

DNA Base Pairing

In DNA, complementary nucleotide bases pair with each other to form the double-stranded helix. Each strand has a 5' end and a 3' end, and the two strands run antiparallel to each other, such that the 5' end matches with the other strand's 3' end. Complementary strands pair, meaning that the nucleotide bases composing each strand must pair with the corresponding nucleotide base of the other strand. For example, adenine and thymine form a pair, which has two hydrogen bonds. In RNA, thymine is replaced by uracil, resulting in U-A bonds, where uracil binds with adenine. Guanine and cytosine form the other pair, which has three hydrogen bonds. Thus, G-C bonds are stronger than U-A bonds.



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Characteristics

3' End

(3) Tree on end of DNA-strand

The 3' end of a DNA strand terminates with a sugar that has a free OH group on its 3' carbon. This end is complementary to the 5' end of another DNA strand.

5' End

(5) Hand on end of DNA-strand

The 5' end of a DNA strand terminates in a phosphate group. This end is complementary to the 3' end of another DNA strand.

Antiparallel Base Pairing

Ant-tie with Parallel-symbol pairing Bass

DNA strands pair in an antiparallel manner, such that the 5' end of one DNA strand lines up with the 3' end of the paired strand.

Complementary Strands Pair

One bass Complimenting the other

Complementary strands pair, meaning that the nucleotide bases composing each strand must pair with the corresponding nucleotide base of the other strand. Thymine and adenine pair, while guanine and cytosine also pair with one another.

Thymine And Adenine Pair

Thigh-man pairing with Add-dummy

Thymine and adenine are two bases that form a pair. They are complementary bases that form hydrogen bonds, which hold DNA strands together.

2 Hydrogen Bonds

(2) Tutu Water Bond

The adenine-thymine base pair forms two hydrogen bonds.

Adenine and Uracil Pair in RNA

Add (+) dummy being kidnapped by U-wrestler on RNA-rhino

In RNA, there is no thymine base. Instead, uracil is used. As a result, in RNA, adenine and uracil form a base pair with two hydrogen bonds.

Guanine And Cytosine Pair

[Guacamole pairing with Side-toe-sun](#)

Guanine and cytosine are the other two bases that form a pair, and they do so in both DNA and RNA.

3 Hydrogen Bonds

[\(3\) Tree Water Bond](#)

The guanine and cytosine base pair bond consists of three hydrogen bonds, which makes G-C pairs stronger than T-A pairs.