - any topic!