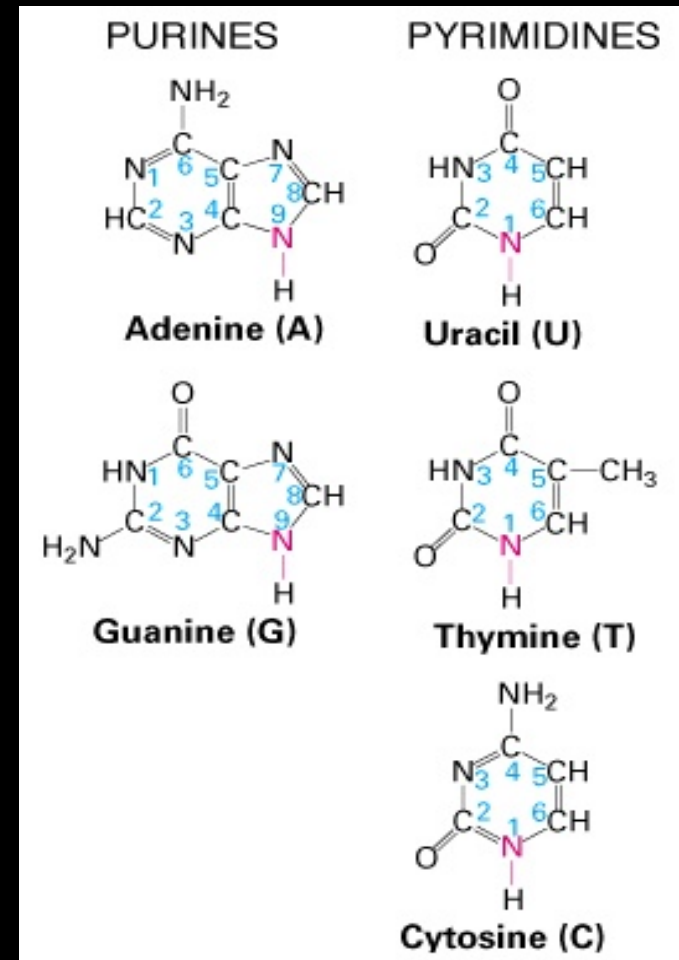
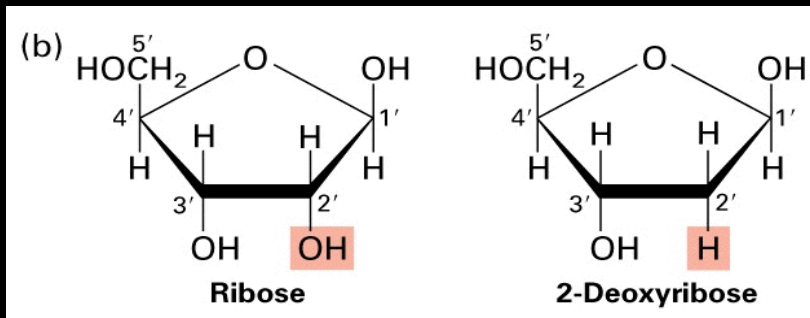
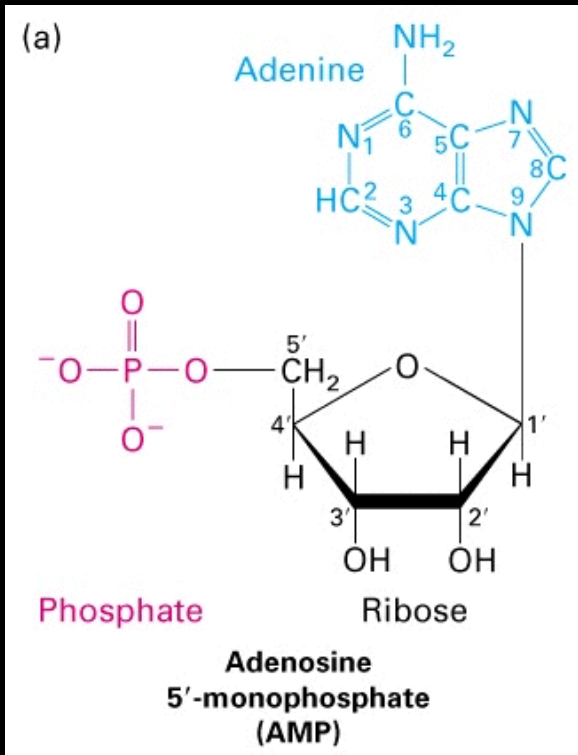
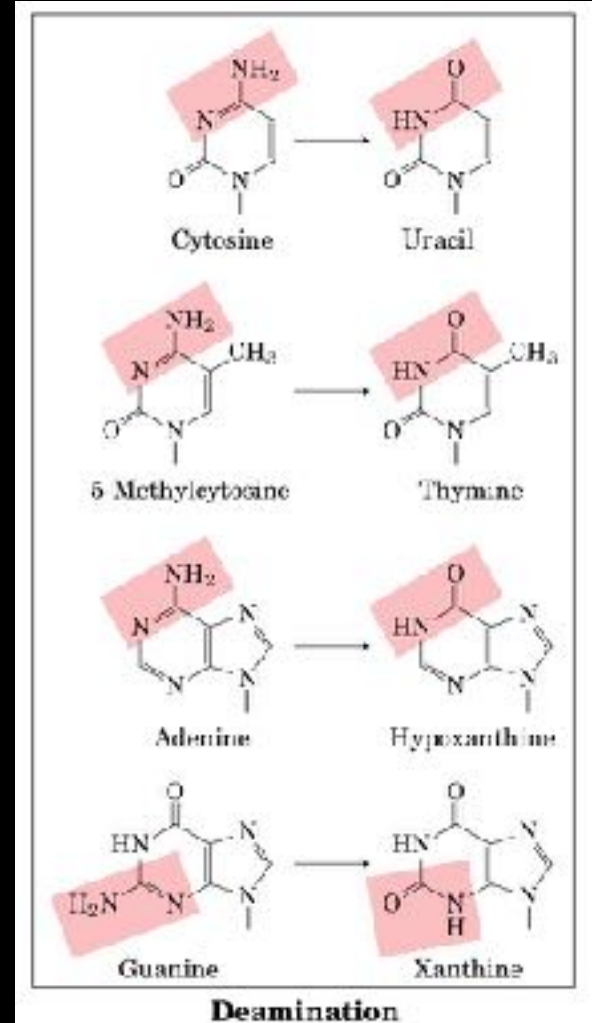
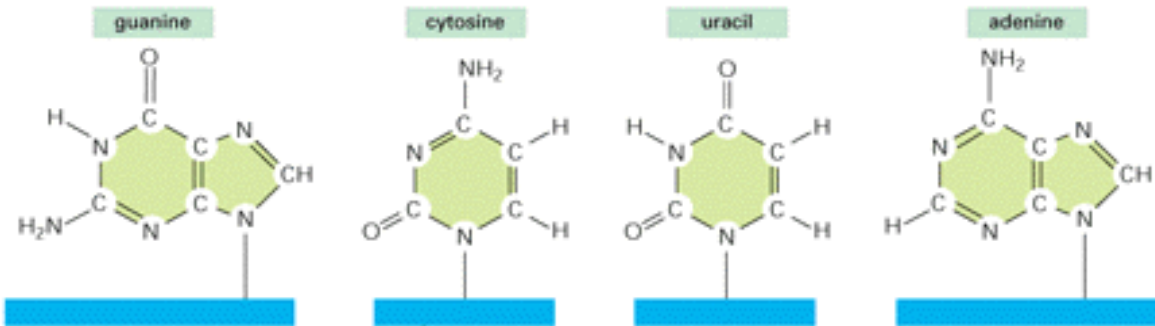
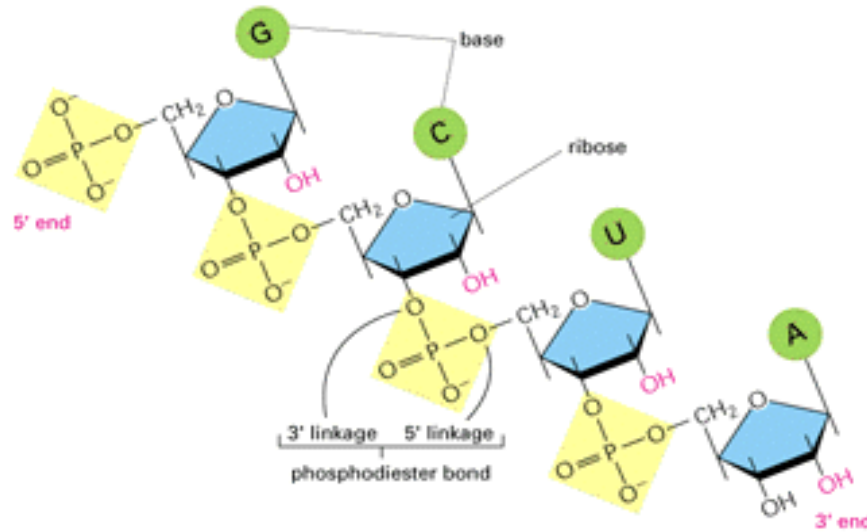


