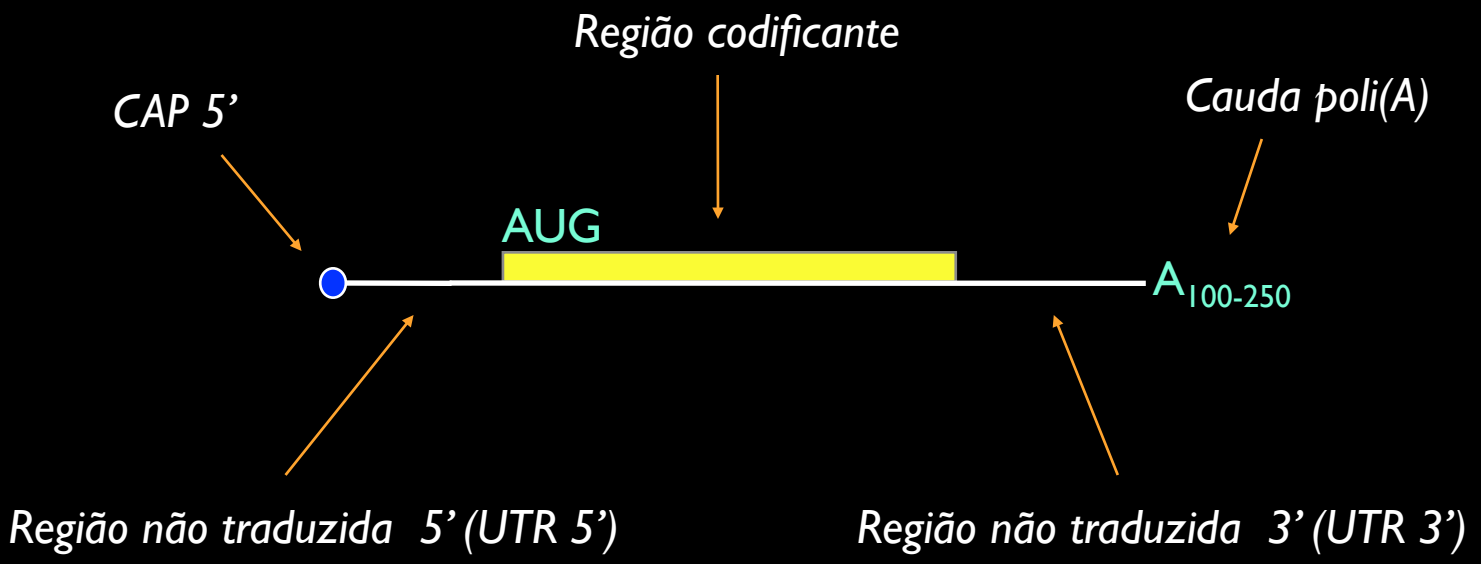
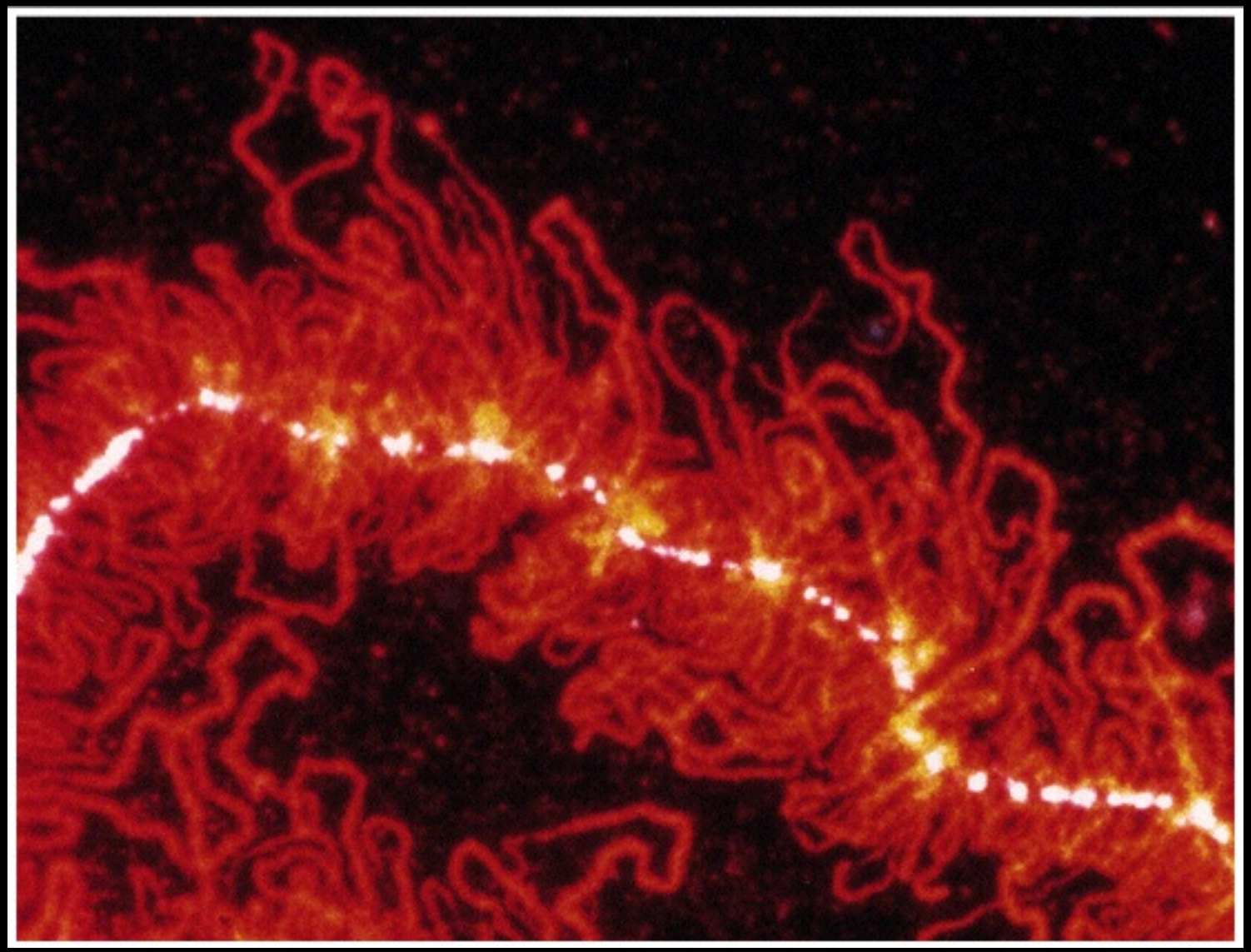
Processamento de RNA

