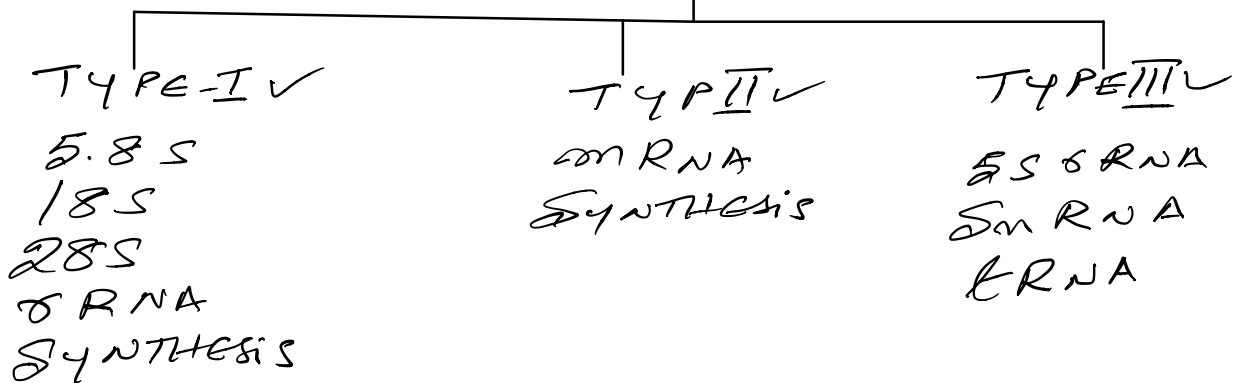


EUKARYOTIC RNA POLYMERASES

TYPES OF RNA POLYMERASE



REQUIREMENT OF IONS/ELECTROLYTES

SENSITIVITY DIFFERENT INHIBITION

INHIBITORS :-

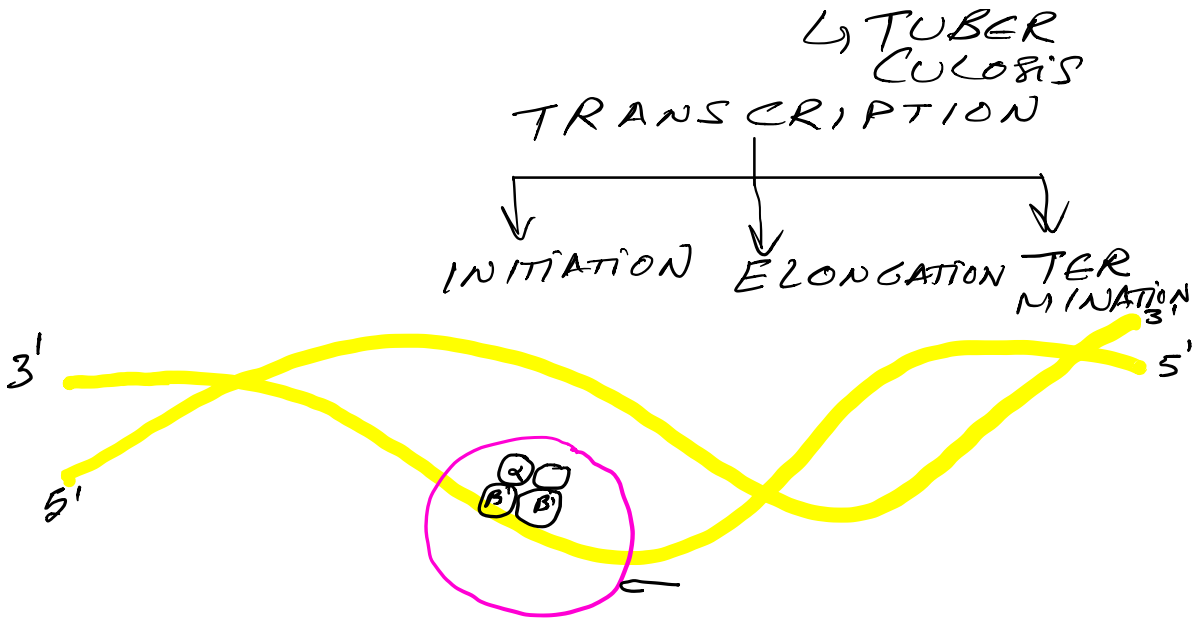
EUKARYOTIC SYSTEM

I	II	III
		α -AMANITIN
		↑
		AMANITA PHALLOIDES
		↑
		MUSHROOM
		↓
		DESTROYING ANGEL OR DEATH CUP

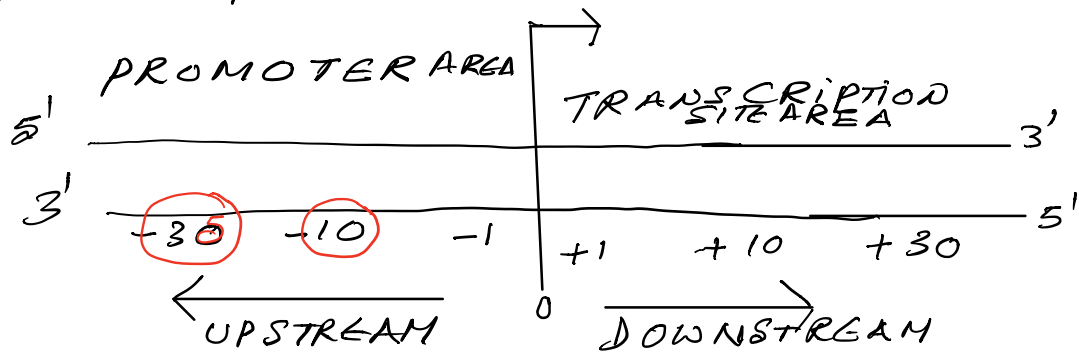
DACTINOMYCIN :- INHIBITS TRANSCRIPTION BY BINDING DNA

↓
WILMSTUMORS
(CHILDHOOD NEOPLASM)
CHORIOCARCINOMA

PROKARYOTIC → RIFAMPICIN

