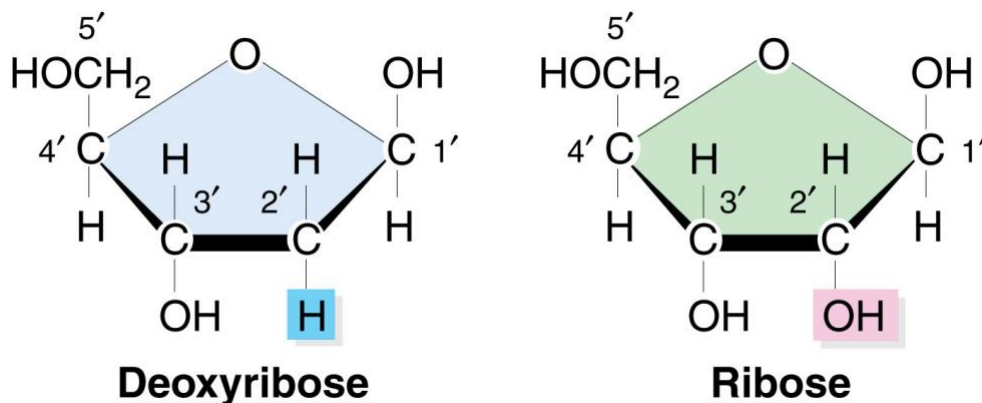




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7. How are disaccharides/polysaccharides formed?

Through concentration reactions

8. What bonds form between sugars?

Glycosidic

9. Explain the structure and function of glucose, starch, glycogen and cellulose.

Glucose: **alpha and beta glucose. Hexose sugar= C₆H₁₂O₆. Monosaccharide.**

Energy supplier.

Starch: long chains of alpha glucose

Amylose- 1-4, unbranched

Amylopectin- 1-6, branched

Energy store- release glucose when needed

Glycogen: carbohydrate energy store in animals. Alpha glucose units, 1-6 glycosidic bonds causing side branches so glucose is released quickly in active tissues.

Cellulose: Beta glucose, Hydrogen bonds. 1 monomer can be inverted for bonding so hydroxyl group sticks out so hydrogen bonds form between positively charged hydrogen atoms of hydroxyl groups and negatively charged oxygen atoms in other areas of the glucose molecule.

Cell wall in plants- very strong.

10. What is an ester bond?

Formed in a condensation reaction (esterification) with a carboxyl group of a fatty acid and one hydroxyl group of glycerol

11. How is a 'fat/oil' formed?

when glycerol combines with one, two or three fatty acids to form a monoglyceride, diglyceride or triglyceride.

12. How is a triglyceride formed, including the bond and type of condensation reaction?

Glycerol combines with three fatty acids, releasing 3H₂O and forming an ester bond.

13. What is saturated lipid?

Each carbon atom is joined by a single covalent bond in a hydrocarbon chain= fats/butter

14. What is an unsaturated lipid?

One double bond= monounsaturated fatty acid

2+ double bonds= polyunsaturated fatty acid

28. How does mitosis contribute to asexual reproduction?

Asexual reproduction only involves one parent

This means it doesn't rely on mating and creates large numbers of offspring; however, the offspring will be genetically identical, meaning there is no variation.

BINARY FISSION: mitosis followed by splitting of an individual= 2 new individuals (bacteria)

PRODUCING SPORES: mitosis and production of asexual spores which are capable of growing into new individuals (fungi)

REGENERATION: Regrow a body part that has been lost- fragmentation, reproduced from fragments of original body (starfish)

PRODUCING BUDS: Outgrowth by parent organism that develops in independent organism (yeast, hydra plant)

VEGETATIVE PROPAGATION: plant forms structure by mitosis that develops into a fully, differentiate, genetically identical plant (spider plant)

30. CORE PRACTICAL 3

31. What are the stages of meiosis

FIRST DIVISION

interphase: chromatin not visible. DNA replicated.

prophase: chromosomes visible. They form a homologous pair (the two matching chromosomes in nucleus) called a bivalent. Crossing over occurs here.

Metaphase: spindles form and chromosomes line up on the metaphase plate.

Anaphase: centromeres do not divide. One chromosome from each homologous pair moves to either pole, resulting in a haploid n.o.

Telophase: nuclear membrane reforms and cells begin to divide. Cells have two chromosomes.

SECOND DIVISION

interphase: no DNA replication, chromosomes visible.

prophase: centrioles replicate and move to new poles, 90 degrees to original ones

metaphase: new spindles form and chromosomes line up on metaphase plate

anaphase: spindle fibres contract, centromeres split and chromatids move to opposite ends of the cell

telophase: nuclear envelopes reform. Chromosomes return to interphase state= 4, haploid, daughter cells.

31. How does meiosis result in genetic variation?

through recombination of alleles including:

Independent assortment: The chromosomes that come from the parents are randomly assorted, so 'alleles are shuffled' causing variation when pulled from the equator in the first division.

Crossing over: large, multi-enzyme complexes, 'cut and join' bits of maternal and paternal chromatids together. Where the chromatid breaks and recombines, is called the chiasmata.

32. How are chromosome mutations caused?

Errors in recombination of DNA

33. What are the types of mutation and what do they do?

Translocation: during chromosome separation in meiosis, one part of a chromosome may break off and attach onto a different chromosome.

Duplication: doubling a section of chromosome

Deletion: loss of a section of chromosome