mRNA

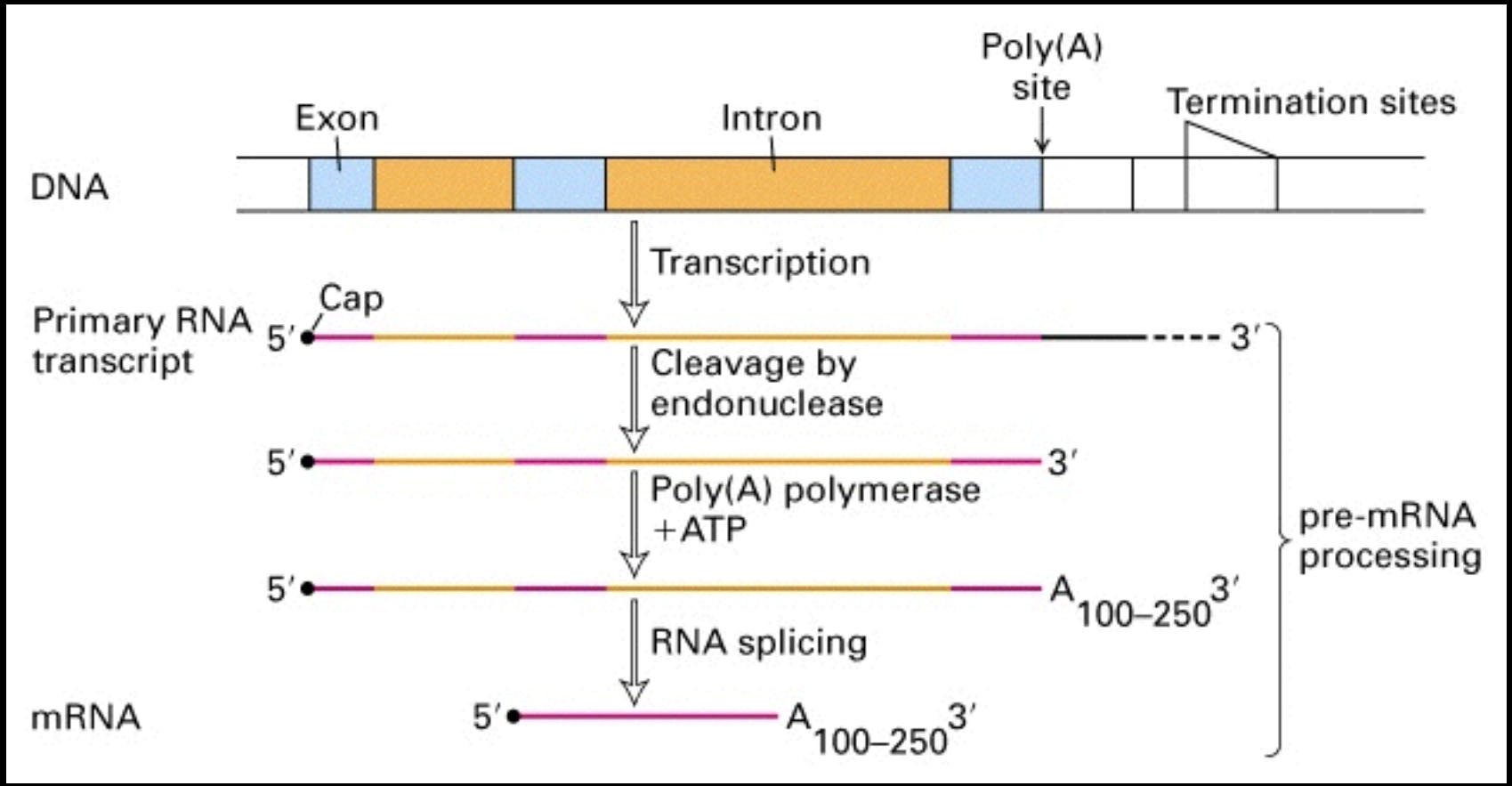
Eucariotos



RNA nascente e RNPs

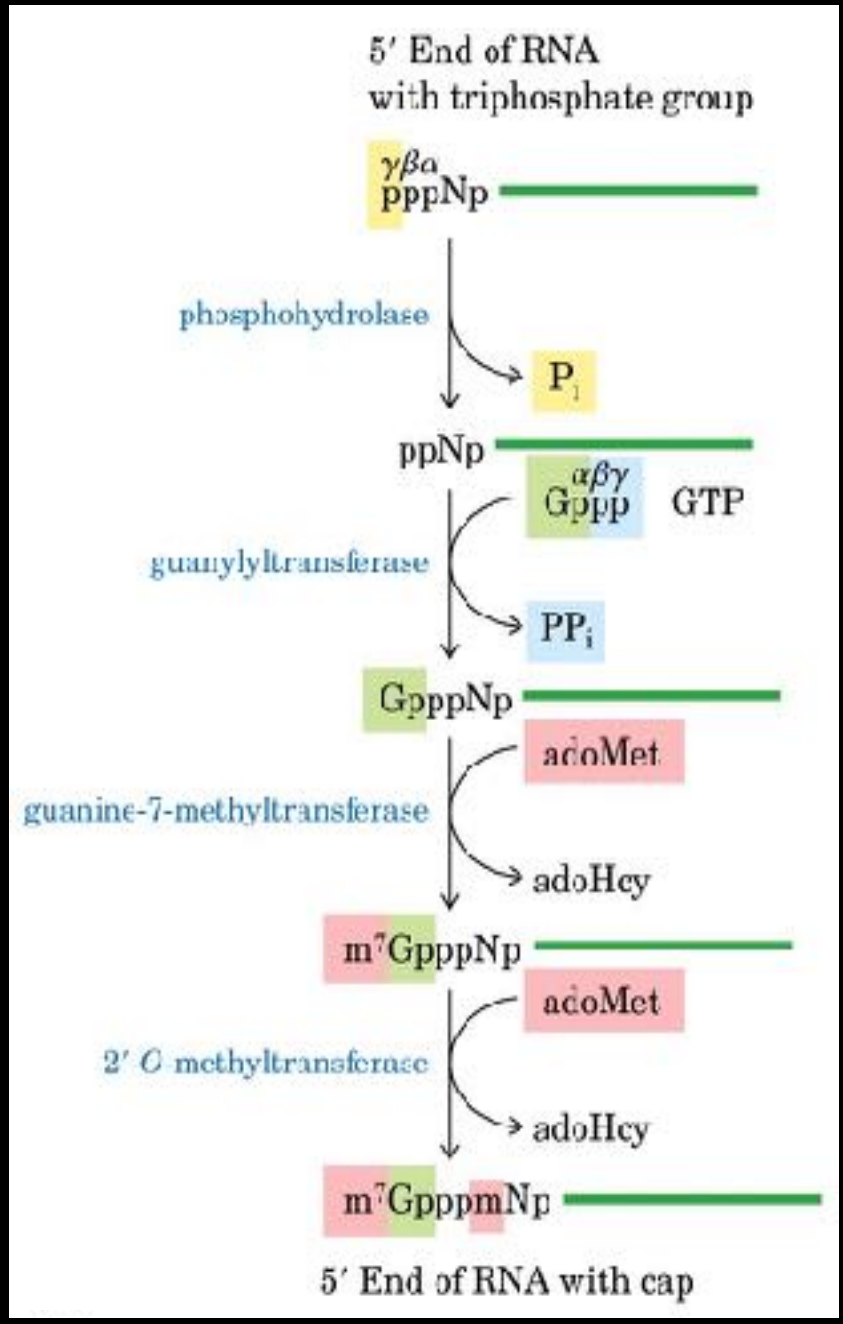


Processamento do mRNA

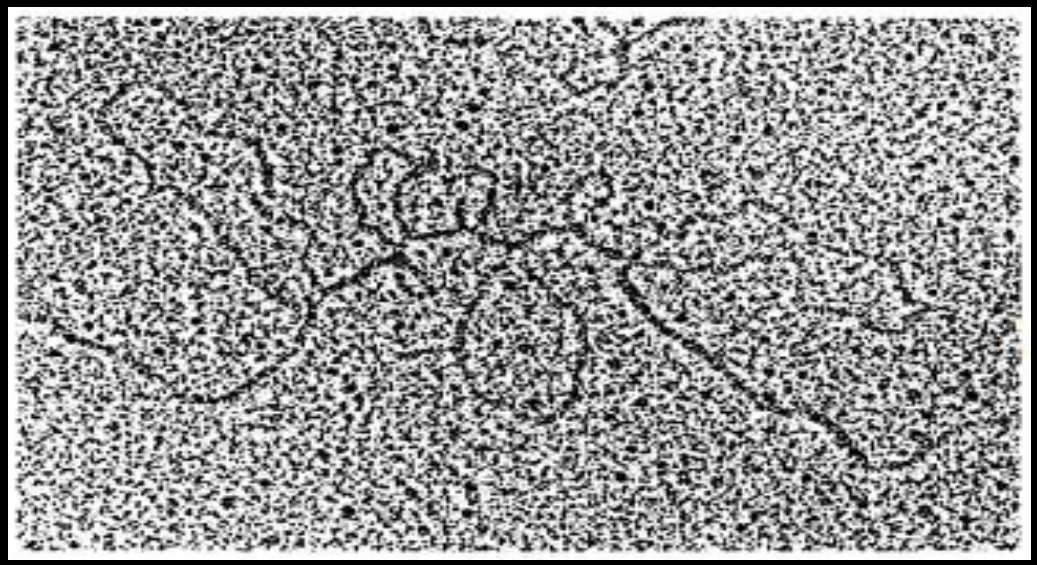


