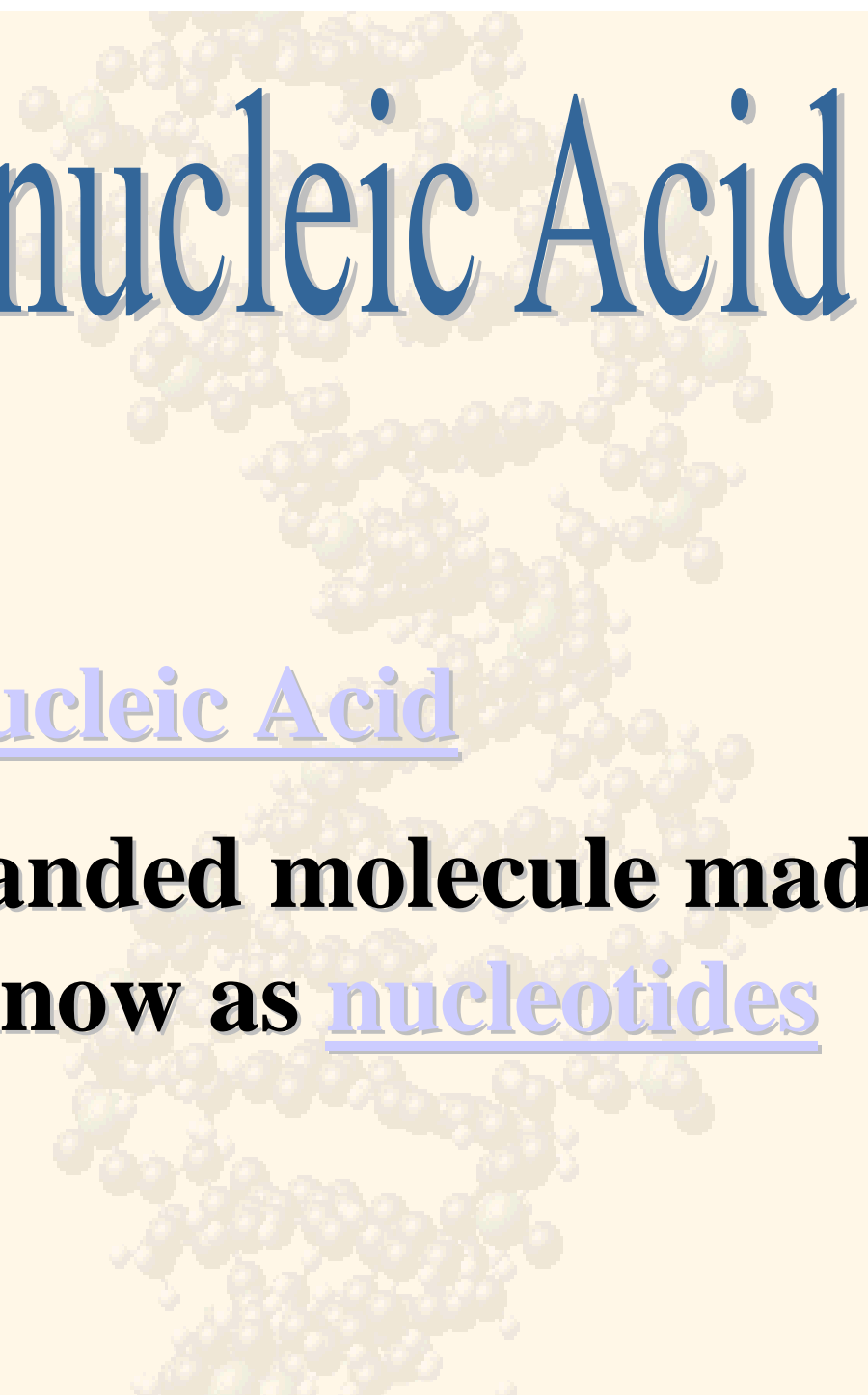


The Structure of Deoxyribonucleic Acid

Deoxyribonucleic Acid

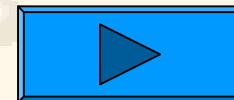


- **DNA**
- **Classified as a Nucleic Acid**
- **Long, double stranded molecule made up of monomers know as nucleotides**

Nucleic Acids

Nucleic acids, built by polymerizing nucleotides, function primarily as informational molecules for the storage and retrieval of information about the primary sequence of polypeptides.