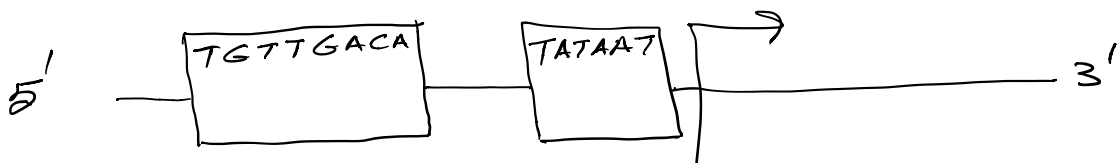


TRANSCRIPTION UNIT



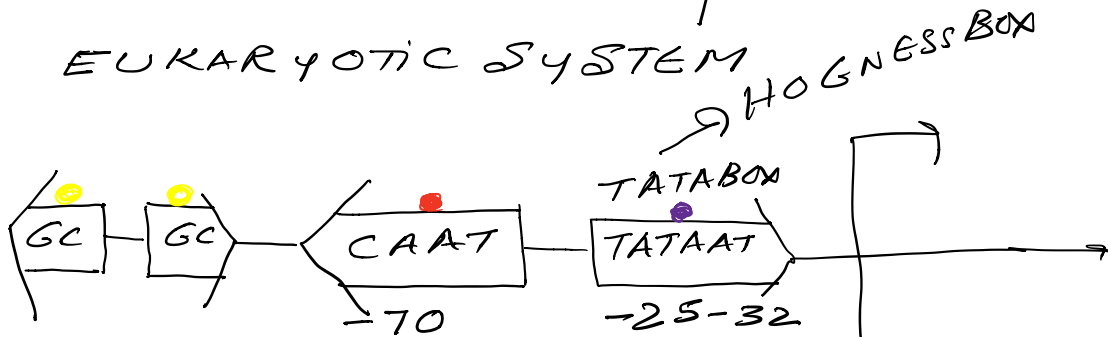
PROMOTERS OF PROKARYOTIC SYSTEM:-

- 10 REGION → TATAAT (TATA BOX) (PRIBNOW BOX)
- 35 REGION → TGTGACA



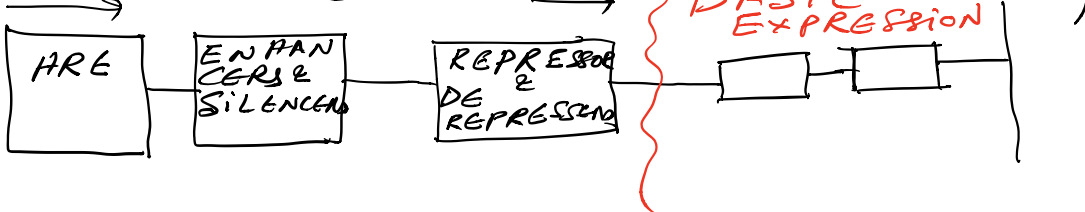


EUKARYOTIC SYSTEM



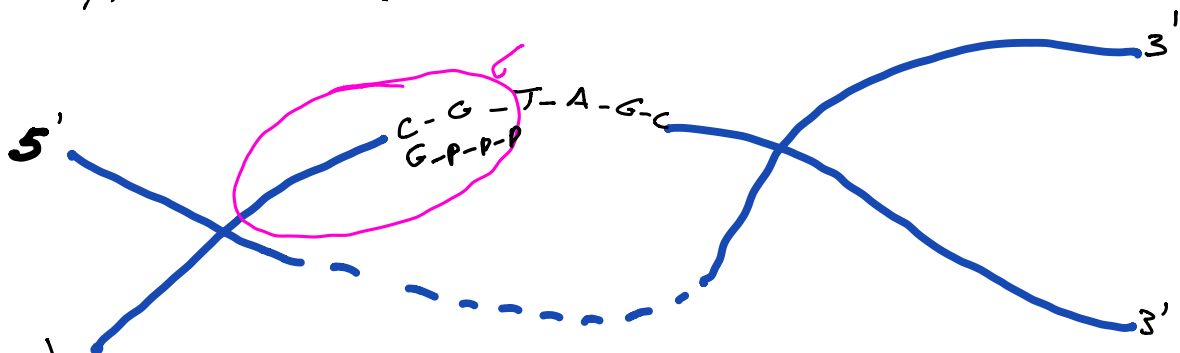
① TATA BOX	SEQUENCE TATAAT	→ PROTEIN FACTOR TFIID
② CAAT BOX	GGCCAATCT	CTF
③ GC BOX	GGGCGG	Sp1
④ TGC BOX	TGGCCGG	NUCLEAR FACTOR

REGULATORY EXP

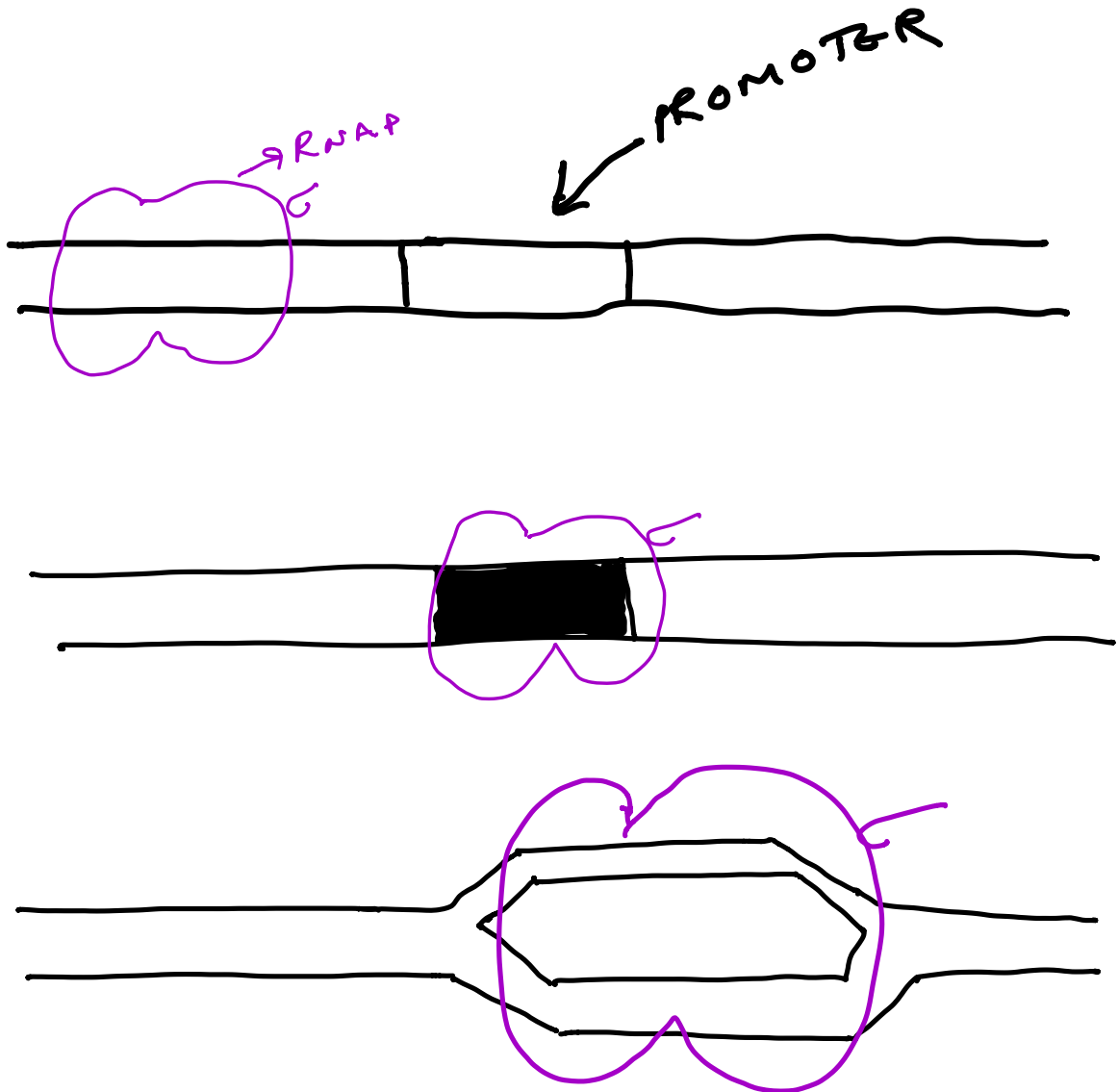
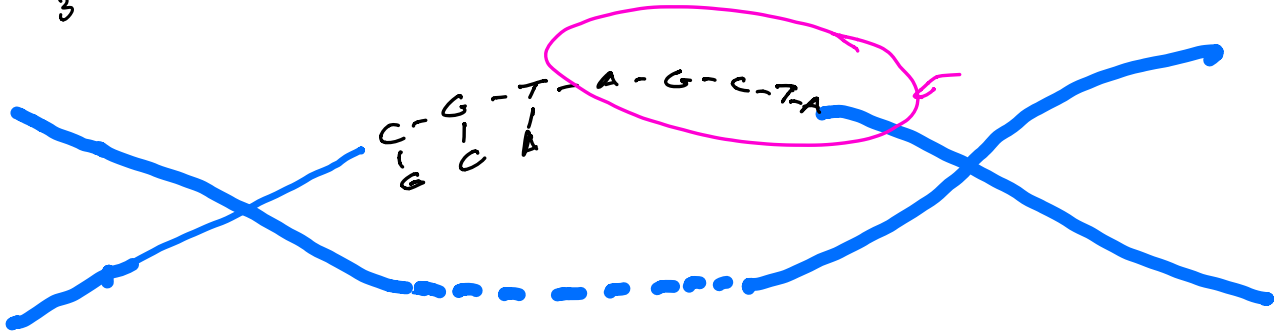


