
METABURG
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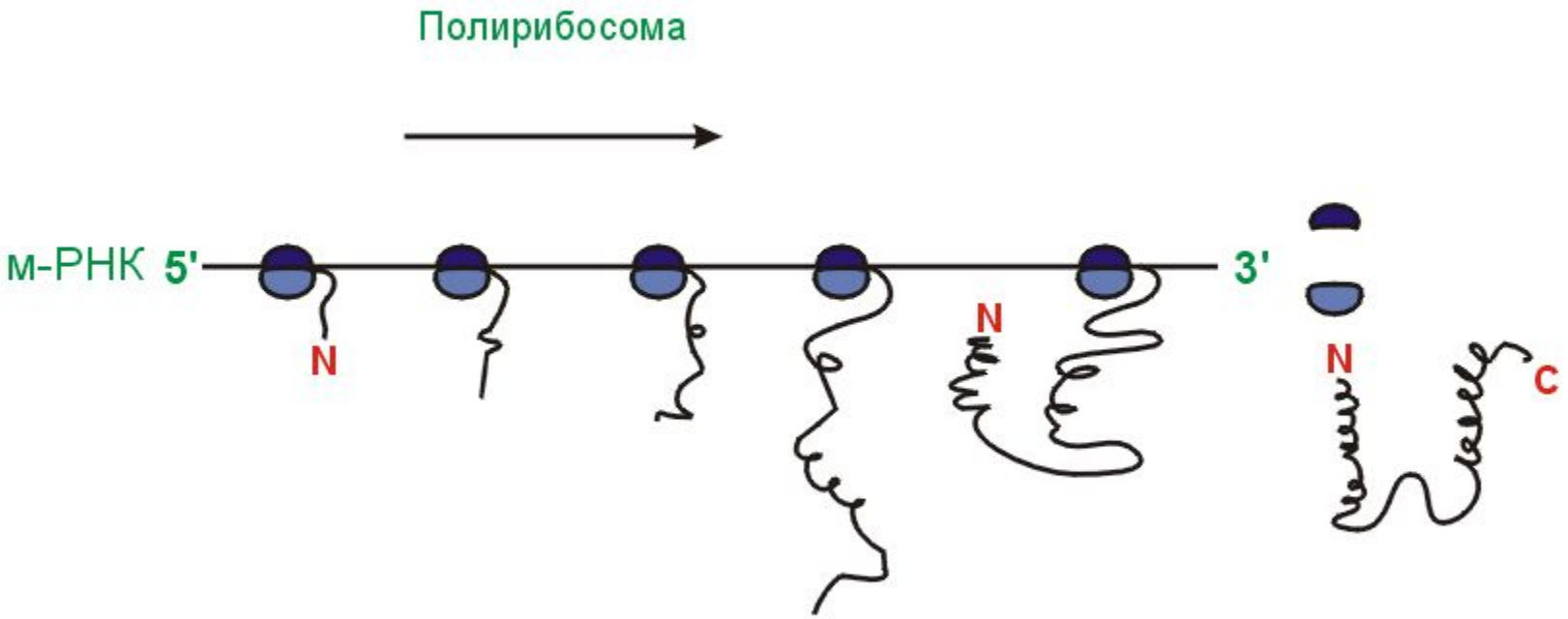
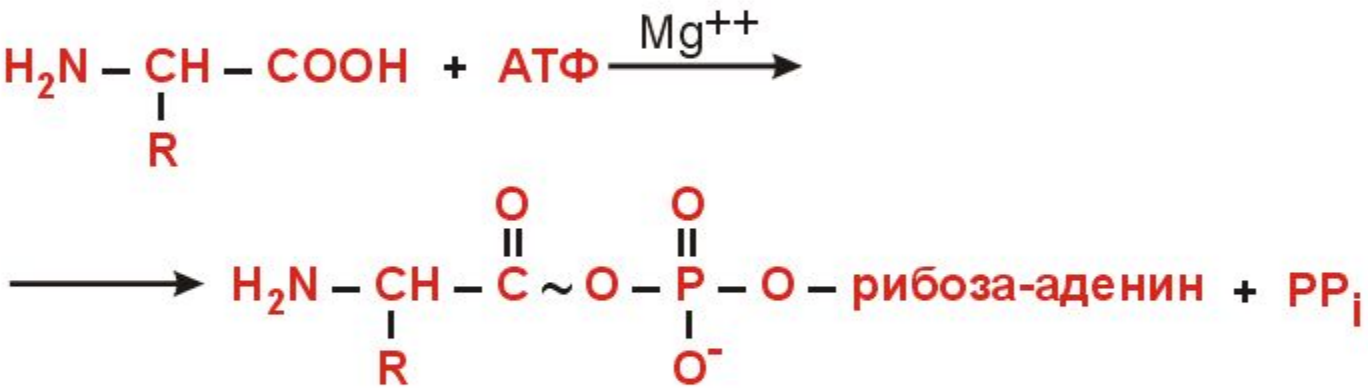
2004

