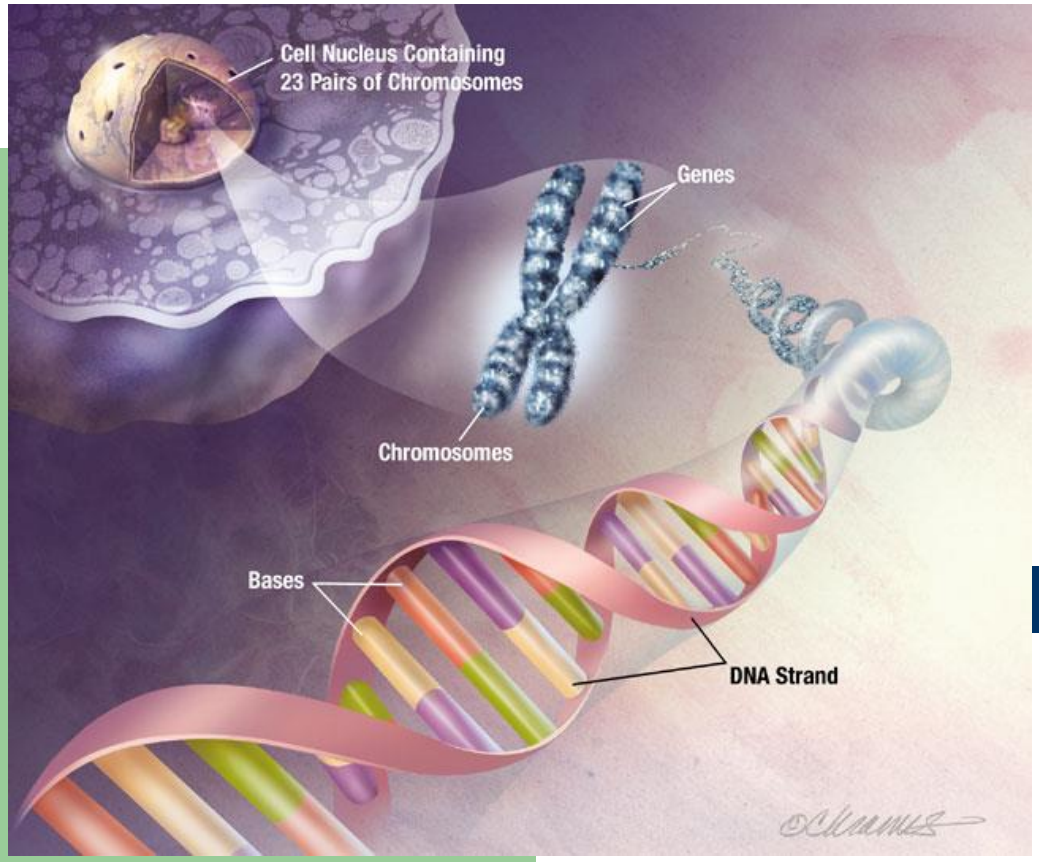
DNA Structure and Transcription



What is this all about?

- What is DNA good for?
- Why do we need genes?
- Why do we need proteins?
- What's so special about enzymes?

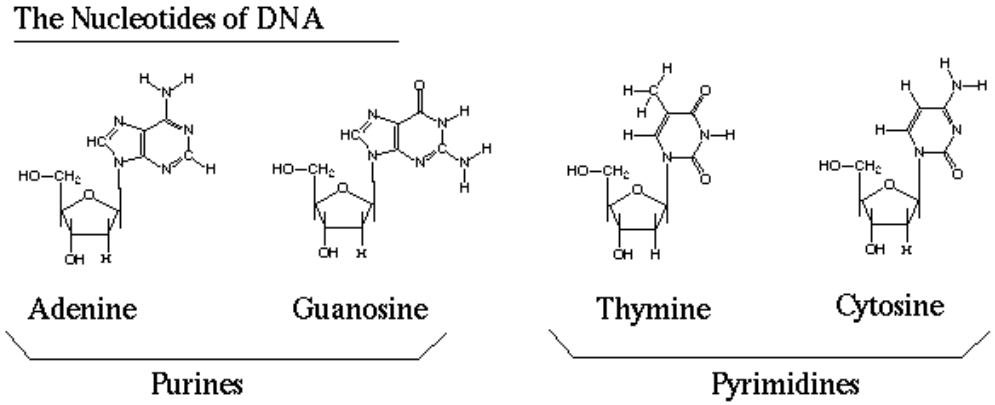
Objectives:

- Students will know the structure and composition of DNA
- Students will understand the physical differences between DNA and RNA.
- Students will be able to describe the basic process and end product of DNA transcription.

