

Clarification summary

Following the ongoing review of our qualifications and feedback from teachers about the depth and breadth of some of the specification statements in GCSE Biology A, we have added the following clarifications to particular specification statements, as detailed in this resource. Please use this resource in conjunction with the [specification](#).

Key: text = a change either in wording or formatting
~~text~~ = this text has either been removed or moved from this position
text = higher content only

Clarification to the 'Learning outcomes' section:

Learning outcome	Reasoning
B2.1e describe the functions of stem cells <u>in embryonic and adult animals, and meristems in plants</u>	Mirrors specification statements 2.1d and 2.1f.
B1.4f explain the interaction of these factors temperature, light intensity and carbon dioxide concentration in limiting the rate of photosynthesis	Clarification of expectations.

Clarification to the 'To include' section:

Specification reference	To include	Reasoning
B1.1b	nucleus, genetic material, chromosomes, plasmids, mitochondria (contain enzymes for cellular respiration), chloroplasts (contain chlorophyll) and cell membranes (contain receptor molecules, provides a selective barrier to molecules), <u>ribosomes (site of protein synthesis)</u>	Clarification that knowledge of ribosomes as the site of protein synthesis is expected.
B1.2d	the unzipping of the DNA molecule around the gene, copying to mRNA in nucleus (transcription), (translation) of the nucleotide sequence, in the cytoplasm, tRNA as the carrier of amino acids	A reference to tRNA is needed to fully describe translation, and this clarifies this for teachers.
B1.4f	<u>using graphs depicting the effects of the limiting factors</u> WS1.3e also added to Working scientifically opportunities to cover section.	Clarification of expectations.
B2.1b	the stages of the cell cycle as <u>cell growth</u> , DNA replication, <u>more cell growth</u> , movement of chromosomes, followed by the growth of the cell	List amended to reflect the order in which the cell cycle happens.
B2.2a	<u>calculation of surface area, volume and surface area: volume ratio, and reference to diffusion distances</u>	Clarification on the expectation for candidates to be able to complete calculations related to this specification statement.

Specification reference	To include	Reasoning
B2.2d	the structure of the mammalian heart with reference to the <u>cardiac muscle</u> , <u>the names of the valves, chambers</u> , cardiac muscle and the structure of blood vessels into and out of the heart , <u>the structure of the blood vessels</u> with reference to thickness of walls, diameter of lumen, presence of valves	Clarification on the requirements of the learning outcome.
B2.2j	<u>calculation of rate and percentage gain/loss of mass</u>	Clarification on the expectation for candidates to be able to complete calculations related to this specification statement.
B3.1a	Central Nervous System, sensory, and motor <u>and relay</u> neurones, and sensory receptors, <u>synapse and effectors</u> , details of the structure of sensory and motor neurones required.	Clarification on the structures that form the nervous system. The inclusion of relay neurones is helpful for explaining the reflex arc in 3.1c.
B3.2h	controlling growth, controlling germination, fruit ripening, flower opening and shedding of leaves	The only change is to bold the text indicated. This is to reflect that this is higher content only.
B3.3b	detection of external temperature, sweating, shivering, change to blood flow in terms of vasoconstriction and vasodilation	Clarification on the requirements of the learning outcome.
B3.3h	<u>Bowman's capsule, proximal convoluted tubule, loop of Henlé and collecting duct</u>	Clarification on the requirements of the learning outcome.
B4.1c	maintaining habitats, fresh water, flow of nutrients <u>and the stages of the carbon and water cycles</u>	Clarification on the requirements of the learning outcome.
B5.1c	use of examples of discontinuous (e.g. <u>eye colour</u>) and continuous variation (e.g. <u>weight and height</u>)	Reordering to clarify that one example applies to discontinuous variation, and the other two are examples of continuous variation.
B5.1j	<u>the use of Punnett squares</u>	Clarification of expectations.
B5.1k	<u>the use of Punnett squares</u>	Clarification of expectations.
B6.2e	restriction enzymes, sticky ends, vectors e.g. plasmids, ligase, host bacteria and selection using antibiotic resistance markers, vectors e.g. plasmids	Text moved for clarification.
B6.3f	<u>human infections: one example of each of viral, fungal, bacterial plant diseases: virus <u>viral</u> tobacco mosaic virus TMV, fungal <i>Erysiphe graminis</i> barley powdery mildew, bacterial <i>Agrobacterium tumefaciens</i> crown gall disease</u>	Previously examples of plant disease and a sexually transmitted infection were given but there was no guidance in terms of human infections – this has now been given.

Clarification to the 'Practical suggestions' section:

Specification reference	Practical suggestions	Reasoning
B1.3d	Demonstration of the synthesis and breakdown of biological molecules (e.g. using Lego bricks). <u>Qualitative</u> testing of biological molecules PAG B2	'Qualitative' added for clarification.
B1.3e	<u>Qualitative</u> testing of biological molecules PAG B2	'Qualitative' added for clarification.
B1.3f	<u>Qualitative</u> testing of biological molecules PAG B2	'Qualitative' added for clarification.