Трансляция



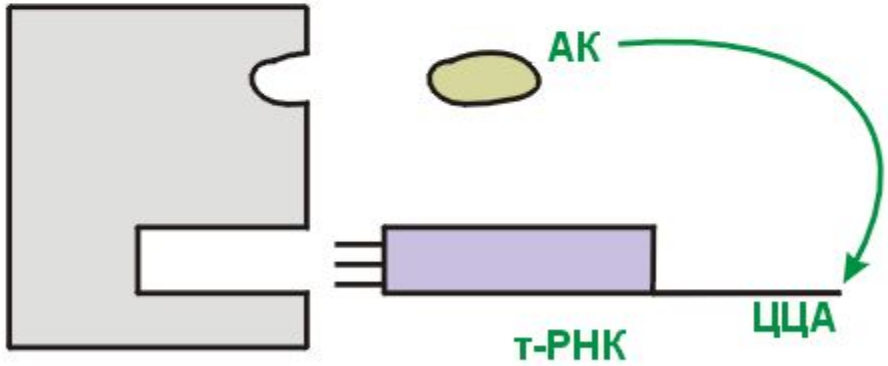
Активирование аминокислоты

1) 

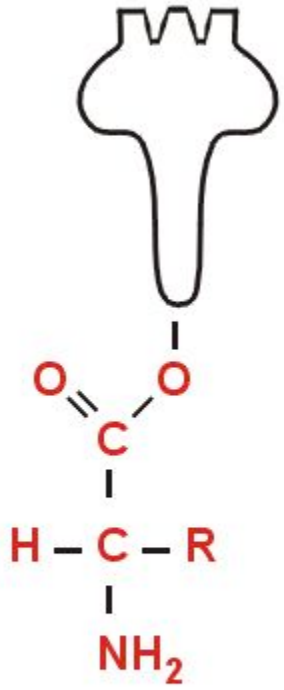
Активирование аминокислоты

2) Аминоацил – АМФ + т-РНК $\xrightarrow{Mg^{++}}$

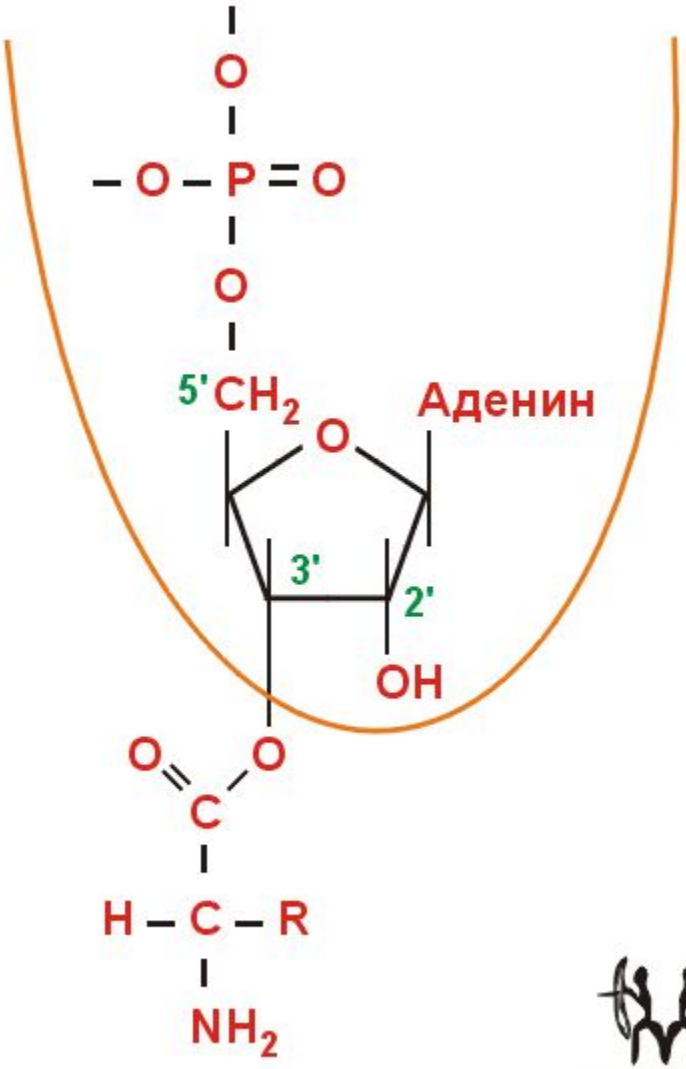
$\longrightarrow$ аминоацил – т-РНК + АМФ