RNA

Nucleotídeos



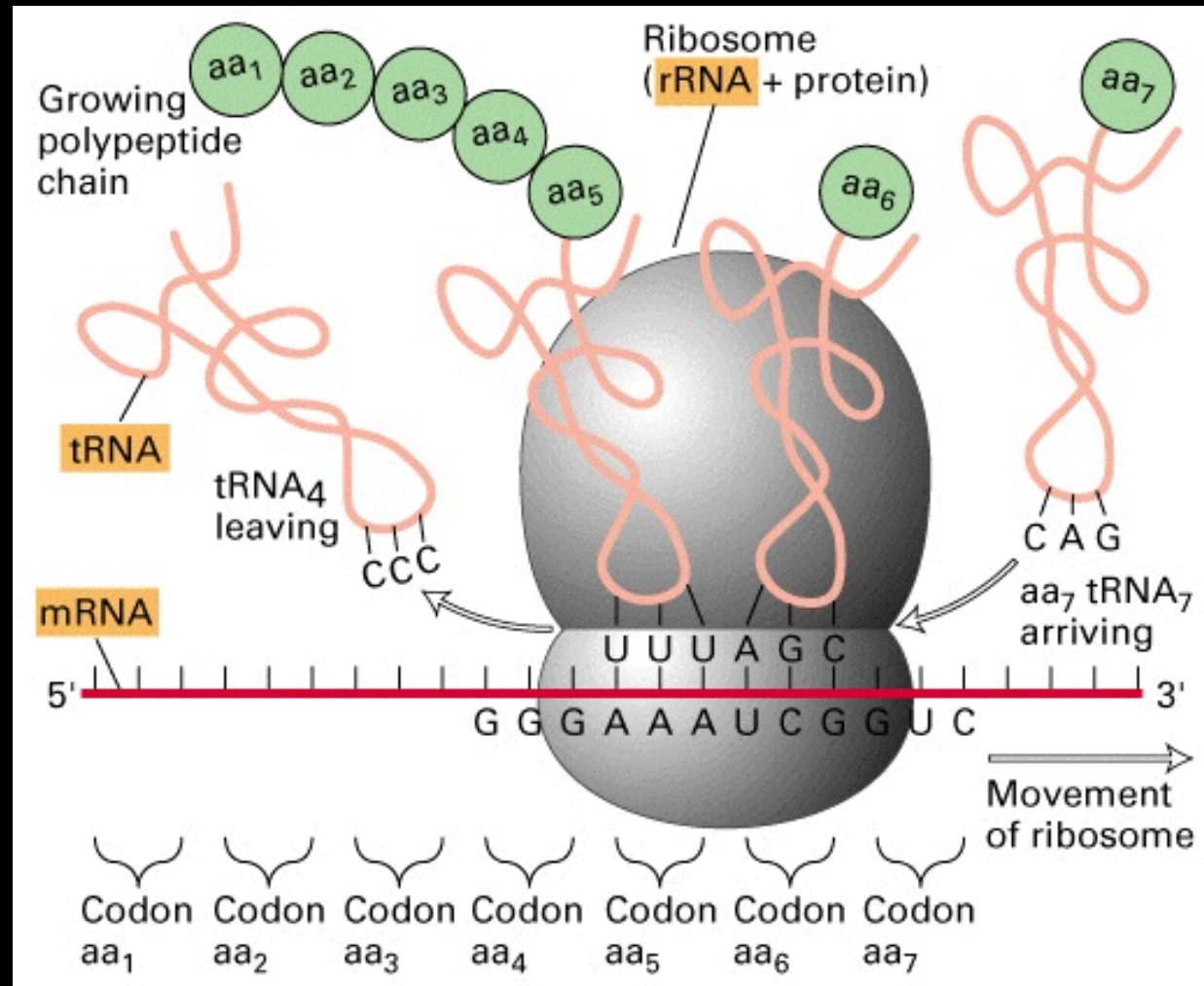
RNA: composição



Tipos de RNA

- RNAs codificantes
 - mRNA
- RNAs não codificantes (ncRNAs)
 - rRNA
 - tRNA

RNA: função



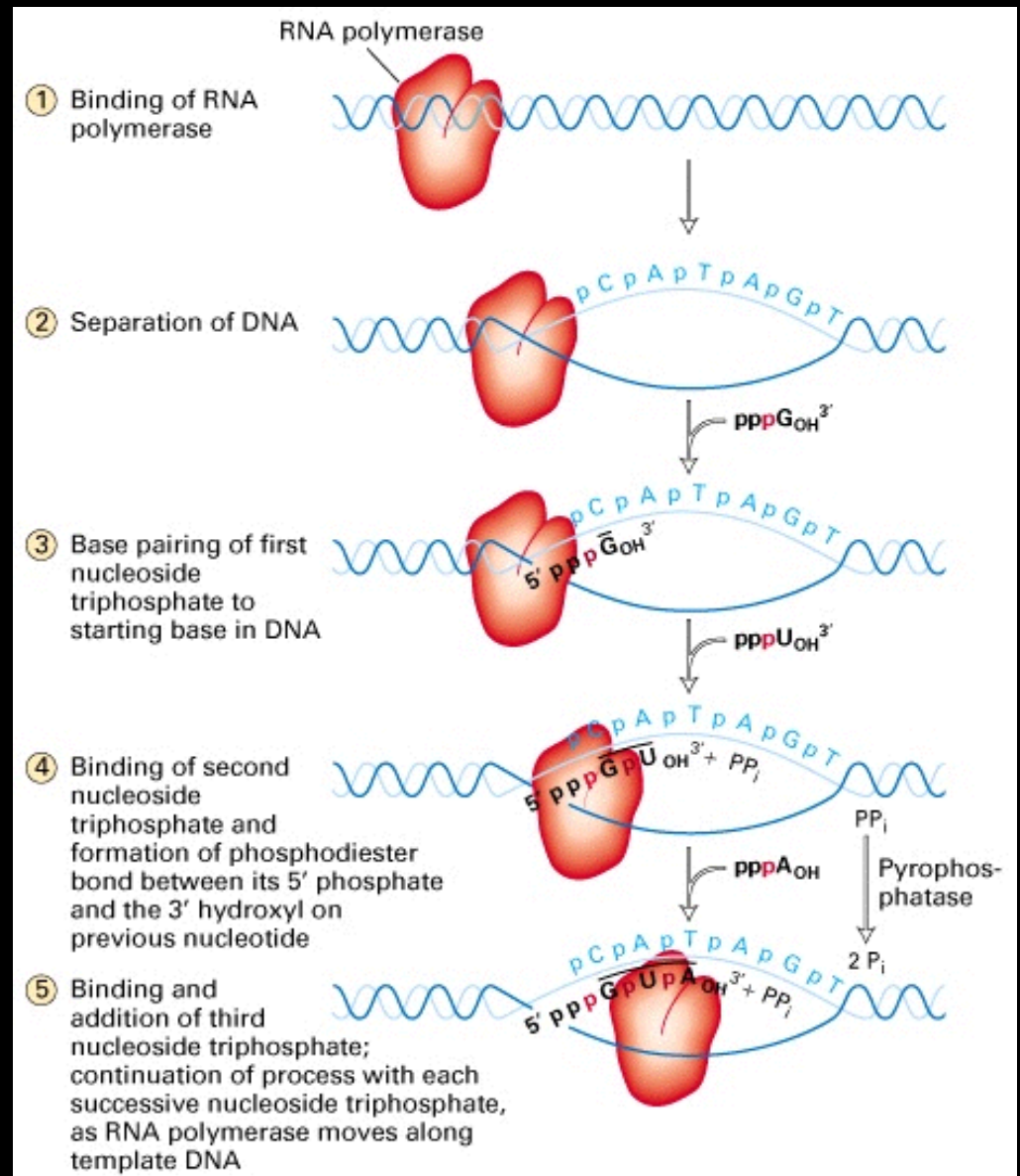
RNAs não codificantes (ncRNAs)

- Constitutivos
 - rRNA, tRNA
 - snRNA, snoRNA, scRNA, scaRNA (small Cajal body-associated; modifica snRNAs)
- Reguladores e proteção do genoma
 - miRNA, ceRNAs, circRNAs, lncRNAs
- Proteção do genoma
