

1. Genomic texts

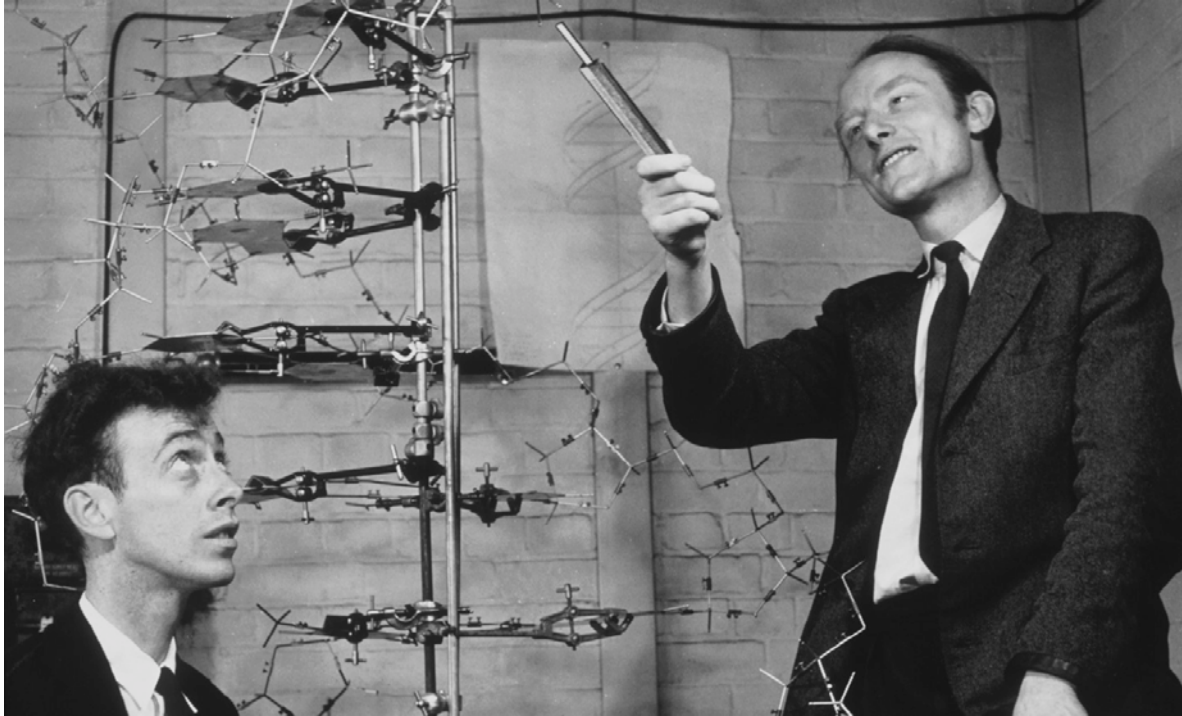
- The cell, atom of the living world
- **At the heart of the cell: the DNA macromolecule**
- DNA codes for genetic information
- What is an algorithm?
- Counting nucleotides
- GC and AT contents of DNA sequence
- DNA walk
- Compressing the DNA walk
- Predicting the origin of DNA replication?
- Overlapping sliding window

At the heart of a cell: the DNA macromolecule

- DNA is the support of genetic information (Oswald Avery, 1944)
- DNA is a long molecule made up of two strands, the famous double helix (Francis Crick, James Watson, Maurice Wilkins and Rosalin Franklin, 1953)