Store and Retrieve Genetic Information





Nucleic Acids

DNA

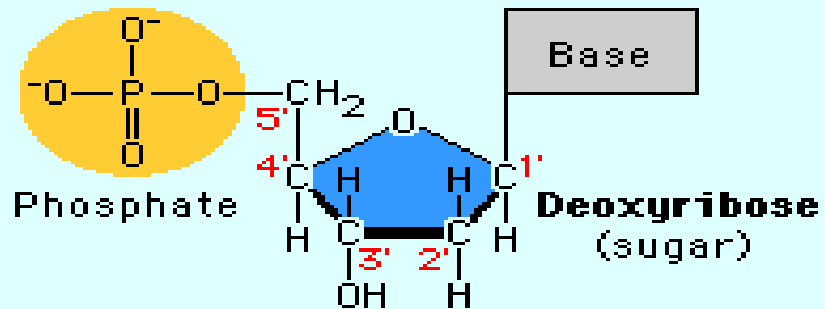
RNA

Deoxyribonucleic acid serves as a cellular database by storing an immense amount of information about all the polypeptides a cell can potentially make

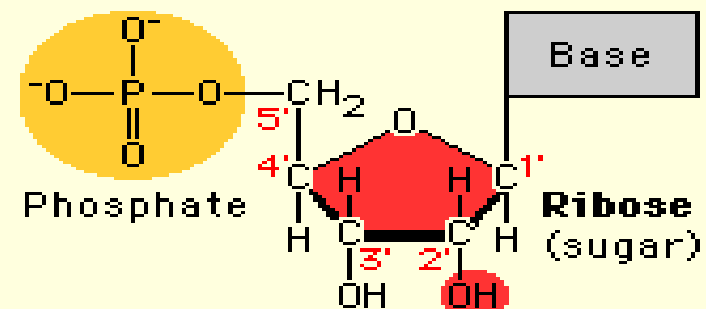
Ribonucleic acid occurs in several different forms (messenger RNA, ribosomal RNA, transfer RNA) and is needed to convert DNA information into polypeptide sequences. In some viruses, RNA serves as the primary database with no DNA involvement.

DNA and RNA

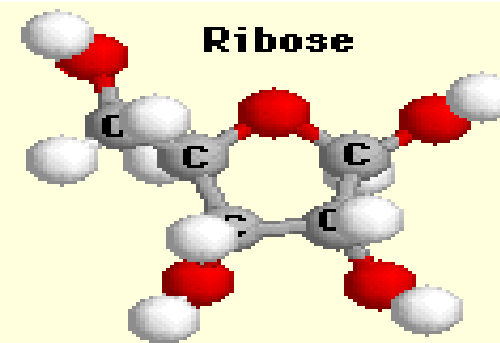
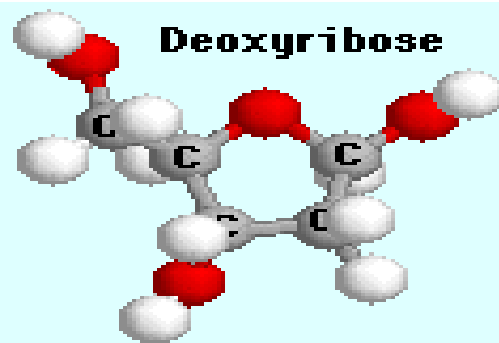
DNA



