

Standard: Students will analyze how biological traits are passed on to successive generations.

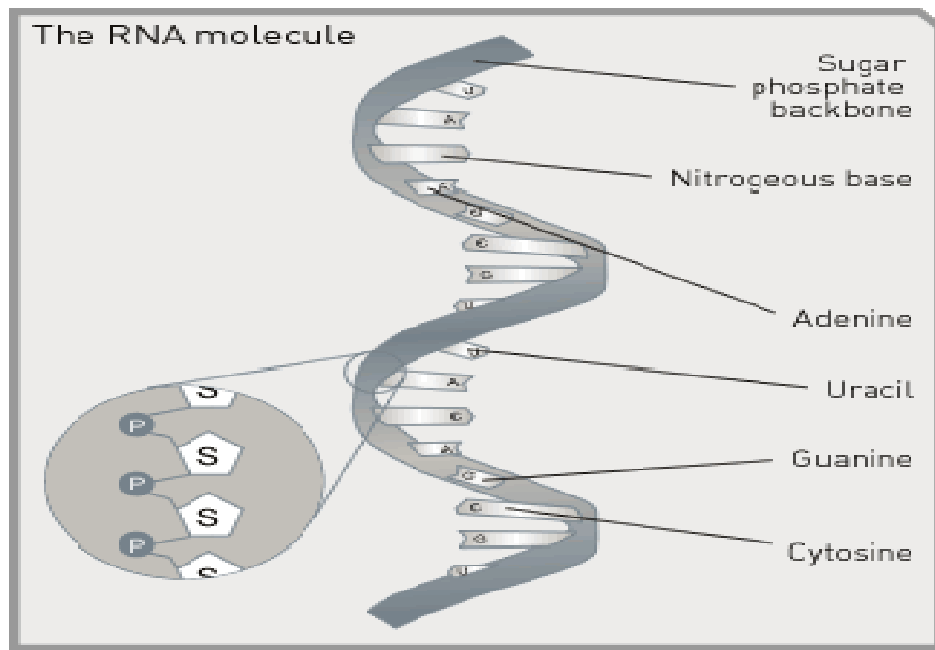
Element: Distinguish between **DNA** and **RNA**.

EQ: How is DNA different from RNA?

RNA is a nucleic acid.

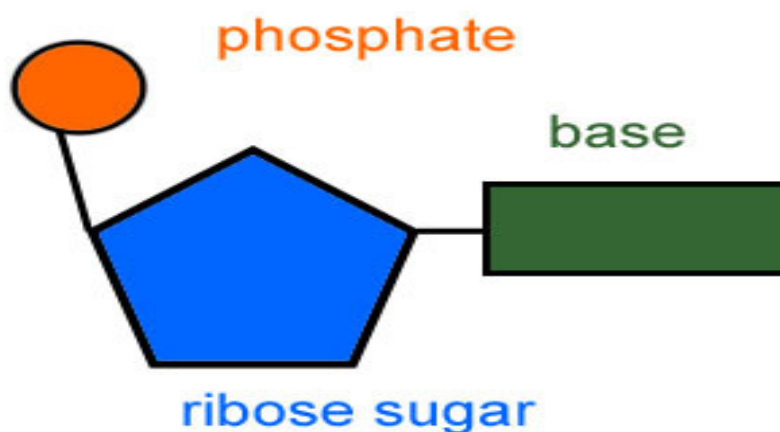
RNA stands for ribonucleic acid.

Unlike DNA, RNA is a **single** strand of nucleotides.



RNA is also made up of **nucleotides**

A nucleotide consists of a **sugar**, a **phosphate**, and a **base**.

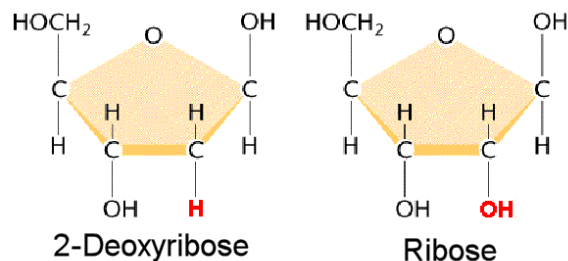


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In DNA, the sugar is **deoxyribose**.

In RNA, the sugar is **ribose**.

The difference between ribose and deoxyribose



Deoxyribose is simply a molecule of the sugar ribose that has had one of the oxygen atoms removed, hence *deoxy*.

The absence of the oxygen atom makes molecules of DNA more flexible than RNA, so it can form a double helix and coil into very compact chromosomes in the nucleus.

The hand rail of RNA is made of sugar (ribose) and phosphate molecules.

RNA has uracil (U) instead of thymine (T).

