TRANSCRIPTION

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Definition

Cellular process in which RNA is synthesized using DNA as a template known as **TRANSCRIPTION**.

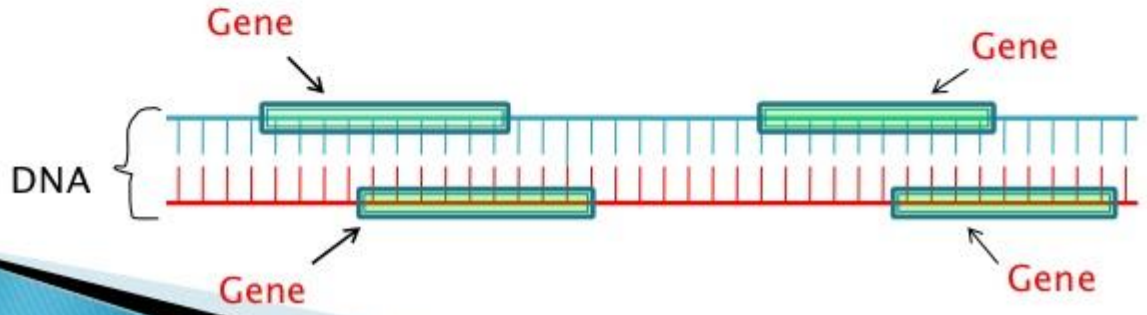
DNA

RNA

RNA

- Polymer of ribonucleotide held together by 3'→ 5' phosphodiester bridge & are single stranded.
- Is the only molecule known to function both in the storage & transmission of genetic information & in catalysis.
- All RNAs except the RNA genomes of certain viruses derived from information which is stored permanently in DNA.

- In replication entire DNA molecule is normally copied.
- In transcription a particular gene or group of genes are copied at any time, & some portions of DNA are never transcribed.
- Gene is a segment of DNA that codes for a type of **Protein** or for **RNA** & may present on any strand of DNA (contain many genes.)



Features of transcription

- **1)** It is highly selective.
- This selectivity is due to signals embedded in the nucleotide sequence of DNA.
- Specific sequences mark the beginning and end of the DNA segment which is to be transcribed.
- This signals instruct the enzyme

where to start & stop the transcription
when to start,
how often to start .

features

- **2)** Many of the RNA transcripts are synthesized as precursors that is known as primary transcripts.

- Which on modifications & trimming converted into functional RNA .
- **SITE:**
- **Transcription –** Prokaryotes– cytoplasm(all RNAs).
  Eukaryotes– Nucleus & mitochondria
  a) Nucleolus – rRNA
  b) Nucleoplasm –tRNA & mRNA.

- The basic biochemistry of RNA synthesis is similar in prokaryotes & eukaryotes, but its regulation is more complex in eukaryotes.

- RNA synthesis in prokaryotes is catalyzed by a large enzyme called as

- **DNA dependent RNA polymerase or RNA polymerase**

A single enzyme, RNA polymerase, synthesizes all types cellular RNAs in prokaryotes.

RNA polymerase use one of the DNA strand as template on which complimentary ribonucleotides are incorporate to synthesize RNA.

- The strand of DNA which is transcribed to RNA called as template strand.
- Opposite strand is referred as coding strand.