 - siRNA, piRNA
- Relacionados a transcrição
 - lincRNAs (ncRNAs longos intercalados)
 - PASRs, PALRs, TASRs (sRNAs e lRNAs associados a promotor e terminador)
 - TSSa-RNAs, tiRNAs (sRNAs associados ao sítio de início de transcrição)
 - PROMPTs (sRNAs associados a região a 5' de promotores)

Transcrição

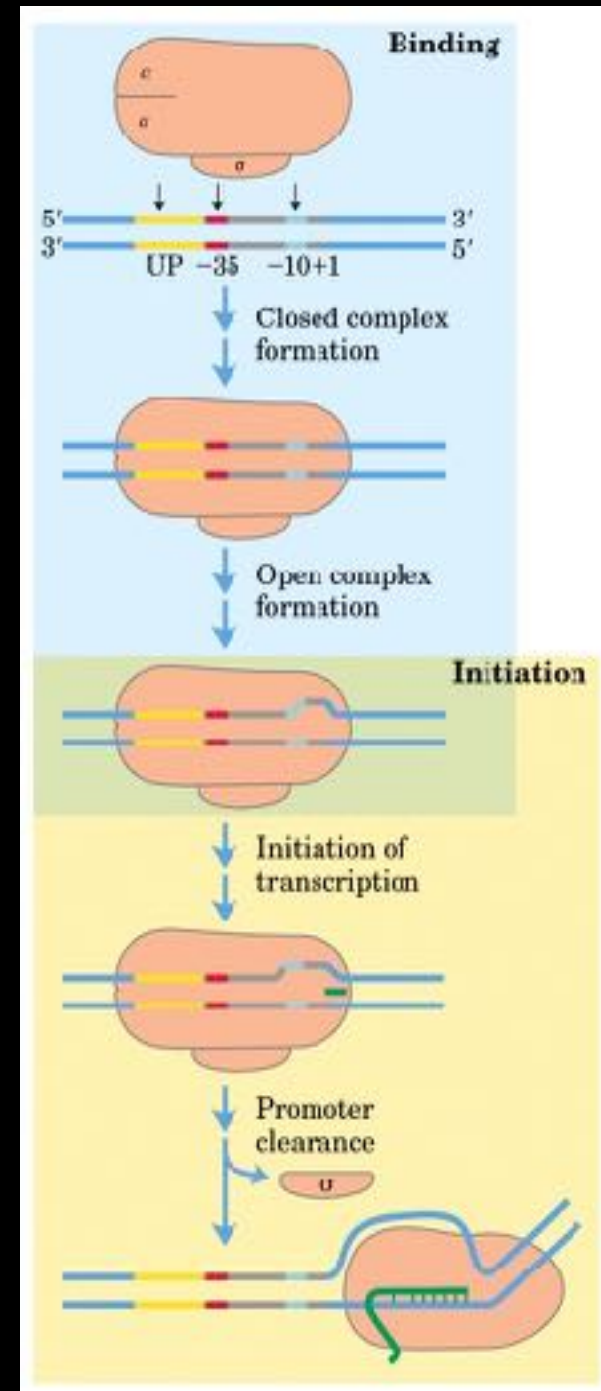
Transcrição

- RNA polimerase
- Reconhecimento do DNA
- Etapas:
 - Iniciação
 - Alongamento
 - Terminação

