Monday December 12th

Test retakes before and after school!

Starter:

You extract a strand of DNA that is 1,500 nitrogen base pairs long.

You determine that there are 400 Guanine.

How many Cytosine? Adenine? Thymine?

Scoring Test Section 3.4

10 total "points"

+1 for each correctly labeled structure

(must be labeled on both cells if found in both!)

+1 for each correct function

Scaled Score:

10 = 4

9-8 = 3.5

7 = 3

6 = 2.5

5 = 2

4-3 = 1.5

2-0 = 1

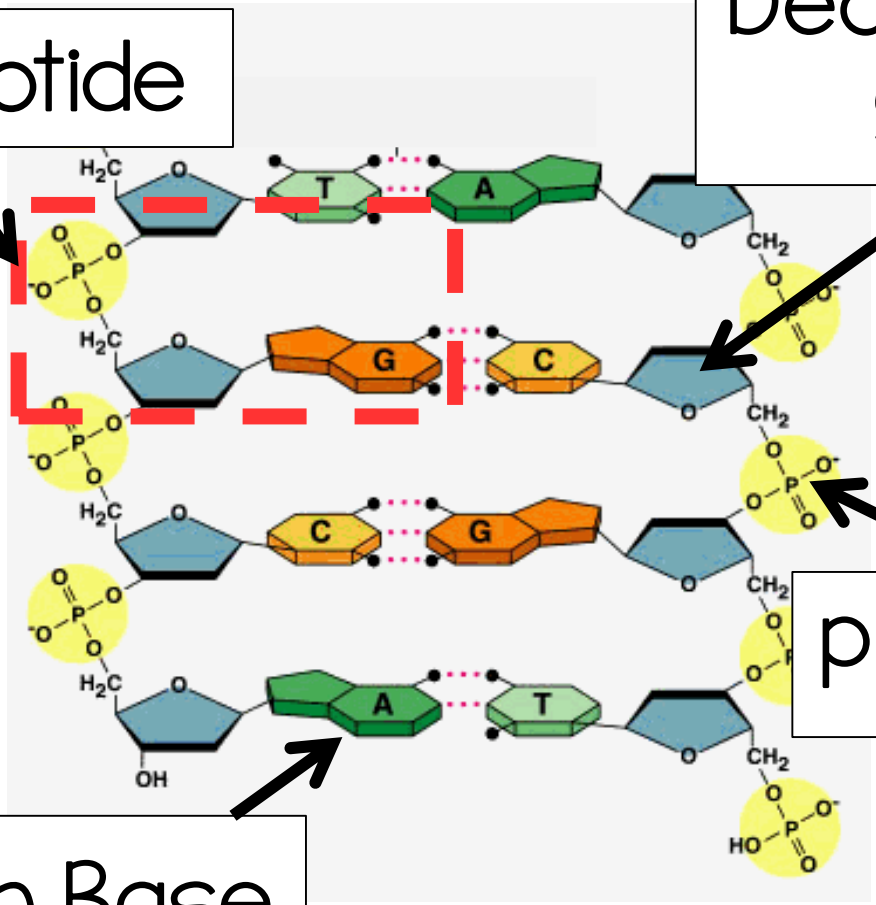
4.1: DNA Structure

- Create or use a model or diagram to describe the molecular components of DNA
- Identify the functions of the major structures within a strand of DNA
- Locate and describe the types of atomic bonds found within a strand of DNA

4.1: DNA Structure

Nucleotide

Deoxyribose Sugar



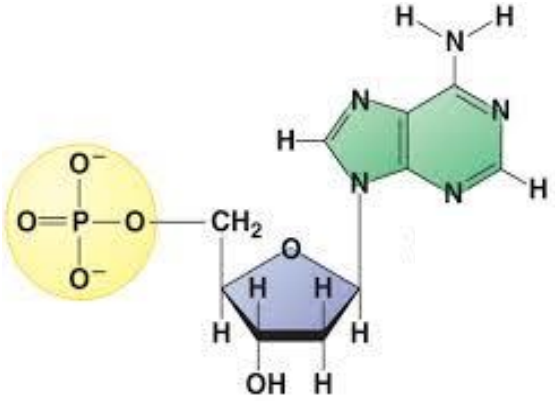
Phosphate

Nitrogen Base

4.1: DNA Structure

Nucleotides:

