

WJEC (Wales) Biology A-level

Topic 3.4 - Microbiology

Definitions and Concepts

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Agar plate - A Petri dish containing agar and nutrients used to culture microorganisms.

Aseptic techniques - A range of techniques used to culture microorganisms under sterile conditions in order to minimise contamination.

Autoclave - A device used to sterilise equipment under high temperatures.

Crystal violet - A purple dye used in Gram staining.

Culture - The growth of living matter *in vitro* under suitable conditions.

Gram negative - Describes bacteria that have a thin peptidoglycan wall with an outer lipopolysaccharide membrane and a red appearance following gram staining. On treatment with alcohol, the lipopolysaccharide layer is lost and the crystal violet washes away.

Gram positive - Describes bacteria that have a thick peptidoglycan wall and a purple appearance following gram staining. The thick peptidoglycan wall retains crystal violet when rinsed with alcohol.

Gram staining - A technique used to differentiate between Gram negative and Gram positive bacteria.

Inoculating loop - A tool used to safely transfer, smear or streak a small sample from a microorganism culture.

Nutrient media - A solid or liquid nutrient-rich medium used in the cultivation of microorganisms. It contains a carbon source, nitrogen source, water and growth factors (e.g. salts and vitamins).

Peptidoglycan - A polymer consisting of amino acids and sugars that forms a 3D mesh and makes up the cell walls of most bacteria.

Safranin - A counterstain used in gram staining that dyes Gram positive bacteria red.

Serial dilution - A sequence of dilutions, in which the dilution factor is constant, used to dilute a stock solution.

Total cell count - The total number of cells (both living and dead) in a given area or volume.

Total viable count - An estimate of the total number of living cells in a given area or volume.

