

# 1 | DNA/RNA

## 1.1 | Nucleic Acids

d-Oxy Ribone Nucleic Acid: DNA Ribone Nucleic Acid: RNA

**All nucleic acids are comprised of monomer units that's synthesized together into polymers.** => Just like KBhBIO101Carbs or KBhBIO101AminoAcids

## 1.2 | 3 basic parts of a Nucleic Acid

Two parts of the backbone (phosphate and sugar) + a nitrogenous base that labels what type of nucleotide this is.

### 1.2.1 | Backbone

- phosphate group
- sugar (Ribos => sugar in RNA, di-oxy Ribos => sugar in DNA)=> In di-oxy Ribos: a OH pair is replaced with a hydrogen **only in one position**. Hence "di-oxy"

### 1.2.2 | nitrogenous base

- Bases in DNA
  - A, T, G, C
- Bases in RNA
  - A, U, G, C

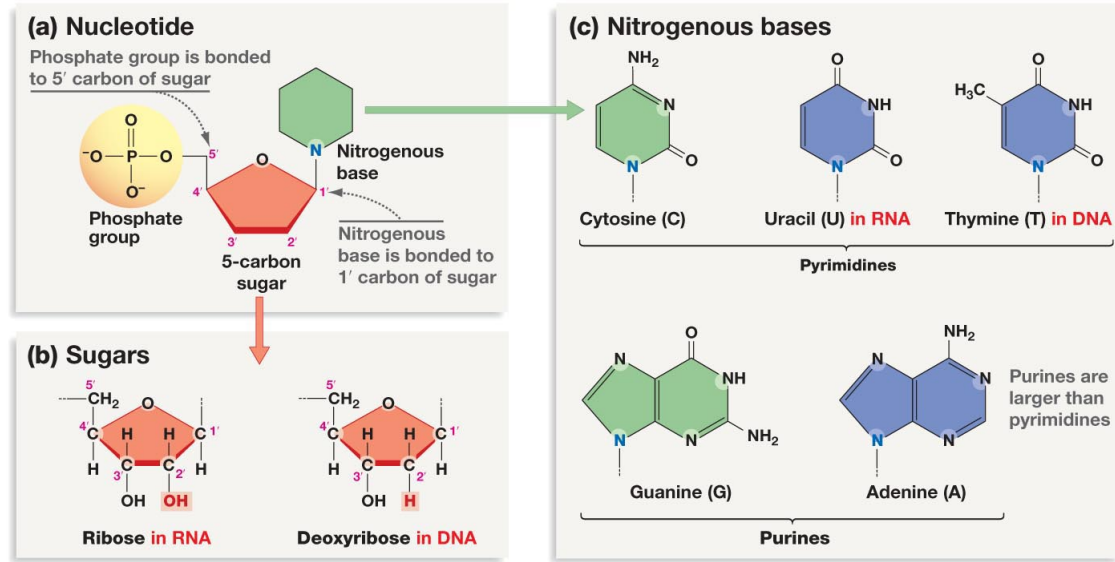
How do we make nucleic acids? Can you guess? Huh? **Dehydration synthesis!**