- Most basic unit of nucleic acid polymers
- Made of 3 basic components

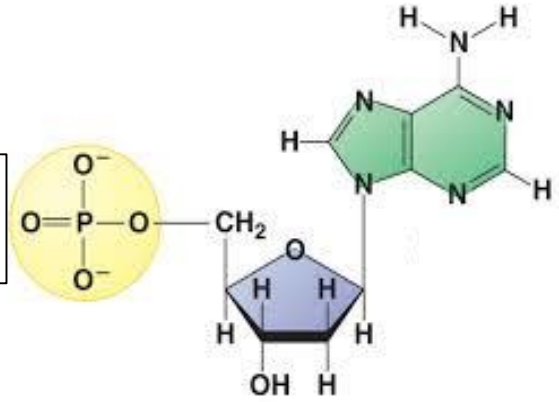


4.1: DNA Structure

Phosphate:

- Made up of phosphorous (P) & oxygen (O)

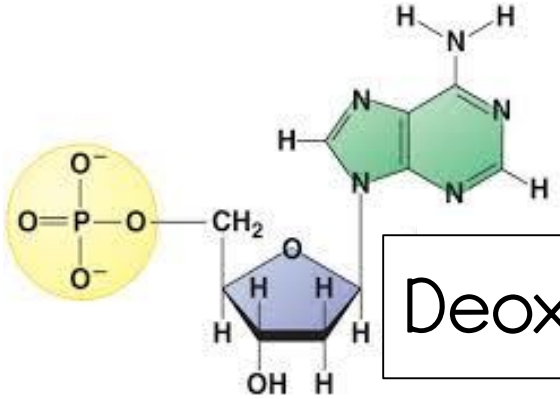
Phosphate



4.1: DNA Structure

Deoxyribose Sugar:

- 5-Carbon sugar ring
- Missing one oxygen (deoxy)

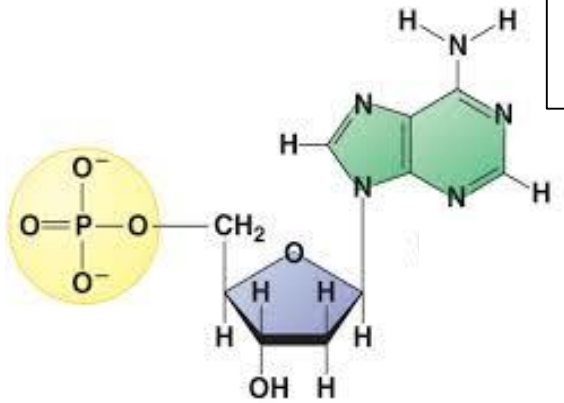


Deoxyribose Sugar

4.1: DNA Structure

Nitrogen Base

- Contains nitrogen
- Four different kinds: A, T, C, G



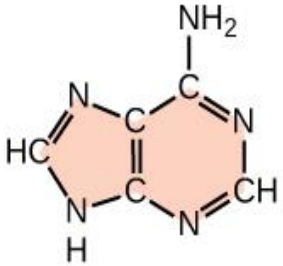
Nitrogen Base

4.1: DNA Structure

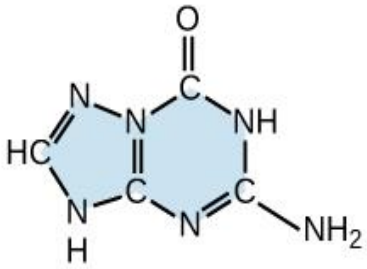
Two Types of Nitrogen Bases:

Purines

(2 rings)



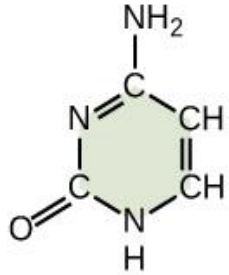
Adenine



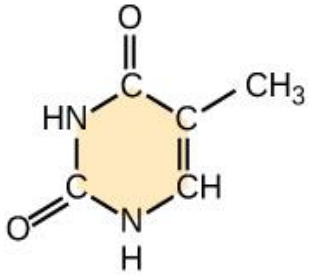
Guanine

Pyrimidines

(Single ring)

