

## **RNA**

Created: Thursday, 21 July 2011 04:56 | Published: Thursday, 21 July 2011 04:56 | Written by Super User | Print

# Ribonucleic Acid

RNA is an important molecule consists of a long chain of <u>nucleotide</u> units. Each nucleotide is made up of nitrogenous base, a<u>ribose</u> sugar, and a<u>phosphate</u>.

## RNA Vs DNA

RNA is as like as aDNA, but has few different structural details.

#### RNA:

- · Is usually single-stranded
- RNA nucleotides contain ribose sugar.
- RNA has the base <u>uracil</u>.
- Bases are A U G C
- RNA is transcribed from DNA
- RNA polymerases help in transcription process
- RNA is central to protein synthesis.
- There are 3 types of RNA: mRNA, tRNA & rRNA.

#### **DNA**:

- · Is usually double-stranded
- DNA contains deoxyribose (lacks one oxygen atom
- DNA has the base Thymine
- Bases are ATGC

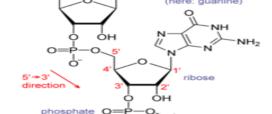


mRNA is a type of RNA (<u>messenger RNA</u>). Information from DNA will be carried to<u>ribosomes</u> through mRNA. RNAs involves with other roles of gene regulation, gene expression etc.

Lets summarize it briefly like below.

- Both are <u>nucleic acids</u>, but differ in three main ways.
- 1. Unlike double stranded DNA, RNA is a single-stranded molecule while DNA contains deoxyribose, RNA contains ribose
- 2. RNA is unstable or less stable when compared to DNA. WHY? Because it is more prone to hydrolysis.
- 3. The complementary base to adenine is not thymine like DNA, but it is uracil. Uracil is the unmethylated form of Thymine.

Types of RNA include<u>mRNA,tRNA,rRNA</u>, snRNAs and other non-coding RNAs. Non coding RNAs allow to fold and they binds and form a double stranded like structure.



## **Structure of RNA**

- Each <u>nucleotide</u> in RNA has a <u>ribose</u> sugar
- Adenine and guanine are purines
- cytosine and uracil are pyrimidines
- A phosphate group is attached to the 3' position of one ribose and the 5' position of the next
- Hydrogen bonds formed between cytosine and guanine and between adenine and uracil and between guanine and uracil

## **Types of RNA**

# mRNA (Messenger RNA) - carries information from DNA of the structural gene to the ribosome.

# tRNA (Transfer RNA) - carries amino acids to mRNA at the ribosome to assembly the protein being made

#rRNA (Ribosomal RNA) - Important structural component of the ribosome where protein synthesis occurs.

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#### **Reference Links:**

- http://en.wikipedia.org/wiki/RNA
- http://www.diffen.com/difference/DNA\_vs\_RNA
- http://www.elmhurst.edu/~chm/vchembook/583rnatypes.html
- http://www.youtube.com/watch?v=NJxobgkPEAo

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