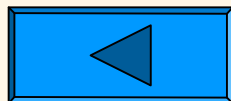
RNA



Nucleotides



Sugars



Nucleotides

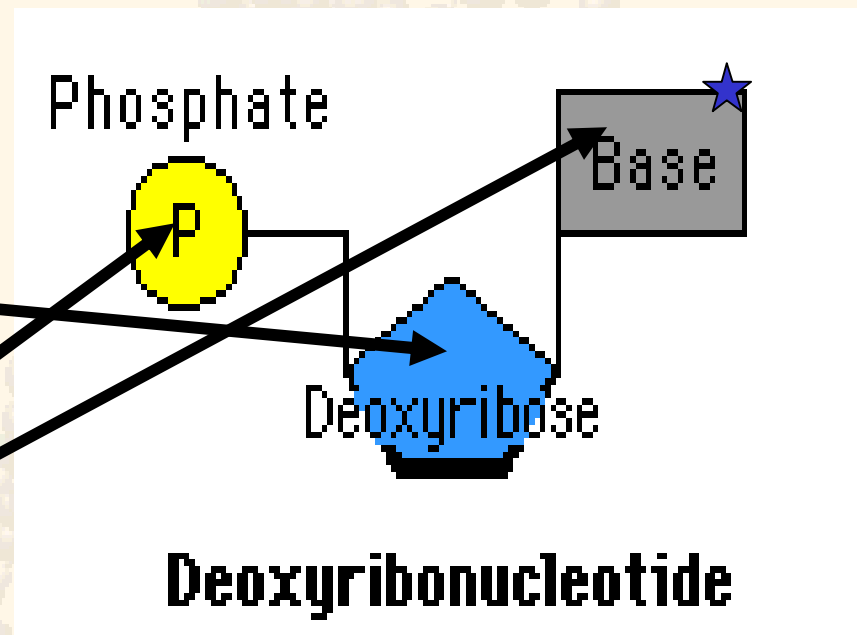
- **Basic unit of DNA**

- **Three Parts**

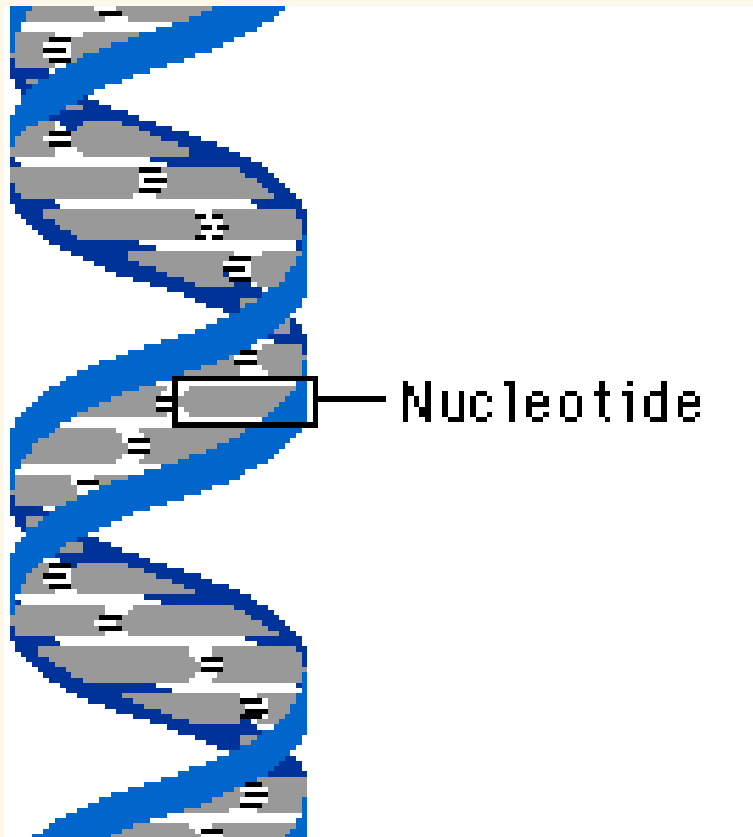
Deoxyribose sugar

Phosphoric acid

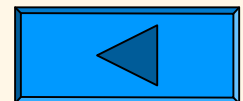
Nitrogen base



Nucleotides

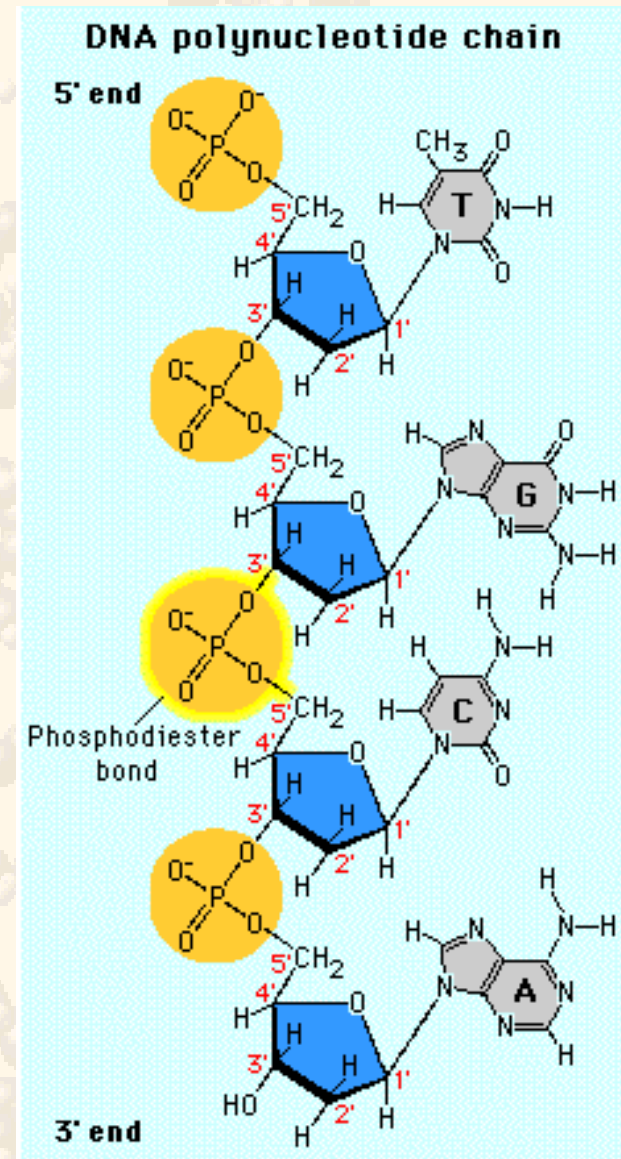


