

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* (bacterial) 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 900-1500 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, methylguanine, 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.