CIS ACTING & TRANS ACTING

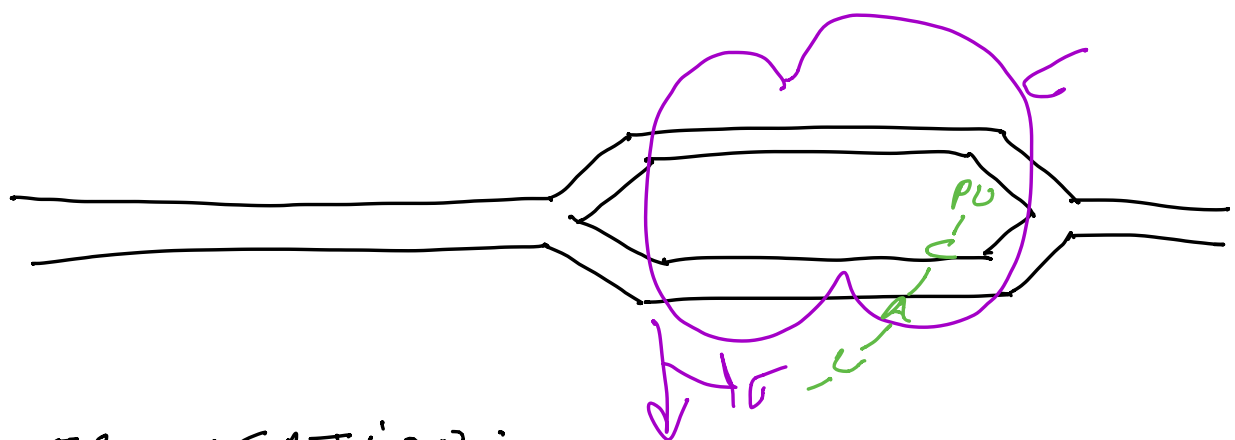
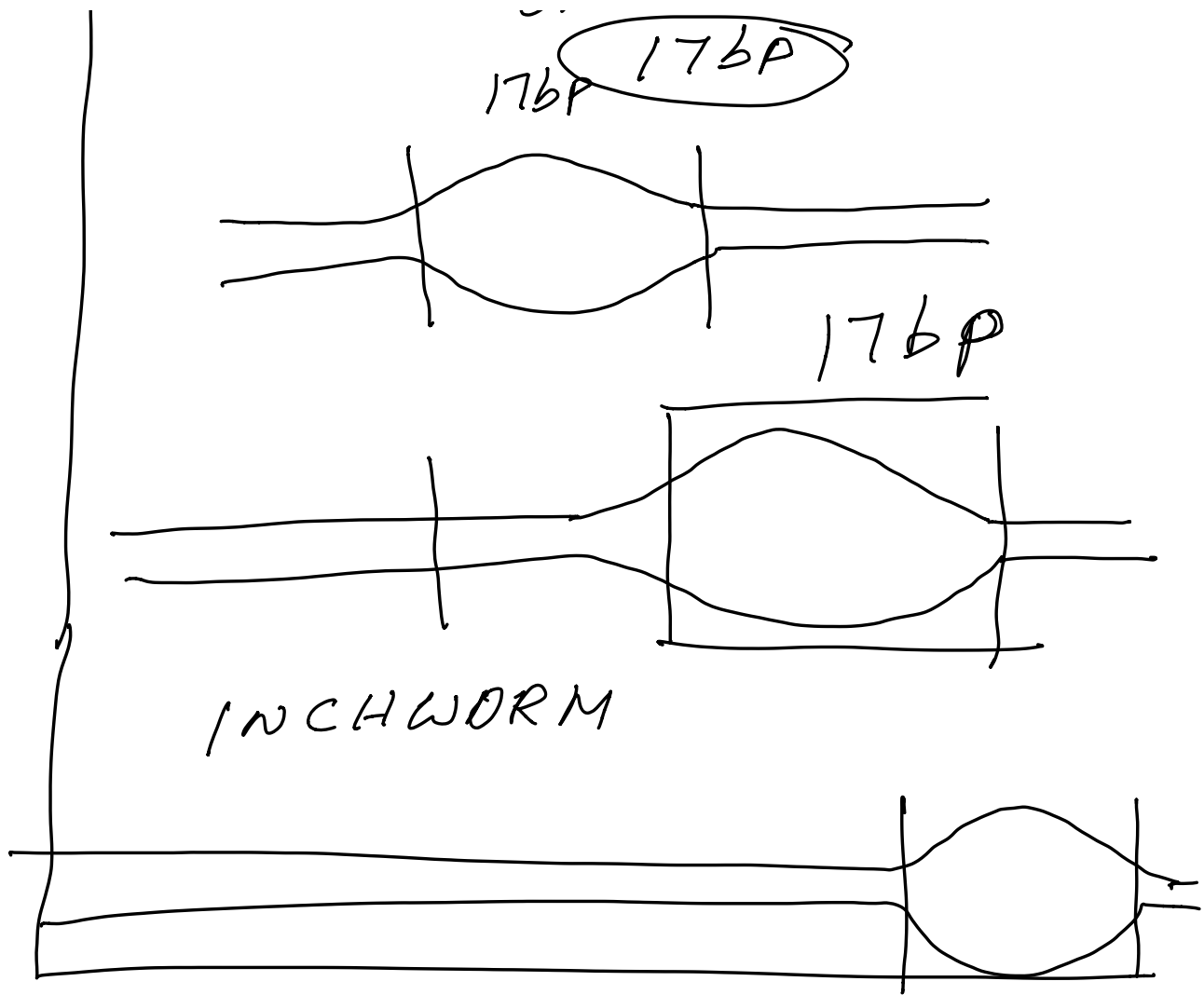
INITIATION:-