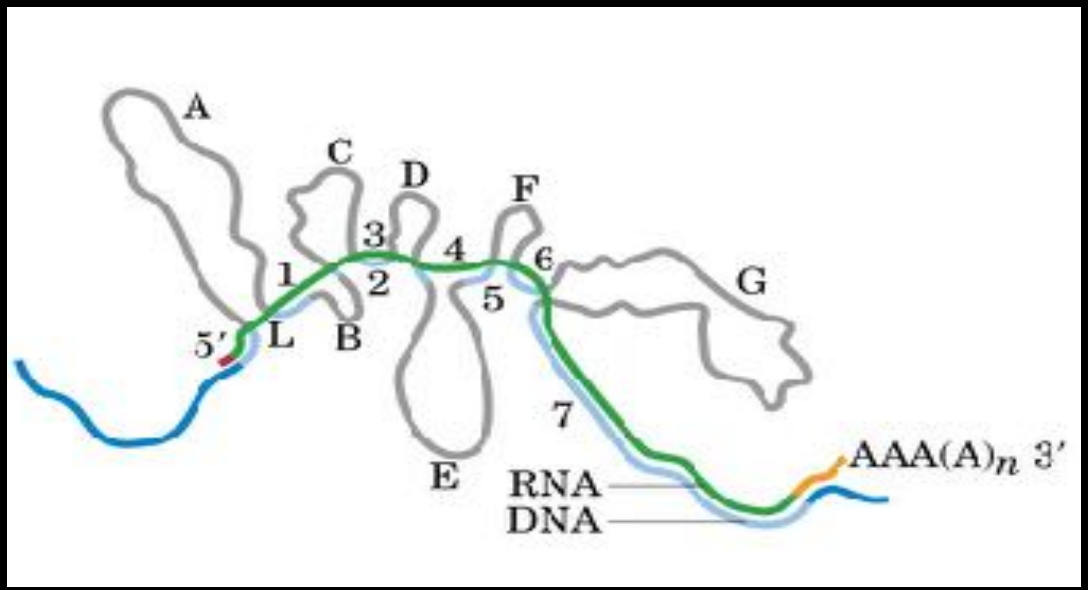
Adição do CAP 5’

- Remoção do fosfato 5’
- Adição de GTP 5’ - 5’
- Metilação da guanina 5’
- Metilação de nucleotídeos adicionais