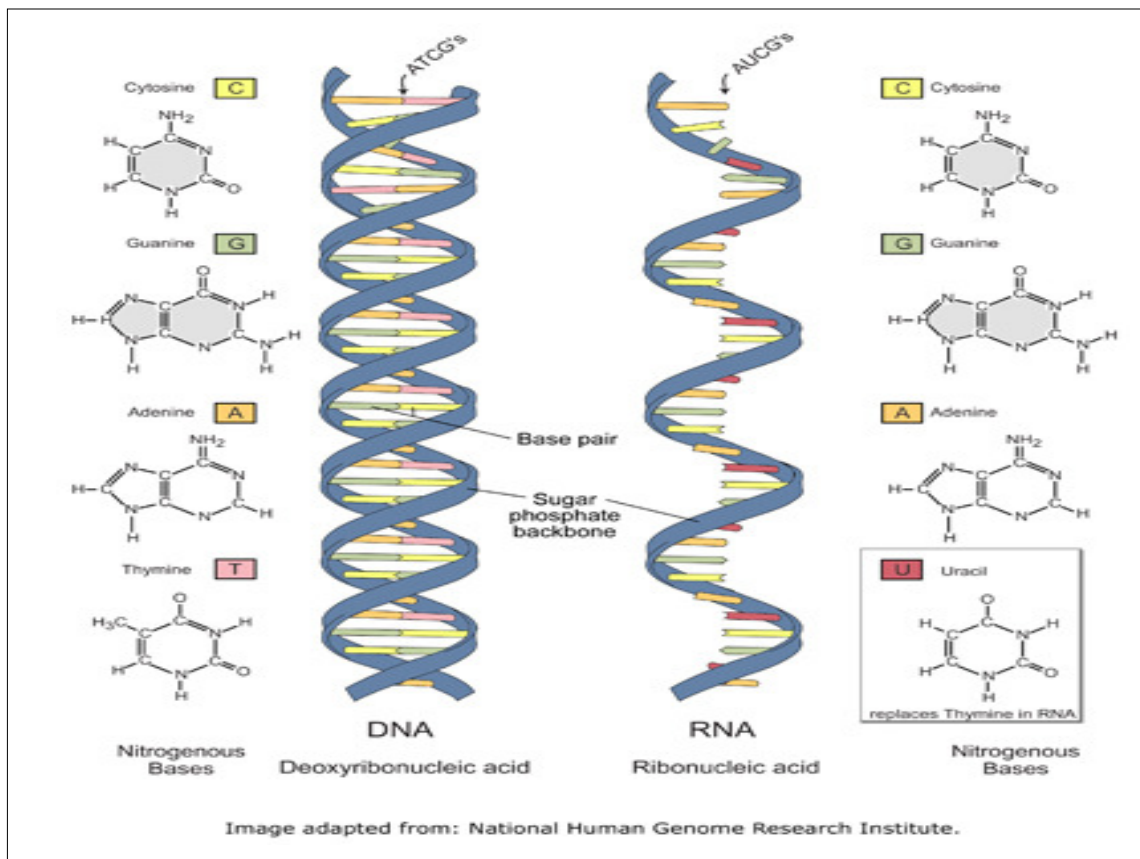
The steps of the ladder are made up of nitrogen bases (A,U,C,G).

A- Adenine

U- Uracil

C- Cytosine

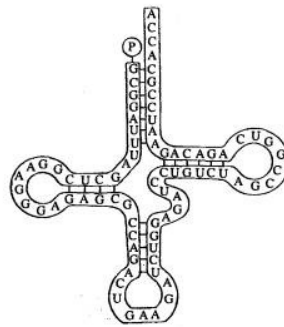
G- Guanine



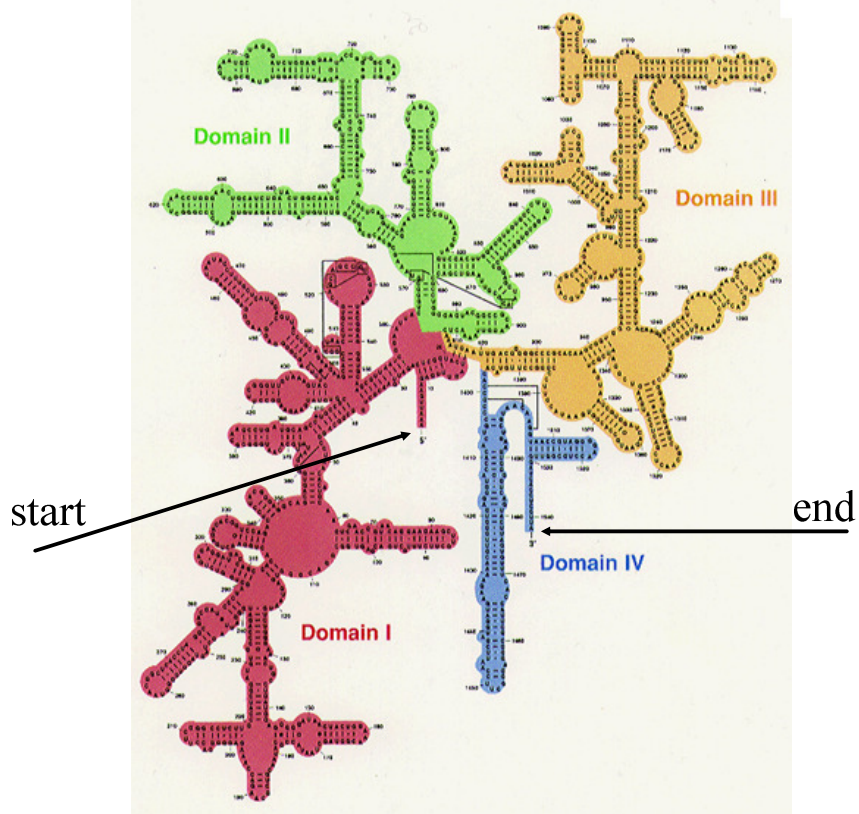
Shape of the RNA molecule

Since RNA is **single-stranded**, it has exposed **nitrogen bases**. These bases can easily stick to other nitrogen bases, like velcro.

This means that often RNA can twist and fold back on itself so that the unpaired bases match up with each other:



tRNA



How is DNA different from RNA?

1. DNA is double stranded, RNA is single
2. DNA's sugar is deoxyribose.
RNA's is ribose.
3. DNA has Thymine.
RNA has Uracil.