1/25/95

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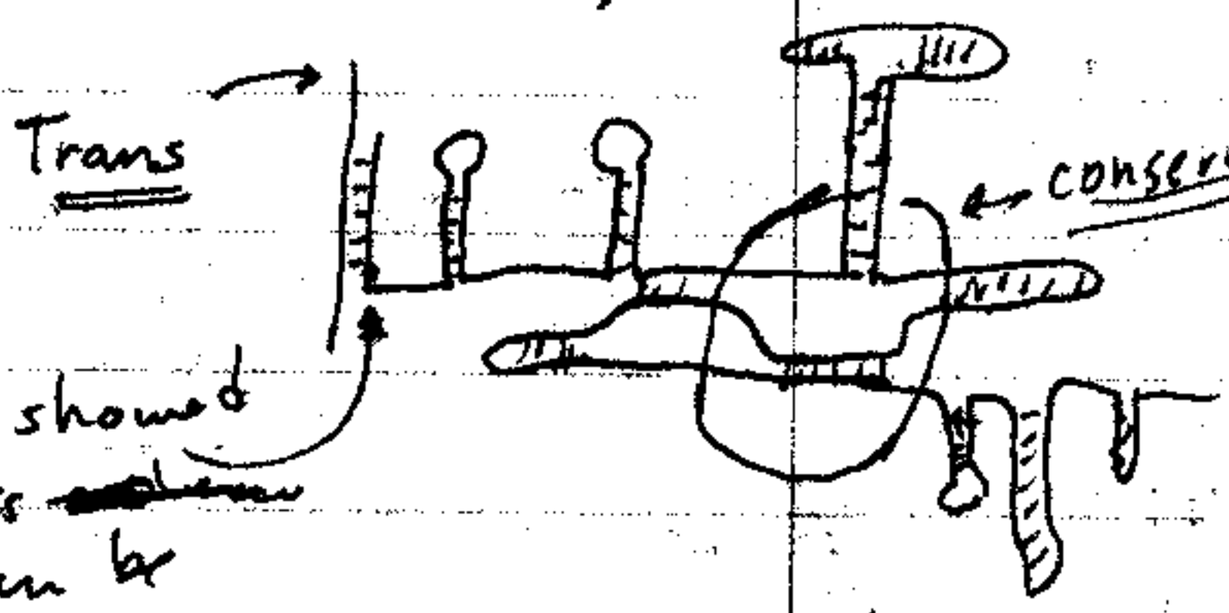
RNA Structure & Its Role in Cellular Function

Recognition of RNA Duplexes by RNA

© RNA enzymes have f(x) groups pointing inside

Group I Intron

- in tetrahymena rRNA, self-excises
- predicted structure by phylogenetic comparison
- created artificial system in which ribozyme works in trans



∴ - The helix is very important

- Apparently this helix is incorporated into active site.

Specificity

→ Are any base pairs required in the helix?

U G ← only U-G pair appears to be conserved

so maybe OH group is being recognized

Appears that Mg on substrate is important

GU pair

also conserved in

Hepatitis δ virus ribozyme

- Valine binding RNA (in vitro selection)
- Alanine tRNA
- 16s rRNA (says 23s)

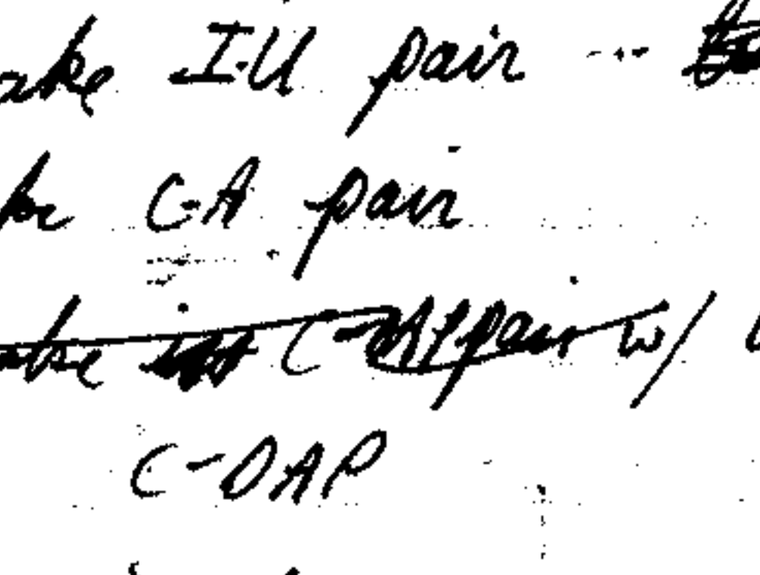
What might GU pair do?

① GU is shifted relative to normal pairs

	Kd
So - alter GU pair -	
① make I-U pair -- ~~lower~~ higher Kd	0.05
② make C-A pair	25
~~③ make inf C-U pair w/ OA~~	~~V1~~
③ C-DAP	1.1

i C-A

i C-DAP



Apparently UG pair is facing G's NH2 group out into the minor groove

Similar in tRNA synthetase