**Many nucleotides
are pieced
together to make a
DNA molecule**



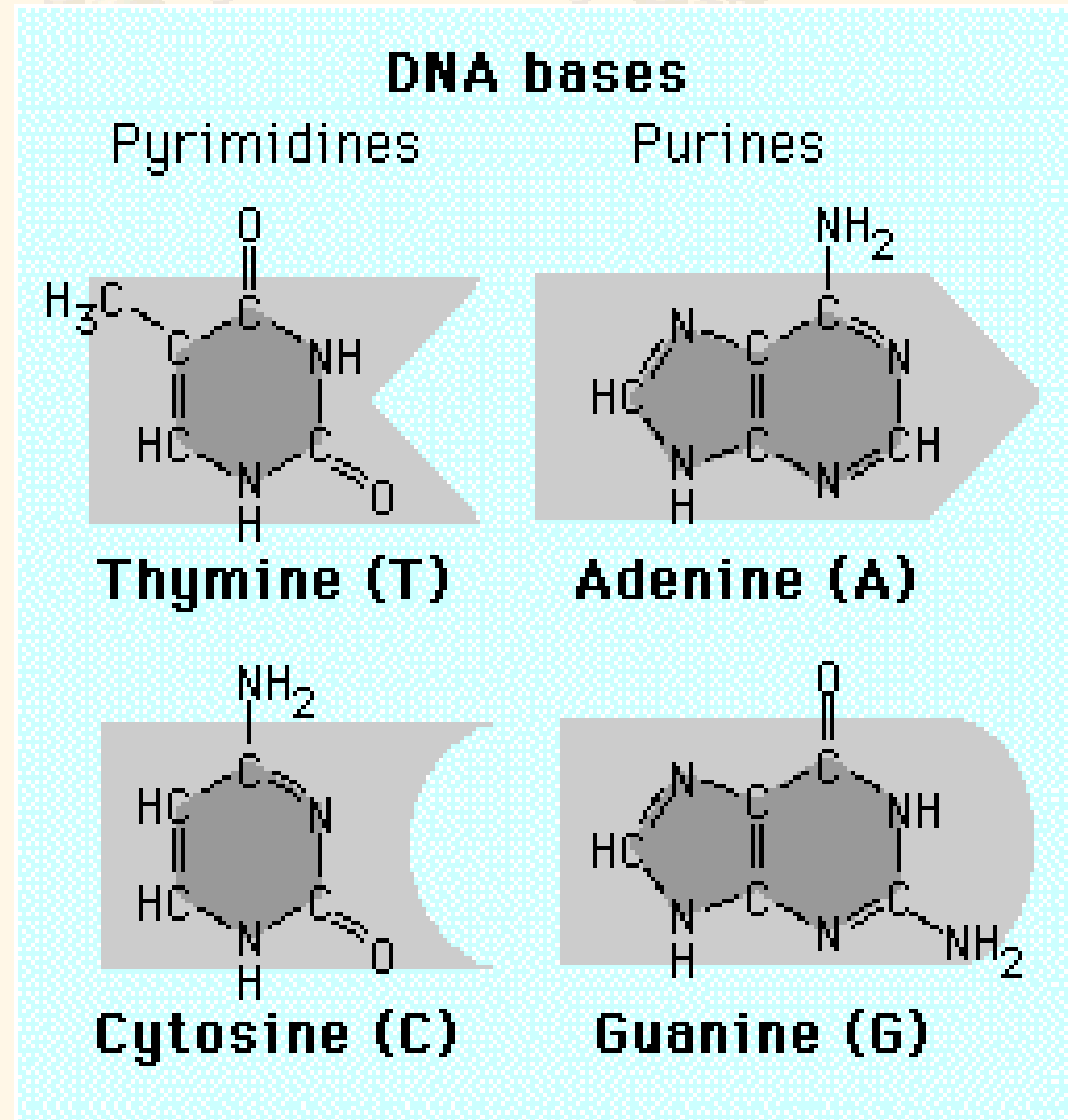
Nitrogenous Bases

There are four different bases found in DNA. Because each base contains at least two nitrogen atoms, they are called nitrogenous bases.



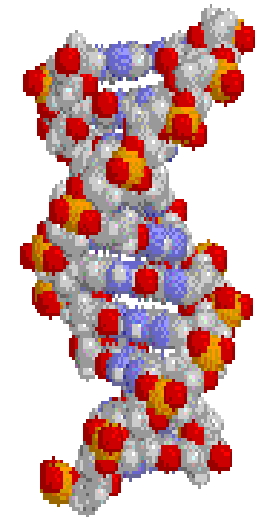
Nitrogenous Bases

There are two classes of bases:



The Double Helix

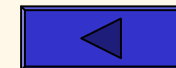
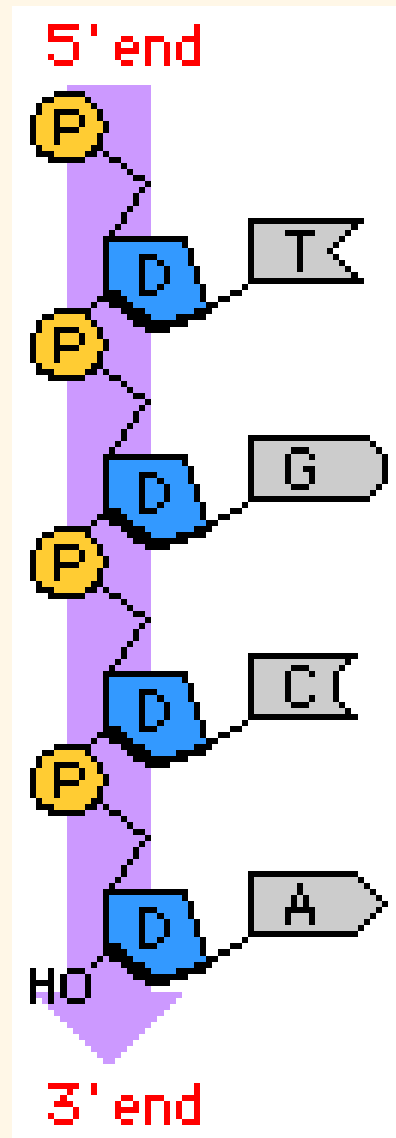
DNA consists of two polynucleotide chains wound around each other to form a double helix. The two chains are held together by complementary base pairing; that is, specific bonding between A and T bases and between G and C bases on the two strands.