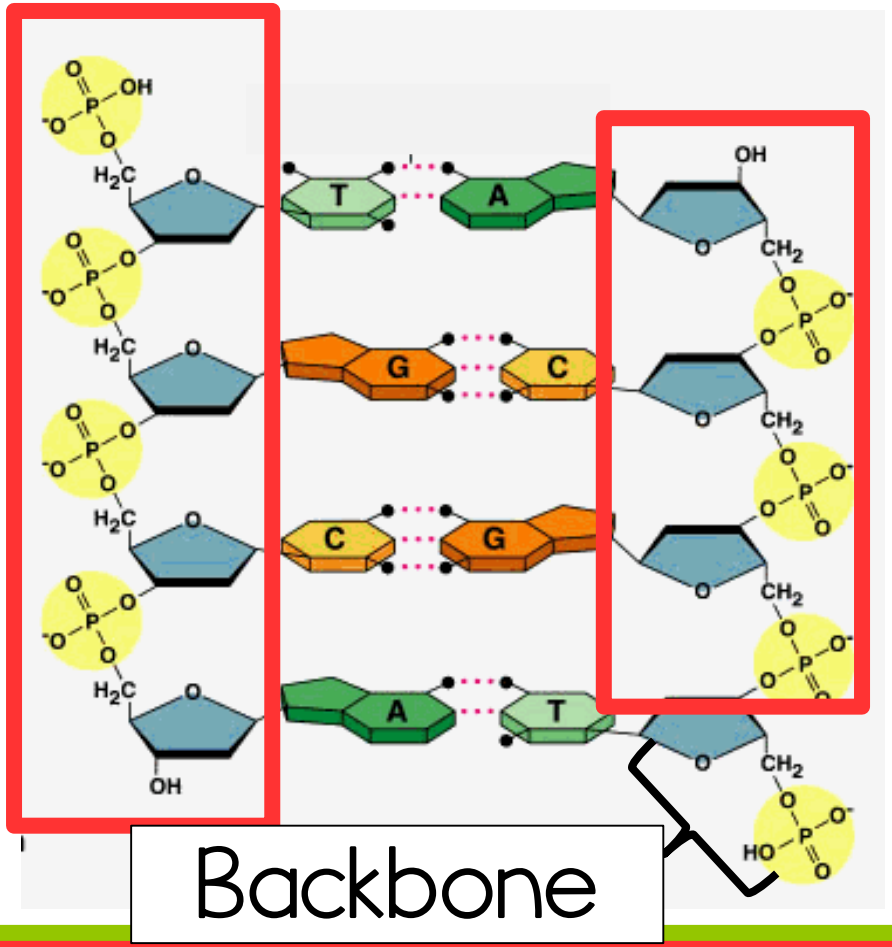


Cytosine



Thymine

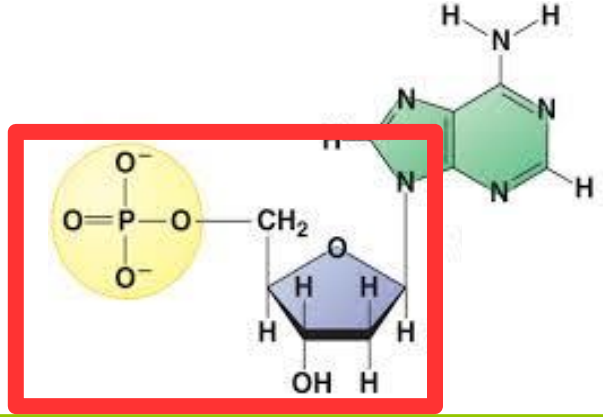
4.I: DNA Structure



4.1: DNA Structure

Backbone:

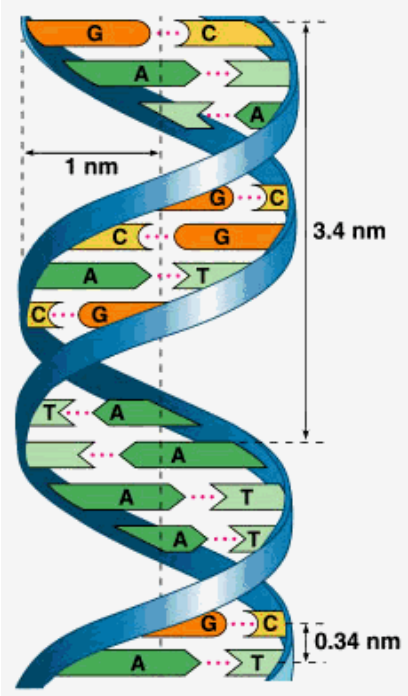
- Made of phosphate & deoxyribose sugar
- Covalently bonded → STRONG!