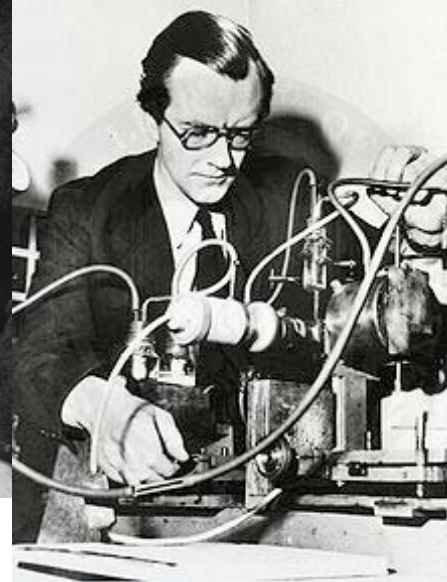
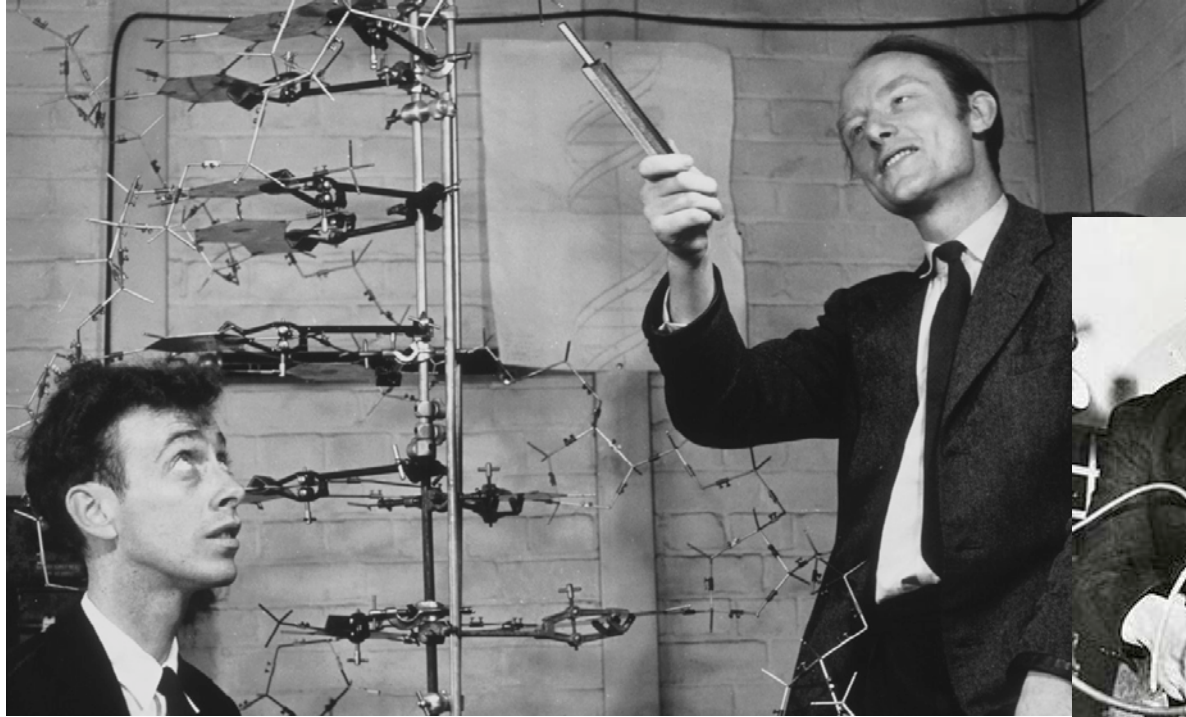


Crick, Watson

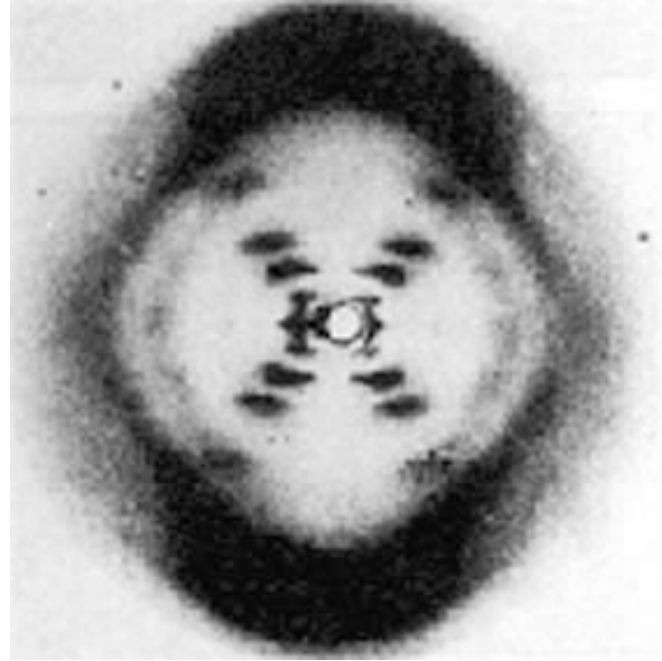


« It did not
escape our
attention... »