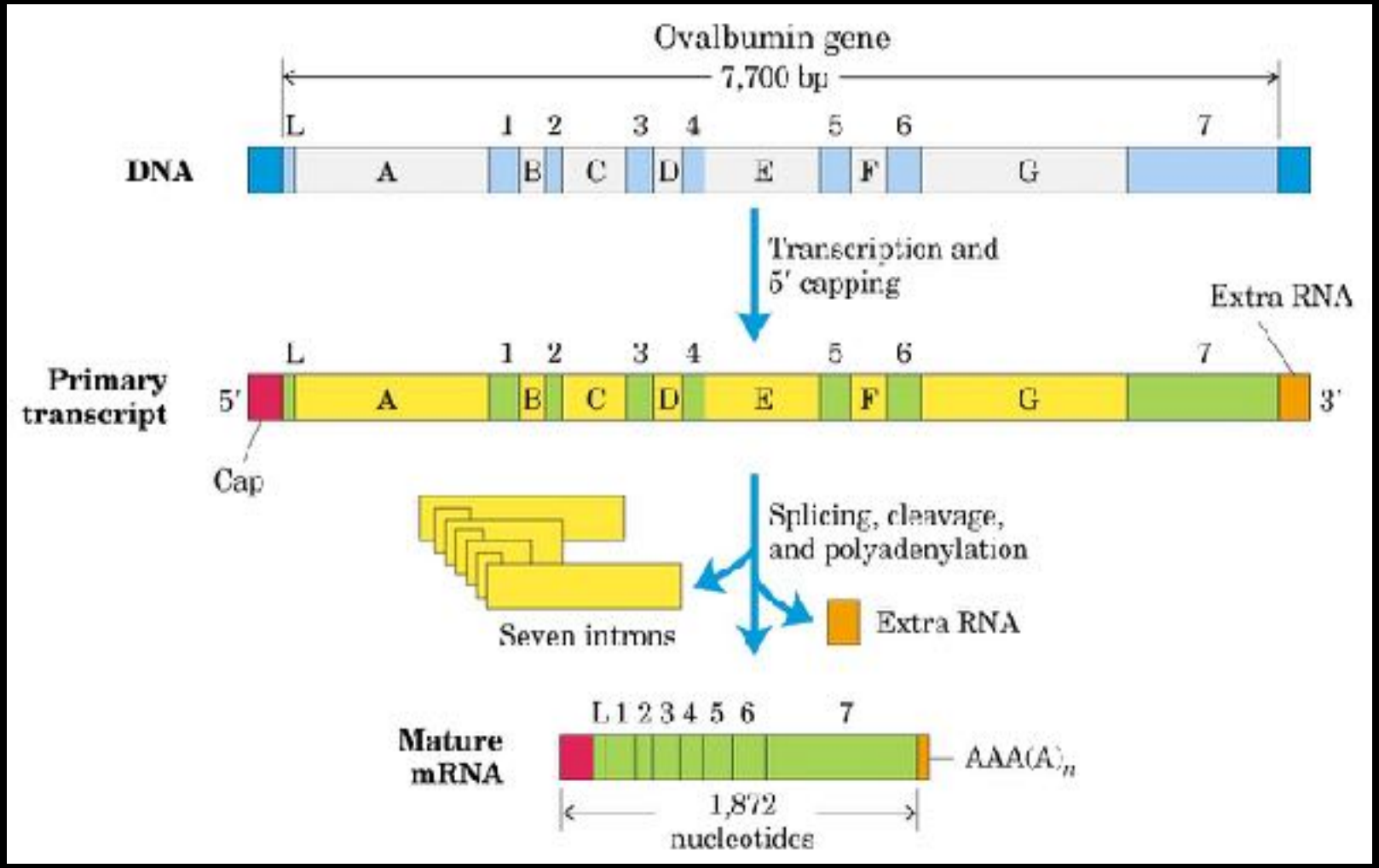


Splicing



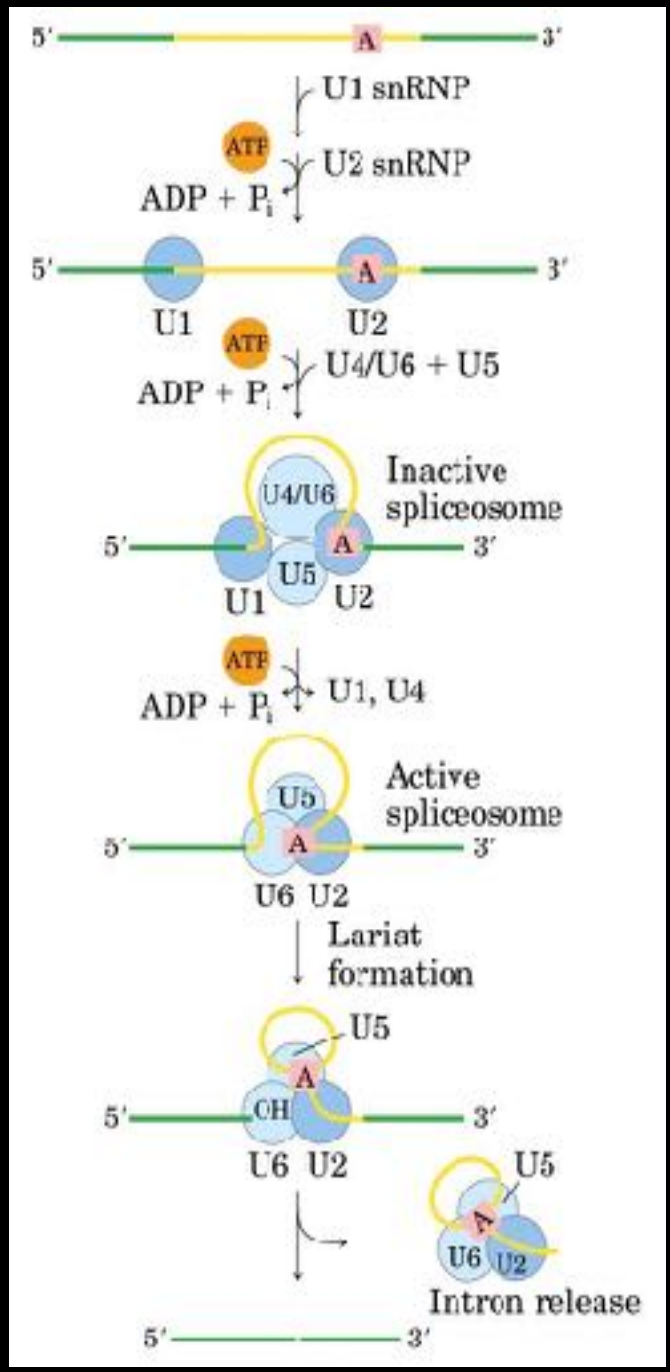


Splicing

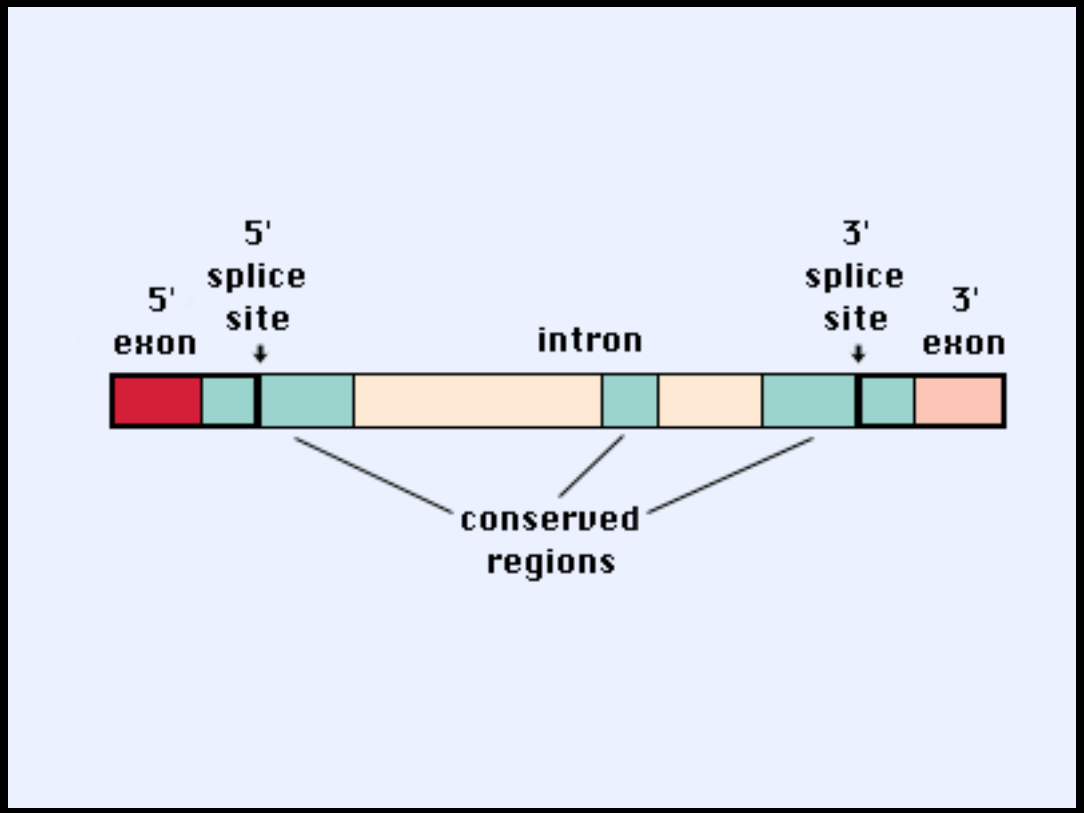

Ovalbumin gene
7,700 bp
L
1
2
3
4
5
6
7
DNA
A
B
C
D
E
F
G
Transcription and
5′ capping
Extra RNA
Primary
transcript
5′
3′
Cap
Splicing, cleavage,
and polyadenylation
