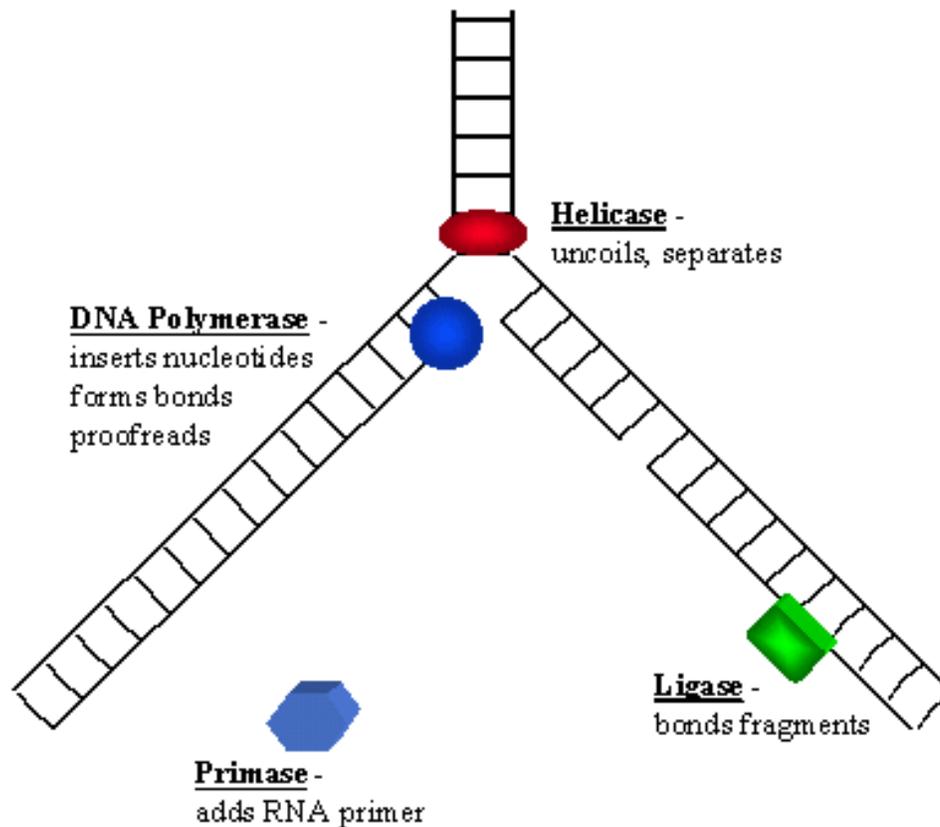


DNA replication

- When Cells replicate they need to make copies of the genetic information so that the new cells can function properly.
- This process of Replication is conducted by an enzyme called **DNA polymerase**.

Enzymes

- **DNA Primase**- Kickstarts the replication of DNA.
- **DNA Helicase**- Unwinds or “unzips” DNA and creates the replication fork or bubble.
- **DNA Ligase**- Fills spaces in between Okazaki fragments.



RNA

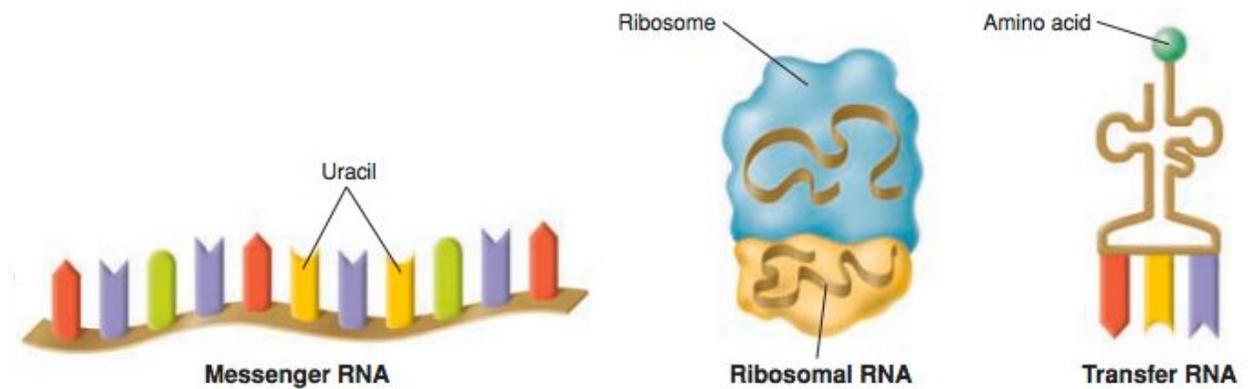
- Comparing RNA to DNA:
 - Another type of a nucleic acid is **Ribonucleic Acid**.