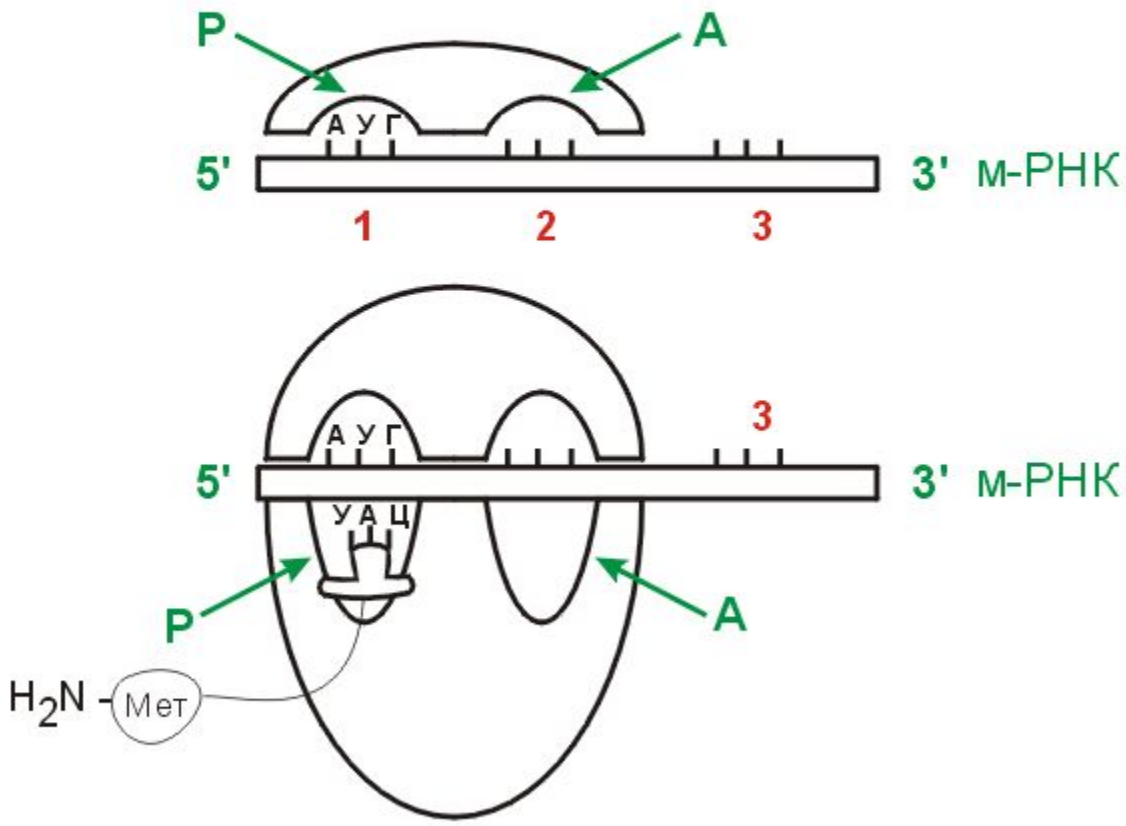
Аминоацил-т-РНК-
-синтетаза



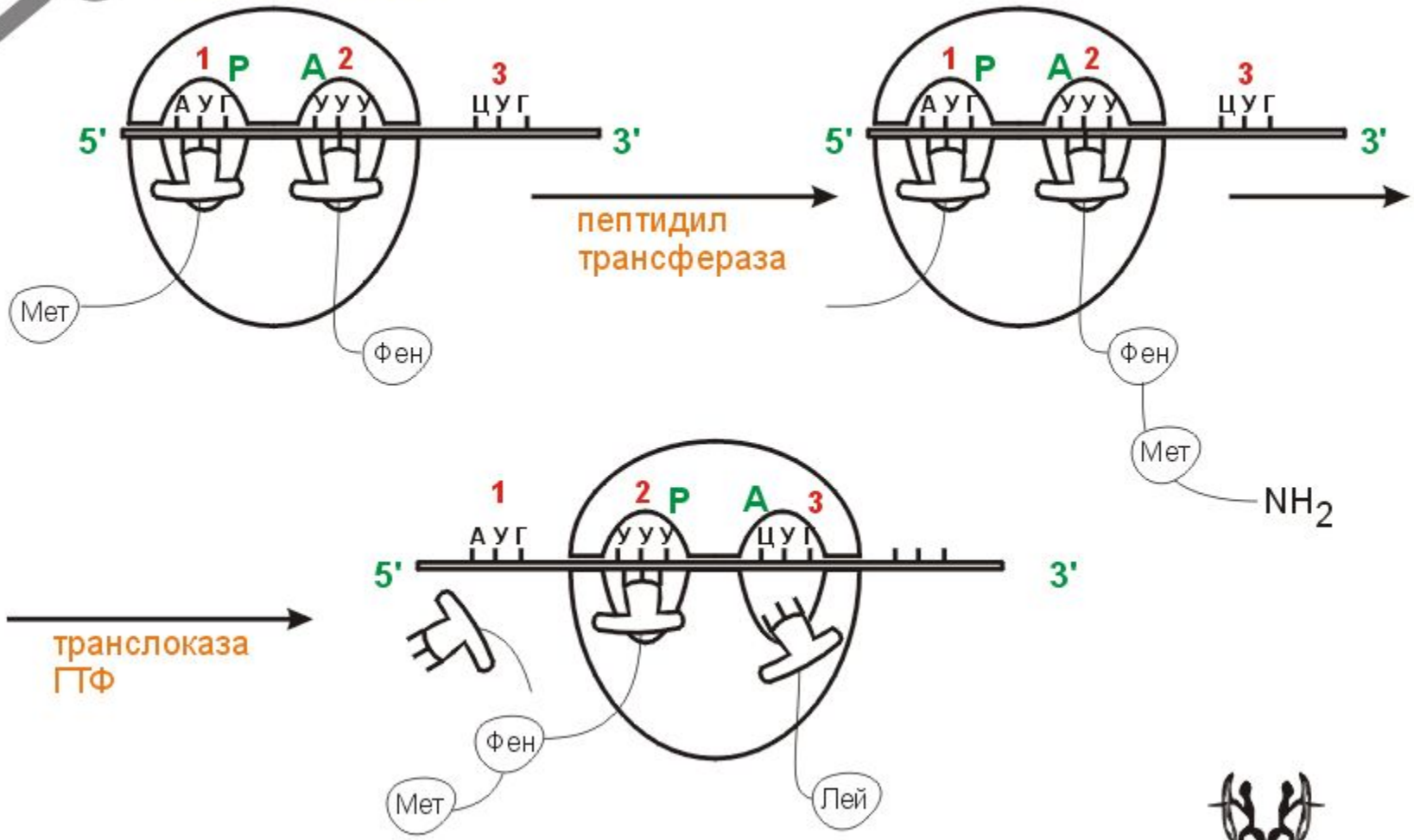
Аминоацил-т-РНК



Инициация



