

## RNAs

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Thymine -  $\text{CH}_3 + \text{Uracil}$

Why does RNA have Uracil & DNA does not?

Cytosine  $\rightleftharpoons$  Uracil

↳ can undergo spontaneous deamination to uracil. → changes in structure.

Hence, genetic code changes.

⇒ Repair system cannot differentiate between altered C and preexisting U

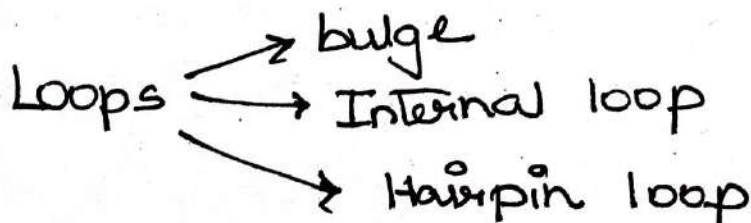
## Double helical RNA!

loop-y structures

## Wobble base pairs

G:U base pair. → weak bonding, because of (str. sim)!

↳ can be found only when most of the bps are joined → not found in pure G-U strand.



## ① mRNA

- regulation of nuclear export
- protection against degradation by exonucleases
- promotion of translation.

## \* Modifications

- 5' end (before transition) → capping with 7-methyl guanosine  
(because it emerges first)  
(nucleus) → cotranscriptionally
- 3' end → tailing with polyadenylate residues  
(nucleus)
- Splicing → removal of introns & joining of exons  
(nucleus)

\* Otherwise RNAase shortens it, and it also helps shuffling proteins to bind to RNA cap/tail  
5' cap binds ribosome → helps in translation.

## Riboswitch

bind small molecule ligand → and regulate expression of downstream gene.

→ cis → part of the same molecule (mRNA)

helps in translational shutdown (quick fix, immediate effect on existing mRNA)

microRNA acts on RNA & prevents translation and

lnc RNA regulates gene expression, as well as translation, can also mediate

mRNA stability.

RNAase-P  $\rightarrow$  RNA acting as ribonuclease