- Each **nucleotide** is made of a 5 carbon sugar, a phosphate group, and nitrogenous base.
- Three major differences between DNA and RNA
 - 1. The sugars (Ribose instead of Deoxyribose)
 - 2. Number of strands
 - 3. RNA contains uracil instead of thymine (AUGC)
- RNA has 3 major types:
 - mRNA
 - tRNA
 - rRNA

TRANSCRIPTION

- **Transcription** is the process by which the information in a strand of DNA is copied into a new molecule of messenger RNA (mRNA).
- mRNA is produced (made) by RNA polymerase.
- Functions of RNA
 - “A disposable copy of a segment of DNA”
 - Its main function is to carry through protein synthesis
 - RNA controls the assembly of amino acids into proteins.
 - Each type of RNA has a different job
 - Messenger RNA
 - Contain instructions for assembling amino acids into proteins
 - **They carry information from DNA to other parts of the cell**

- Ribosomal RNA
 - Proteins are assembled on ribosomes which are composed of two RNA subunits
- Transfer RNA
 - **Transfers each amino acid to the ribosome as if specified by the coded messages in mRNA**



Types of RNA 🇵🇸 The three main types of RNA are messenger RNA, ribosomal RNA, and transfer RNA. Ribosomal RNA is combined with proteins to form ribosomes.

Translation

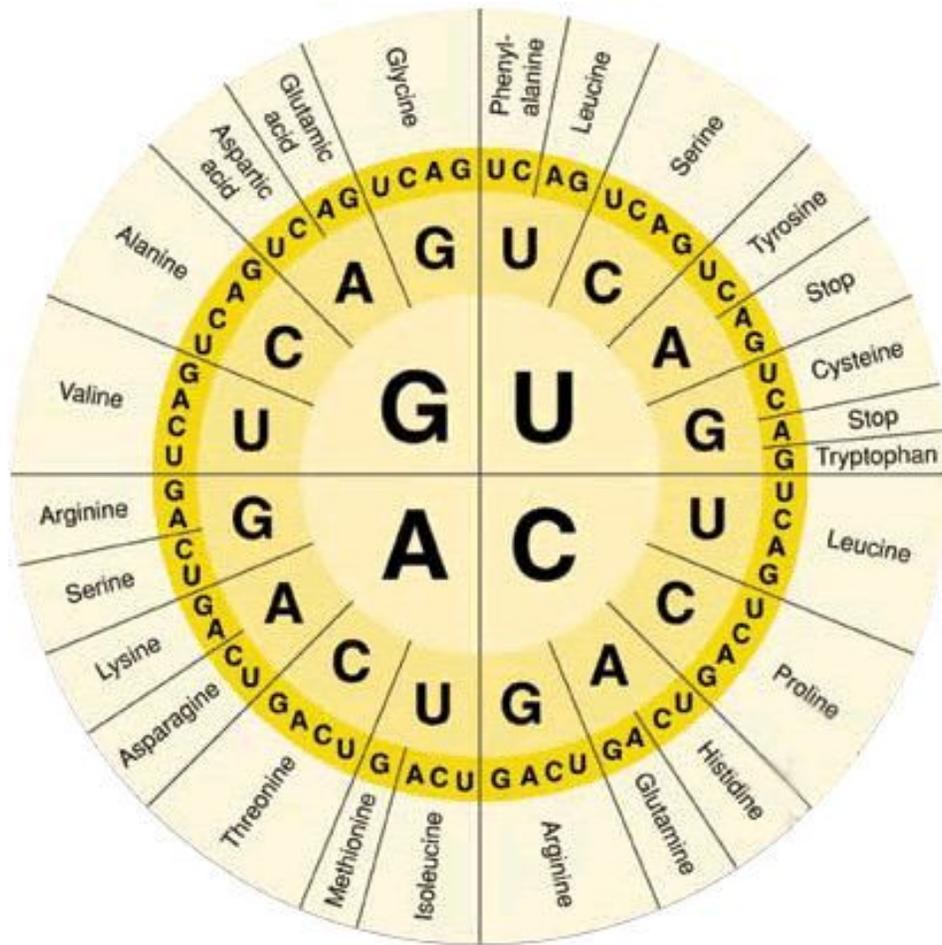
The decoding of an mRNA message into a protein is a process known as **translation**.

- **Translation**

- The mRNA formed in **transcription** is transported out of the nucleus, into the cytoplasm, to the ribosome (the cell's protein synthesis factory).

Genetic Code

- Transcribed information
- Proteins are made by joining amino acids together into long chains which are called **polypeptides**
- **The genetic code** is read three “letters” at a time, so that each “word” is three bases long and corresponds to a single amino acid.



- - Transfer RNARibosomal RNA
 - Proteins are assembled on ribosomes which are composed of two RNA subunits.
 - **Transfers each amino acid to the ribosome as if specified by the coded messages in mRNA.**
- **Step 1:** A ribosome attaches to an mRNA molecule in the cytoplasm and the tRNA molecule brings the proper amino acid into the ribosome. One at a time, the ribosome then attaches these **amino acids** to the growing chain.
- **Step 2:** the process continues until the ribosome reaches one of the three stop codons. Once the chain is complete, it and the mRNA are released from the ribosome.

