

A-U-C-A-U-A-G-U-A

A **complete DNA molecule** consists of two polynucleotide chains that **run in opposite directions** to one another.

The two strands of DNA form a **double helix** that runs **antiparallel** such that one strand runs 5' to 3' ("*five prime to three prime*") while the other one runs 3' to 5'.

The **purine** and **pyrimidine bases** that are opposite one another (*adenine with thymine and guanine with cytosine*) in each polynucleotide chain are linked together by **hydrogen bonds**. The **A-T** base pair has two hydrogen bonds while the **G-C** base pair has three. This base pairing (*A with T and G with C*) is known as **complementary base pairing**.

Remember: This complementary base pairing can also occur in RNA and between RNA and DNA; however, **uracil** substitutes for **thymine** in **RNA**. Uracil base pairs with adenine.

Important point: The A-T base pair **promotes helix stabilization** in DNA **but does not** do so in RNA.

1. In all **DNA**, the number of **thymine** residues equals the number of **adenine** residues. Also, the number of **guanine** residues equals the number of **cytosine** residues.
2. Purines are the **larger** of the two types of bases found in DNA.
3. In addition, the sum of **purine residues** equals the sum of **pyrimidine residues** ($A + G = T + C$).
4. **The melting temperature** of the double helix is a function of the base composition with a **higher GC content** having a higher melting temperature.