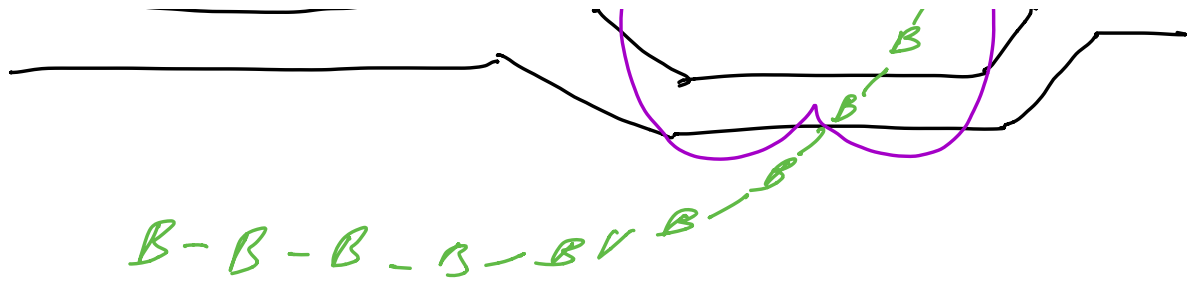


3



RNA POLYMERASE HAS
UNWINDASE LIKE ACTIVITY
UNWINDING REGION





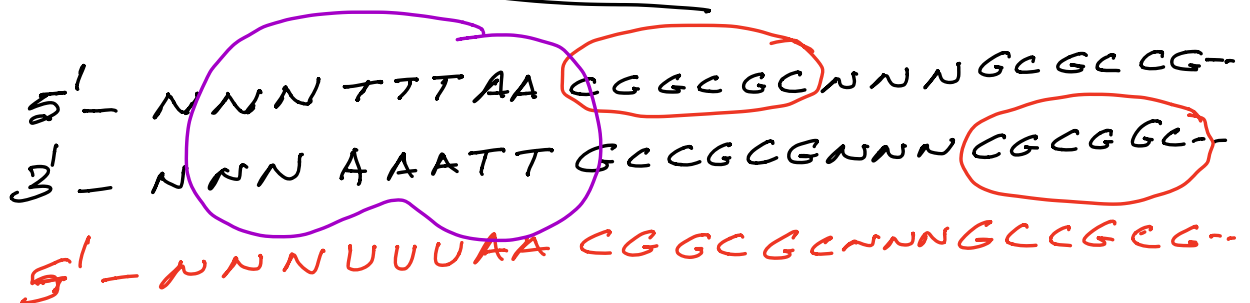
TERMINATION PROCESS:-

PROTEIN

FACTOR
INDEPENDENT

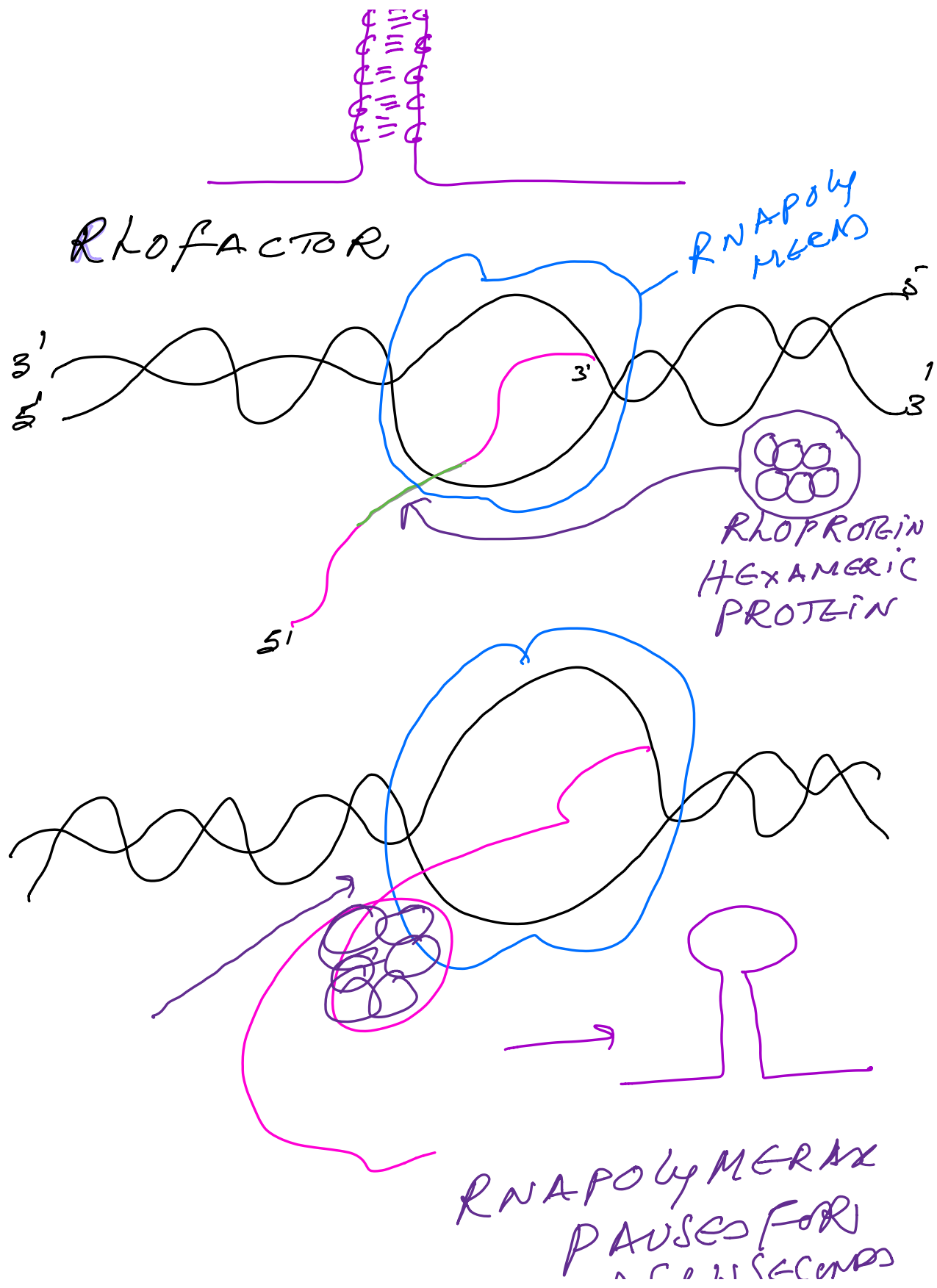
FACTOR
DEPENDENT

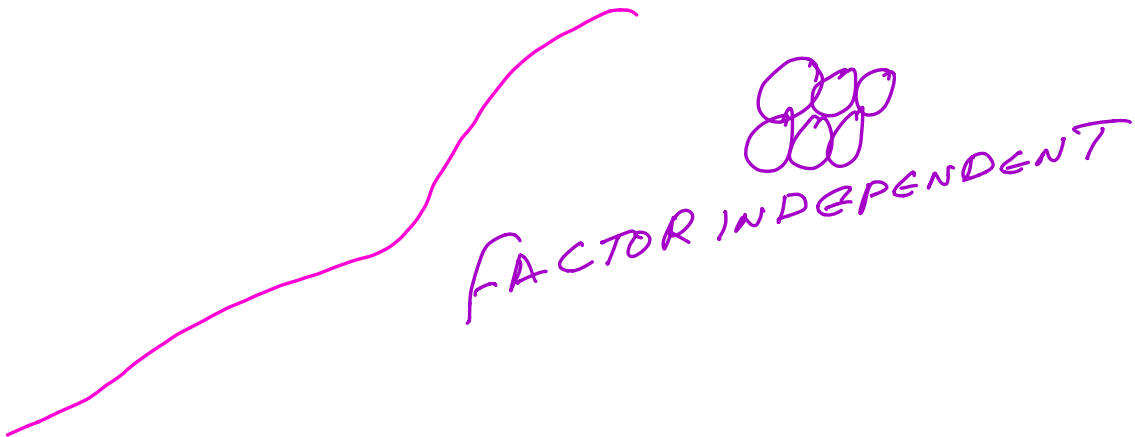
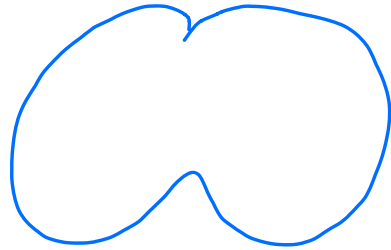
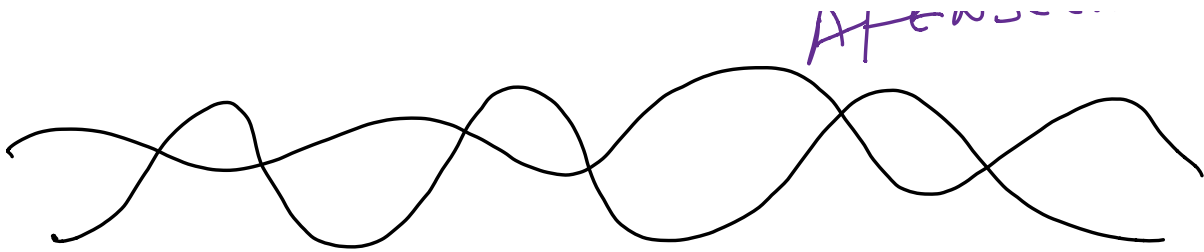
FACTOR INDEPENDENT TERMINATION