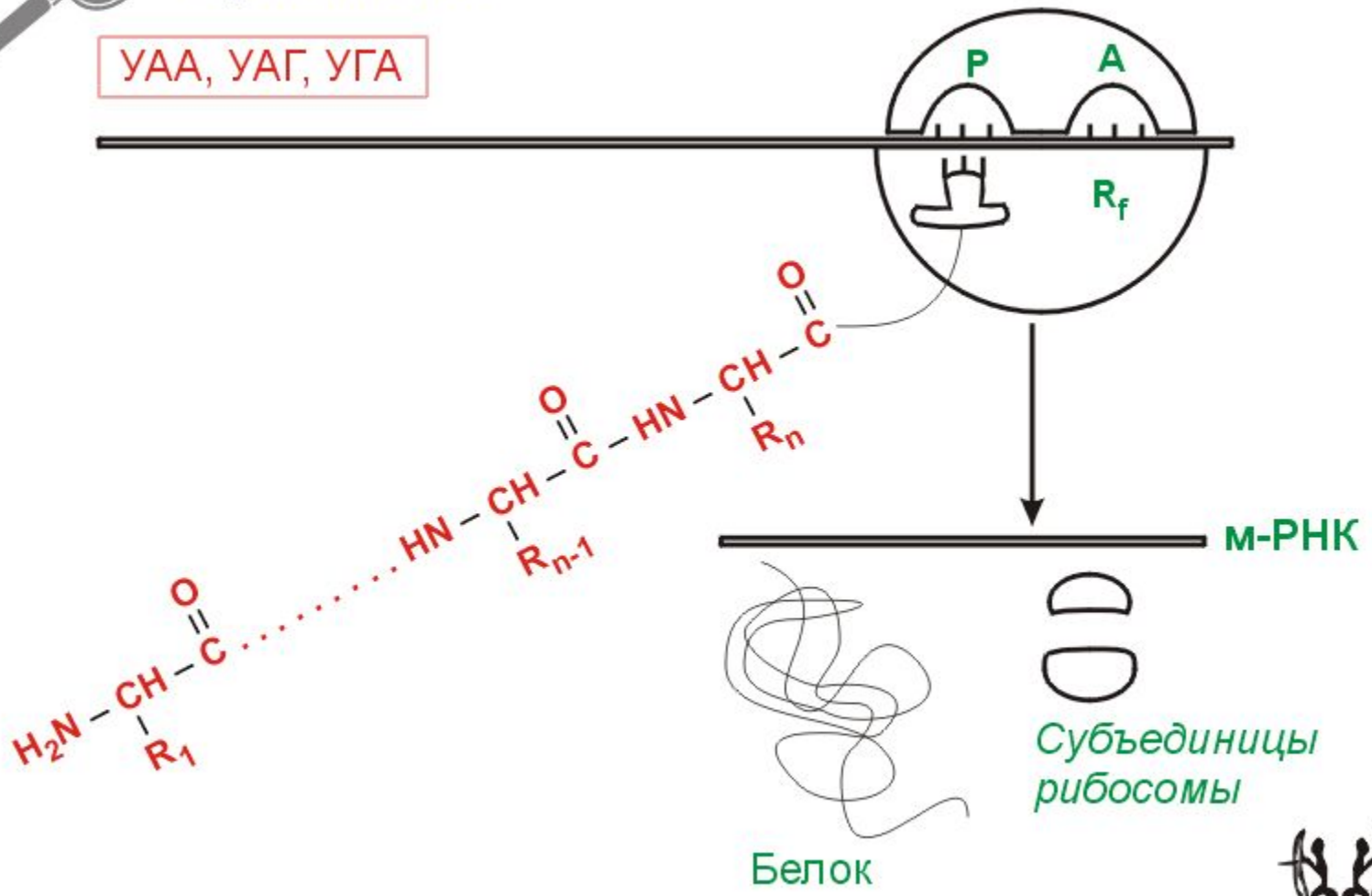
Элонгация



METABURG media

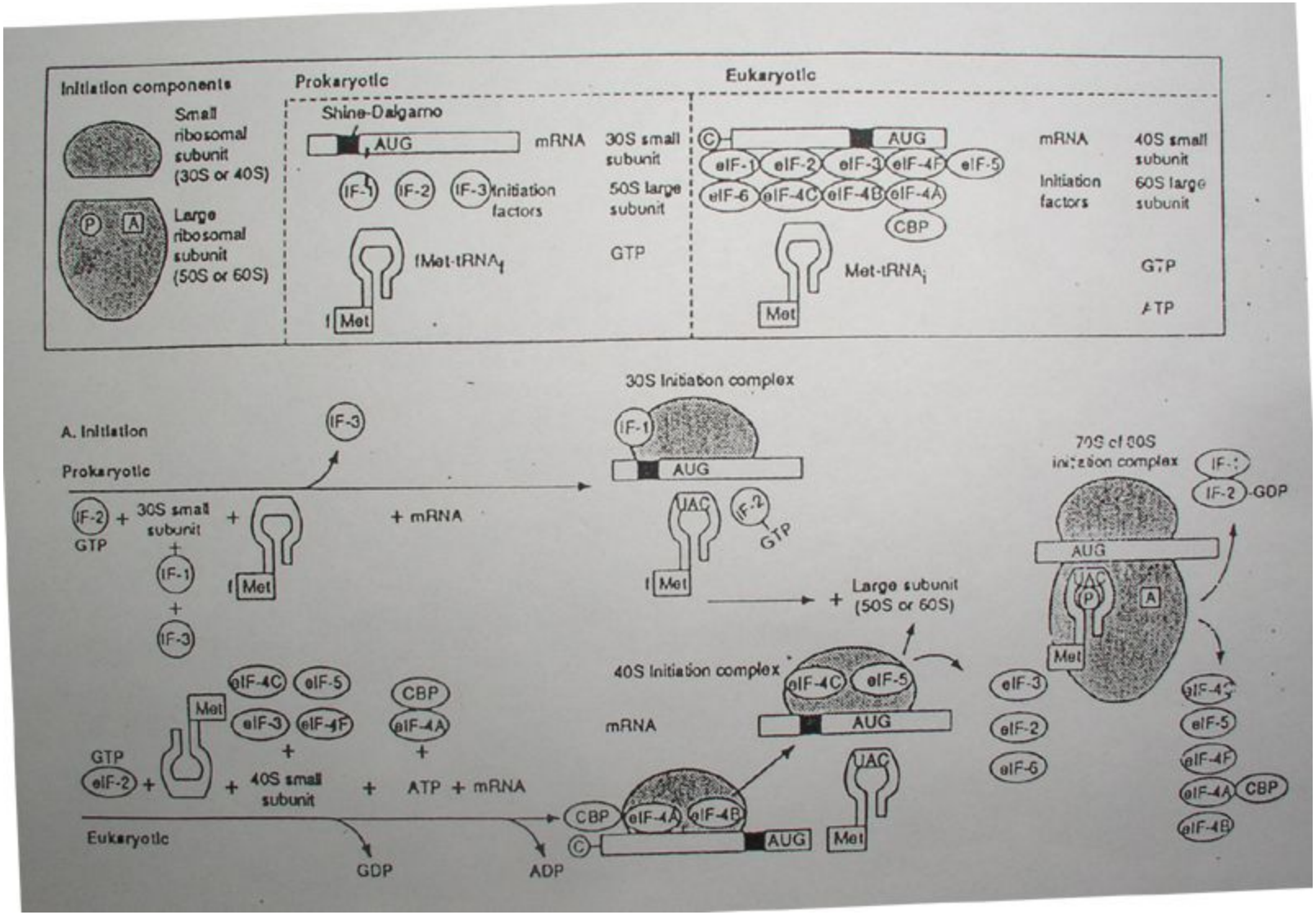
Терминация

УАА, УАГ, УГА



Необходимые компоненты трансляции

	Прокариоты	Эукариоты
Инициация	IF-1, IF-2, IF-3	eIF-№ (или № *буква*)
Элонгация	EF-Tu, EF-Ts, EF-G	eEF-1α, eEF-1β, eEF-2
Терминация	RF-1, RF-2, RF-3	eRF-1, eRF-3


