**8.4 Transcription**

**Key Concept: Transcription converts a gene into a single stranded RNA molecule.**

RNA carries DNA’s instructions

* The central dogma states that information flows in one direction from DNA to RNA to proteins

The central dogma includes three processes.

* Replication
* Transcription
* Translation
* RNA is a link between DNA and proteins.

RNA differs from DNA in three ways

* RNA has a ribose sugar
* RNA has uracil instead of thymine
* RNA is single stranded

Transcription makes three types of RNA.

* Transcription copies DNA to make a strand of RNA.

*Transcription is catalyzed by RNA polymerase*

* RNA polymerase and other proteins form a transcription complex.
* The transcription complex recognizes the start of a gene and unwinds a segment of it.

Nucleotides pair with one strand of the DNA

* RNA polymerase bonds the nucleotides together.
* The DNA helix winds again as the gene is transcribed

Transcription makes three types of RNA

* Messenger RNA (mRNA) carries the message that will be translated to form a protein.
* Ribosomal RNA (rRNA) forms part of ribosomes where proteins are made.
* Transfer RNA (tRNA) brings amino acids from the cytoplasm to a ribosome.

**The transcription process is similar to replication.**

* Transcription and replication both involve complex enzymes and complementary base pairing.
* The two processes have different end results.
  + Replication copies all the DNA; transcription copies a gene.
  + Replication makes one copy; transcription can make many copies.