




SUMMARY BIOLOGICAL MOLECULES

	CARBOHYDRATES	LIPIDS	PROTEINS
POLIMER	PLANTS: starch & cellulose ANIMALS: glycogen	saturated/unsaturated fats and oils	protein
MONOMER(S)	glucose galactose fructose 	3 x fatty acid chains 1 x glycerol molecule 	amino acids 
BONDS	glycosidic bond	ester bond	peptide bond
STRUCTURES	<i>monosaccharides</i> (1 sugar molecule), e.g.: <i>glucose, galactose and fructose</i> <i>disaccharides</i> (2 sugar molecules), e.g.: - glucose + glucose → <i>maltose</i> - glucose + galactose → <i>lactose</i> - glucose + fructose → <i>sucrose</i> <i>polysaccharides</i> (many sugar molecules), e.g.: <i>starch, glycogen, cellulose and chitin</i>	<i>unsaturated fats</i> , e.g. oils, = double bonds in fatty acid chains (liquids at room temperature) <i>saturated fats</i> , e.g. butter = single bonds in fatty acid chains (solids at room temperature)	<i>primary structure</i> = long chain of amino acids <i>*secondary structure</i> = chain of amino acid folds <i>tertiary structure</i> = combination of secondary structures <i>quaternary structure</i> = more than one folded protein chain together <i>dipeptide</i> (2 amino acids), <i>tripeptide</i> (3 amino acids), <i>polypeptide</i> (less than 50 amino acids) and <i>proteins</i> (more than 50 amino acids)
STORAGE PLACE	ANIMALS: liver and skeletal muscle as <i>glycogen</i> PLANTS: as <i>starch</i> and <i>cellulose</i>	as <i>fat</i> in adipocytes (fat cells) as <i>cholesterol</i> in cells & liver	as <i>muscle</i>
ELEMENTS	C, H and O (in a 1:2:1 ratio)	C, H and O (ration of H:O is greater than 2:1)	C, H, O, N, P, S, etc.
REAGENTS FOR FOOD TESTS (COLOURS)	MONOSACCHARIDES: <i>Benedict</i> (blue → yellow/green/orange/brick red) <i>Fehling A & B</i> (blue → brick red) STARCH: <i>Iodine</i> (yellow-brown → blue-black)	<i>Ether/Ethanol</i> (translucent fatty spot forms)	<i>Biuret</i> reagent (blue → purple/violet) <i>Millon's</i> reagent (wit → pink/wine red)
FUNCTIONS	<ol style="list-style-type: none"> 1. Main source of energy 2. Source of reserve energy 3. Structural component of plant cell walls as cellulose 	<ol style="list-style-type: none"> 1. Main reserve energy source 2. Structural component of cell membranes as phospholipids 3. Heat insulator 4. Shock absorber between organs 	<ol style="list-style-type: none"> 1. Growth and repair 2. Structural component of cell membranes 3. Forms enzymes (controls metabolic processes) 4. Forms anti-bodies (protects against disease) 5. Transport of substances (e.g. haemoglobin transports gases) 6. Forms hormones (co-ordinate body processes) 7. Source of reserve energy