Seven introns
Extra RNA
Mature
mRNA
AAA(A)n
1,872
nucleotides

Splicing: mecanismo

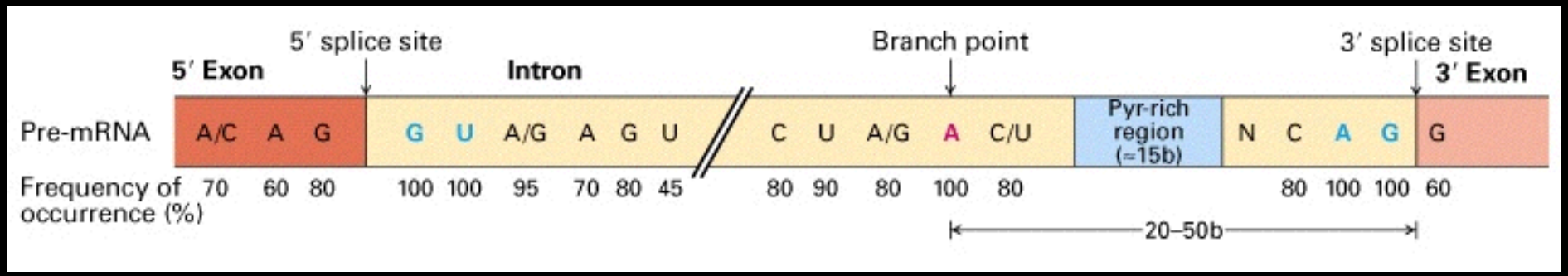
- Reconhecimento:
  - Junção exon-intron
  - Ponto de ramificação
  - Junção intron-exon
- Primeira reação de transesterificação
- Segunda reação de transesterificação
- Liberação do intron