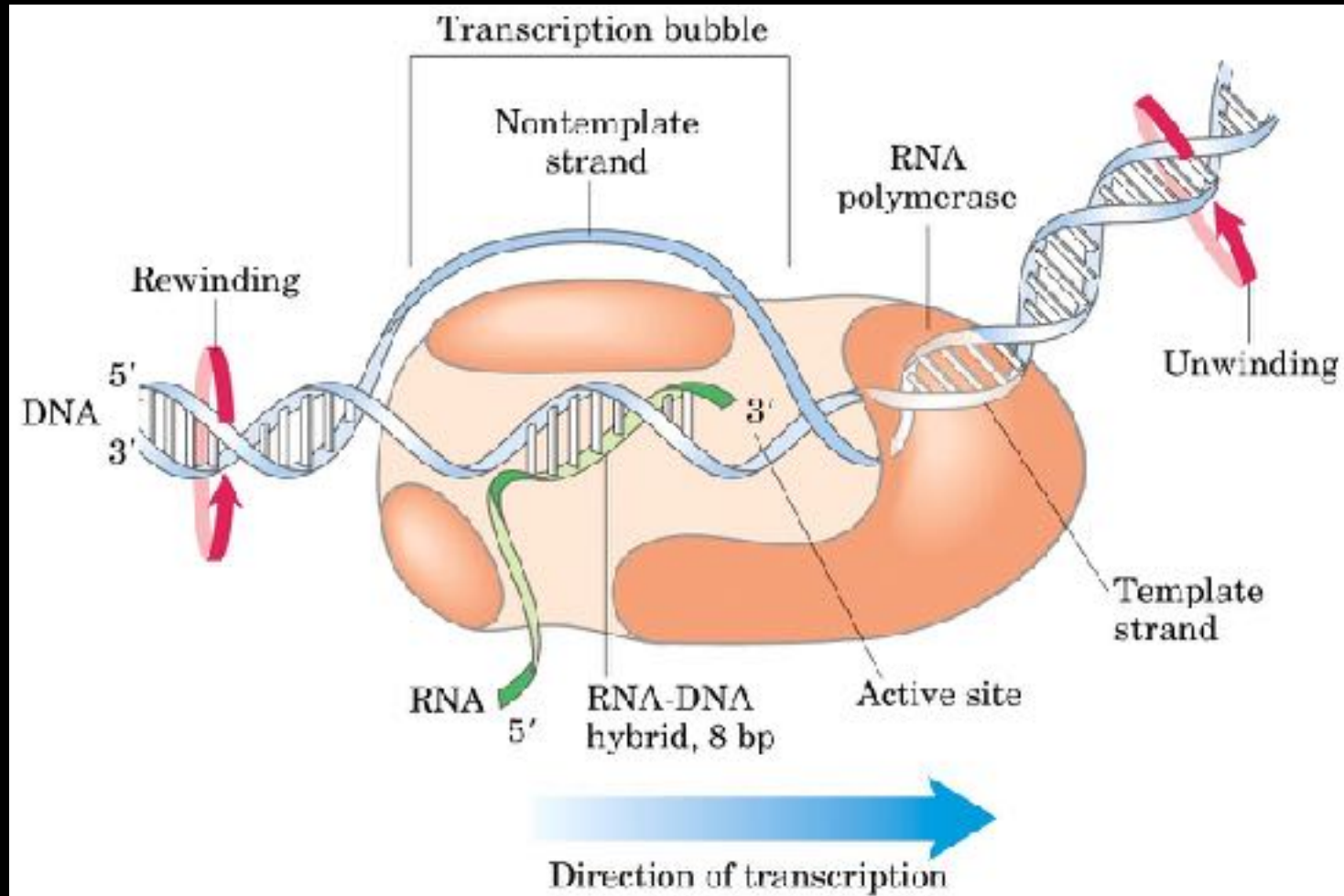


RNA polimerase

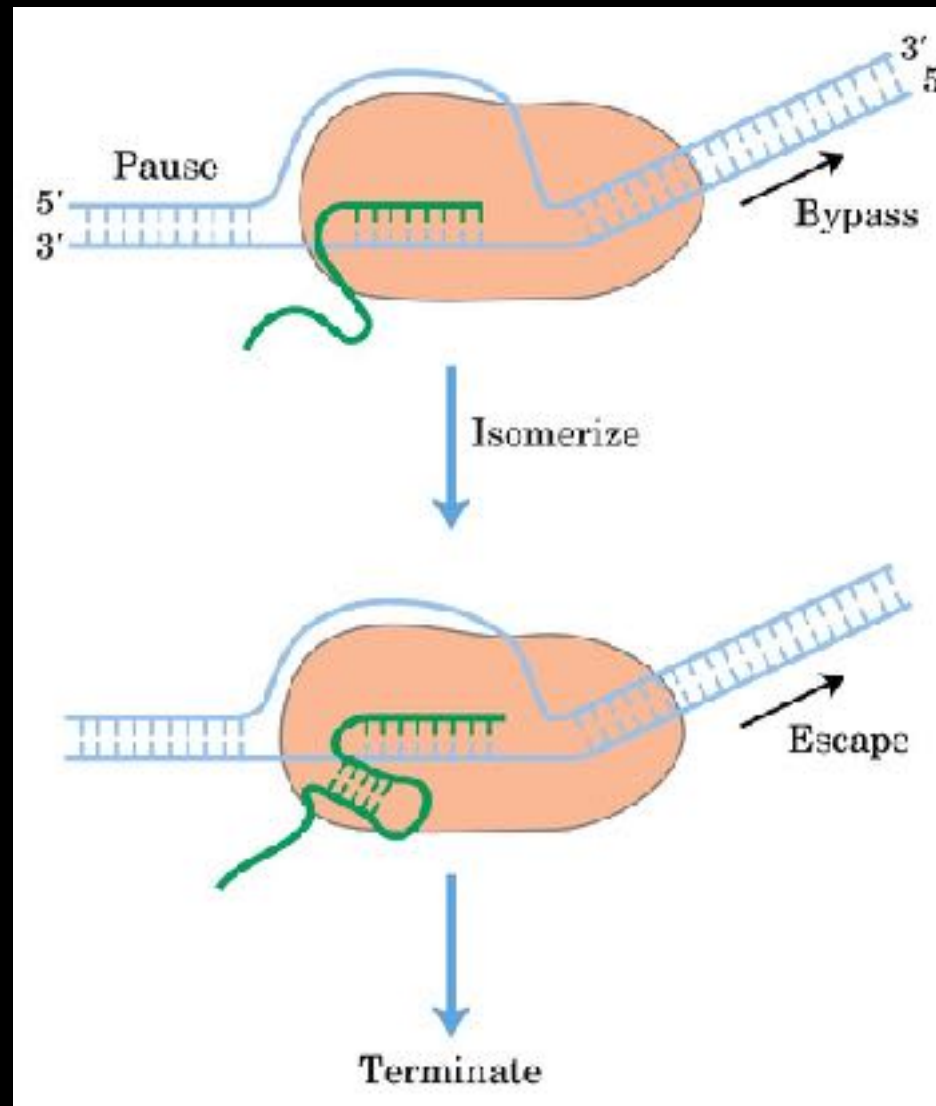
- Reconhecimento do promotor
- Complexo de iniciação
- *Clearance* do promotor
- Síntese de RNA



