

# THE WATSON-CRICK MODEL OF DNA (1953)

- ⌘ **Deoxyribonucleic Acid (DNA)** is a **double-stranded, helical molecule**. It consists of two **sugar-phosphate backbones** on the outside, held together by **hydrogen bonds** between pairs of **nitrogenous bases** on the inside. The bases are of four types (A, C, G, & T): pairing always occurs between A & T, and C & G. **James Watson** (1928 - ) and **Francis Crick** (1916 - 2004) realized that these pairing rules meant that either strand contained all the **information** necessary to make a new copy of the entire molecule, and that the order of bases might provide a "**genetic code**".

- ⌘ Watson and Crick shared the Nobel Prize in 1962 for their discovery, along with **Maurice Wilkins** (1916 - 2004), who had produced a large body of crystallographic data supporting the model. Working in the same lab, **Rosalind Franklin** (1920 - 1958) had earlier produced the first clear crystallographic evidence for a helical structure. Crick went on to do fundamental work in molecular biology and neurobiology. Watson became Director of the Cold Spring Harbor Laboratory, and headed up the **Human Genome Project** in the 1990s.

# Some other characteristics of DNA:

- ⌘ 1. The amount of DNA per nucleus is constant in all the somatic cells of a given species.
- ⌘ 2. The total amount of DNA in a haploid genome is a characteristic of each organism and is known as C-value.
- ⌘ 3. Only a small fraction of DNA is functional in eukaryotes.
- ⌘ ADVERTISEMENTS:
- ⌘ 4. DNA is the chemical basis of heredity and is organized into genes or cistrons.
- ⌘ 5. DNA replicates to form DNAs and transcribes to form RNAs.