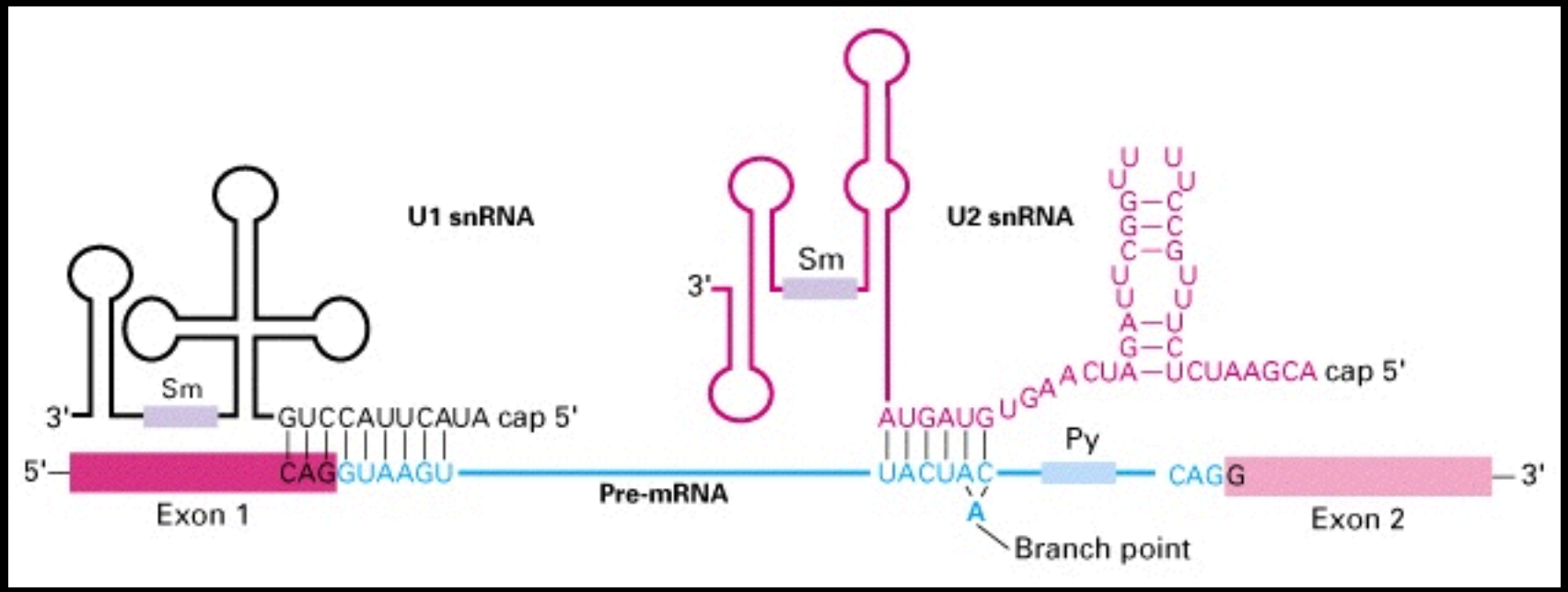
Splicing: animação



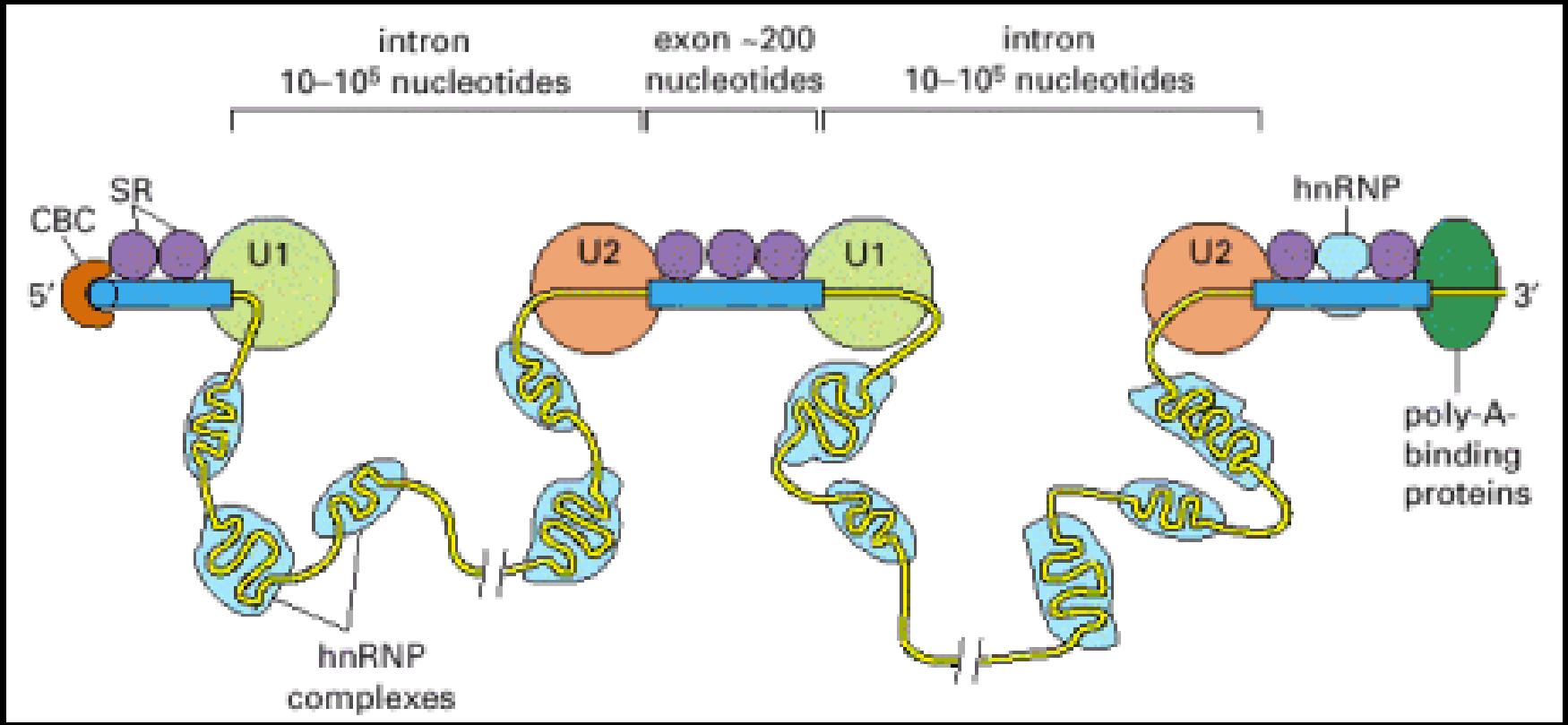
Splicing: sequências consenso de levedura