Transcrição: alongamento



Transcrição: terminação

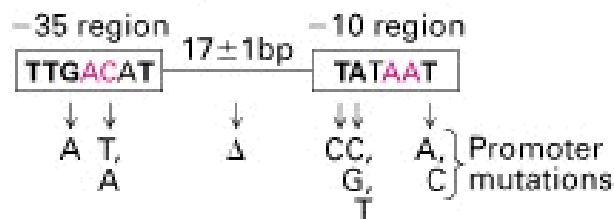


Promotor: estrutura

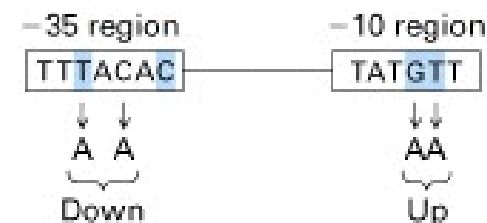
(a) Strong *E. coli* promoters

tyr tRNA	TCTCAACGTAACAC	TTTACAGCGGCG	••CGTCATTTGA	TATGATGC	•GCCCC	GCTTCCCGATAAGGG
rrn D1	GATCAAAAAAATAC	TTGTGCAAAAAA	••TTGGGATCCC	TATAATGCGCCTCC	GTTGAGACGACAACG	
rrn X1	ATGCATTTTTCCGC	TTGTCTTCTGA	••GCCGACTCCC	TATAATGCGCCTCC	ATCGACACGGCGGAT	
rrn (DXE) ₂	CCTGAAATTCAGGG	TTGACTCTGAAA	••GAGGAAAGCG	TAATATAC	•GCCAC	CTCGCGACAGTGAGC
rrn E1	CTGCAATTTTTCTA	TTGCGGCCTGCG	••GAGAACTCCC	TATAATGCGCCTCC	ATCGACACGGCGGAT	
rrn A1	TTTTAAATTTCTC	TTGTCAAGGCCGG	••AATAACTCCC	TATAATGCGCCACC	ACTGACACGGGAACAA	
rrn A2	GCAAAAAATAAATGC	TTGACTCTGTAG	••CGGGAAGGCG	TATTATGC	•ACACC	CGCGCCGCTGAGAA
λ P _R	TAACACCGTGCGTG	TTGACTATTTTA	•CCTCTGGCGGTG	ATAATGG	•TTGC	ATGTACTAAGGAGGT
λ P _L	TATCTCTGGCGGTG	TTGACATAAATA	•CCTCTGGCGGTG	ATACTGA	•GCAC	ATCAGCAGGACGCAC
T7 A3	GTGAAACAAAACGG	TTGACAACATGA	•AGTAAACACGG	TACGATGT	•ACCAC	ATGAAACGACAGTGA
T7 A1	TATCAAAAAGAGTA	TTGACTTAAAGT	•CTAACCTATAGG	ATACTTA	•CAGCC	ATCGAGAGGGACACG
T7 A2	ACGAAAAACAGGTA	TTGACAACATGA	AGTAACATGCAG	TAAGATAC	•AAATC	GCTAGGTAACACTAG
fd VIII	GATACAAATCTCCG	TTGTACTTTGTT	••TCGCGCTTGG	TATAATCG	•CTGGG	GGTCAAAGATGAGTG
		-35		-10		+1 →

(b) Consensus sequences of σ^{70} promoters



(c) *Lac* promoter sequence



RNA polimerases de eucariotos

- RNA polimerase I
 - rRNA
- RNA polimerase II
 - mRNA
 - Alguns snRNAs
- RNA polimerase III
 - tRNA
 - Alguns snRNAs
 - scRNA
 - rRNA 5S

Transcrição: RNA polimerase II

RNA polymerase II transcription machinery

pol II	DNA unwinding RNA polymerization proofreading
GTFs	promoter recognition
Mediator	response to regulators

General transcription factors

TFII	subunits	mass (kD)	similarity to human
B	1	37	52%
D	1	21	81
	TBP		
	TAFs	10	662
E	2	109	53
F	2	159	51
H	9	570	62

Yeast and human pol II are virtually identical

12 Subunits

514 kDa

53% identity

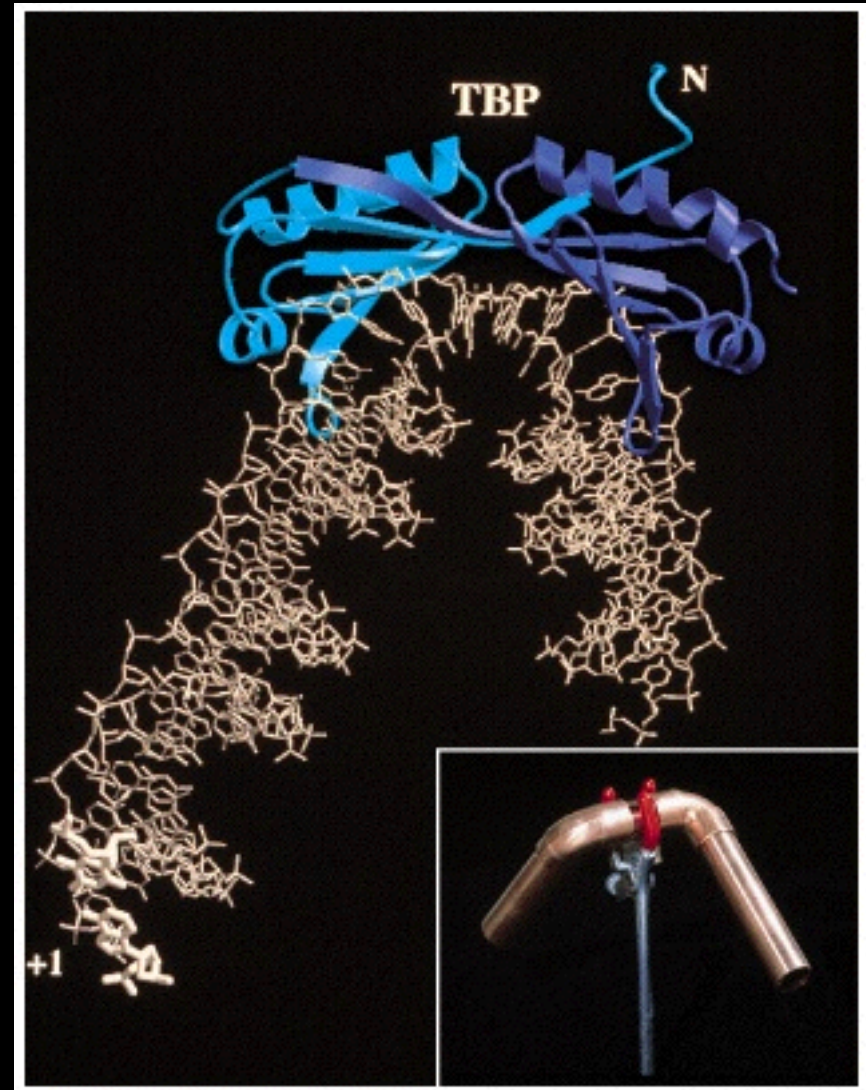
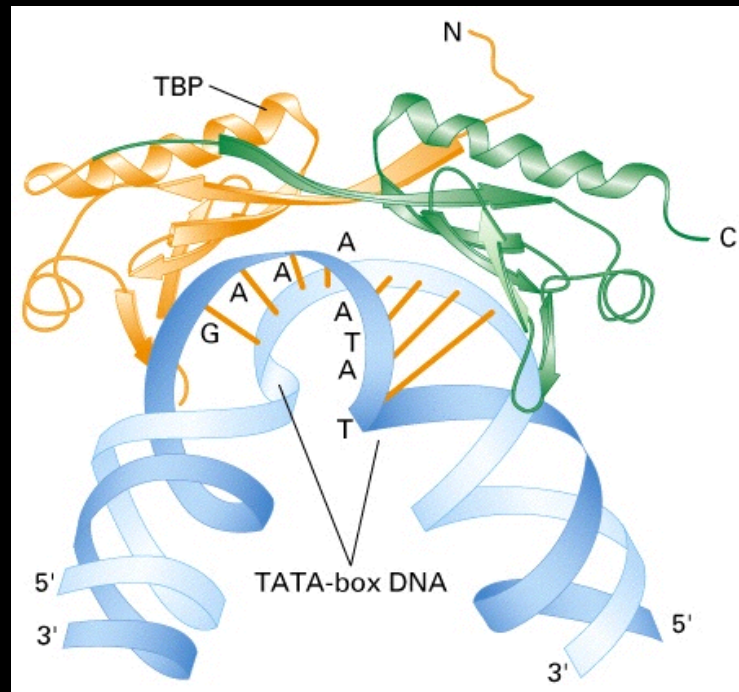
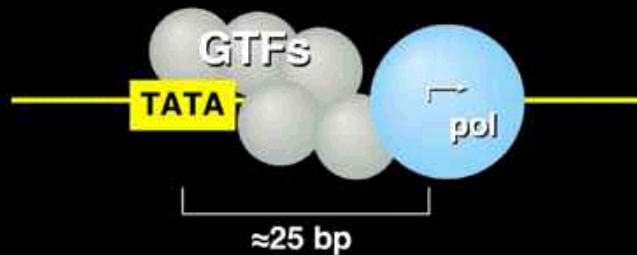
Subunits can be replaced