Crick, Watson, Wilkins



Crick, Watson, Wilkins... and Rosalind Franklin



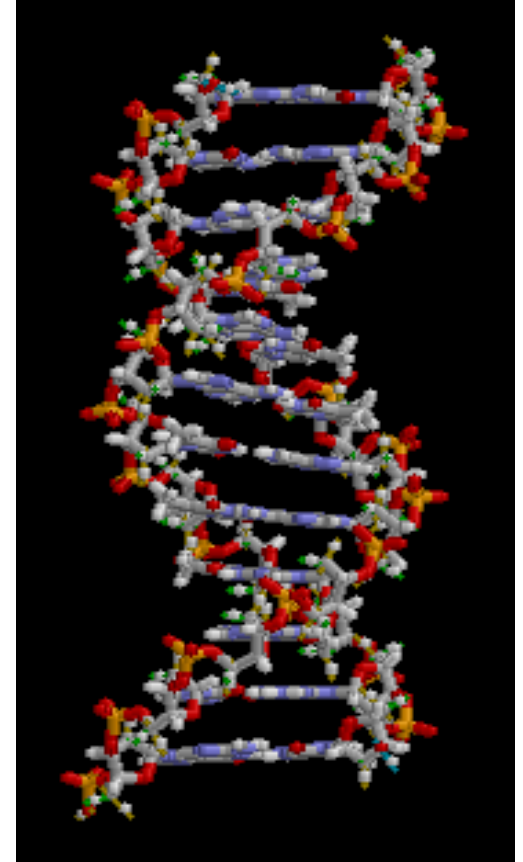
At the heart of a cell: the DNA macromolecule

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The double helix and its two strands provide clues about the conservation of information during cell division

Structure of DNA

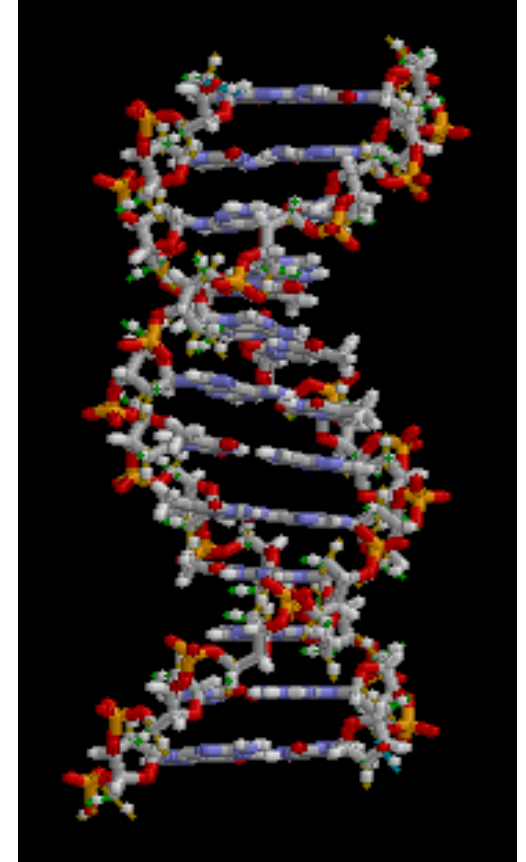
- DNA is a macromolecule
- Double helix, two strands
- Each strand supports a succession of nucleotides
- Four types of nucleotides
 - Adenine
 - Cytosine
 - Guanine
 - Thymine