Reconhecimento de introns

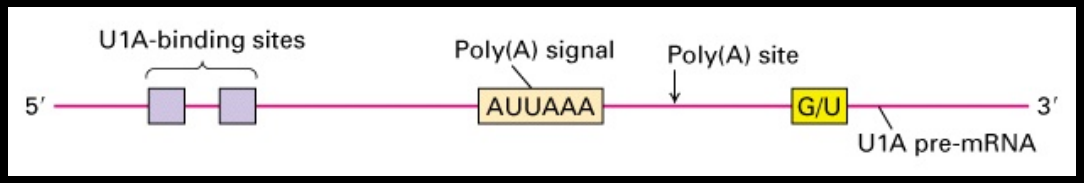


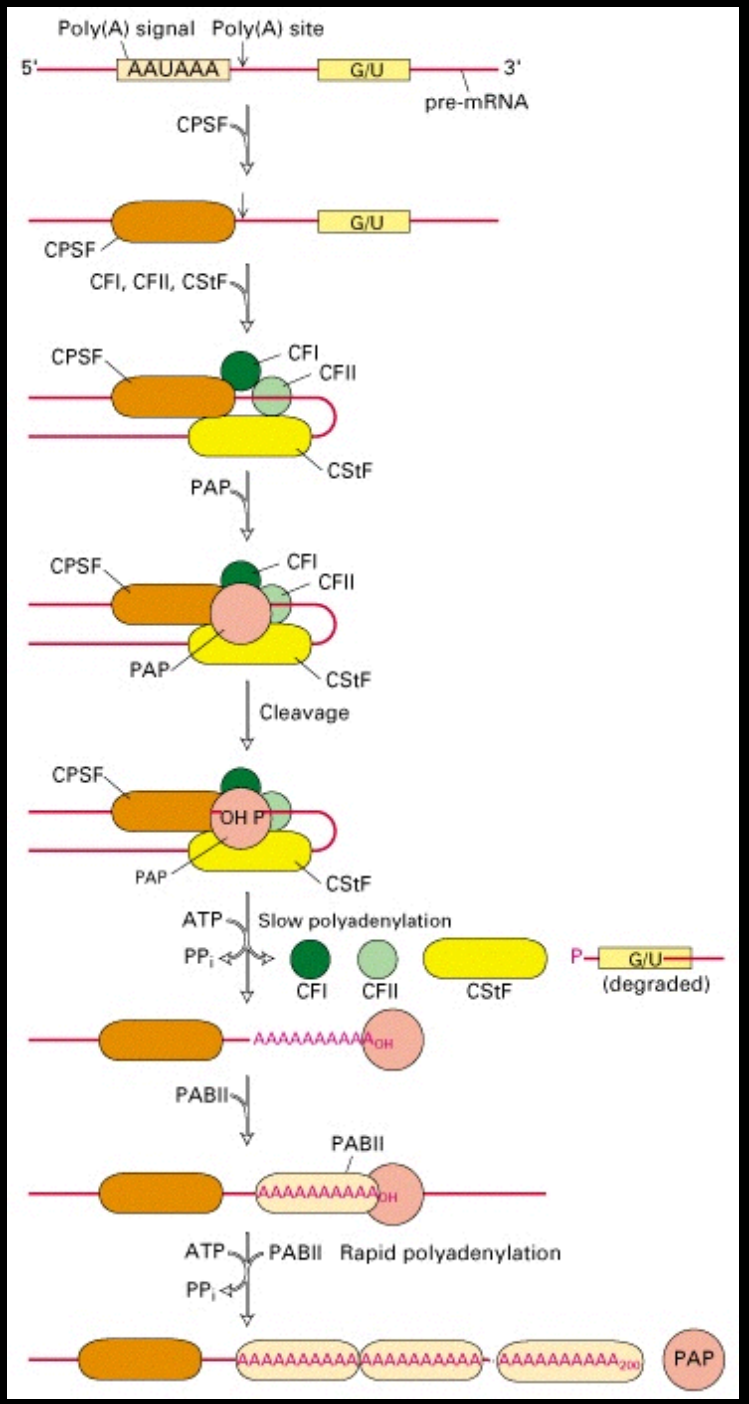
Splicing: reconhecimento de exons



Adição de cauda poli(A)

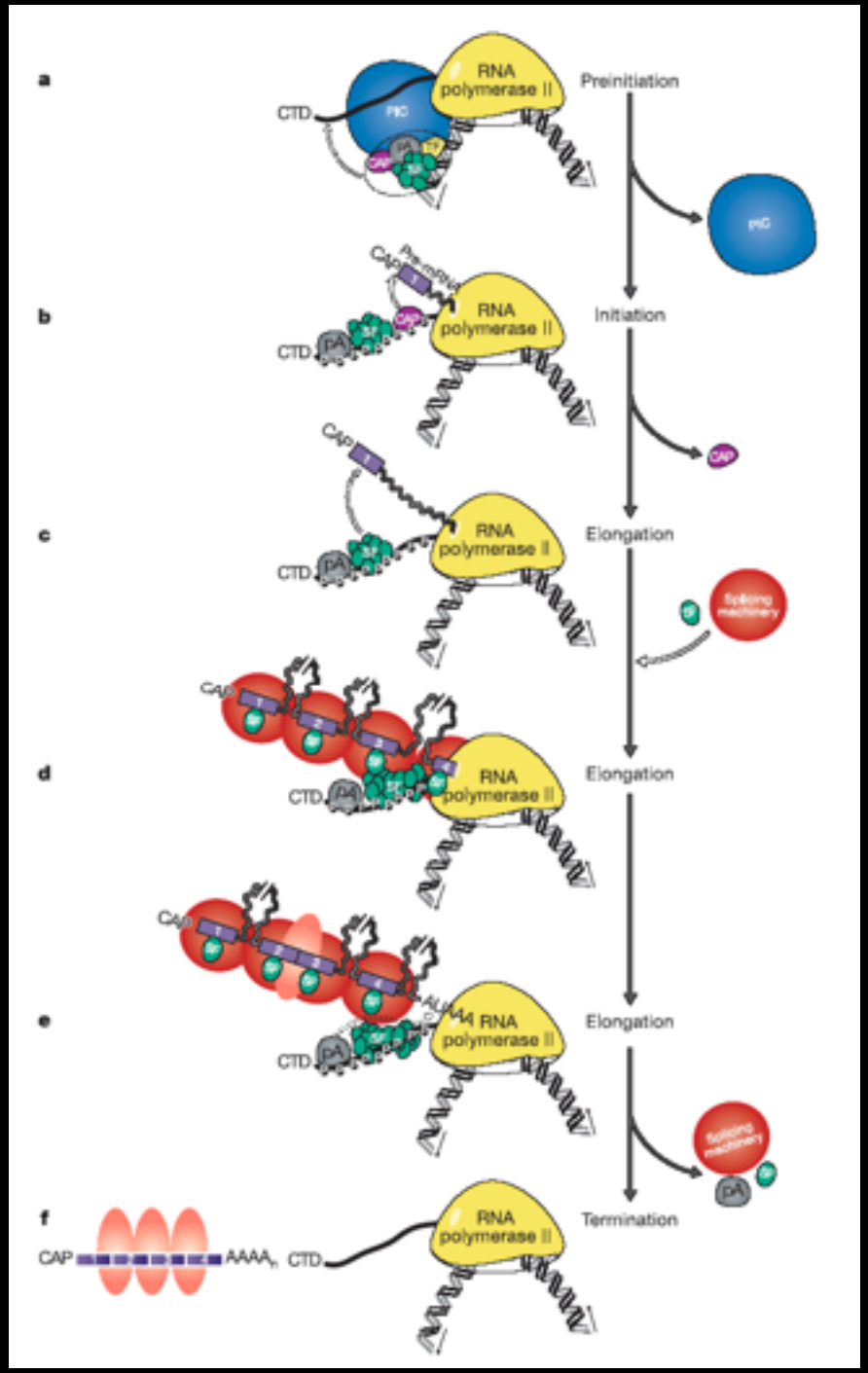
- Reconhecimento do sinal de poliadenilação
- Clivagem do RNA
- Síntese de poli(A) na extremidade 3’



