Biological molecules

A-Level Biology · Vocabulary in context

Word	Example
molecule /ˈmɒlɪkjuːl/	A water **molecule** has two hydrogen atoms and one oxygen atom.
carbohydrate /ˌkɑːbəʊˈhaɪdreɪt/	Glucose is a simple **carbohydrate** used in respiration.
lipid /ˈlɪpɪd/	Fats and oils are **lipids**, and they do not mix with water.
protein /ˈprəʊtiːn/	Meat, eggs and beans are rich in **protein**.
nucleic acid /njuːˈklɪɪk ˈæsɪd/	DNA and RNA are both a **nucleic acid**.
reducing sugar /rɪˈdjuːsɪŋ ˈʃʊgə/	Glucose is a **reducing sugar**, so it turns Benedict's solution from blue to red.
precipitate /prɪˈsɪpɪteɪt/	A white **precipitate** forms when silver nitrate meets chloride ions.
starch /stɑːtʃ/	Potatoes contain a lot of **starch**.
iodine /ˈaɪədiːn/	**Iodine** solution turns blue-black when starch is present.
emulsion /ɪˈmʌlʃn/	A cloudy white **emulsion** shows that fat is present.
biuret /ˈbɪjuːrət/	The **biuret** test turns purple with protein.
semi-quantitative /ˈsemi ˈkwɒntɪteɪtɪv/	The colour of Benedict's test is **semi-quantitative**: it shows roughly how much sugar, not the exact amount.

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standardise /ˈstændədaɪz/	We **standardise** the test by using the same volume and time for every sample.
concentration /ˌkɒnsənˈtreɪʃn/	The **concentration** of the acid is 2 mol/dm^3. 2 mol/dm^3
non-reducing sugar /nɒn rɪˈdjuːsɪŋ ˈʃʊgə/	Sucrose is a **non-reducing sugar**, so it must be broken down before Benedict's test works.
hydrochloric acid /ˌhaɪdrəˈklɔːrɪk ˈæsɪd/	The stomach makes **hydrochloric acid**.
neutralise /ˈnjuːtrəlaɪz/	After heating with acid, we add sodium hydrogencarbonate to **neutralise** the solution.
monomer /ˈmɒnəʊmə/	Ethene is the **monomer** of poly(ethene).
polymer /ˈpɒlɪmə/	Poly(ethene) is a **polymer**.
macromolecule /ˈmækrəmɒlɪkjuːl/	Starch is a **macromolecule** made of thousands of glucose units.
monosaccharide /ˈmɒnəʊsækɑːraɪd/	Glucose is a **monosaccharide**: a single sugar unit.
glucose /ˈgluːkəʊs/	Cells use **glucose** for energy.
disaccharide /ˌdɪsəkˈhɑːraɪd/	Sucrose is a **disaccharide** made of glucose and fructose joined together.
polysaccharide /ˌpɒlɪˈsækɑːraɪd/	Starch and cellulose are both a **polysaccharide**, a long chain of sugars.
fructose /ˈfrʌktəʊs/	Fruit tastes sweet because it contains **fructose**.

Word	Example
maltose /ˈmɒltəʊs/	Amylase breaks starch into **maltose**.
sucrose /ˈsuːkrəʊs/	Plants move sugar around as **sucrose**.
covalent bond /ˈkəʊvələnt bɒnd/	A **covalent bond** is a shared pair of electrons.
glycosidic bond /ˌglaɪkəˈsɪdɪk bɒnd/	A **glycosidic bond** joins two sugar units together.
condensation /kɒndenˈseɪʃn/	In **condensation**, two molecules join and give off water.
hydrolysis /haɪˈdrɒləsɪs/	**Hydrolysis** uses water to break a large molecule into smaller ones.
energy /ˈenədʒi/	Food gives your body the **energy** it needs to move.
amylose /ˈæmɪləʊs/	**Amylose** is a long glucose chain that coils up like a spring.
amylopectin /ˈæmɪləʊpktɪn/	**Amylopectin** is a glucose chain with many branches.
glycogen /ˈglaɪkədʒn/	The liver stores **glycogen**.
insoluble /ɪnˈsɒljuːbl/	Starch is **insoluble**, so it does not dissolve in the cell's water.
water potential /ˈwɔːtə pəˈtenʃl/	Water moves from high **water potential** to low water potential.
osmosis /ɒzˈməʊsɪs/	Water enters the root by **osmosis**.
cellulose /ˈseljuːləʊs/	Plant cell walls are made of **cellulose**.

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Word	Example
fibre /ˈfaɪbə/	A collagen **fibre** helps a tendon resist stretching.
hydrogen bond /ˈhaɪdrədʒn bɒnd/	A **hydrogen bond** is a weak pull between molecules, such as between water molecules.
microfibril /ˈmaɪkrəʊfɪbrəl/	Cellulose chains join into a strong **microfibril**, which makes plant cell walls hard to break.
cell wall /sel wɔːl/	A **cell wall** gives a plant cell its shape.
triglyceride /ˈtrɪglɪsəraɪd/	A **triglyceride** is one glycerol joined to three fatty acids.
glycerol /ˈglɪsərɒl/	A fat molecule contains one **glycerol**.
non-polar /nɒn ˈpəʊlə/	Oil is **non-polar**, so it mixes poorly with water.
hydrophobic /ˌhaɪdrəˈfəʊbɪk/	Oil is **hydrophobic** and forms droplets in water.
fatty acid /ˈfæti ˈæsɪd/	A **fatty acid** is a long chain of carbon and hydrogen with an acid group at one end.
ester bond /ˈestə bɒnd/	An **ester bond** joins each fatty acid to glycerol.
saturated /ˈsætʃəreɪtɪd/	Ethane is **saturated**: it has only single bonds.
double bond /ˈdʌbl bɒnd/	A **double bond** shares two pairs of electrons between two carbon atoms.
unsaturated /ʌnˈsætʃəreɪtɪd/	Ethene is **unsaturated**: it has a double bond.