4.1: DNA Structure

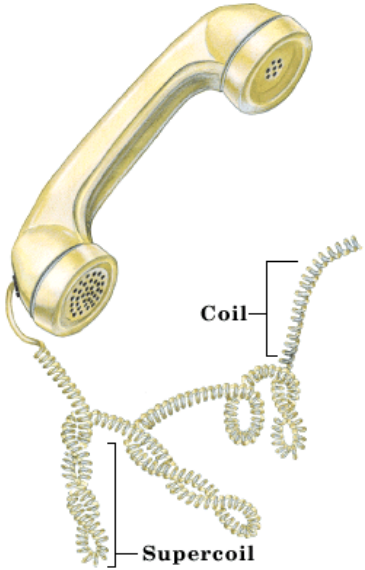
Double Helix:

- DNA is double stranded
- Wraps in a helix or twist
- Creates "super coiling" for compact storage!



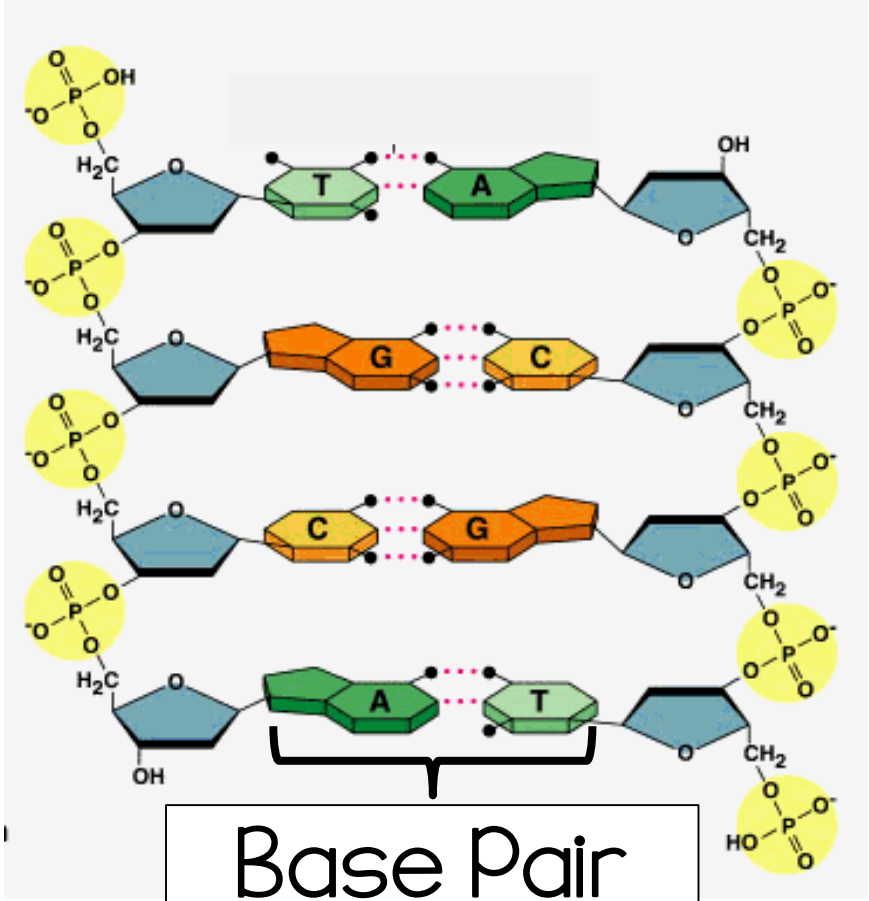
4.1: DNA Structure

Double Helix:



Supercoiled Compact DNA

4.I: DNA Structure



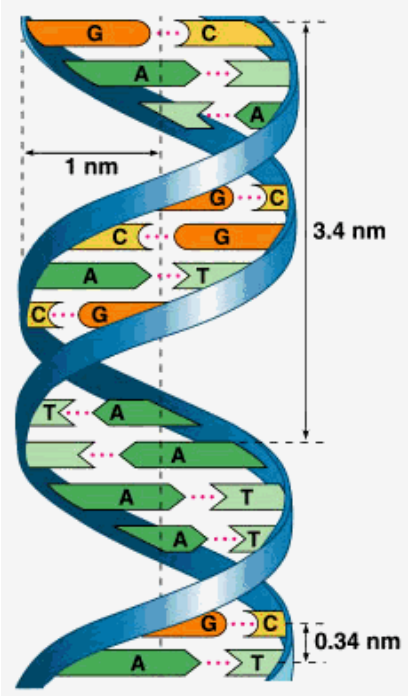
4.1: DNA Structure

Chargaff's Rule: Base Pairing

- Adenine pairs with Thymine
- Cytosine pairs with Guanine

# of G = # of C

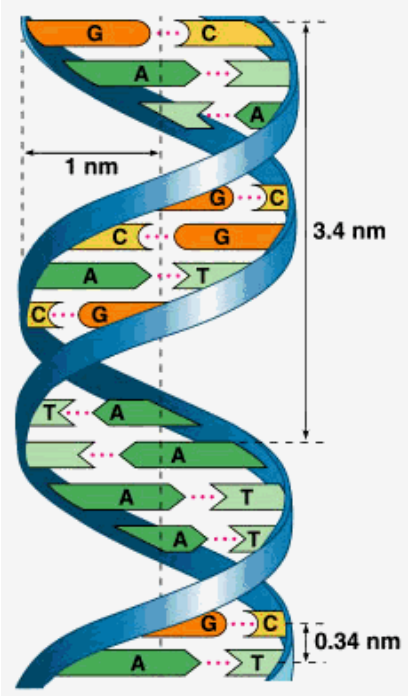
# of T = # of A



4.1: DNA Structure

Holding the Ladder Together:

- What could hold the complementary (opposite) sides of the ladder together BUT still be easily broken?



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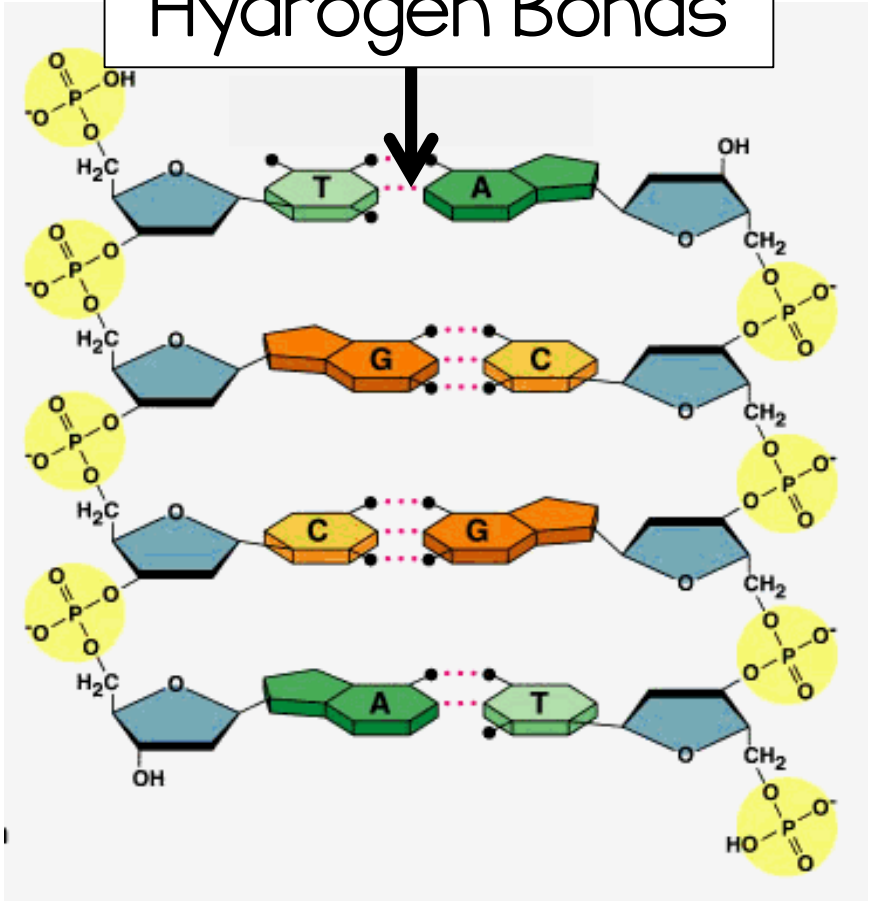
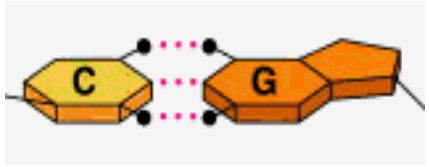
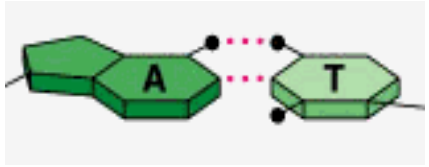