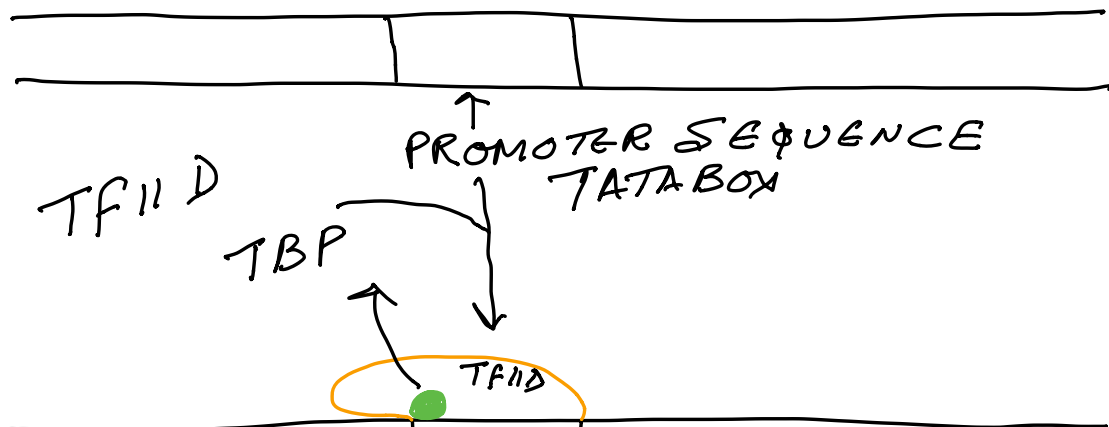
MADAM I'M ADAM
NURSES RUN
MALAYALAM
PALINDROME

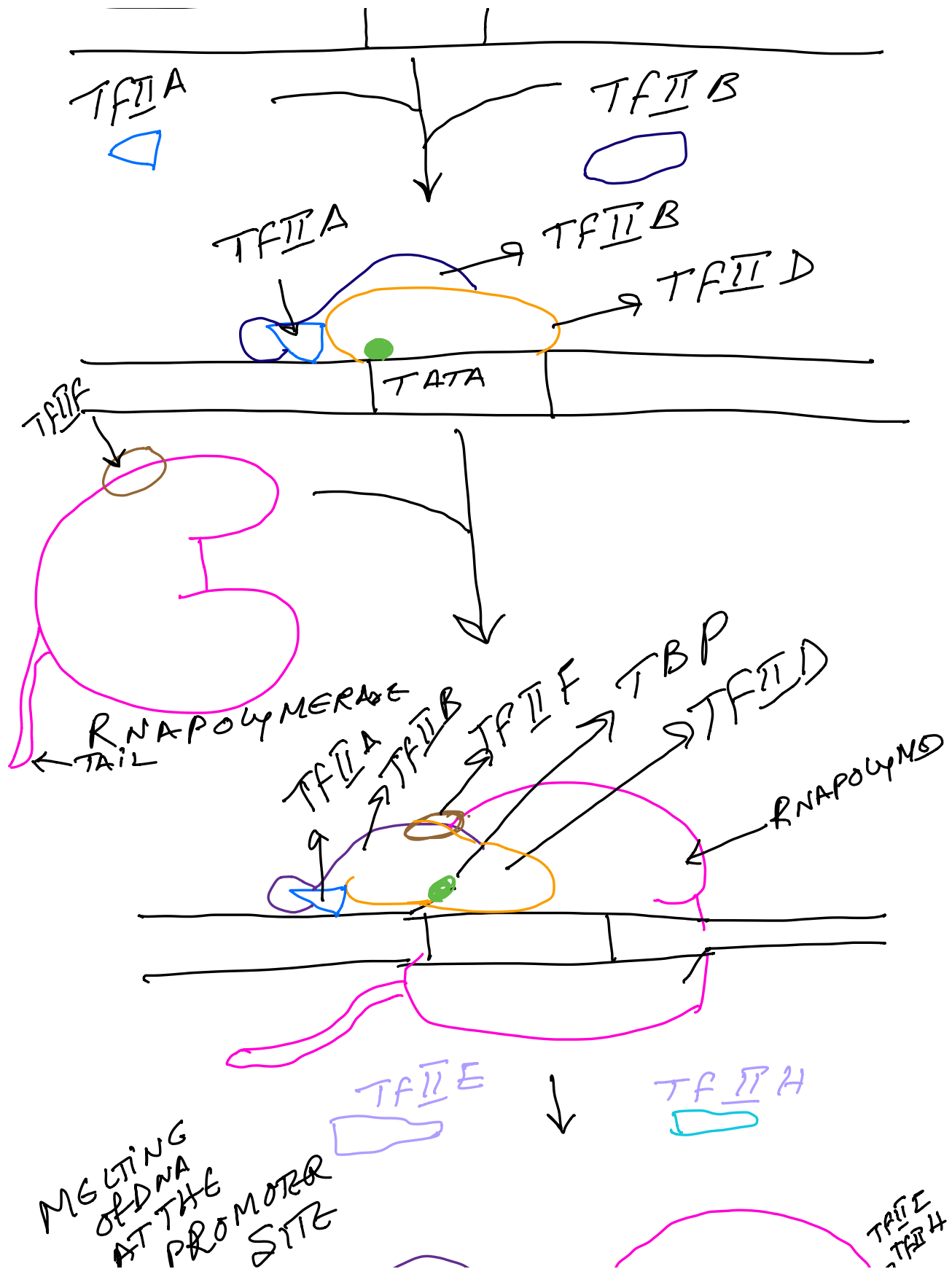


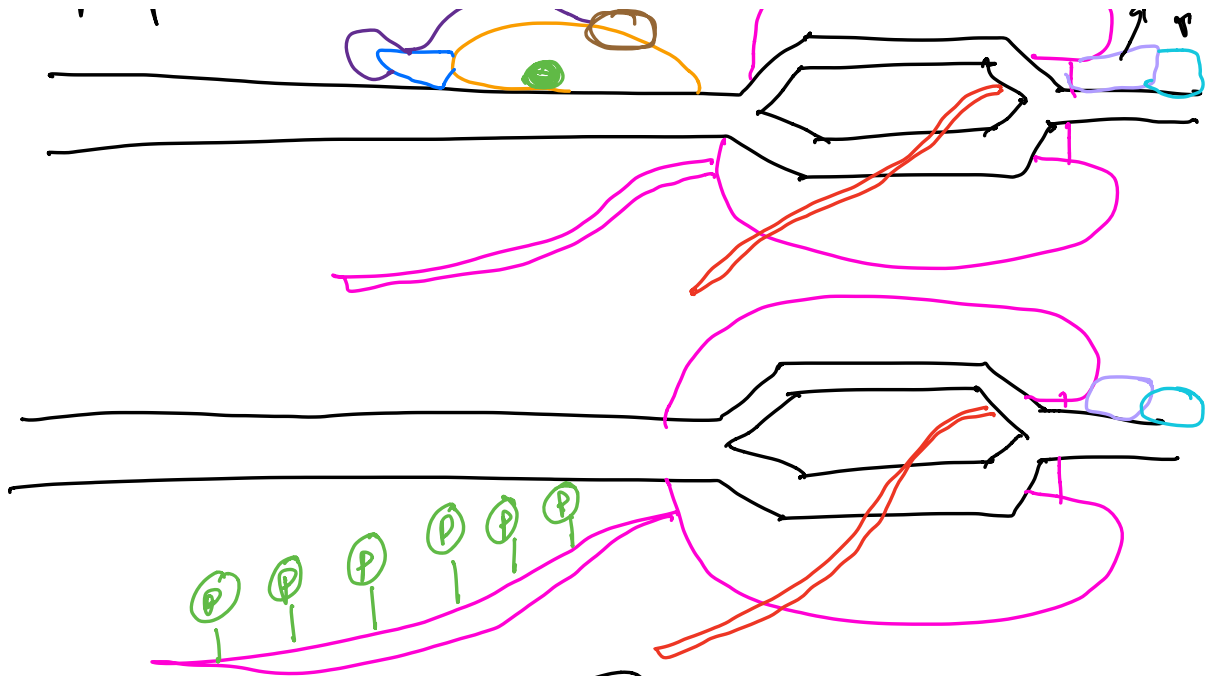




EUKARYOTIC TRANSCRIPTION:-







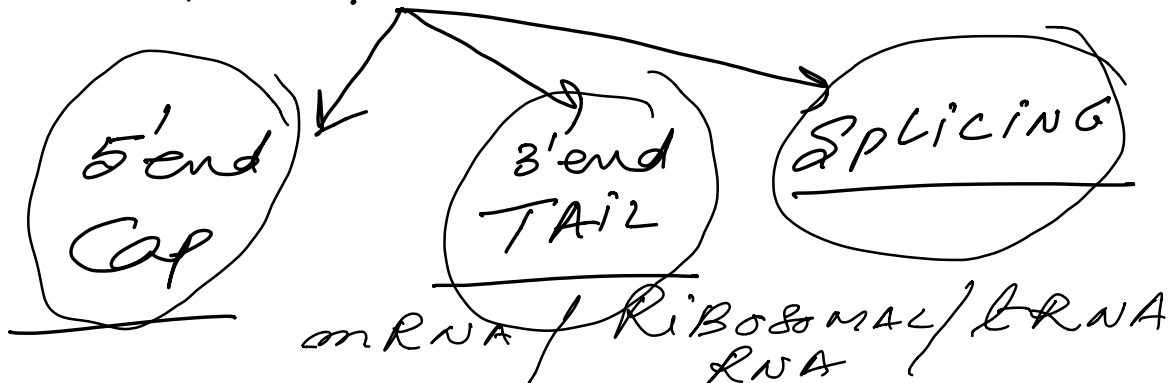
ABORTIVE TRANSCRIPTION

CTERMINAL DOMAIN

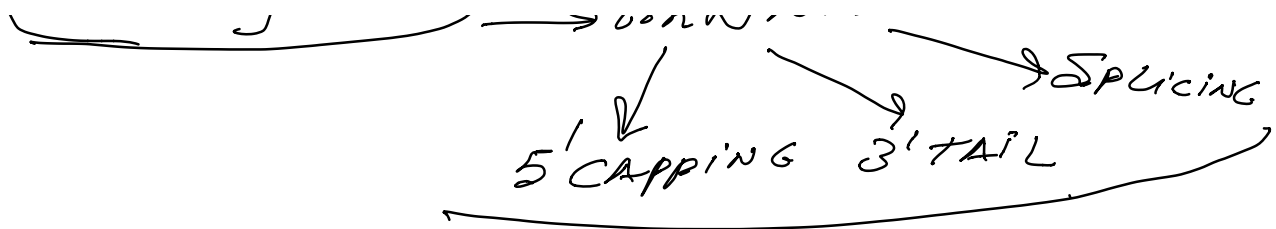
CTD

T S P T S P S → Ser
 ↓ ↓ ↓ ↓ ↓
 Tyx Ser PRO THR Ser PRO

POST TRANSCRIPTIONAL MODIFICATIONS



