



كلية : التربية للعلوم الصرفة

القسم او الفرع : علوم الحياة

المرحلة: الثانية

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اسم المادة باللغة العربية : كيمياء حيائية

اسم المادة باللغة الإنكليزية : **Biochemistry Chemistry**

اسم المحاضرة الثامنة باللغة العربية: الاحماض النووية

اسم المحاضرة الثامنة باللغة الإنكليزية : **Nucleic Acids**

Nucleic acids

Nucleic acids are required for the storage and expression of genetic information.

There are two chemically distinct types of **Nucleic acids**: deoxyribonucleic acid (DNA) and ribonucleic acid (RNA).

DNA: the storehouse of genetic information, is present not only in the nucleus of eukaryotic organisms, but also in mitochondria and the chloroplasts of the plants. The genetic information found in DNA is copied and transmitted to daughter cells through DNA replication.

Nucleotides: are the monomeric units of the nucleic acids, DNA (deoxyribonucleic acid) and RNA (ribonucleic acid).

Each nucleotide consists of a heterocyclic **nitrogenous base**, a **sugar**, and one, two or three **phosphate**.

There are two types:

DNA contains the purine bases **adenine** (A) and **guanine** (G) and the pyrimidine bases **cytosine** (C) and **thymine** (T), the sugar is **deoxyribose**.

RNA contains A, G, and C, but it has **uracil** (U) the sugar is **ribose**.

- **Nucleotides**

Nucleotides, composed of a base, a sugar, and phosphate, were found to be the monomeric units of the nucleic acids. In nucleosides, the nitrogenous base is linked by an *N-glycosidic bond to the anomeric carbon of the sugar, either ribose or deoxyribose*. A nucleotide is a nucleoside with an inorganic phosphate attached to a 5-hydroxyl group of the sugar in ester linkage. The names and abbreviations of nucleotides specify the base, the sugar, and the number of phosphates attached (**MP, monophosphate; DP, diphosphate; TP, triphosphate**). In deoxynucleotides, the prefix “d” precedes the abbreviation. For example, GDP is guanosine diphosphate (the base guanine attached to a ribose that has two phosphate groups) and dATP is deoxyadenosine triphosphate (the base adenine attached to a deoxyribose with three phosphate groups).

