B. Sc I, (Zoology Hons.)
Paper-Gr-B

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Kinds of ribo-nucleic Acid

These ribo-nucleic acids are of three types.

(a) Messenger RNA :- This ribonucleic acid is of nuclear origin & conveys genetic information from DNA in the nucleus to the ribosomes in the cytoplasm, where amino acids become grouped to form proteins. Messenger RNA can be artificially synthesized from Escherichia coli (bacteria) using DNA Primer. The messenger RNA (m-RNA) term was proposed by Jacob & Monod in 1961 & it is a template molecule copied from DNA. The m-RNA is very unstable and heterogeneous, and its size varies according to polypeptide chain for which it will code. In E.coli, average size of m-RNA is 100-1500 nucleotide related to 300-500 amino acids. Sometimes, m-RNA are larger called polygenic or Polycistronic messengers. In Eukaryotic cells, m-RNA does not enter cells as naked strand of DNA but in association with proteins. This complex of m-RNA with Protein is called informosomes by Spirin (1965)

(b) Transfer or adapter RNA :- It is another important type of ribonucleic acid which is present in the cytoplasm, helping there in protein synthesis. It has been recently found that t-RNA originates from nucleus near the nucleolar region. In the bacteria Escherichia coli transfer RNA constitutes 10-20%.

of the total Cellular RNA. It has a comparatively Smaller molecule than messenger RNA & has molecular weight of 24,000. There are different particular types of transfer RNA corresponding to various amino acids. Thus, one Particular type of t-RNA pick up particular amino acid and finally forms chains of amino acid with the help of other transfer RNA resulting in the formation of Protein. In t-RNA, four special sites may be recognized such as sites for amino - acid attachment, anticodon, recognition of specific amino acid - activating enzyme and ribosomal recognition. Besides, another characteristic is presence of methylated bases, which include mainly Pseudouridine, inosinic acid, methyl guanine, methylamino Purine and methylcytosine. The sequence of at least 14 t-RNA is now known, as told by Philips (1969) with regard to nucleotides.

(C) Ribosomal RNA :- This ribonucleic acid is the major component of cytoplasmic Particles called ribosome Ribosomal RNA comprises up to 80% of the cellular RNA of Escherichia coli. It is the site of amino acids union.