(EUKARYOTIC) ~ ~ ~ RNA



5- CAPPING :-

PRIMAR TRANSCRIPT
 ↳ OBTAINED IMMEDIATELY AFTER
 BASE MODIFICATION TRANSCRIPT
 BASE ALTERATIONS X ACTIVE
 METHYLATION

5'- CAPPING :-

NOT MUCH
 CHANGES
 PRIMARY TRANSCRIPT

9

FINAL PRODUCT

7-METHYL GUANOSINE TRIPHOSPHATE
 PECULIAR ASPECT

5'- 5' PHOSPHODIESTER

WHAT IS ITS UTILITY

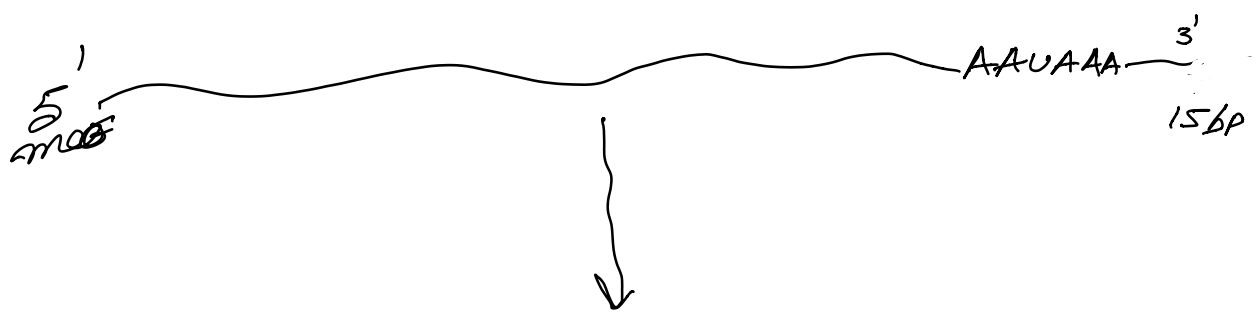
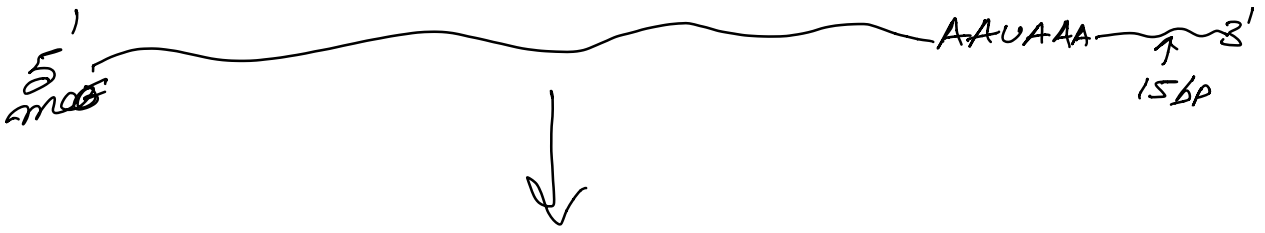
- PROTECTS RNA FROM

