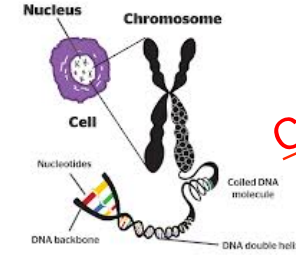


## DNA

### 1: Function

- Functions
- 1. Storage of genetic information
- 2. Self-duplication & inheritance.
- 3. Expression of the genetic message.
- **DNA's major function is to code for proteins.**
- Information is encoded in the order of the nitrogenous bases.

### 2: Chromosomes



#### Prokaryotic

- Circular DNA
- Very small
- 1 chromosome per cell
- Some enzymes and proteins are associated with the DNA.
- Not housed in a nucleus.

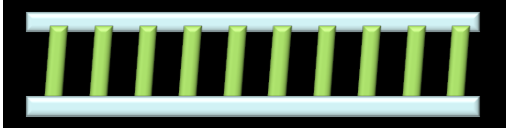
#### Eukaryotic

- Linear DNA
- Fairly long
- Several chromosomes per cell.
- Histone
  - Protein that—"spools". Same in all eukaryotes
- Housed in a nucleus.
- Nucleosome—2 loops of DNA wrapped around 8 histone proteins.

## Nucleotides

### 3: DNA Structure

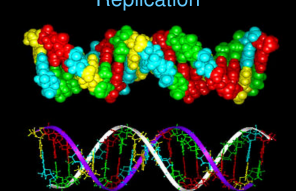
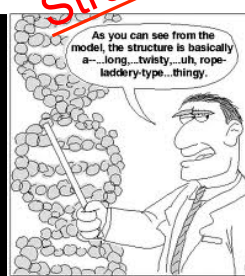
I. The phosphate and sugar form the backbone of the DNA molecule, whereas the bases form the "rungs".



## DNA

### 3: DNA Structure

A. Structure:  
I. Double helix

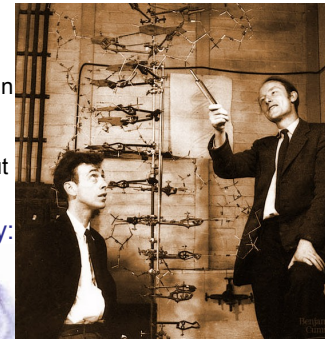




1953: The structure of the DNA molecule is first described.

## DNA Structure Discovery

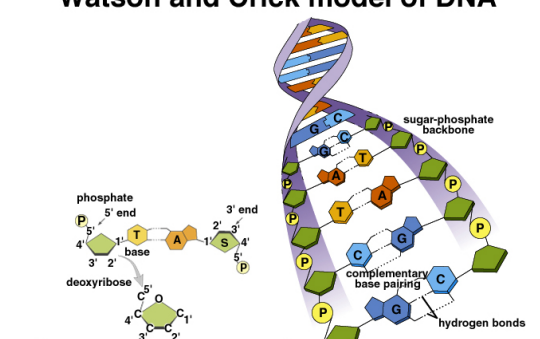
III. James Watson & Francis Crick discovered the double helix structure of DNA in 1953 – they stayed up one night & built themselves a model out of metal

Structure informed by: Rosalind Franklin's DNA image


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## Watson and Crick model of DNA



## DNA

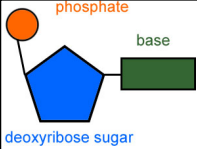
A. Structure:  
I. Double helix



4. Why

Activity

## DNA Structure

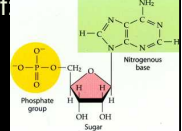


5. Nucleotides

II. A molecule of DNA is made up of millions of tiny subunits called **Nucleotides**.

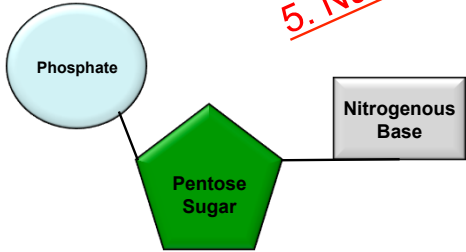
1. Each nucleotide consists of

- Phosphate group
- Pentose sugar
- Nitrogenous base



## Nucleotides

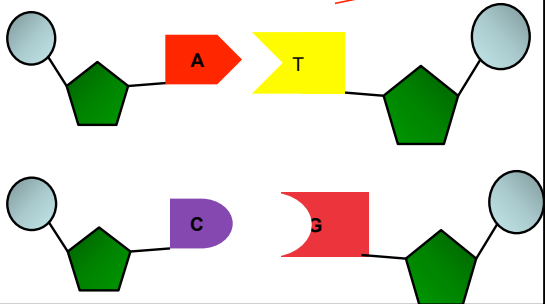
5. Nucleotides



b) There are four types of nitrogenous bases. (Nucleotides)

5. Nucleotides

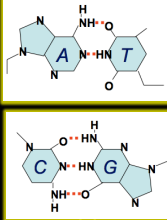
6. Base Pairing



## Nucleotides

6. Base Pairing

- Each base will only bond with **one** other specific base.
- Adenine (A) } Form a base pair.
- Thymine (T) }
- Cytosine (C) } Form a base pair.
- Guanine (G) }




- Because of this **complementary** base pairing, the order of the bases in one strand determines the order of the bases in the other strand.

## Nitrogenous Bases

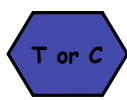
6. Base Pairing

Bonus Knowledge

- Double ring PURINES**
- Adenine (A)
- Guanine (G)



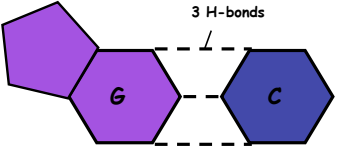
- Single ring PYRIMIDINES**
- Thymine (T)
- Cytosine (C)



**6. Base Pairing**  
*Bonus Knowledge*

### Base-Pairings

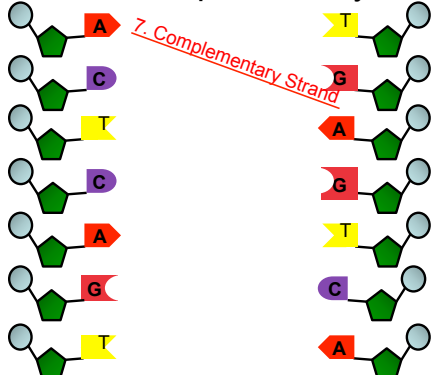
- **Purines only pair with Pyrimidines**
- **Three** hydrogen bonds required to bond **Guanine & Cytosine**



The diagram shows a purple Guanine (G) base and a blue Cytosine (C) base. Three dashed lines represent hydrogen bonds between them: one between the carbonyl oxygen of G and the amino group of C, one between the imino hydrogen of G and the ring nitrogen of C, and one between the ring nitrogen of G and the carbonyl oxygen of C. A label '3 H-bonds' points to these dashed lines.

**Make the complementary strand:**

*7. Complementary Strand*



The diagram shows a DNA double helix. The left strand is complete with bases A, C, T, C, A, G, T from top to bottom. The right strand is missing its top three bases. The bases shown on the right strand are T, G, A, G, T, C, A from top to bottom. A red arrow labeled '7. Complementary Strand' points to the missing section of the right strand.