DNA in the Cell

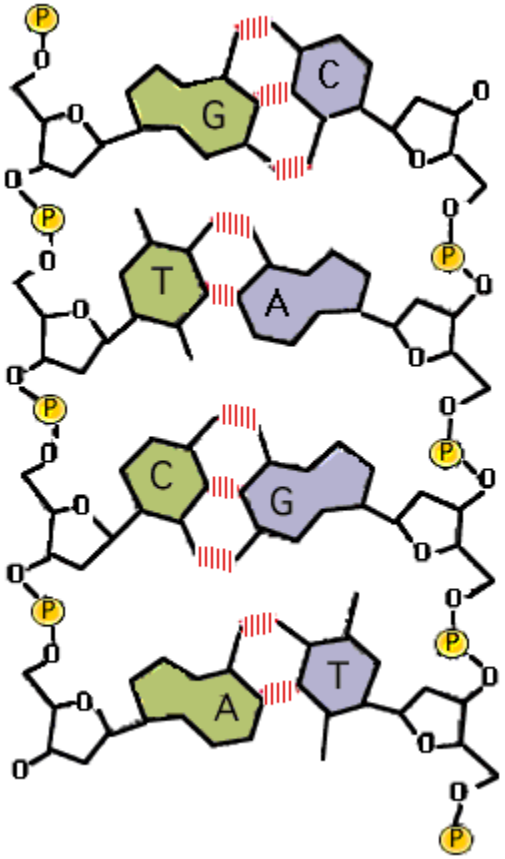
DNA Bases

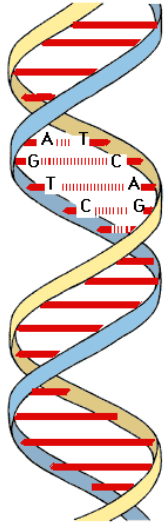
- Only four bases in DNA
- A – adenosine
- C – cytosine
- G – guanine
- T – thymine



DNA Base Pairs

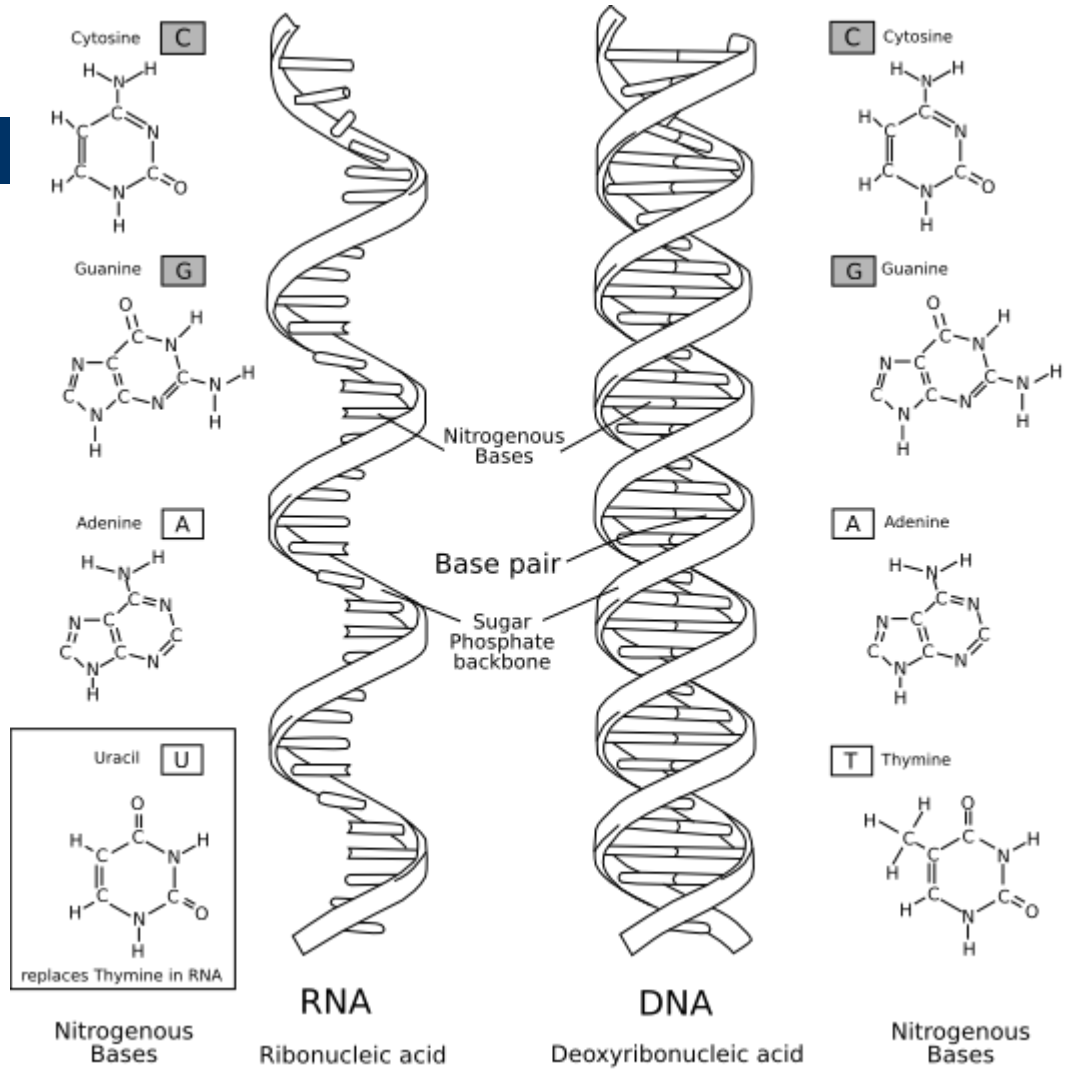
- DNA bonds in a double helix
- A always pairs with T
- C always pairs with G
- Pyramidine + Purine