RNA polymerase II transcription machinery

	subunits	mass (kD)
pol II	12	513
GTFs	25	1558
Mediator	20	1003
	57	3074

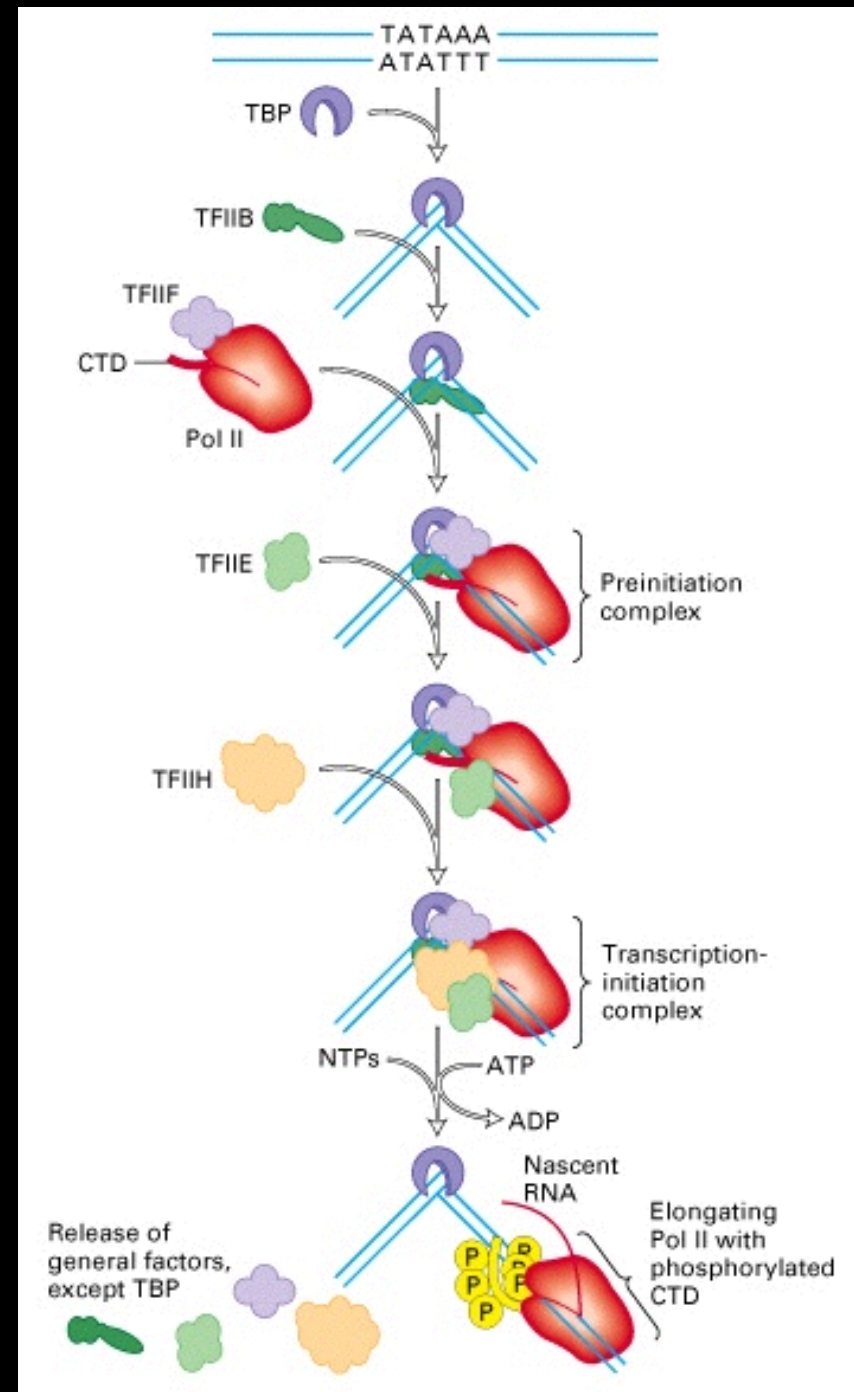
RNA polimerase II: iniciação

General transcription factors (GTFs) enable promoter recognition and initiation



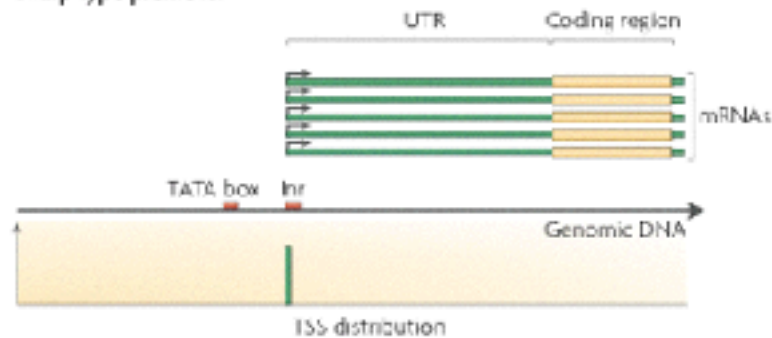
Iniciação: pol II

- Reconhecimento do promotor
- Fatores gerais de transcrição
- Montagem do complexo de iniciação
- *Clearance* do promotor
- Síntese de RNA