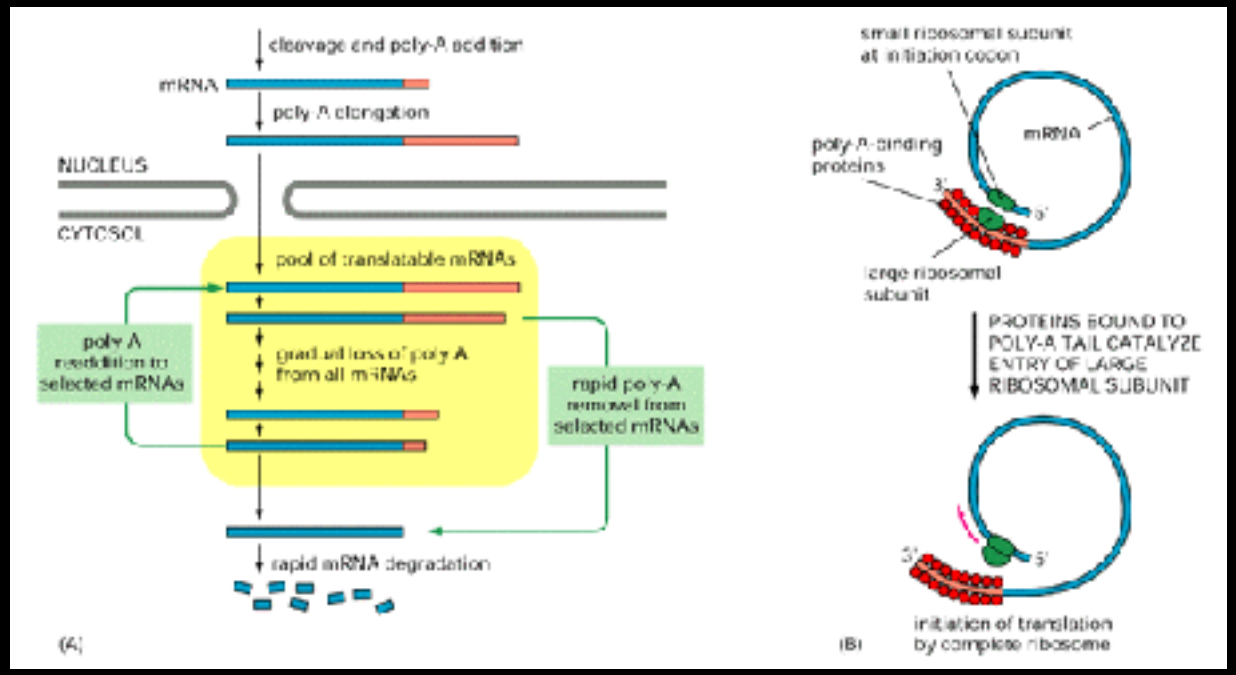


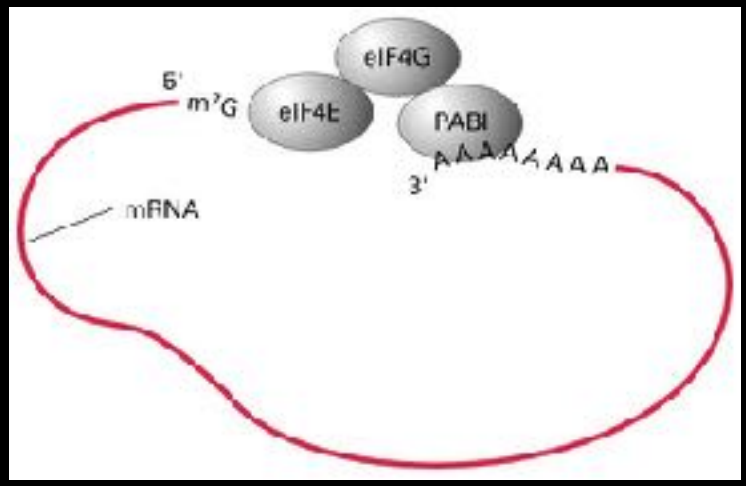
Expressão gênica

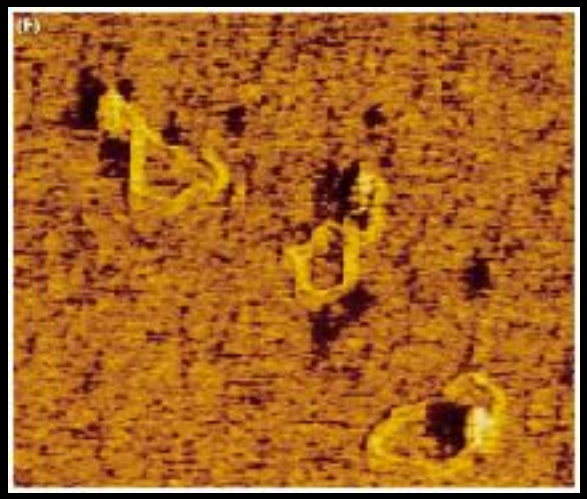
- Modelo de ‘fábrica’
- Transcrição e processamento simultaneos
- Acoplamento e coordenação



Cauda poli(A): meia-vida do mRNA







Meia-vida dos mRNAs

TABLE 11-1 Half-Lives of Messenger RNAs

Cell	Cell Generation Time	mRNA Half-Lives*	
		Average	Range Known for Individual Cases
Escherichia coli	20–60 min	3–5 min	2–10 min
Saccharomyces cerevisiae (yeast)	3 h	22 min	4–40 min
Cultured human or rodent cells	16–24 h	10 h	30 min or less (histone and *c-myc* mRNAs) 0.3–24 h (specific mRNAs of cultured cells)

*For information on specific mRNA half-lives for *E. coli*, see A. Hirashima, G. Childs, and M. Inouye, 1973, *J. Mol. Biol.* **119**: 373; for yeast, see L.-L. Chia and C. McLaughlin, 1979, *Mol. Gen. Genet.* **170**:137; and for mammalian cells, see M. M. Harpold, M. Wilson, and J. E. Darnell, 1981, *Mol. Cell Biol.* **1**:188.

Integração da expressão gênica