IB Biology Topic 2 – Molecular Biology Revision Sheet

Carbon atoms can form four covale bonds.

Carbon compounds which life is based on are; carbohydra , lipi , prote , nucleic

Metabolism is All the enzyme catalysed reactions

Anablism is building larger molecules from smaller

Catabolism is breaking large molecules into smaller

The most common **Elements** found in living things are:

Carbon , Hydrogen , Oxygen ,

Other elements & their functions are;

Sulfur - found in some amino

Calcium - Bones and teeth, nerve impulses and muscle

Iron - Part of Hemoglobin

Phosphorous Found in DNA RNA and phospholipids

Condensation reactions are

Reactions which join two monomers resulting in the loss of a Amino acids -->

Hydrolysis reactions are

Reactions which separate two monomers, invlovling the addition of water.

Properties of **Water**:

- cohesi
- adhesi
- excellent
- high specific heat capacity

The importance of water for living things

- allows water to be pulled up xylem /
- water sticks to other things,
- allows transport of many substances
- water only changes temp slowly maintaining a stable environment for aquatic

Molecular diagram of glucose

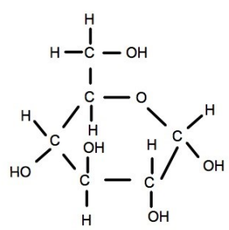

Diagram of ribose,

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Fatty acids can be saturated, which means they have no double

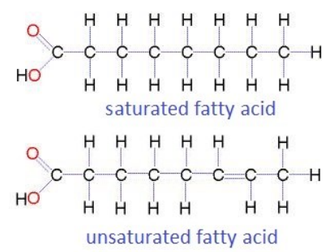
or monounsaturated that means there is a single double

or polyunsaturated. there is more than one

A cis isomer of a fatty acid is.

Cis has both H molecule on the double bond on the This is a

Diagrams of fatty acids



The effect of Temperature on enzyme reaction rates is Increases up to optimum (~40°C) then decreases rapidly

pH affects enzymes by changes in pH change the shape of the The further the pH is from the optimum pH of the enzyme -

and substrate concentration changes the rate of activity of enzymes because the more substrate there is the faster the reaction, until all the active .

. How does the shape of an enzyme help its function? The active site binds to the enzyme's substrate, it makes enzymes

Examples of proteins: - a few details of each.

Insulin A hormone released into blood. binds to receptors in liver & lowers conc of

RuBISCO Enzyme which fixes CO2 to RuBP during photosynthesis -

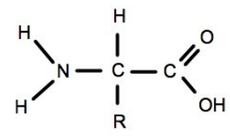
Spider silk Fibrous protein, long thin and

Rhodopsin A light sensitive pigment found in cells of

Enzymes Globular proteins with active sites which bind to a

A proteome is all of the proteins expressed

Use this diagram of a generalized amino acid to draw molecular diagrams of peptide bond formation.



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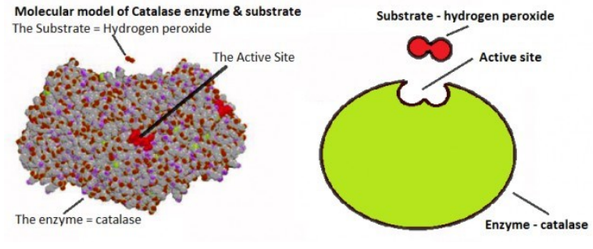
How many different amino acids are there? 2



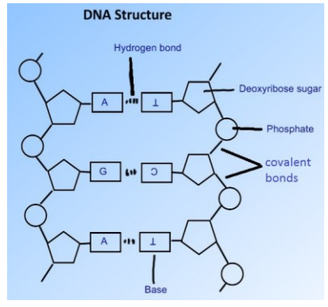
Advantages or immobilization of lactase in alginate beads are The enzyme be easily separated from the milk and reused if it is

The similarities in structure between DNA and RNA are both have sugar phosphate backbone both are made from nucleotides (base sugar

Complementary base pairing is The fact that A (adenine) always pairs with T and C (cytosine) always pairs with G

Semi-conservative replication is the way a new strand of DNA is built on original strands. Half of the DNA in each strand is

A codon is 3 bases on a Anticodons are 3 bases on a tRNA



DNA replication is controlled by these enzymes whose functions are:

- Helicase uncoils and unzips
- DNA polymerase builds a new DNA strand on the

Transcription of DNA is the creation of a

Translation is the creation of a polypeptide