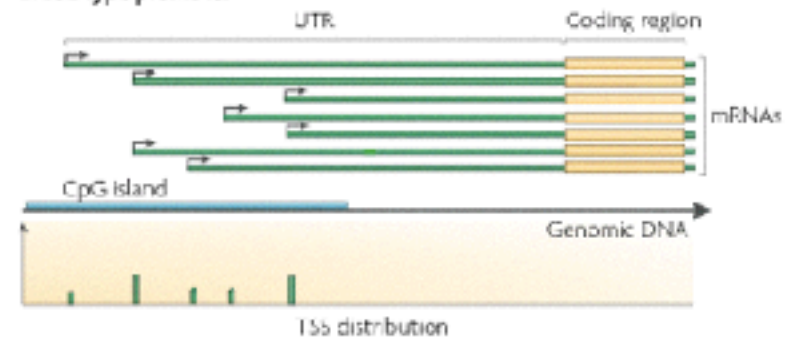


Tipos de promotor

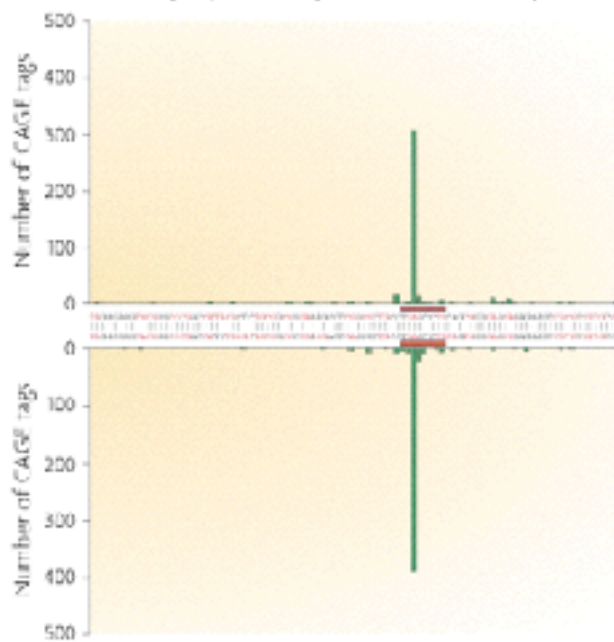
Aa
Sharp type promoter



Ab
Broad type promoter

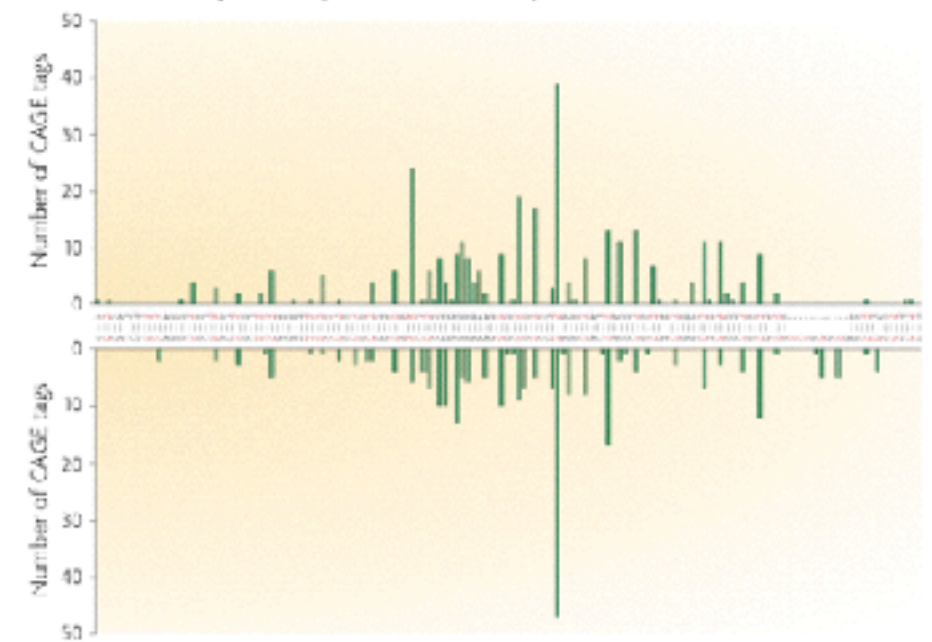


Ba Mouse *Syn1* promoter (TC id: T0XR0125C39F)



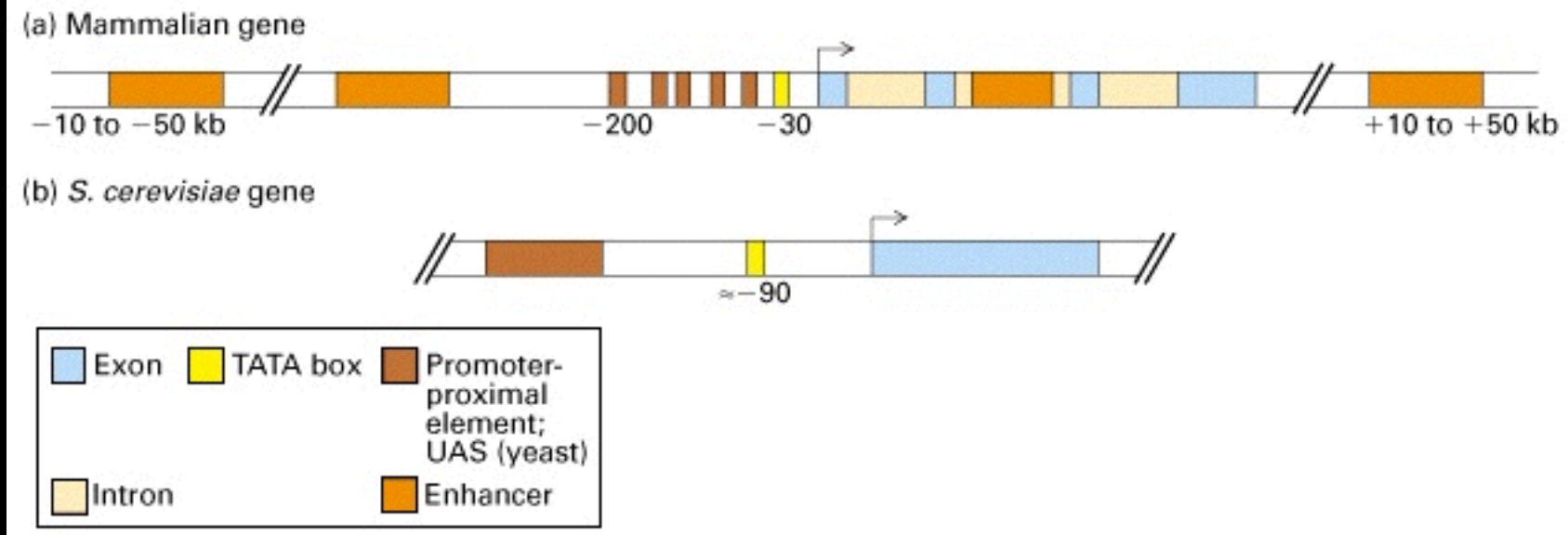
Human *SYN1* promoter (TC id: T0XR02D0C1B6)