Initiation components
Prokaryotic
Eukaryotic
Small ribosomal subunit (30S or 40S)
Large ribosomal subunit (50S or 60S)
Shine-Dalgarno
AUG
mRNA
30S small subunit
50S large subunit
GTP
IF-1
IF-2
IF-3
Initiation factors
fMet-tRNAf
fMet
eIF-1
eIF-2
eIF-3
eIF-4F
eIF-5
eIF-6
eIF-4C
eIF-4B
eIF-4A
CBP
Met-tRNAi
Met
mRNA
40S small subunit
Initiation factors
60S large subunit
GTP
ATP
A. Initiation
Prokaryotic
30S small subunit
+ mRNA
30S Initiation complex
UAC
Large subunit (50S or 60S)
70S or 80S initiation complex
GDP
40S small subunit
+ ATP + mRNA
40S Initiation complex
Eukaryotic
GDP
ADP

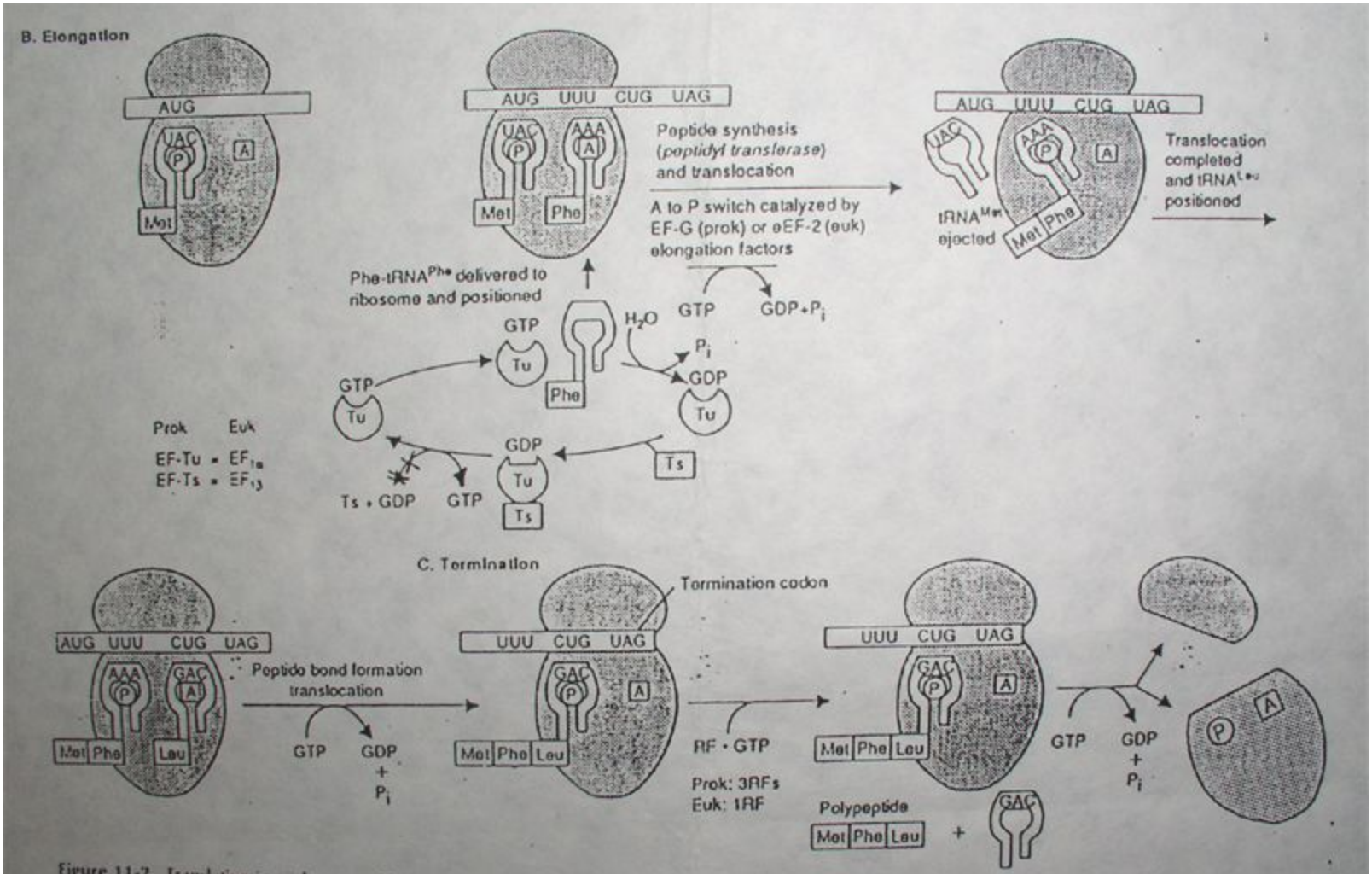


Figure 11-2. Translation in prokaryotes. There are three stages in translation: (*A*) initiation, (*B*) elongation, and (*C*) termination. The mechanism of protein synthesis in eukaryotes and prokaryotes is similar. In general, eukaryotes require more factors. *ADP* = adenosine