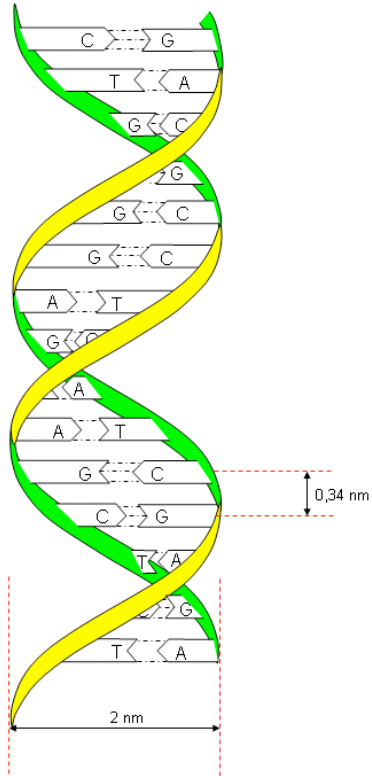
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 - **A**denine
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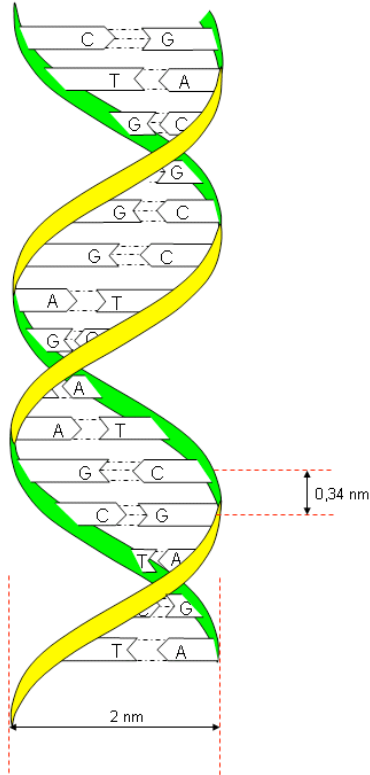
4 types of nucleotides: A, C, G, T



The sequence of nucleotides codes for the genetic information

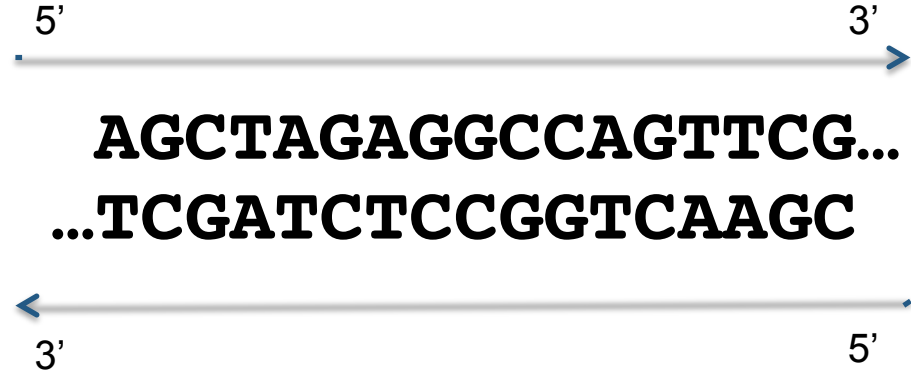
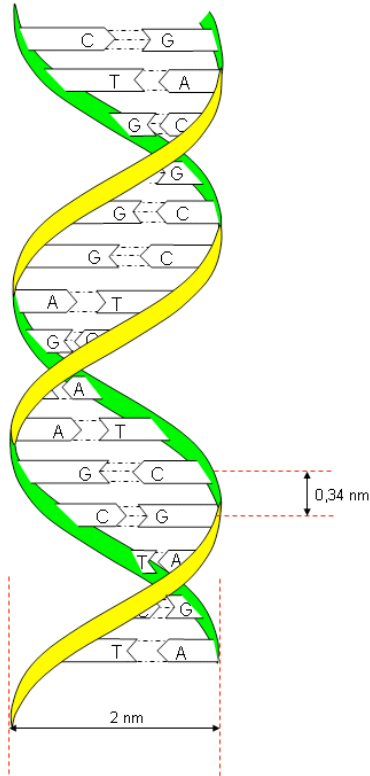