5'- EXONUCLEASE ACTIVITY [↑] 15bp

- USEFUL IN THE RECOGNITION

BY TRANSLATION MACHINERY

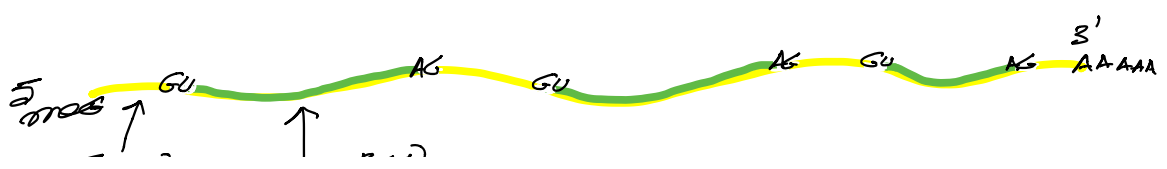
POLY A TAIL



USE of POLYADENYLATED TAIL
 • PROTECTS FROM 3'
 EXONUCLEASE ACTIVITY

HISTONE
 X POLYADENYLATED
 TAIL

SPLICING

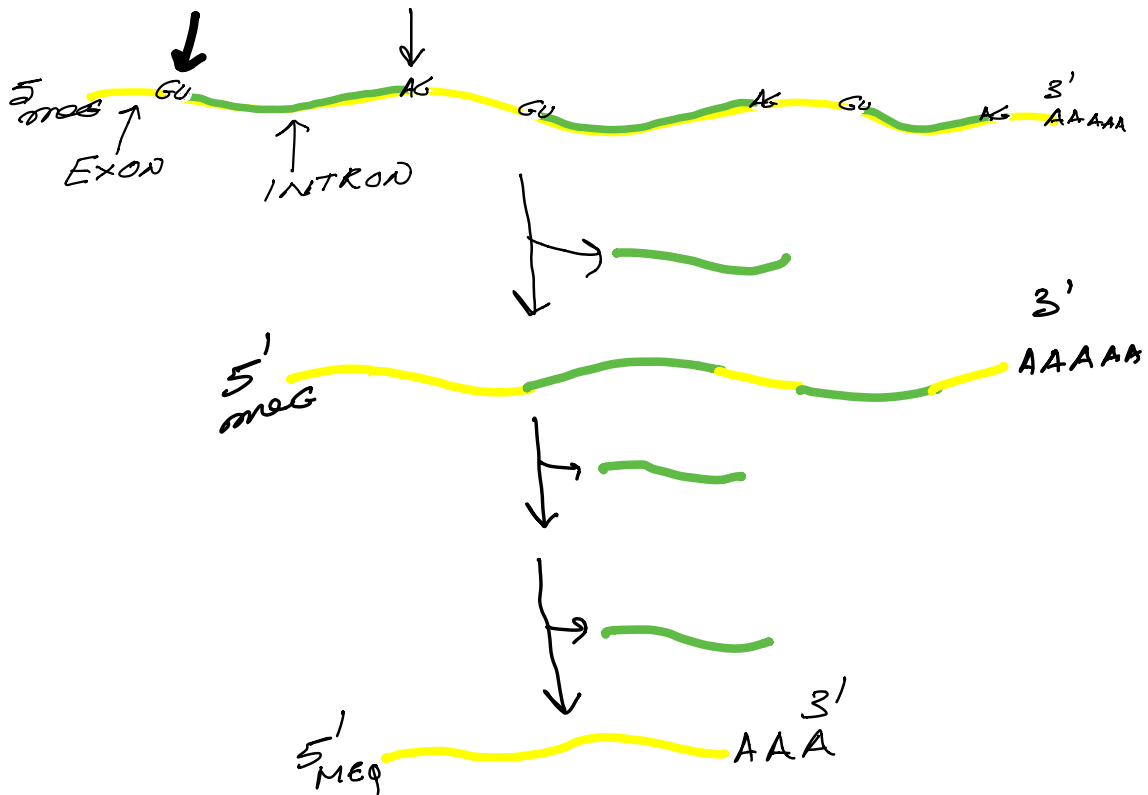


EXON INTRON

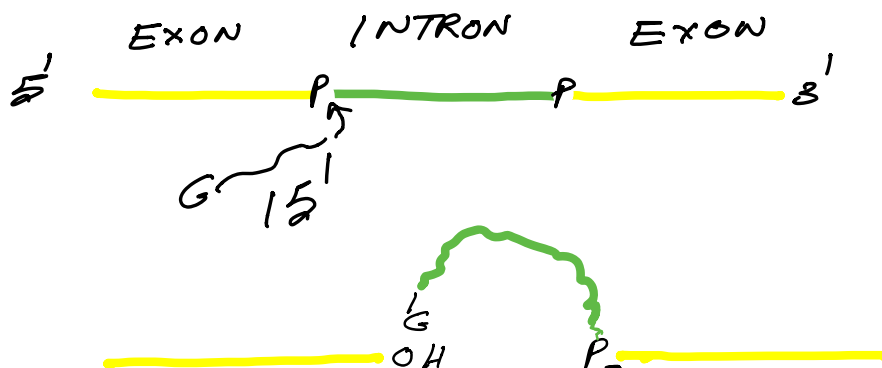
EXON $\rightarrow$ EXPRESSING GENES

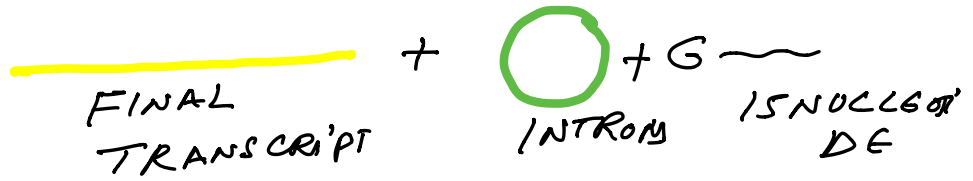
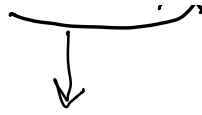