diphosphate; *ATP* = adenosine triphosphate; *CBP* = cap-binding protein; *EF* = elongation factor; *GDP* = guanosine diphosphate; *GTP* = guanosine triphosphate; *IF* = initiation factor (eukaryotic IFs are preceded by eI; *Leu* = leucine; *Met* = methionine; *mRNA* = messenger RNA; *Phe* = phenylalanine; *P* = inorganic phosphate; *RF* = release factor; *tRNA* = transfer RNA. (Adapted with permission from Darnell J, Lodish H, Baltimore D: *Molecular Cell Biology*, 2nd ed. New York, WH Freeman, 1990, p 102–103.)

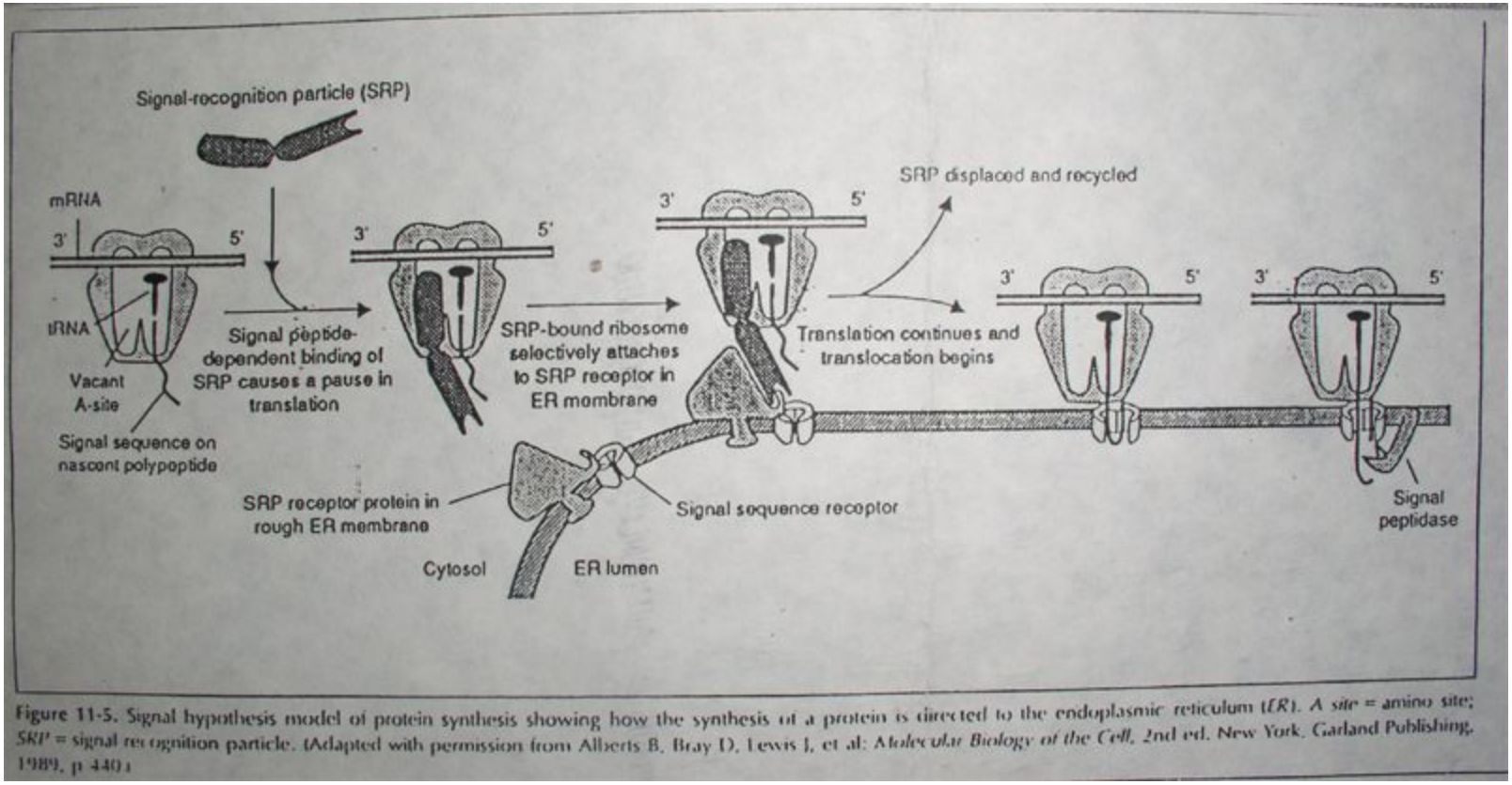


Figure 11-5. Signal hypothesis model of protein synthesis showing how the synthesis of a protein is directed to the endoplasmic reticulum (*ER*). *A site* = amino site; *SRP* = signal recognition particle. (Adapted with permission from Alberts B, Bray D, Lewis J, et al: *Molecular Biology of the Cell*, 2nd ed. New York, Garland Publishing, 1989, p 440.)