## 1.3 | Shapes of the DNA

### 1.3.1 | DNA/RNA Primality

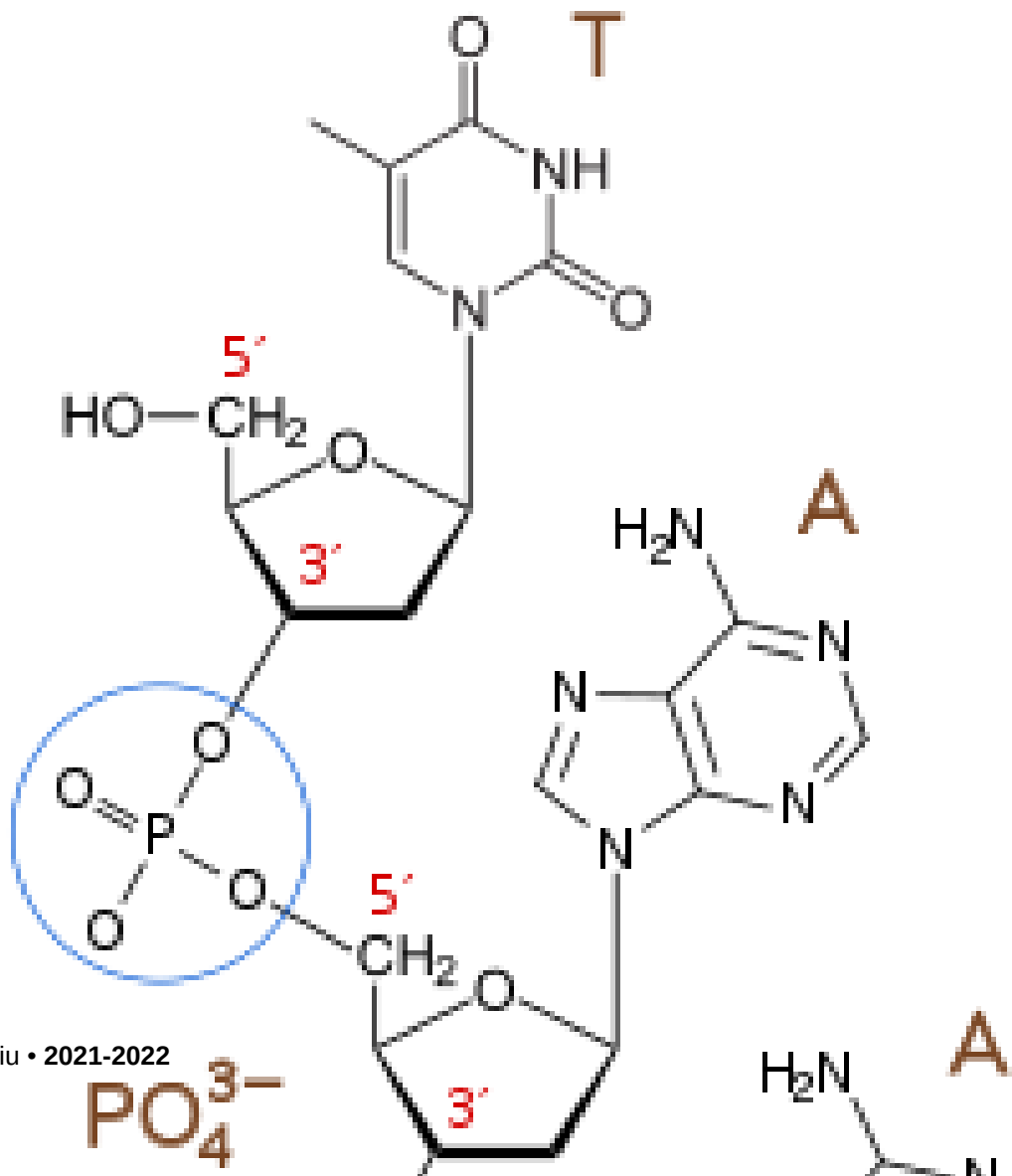
- 5' => one end of an RNA/DNA part (connection from the phosphate group)
- 3' => another end of a RNA/DNA part (connection from the third carbon on the sugar counting from left)

As in...



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Figure 1: d<sub>na</sub>.jpg



### 1.3.2 | DNA/RNA Strand

- DNA is supposed to be double stranded: DNA is *anti-parallel* to each other => 5' to 3' backbone parallel to 3' to 5' backbone
- RNA is supposed to be single stranded, but viruses may give them in bundles so that it would avoid detection

See also KBhBIO101SenseAndAntisense

#### **Temp copies of genome is RNA, permanent record in DNA**

## The Central Dogma The process of the central dogma is a rough path by which DNA is converted into Proteins. This helps us understand how proteins are made in a cell, and also how viruses could hijack this process to make themselves.

See KBhBIO101CentralDogma

### 1.4 | DNA-Made Structures

In a KBhBIO101Cells, DNA is organized into different shapes depending on which KBhBIO101CellLifecycle that the cell is in. These structures help facilitate cell replication.

See KBhBIO101DNAStructures