Bb Mouse *Pura* promoter (TC id: T18F0230753D)

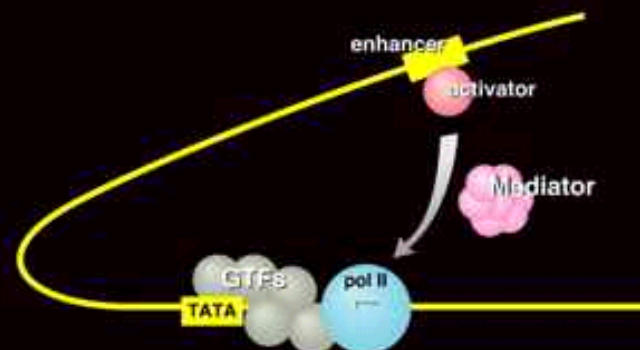


Human *PURA* promoter (TC id: T05F065033E0)

Pol II: elementos de regulação

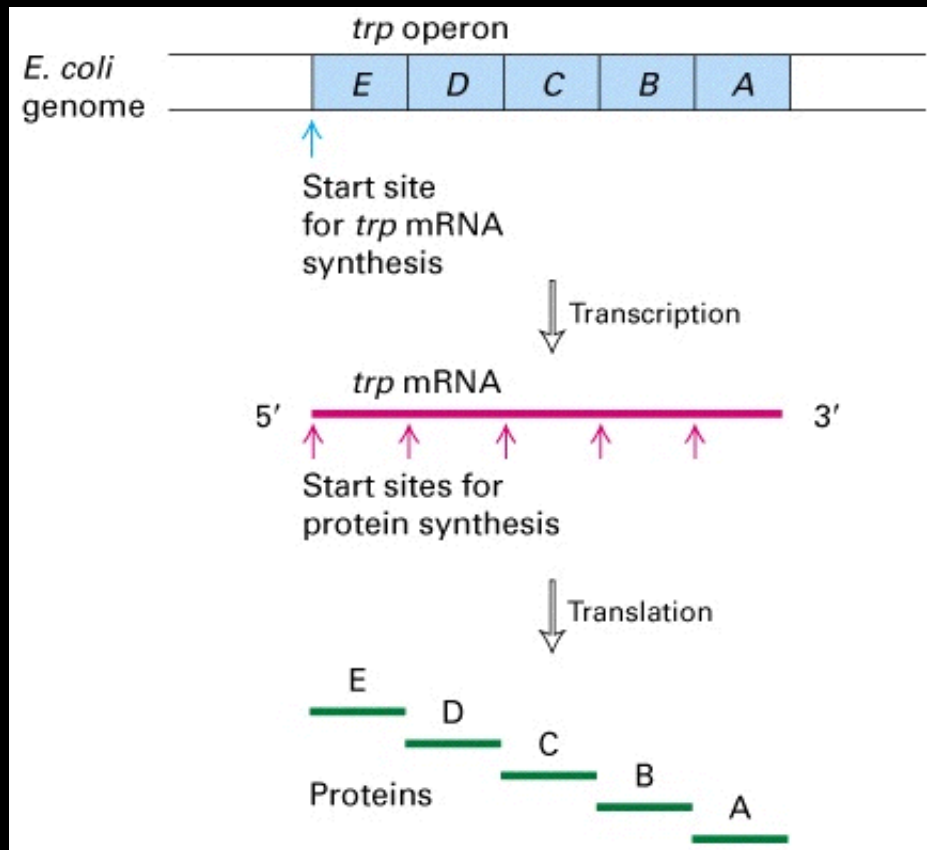


Regulation of RNA polymerase II transcription

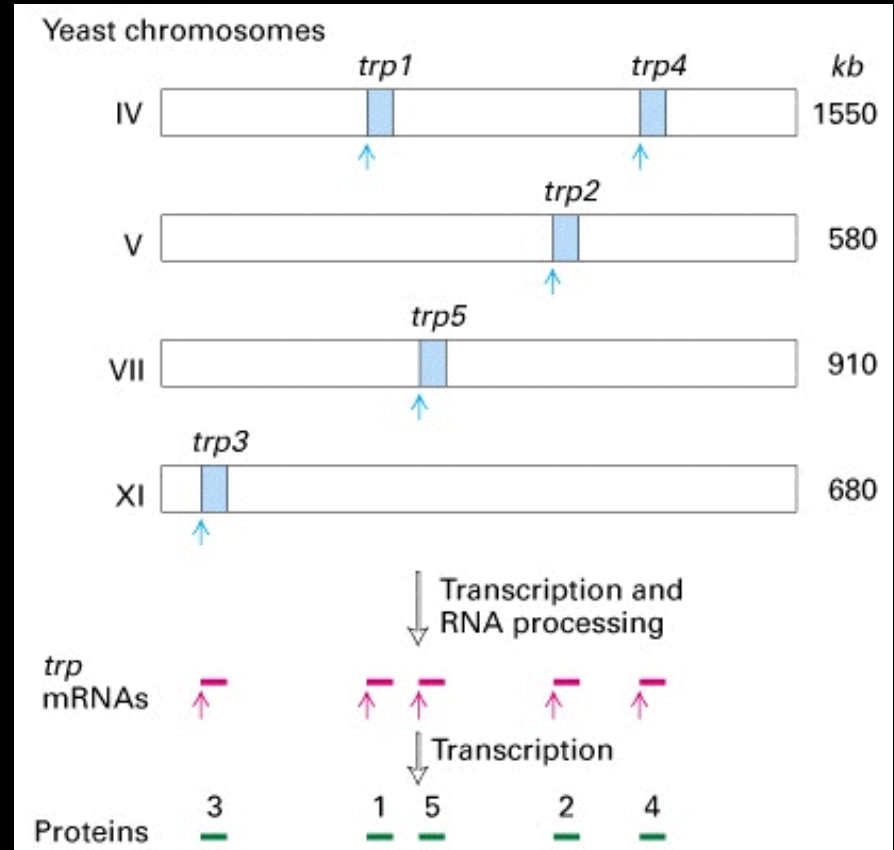


Unidades transcripcionais

Procariotos



Eucariotos



Transcrição: animação