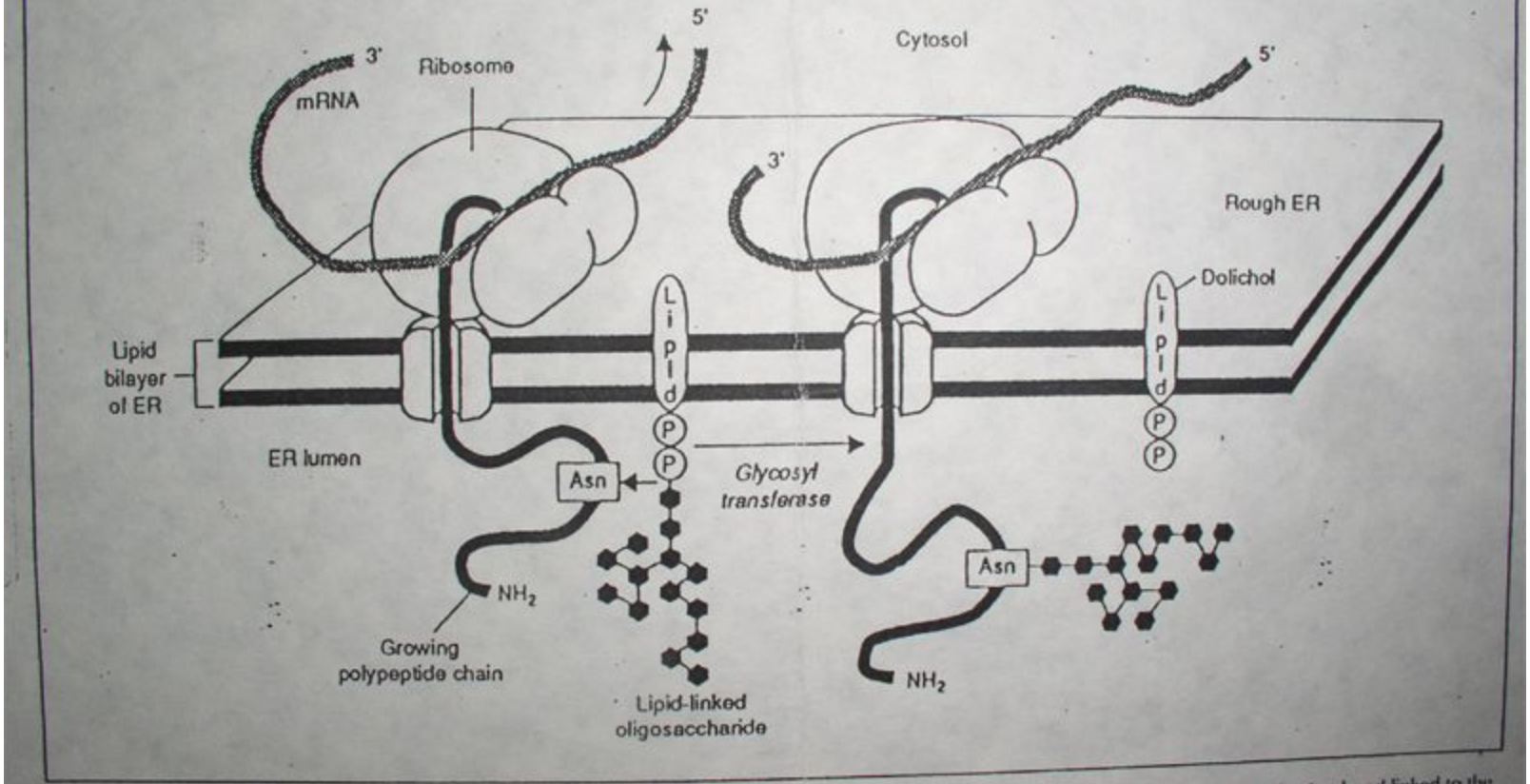


Figure 11-6. N-linked glycosylation of a protein being synthesized in the endoplasmic reticulum (*ER*). An oligosaccharide, previously synthesized and linked to the lipid dolichol within the membrane, is transferred by glycosyl transferase to an appropriate asparagine (*Asn*). Appropriate asparagines are the asparagines within the sequences Asn-X-Ser or Asn-X-Thr. *mRNA* = messenger RNA. (Reprinted with permission from Alberts B, Bray D, Lewis J, et al: *Molecular Biology of the Cell*. New York, Garland Publishing, 1983, p 349.)

Дифтерийный токсин

Бактериофаг *Corynebacterium diphtheriae*

Фрагмент **A** = *АДФ-рибозил трансфераза*. Фрагмент **B**

$НАД^+$ + eEF-2 ⟶ АДФ-рибозил-eEF-2 + Никотинамид + H^+

Ricin

α-Sarcin

Colicin E3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