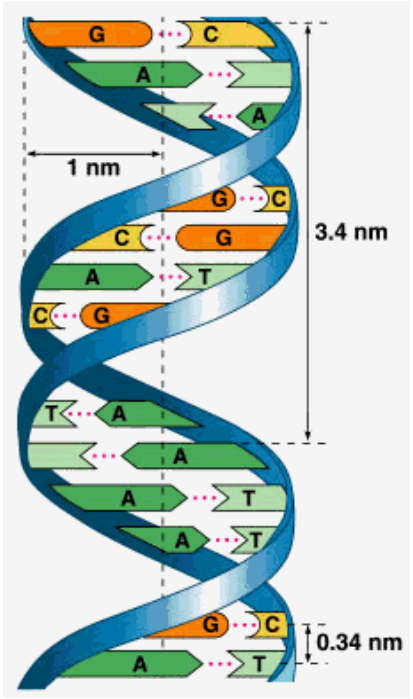
4.1: DNA Structure

Holding the Ladder Together:

- Hydrogen bonds link base pairs together
- Lots of H-bonds = strong!



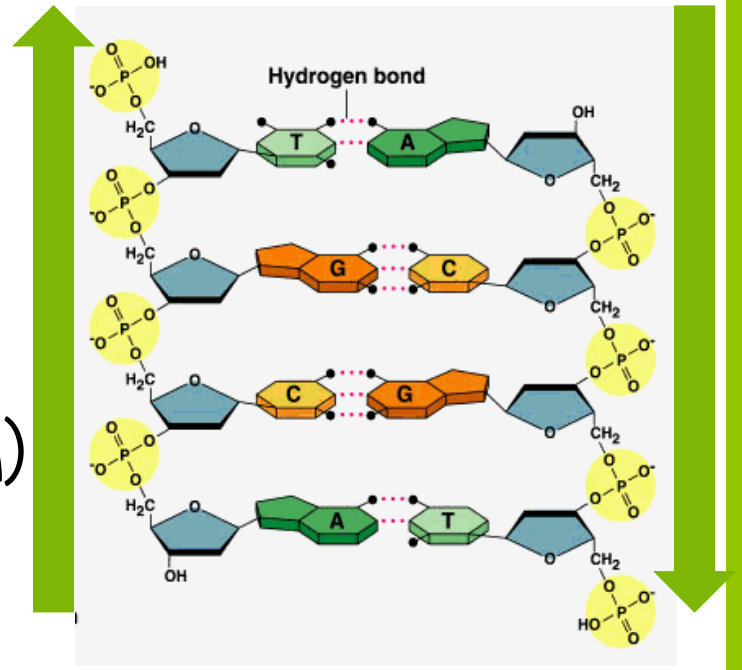




4.1: DNA Structure

Directionality:

- Strands go in opposite directions
- (Sugars point up or down)



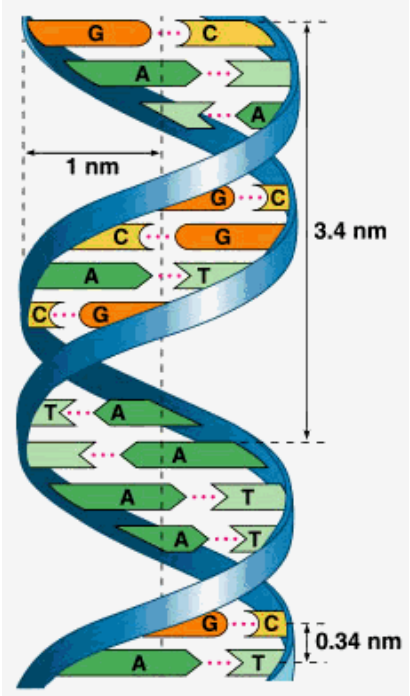
4.1: DNA Structure

Function of DNA:

- Code of bases (ATCG)

  provides info to make proteins!
- Proteins used to make a majority

  of structures in organism



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