Types of RNA and Mechanism of Transcription

Types of RNA

RNA can be transcribed from DNA in several forms:

- Messenger RNA
- Transfer RNA
- Ribosomal RNA
- Catalytic RNA

The main difference between transcription and DNA replication is the use of one main enzyme, RNA polymerase.

Once RNA polymerase binds, it needs to unwind DNA in order to use it as a template to create RNA. The RNA polymerase enzyme binds to the template strand and creates the RNA molecule.

Unlike DNA polymerases, RNA polymerases do not have proofreading activity. The enzyme is error-prone and any mistakes can result in translated proteins that may not be functional.

The one exception is that DNA contains thymine and RNA contains uracil.

Eukaryotic mRNA Processing; Spliceosome

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Eukaryotic mRNA processing involves the modification of the initial RNA molecule synthesized by RNA polymerase, resulting in the formation of mature mRNA. RNA splicing is the process of removing noncoding introns. Alternatively, splicing enables the production of multiple protein products from a single gene. The spliceosome, consisting of RNA-protein complexes called small nuclear ribonucleoproteins (snRNPs), binds to pre-mRNA and performs the splicing process.