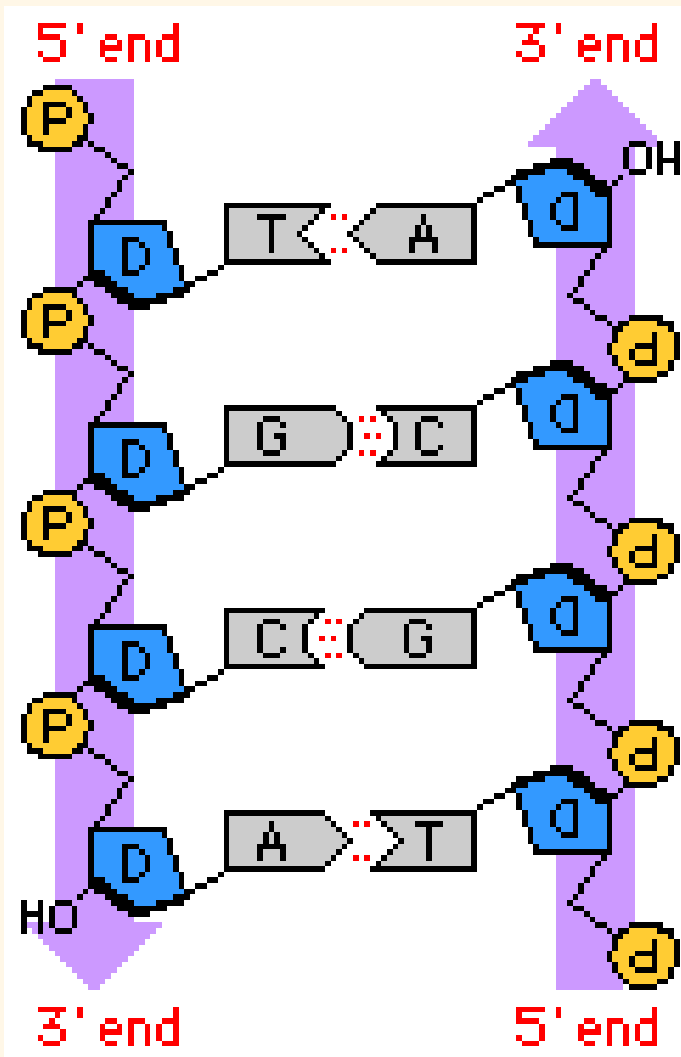
Polynucleotide Chains

A DNA chain consists of nucleotides joined by bonds between phosphate and sugar

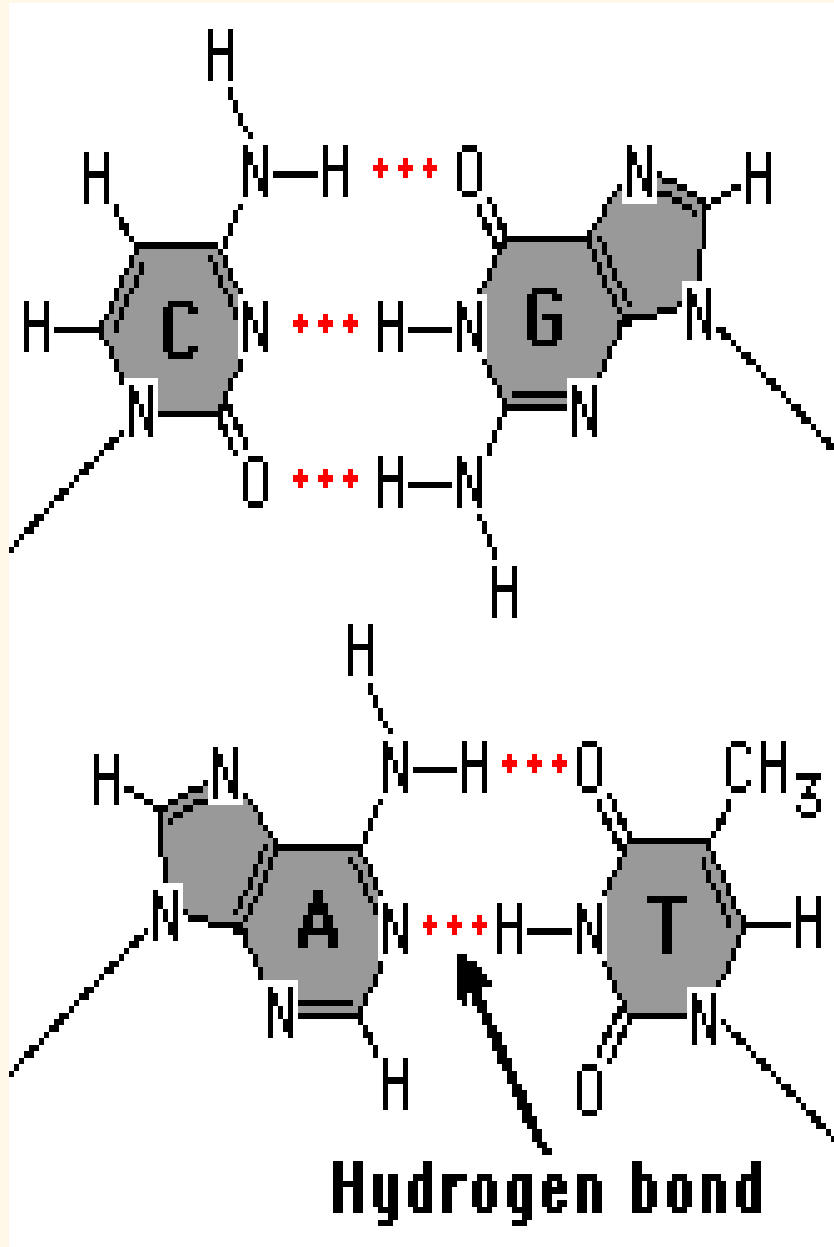
This makes up the sides of the DNA “ladder”