Word	Example
insulation /ˌɪnsjuːˈleɪʃn/	**Insulation** keeps the heat in the house.
hydrocarbon /ˈhaɪdrəkɑːbən/	Fatty acid tails are long **hydrocarbon** chains, made of only carbon and hydrogen.
metabolic water	Camels use fat as a source of **metabolic water** when they break it down.
buoyancy /ˈbɔɪənsi/	**Buoyancy** helps a ship float.
myelin	The fatty **myelin** around a nerve cell helps signals travel faster.
phospholipid /ˈfɒsfəlɪpɪd/	A **phospholipid** has a head that likes water and two tails that do not.
phosphate /ˈfɒsfeɪt/	**Phosphate** groups occur in ATP, nucleic acids and phospholipids. ATP、
hydrophilic /ˌhaɪdrəˈfɪlɪk/	Sugar is **hydrophilic**, so it dissolves easily in water.
polar /ˈpəʊlə/	Water is **polar** because its charge is unevenly distributed.
amino acid /əˈmiːnəʊ ˈæsɪd/	Glycine is the simplest **amino acid**.
amino group /əˈmiːnəʊ gruːp/	Every amino acid has an **amino group**, $-NH_2$, at one end. $-NH_2$
carboxyl group /ˈkɑːbəksɪl gruːp/	Every amino acid has a **carboxyl group**, –COOH, at the other end. –COOH
side chain /saɪd tʃeɪn/	Each amino acid has a different **side chain**, called the R group. R
peptide bond /ˈpeptaɪd bɒnd/	A **peptide bond** joins two amino acids.

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Word	Example
polypeptide /ˌpɒlɪˈpeptaɪd/	A **polypeptide** is a long chain of amino acids.
primary structure /ˈpraɪməri ˈstrʌktʃə/	The order of amino acids in a chain is its **primary structure**.
secondary structure /ˈsekəndəri ˈstrʌktʃə/	A coil or a folded sheet is the **secondary structure** of a protein.
helix /ˈhiːlɪks/	The electron moves in a **helix**, like a spring.
pleated sheet /ˈpliːtɪd ʃiːt/	In a **pleated sheet**, parts of the protein chain lie side by side, held by hydrogen bonds.
tertiary structure /ˈtɜːʃəri ˈstrʌktʃə/	The **tertiary structure** is the final 3D shape of one folded chain. 3D
quaternary structure /kwəˈtɜːnəri ˈstrʌktʃə/	Haemoglobin has **quaternary structure** because it is made of four chains.
hydrophobic interactions /ˌhaɪdrəˈfəʊbɪk ˌɪntəˈrækʃnz/	**Hydrophobic interactions** push the oily parts of a protein to the inside, away from water.
ionic bond /aɪˈɒnɪk bɒnd/	An **ionic bond** is the attraction between oppositely charged ions.
disulfide bond /ˈdaɪsəlfaɪd bɒnd/	A **disulfide bond** is a strong link between two sulfur atoms in a protein.
globular protein /ˈglɒbjʊlə ˈprəʊtiːn/	An enzyme is a **globular protein**: it is round and dissolves in water.
soluble /ˈsɒljuːbl/	Salt is **soluble** in water.

Word	Example
fibrous protein /ˈfɪbrəs ˈprəʊtiːn/	Collagen is a **fibrous protein**: long, strong and does not dissolve.
haemoglobin /ˌhiːməˈgləʊbɪn/	**Haemoglobin** in red blood cells carries oxygen.
oxygen /ˈɒksɪdʒn/	Your cells need **oxygen** to release energy.
haem group /hiːm gruːp/	Each **haem group** contains iron, which holds one oxygen molecule.
iron /ˈaɪən/	Red meat and spinach contain **iron**.
sickle cell anaemia /ˈsɪkl sel əˈniːmɪə/	In **sickle cell anaemia**, red blood cells bend into a curved shape and carry less oxygen.
collagen /ˈkɒlədʒn/	**Collagen** is a strong protein in skin, bone and tendons.
tendon /ˈtendn/	A **tendon** joins a muscle to a bone.
solvent /ˈsɒlvənt/	Water is the **solvent** in salt water.
specific heat capacity /spəˈsɪfɪk hiːt kəˈpæsɪti/	Water has a high **specific heat capacity**, so it warms up slowly.
latent heat of vaporisation /ˈleɪtənt hiːt ɒv ˌveɪpəraɪˈzeɪʃn/	Water's high **latent heat of vaporisation** makes sweating effective.
evaporate /ɪˈvæpəreɪt/	Sweat cools you because it **evaporates** from your skin.
cysteine	Two **cysteine** groups can form a disulfide bond in a protein.

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