INTRONS $\rightarrow$ INTERVENING SEQUENCES

INTRON STARTS WITH GU & ENDS WITH AG

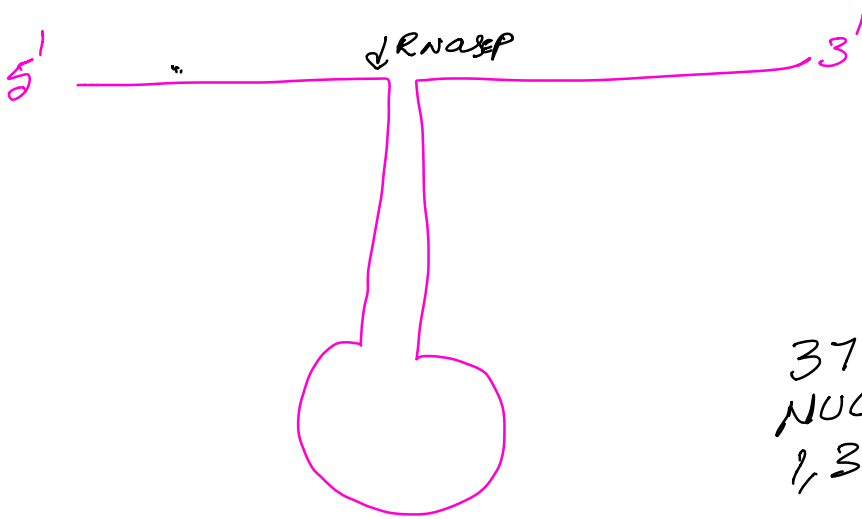


SPLICING RIBOSOMAL RNA:-
SELF SPLICING .

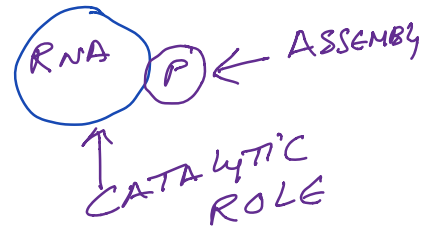




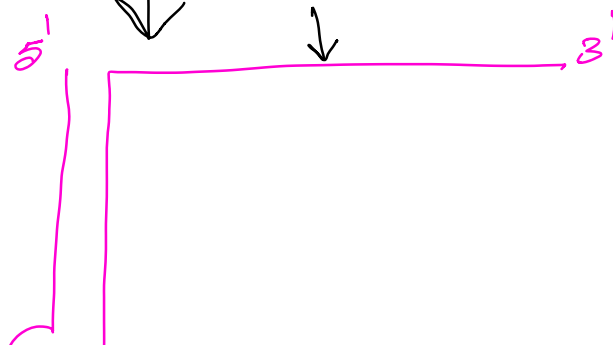
TRANSFER RNA:-

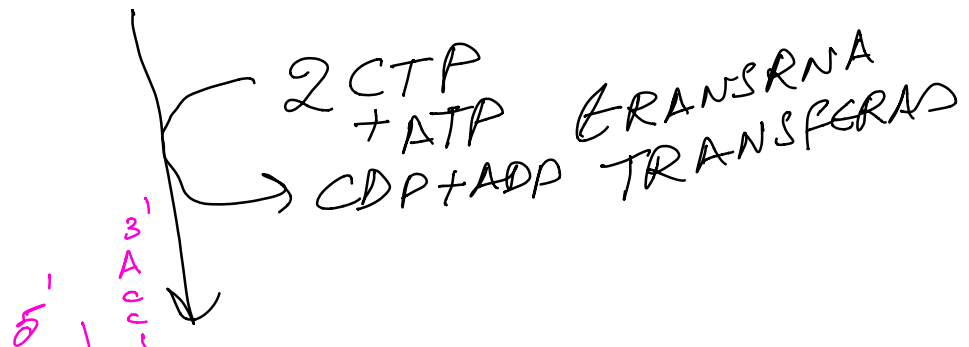
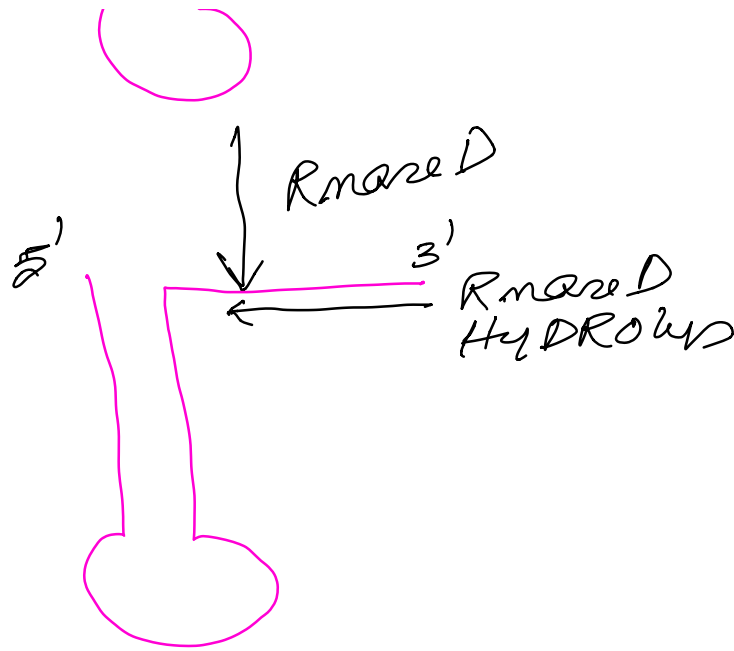


RNase P
RNA + PROTEIN
↓
377 NUCLEOTIDES
1,30,000



RNase P





MANY
UNUSUAL
BASES
DIHYDROURACIL
RIBOTHYMIDINE
&
PSEUDOURIDINE



ENR.