The sequence of nucleotides codes for the genetic information

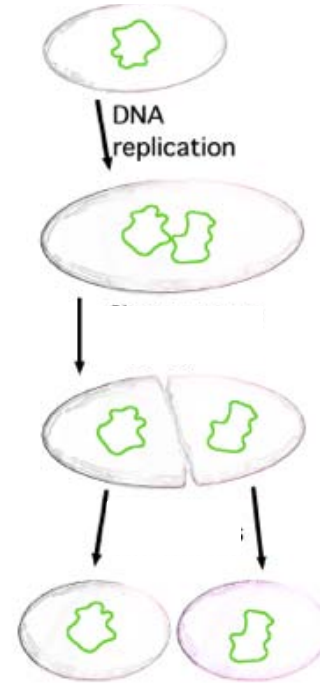
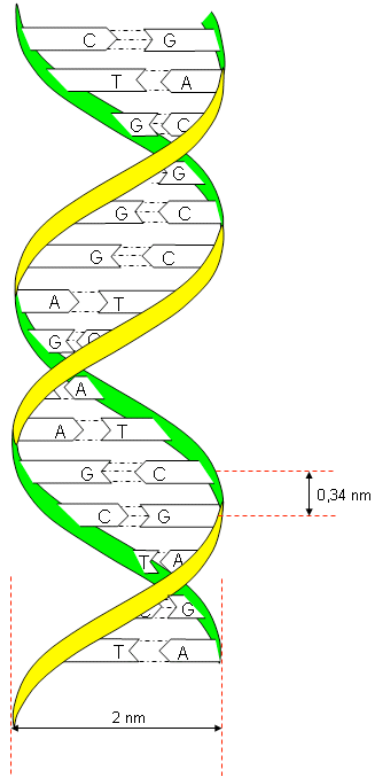


AGCTAGAGGCCAGTTCG...

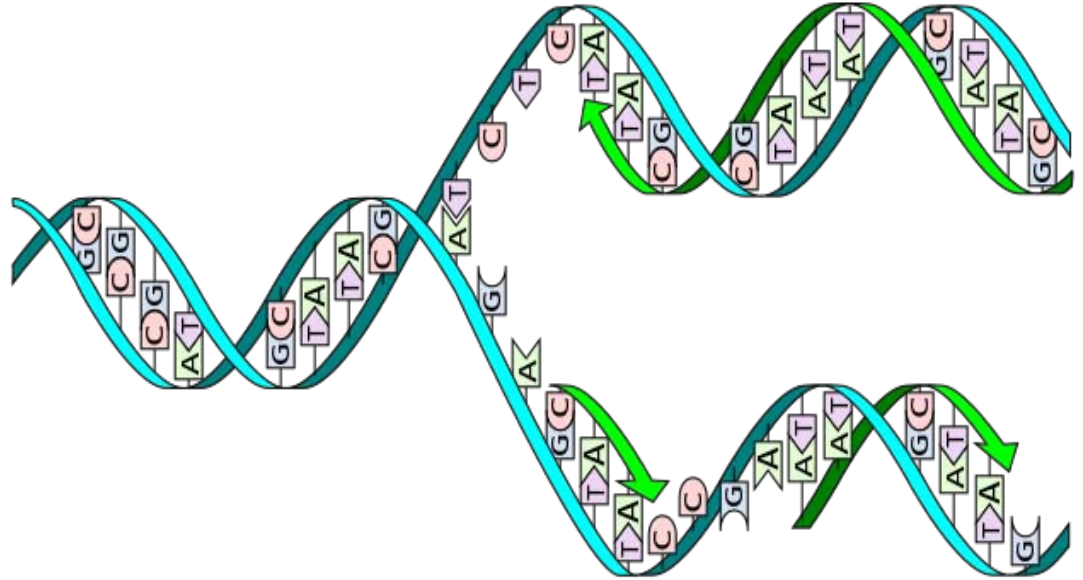
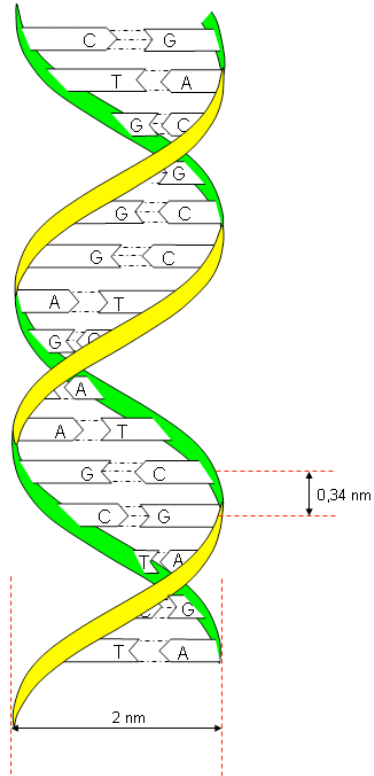
The sequence of nucleotides codes for the genetic information



Replication of DNA and duplication of information



Replication of DNA and duplication of information



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