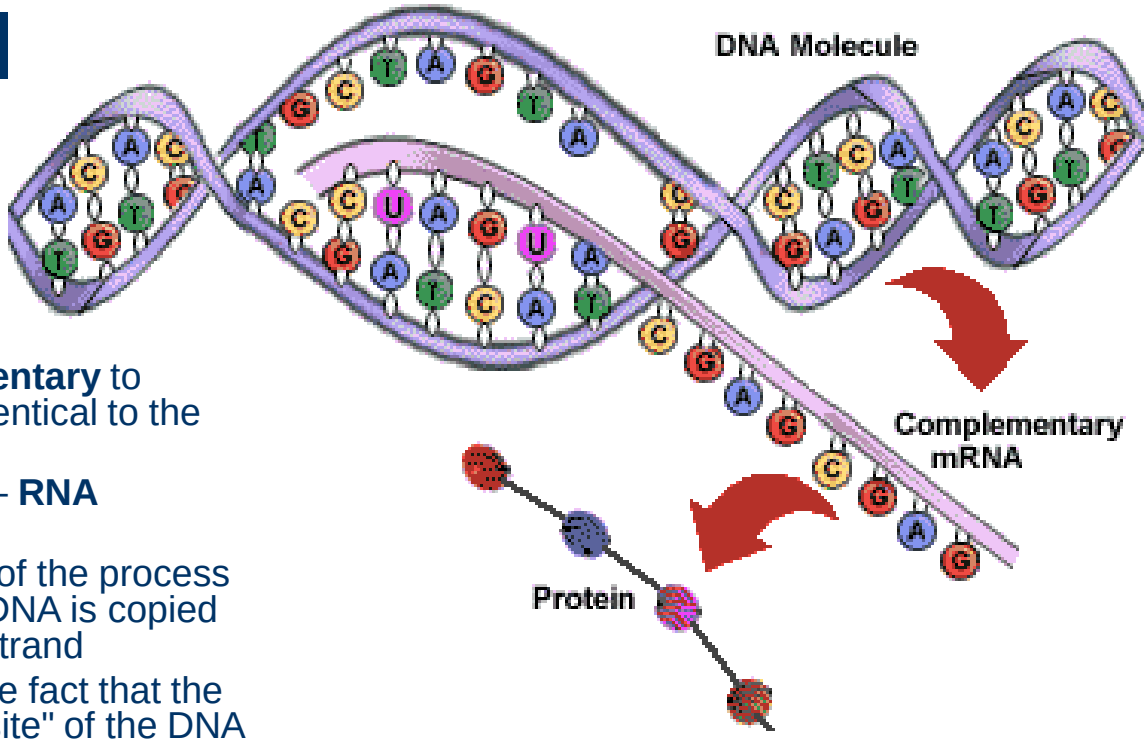
RNA Bases

- Four bases – one different from DNA
- U – Uracil (instead of Thymine)
- RNA does not form double-helix



DNA Transcription

- DNA gets copied to **mRNA** (messenger RNA)
- DNA A pairs with RNA U
- DNA C pairs with RNA G
- DNA G pairs with RNA C
- DNA T pairs with RNA A
- mRNA strand is **complementary** to transcribed DNA strand; identical to the **sister DNA** strand
- Work done by an enzyme – **RNA polymerase**
- **transcription** is the name of the process through which a strand of DNA is copied into its associated mRNA strand
- complementary refers to the fact that the mRNA strand is the "opposite" of the DNA strand - each RNA base is the opposite of each DNA base



DNA Transcription in Action

http://vcell.ndsu.edu/animations/transcription/movie-flash.htm