

# DICTIONARY OF BIOTECHNOLOGY

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52 *Brevibacterium*

mentation has finished. The brandy is then stored for several years in oak barrels. Armagnac, which comes from another region of France, is obtained in a single distillation from wine that does not contain residual yeast.

**Brevibacterium** A fermentative bacterium used to produce amino acids.

**brewers' yeast** Strains of *Saccharomyces uvarum* or *S. cerevisiae* used in the production of beer.

**brewing** The art of producing beer. *See* ale, lager.

**broad host range** A plasmid or phage that is not specific to a single host species or strain and is able to replicate in a number of different hosts.

**bromelain** A glycoprotein with proteolytic activity obtained from pineapple stem.

**bromodeoxyuridine (BDUR)** A base analogue of thymidine.

**bromophenol blue** 3,3',5,5'-Tetrabromophenolsulphonaphthalein; a dye used for visualization of proteins on gels following separation by electrophoresis.

**5-bromouracil** A base analogue used as a mutagen. This compound can be incorporated into DNA sequences in place of thymine and cause incorrect base pairing some time later.

**broth** A culture medium derived from a protein solution or hydrolysate; more generally, a suspension of cultured microorganisms.

**broth conditioning** A treatment applied in a fermentation process after harvesting in order to facilitate downstream processing. Processes such as pH modification, heat treatment or flocculation are applied to increase particle density and reduce viscosity and aggregation, leading to a reduction in fouling and facilitating the handling of solids.

**brown algae** The Phaeophyta; a commercial source of alginic acids.

**brush border** *See* microvillus.

**BSA** *See* bovine serum albumin.

**BSE** Bovine spongiform encephalopathy; one of a number of infectious diseases generally known as encephalopathies, which may be caused by an infective protein (prion). *See* spongiform encephalopathy.

**Bt** *See* *Bacillus thuringiensis*.

**bubble column** A type of fermenter or bioreactor used for the growth of plant cell cultures in liquid suspension. Air is bubbled into the bottom of a tall column, keeping the cells suspended in an expanded bed.

**bubble point test** A technique used to establish the integrity of filters, in which the gross flow of air through a prewetted membrane is detected. The sensitivity of the test decreases with increasing membrane area.

**budding** A mechanism of non-sexual reproduction found typically in yeasts, in which a small outgrowth develops into a new cell. This may remain attached to the parent cell or become detached.

**buffer** A chemical solution which is resistant to change in pH on the addition of acid or alkali. Buffer solutions commonly consist of a mixture of a weak acid and its conjugate base (e.g., acetic acid and sodium acetate) or a weak base and its conjugate acid (e.g., ammonium hydroxide and ammonium chloride). Traditionally, buffers based on inorganic salts (phosphate, carbonate) and organic acid salts (acetate, citrate, succinate, glycine, maleate, barbiturates, etc.) were used in biological experiments. In many cases these have been replaced by specific zwitterionic buffers. *In vivo* buffer systems are essential for maintaining the physiological pH of cytoplasm and extracellular fluids, with a phosphate buffer system being the main intracellular buffer, and a bicarbonate buffer the main extracellular one. Buffers are important in the isolation of subcellular particles, enzymes, proteins

and nucleic acids from living material, as well as maintaining growth of cultured organisms, plant tissue cultures and animal cell lines. Buffers are also used in electrophoresis and some forms of chromatography.

**bundle sheath** A layer of cells which surrounds the vascular bundles of leaves. In C<sub>4</sub> plants, the enzyme associated with the reductive assimilation of carbon dioxide through the photosynthetic carbon reduction cycle (rubisco) is restricted to the bundle sheath chloroplasts. In extreme C<sub>4</sub> plants, such as sugar cane, maize and sorghum, these chloroplasts are larger than those of the mesophyll cells, and may have much reduced grana, or grana may be completely absent. In most leaves, the bundle sheath preferentially accumulates starch.

**Bunsen coefficient (*a*)** A unit defined as the volume of gas in millilitres, reduced to 0°C and 760 mm Hg pressure, dissolved in 1 millilitre of water.

**buoyant density** The equilibrium density at which a molecule comes to lie within a density gradient, formed from a solution of a material such as caesium chloride, when subjected to the force generated in an analytical centrifuge. The buoyant density of DNA increases with the content of cytosine plus guanine.

**butanoic acid** See butyric acid.

**butanol** An alcohol, produced in some bacterial fermentations, used as an industrial solvent.

**buttermilk** A fermented product obtained by culture of *Streptococcus lactis*, *S. cremoris* and/or *Leuconostoc cremoris* in pasteurized skimmed milk.

**butyl alcohol** See butanol.

**butyric acid** An organic acid produced in some bacterial fermentations.