23rd January 2024

The linkages of RNA are the same as that of DNA.

2' position has –OH instead of –H

Thymine has methyl group, uracil does not.

everything else is the same.

Why then do we have uracil in RNA and not in DNA?

Uracil is present – ~~adding~~ addition of methyl group makes thymine.

Cytosine can deaminate to form uracil – spontaneously.

This is a way of mutation of DNA.

If this happens in DNA, the repair mechanism can fix it as uracil is supposed to be in DNA.

U and G can bond using H bonds – they are weak.

Also known as wobble pairs.

RNA can form different 3D structures due to its double helical characteristics

① 7'-methyl guanosine 5' cap is put on the precursor-mRNA ~~after transcription~~ during transcription.

② Poly-(A) tail is put after transcription

③ Introns are removed

After these are done, RNA ~~has~~ leaves nucleus for translation in cytosol.

→ Protects RNA from RNAse

Shuttle proteins also bind to them and piggyback them across nuclear pore.

Promotes translation.

cis – same molecule, trans – another molecule

nothing to do with stereochemistry.

Riboswitches are regions where small molecule ligands come and bind and causes ~~con~~ conformational change in RNA to stop ribosome from binding.

Why not just stop at transcriptim?

MRNA has finite half life — if it remains in cells and produces protein. If you need long term shutdown, transcription shutdown is good. Otherwise for quick shutdown, riboswitches are good.

Riboswitches can also change halflife by making RNA ~~susc~~ susceptible to RNAse.

MicroRNA acts only on RNA and prevents translatim.

IncRNA is more varied —

1. bind to chromosome it got coded from to stop transcription (cis)
2. bind to other chromosome site (trans)
3. Interferes with polysome.

Ⓟ rRNA is an RNA-protein complex.

RNAse P is an RNA, while RNAse D is a protein.