Complimentary Base Pairing

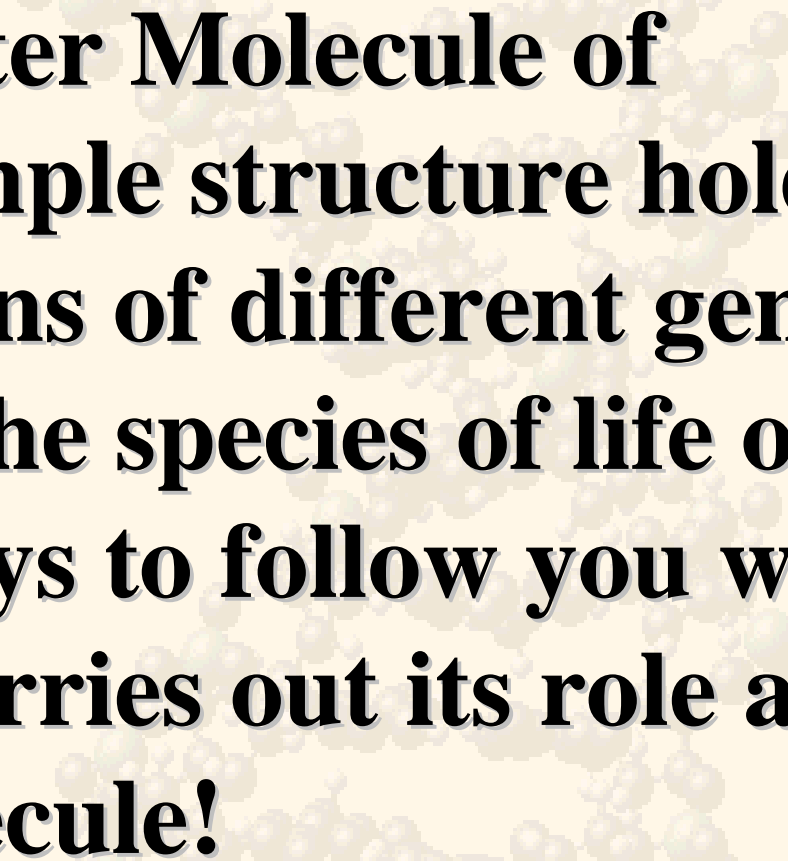


In complementary base pairing, the two DNA chains are held together by hydrogen bonds between nitrogen bases!



Complementary base pairing involves specific hydrogen bonding between A and T bases (two bonds) and between G and C bases (three bonds).

These paired bases form the rungs of the DNA ladder!



DNA is the Master Molecule of Diversity. Its simple structure holds the key to millions of different genetic codes for all of the species of life on Earth. In the days to follow you will see how DNA carries out its role as the Master Molecule!