5 - la traduction

5-1. Introduction

5-2. L'appareil de traduction et son fonctionnement

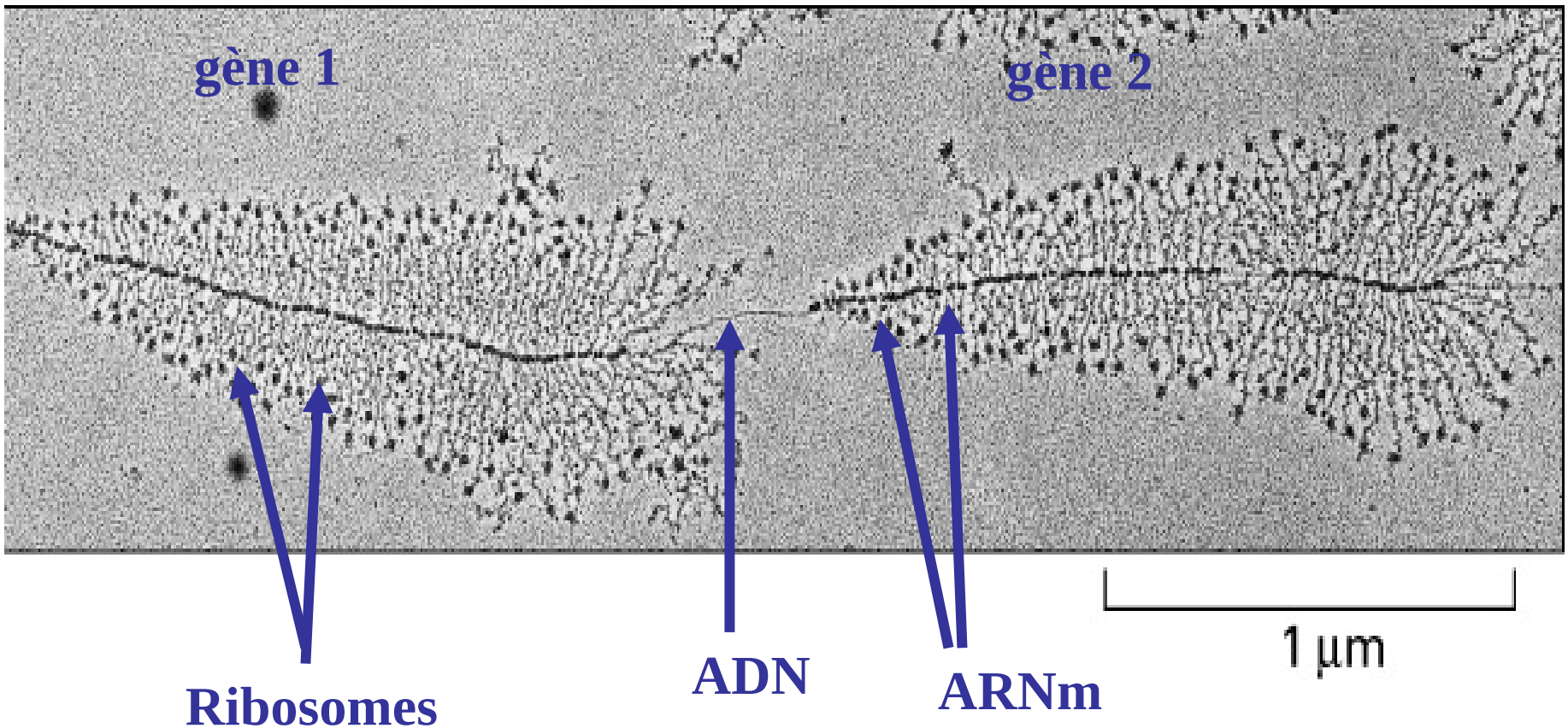
- **Les ribosomes**
- **Les ARNt**
- **Les ARNt Synthétases**

5-3. Les étapes de la synthèse protéiques

- **Initiation**
- **Élongation**
- **Terminaison**

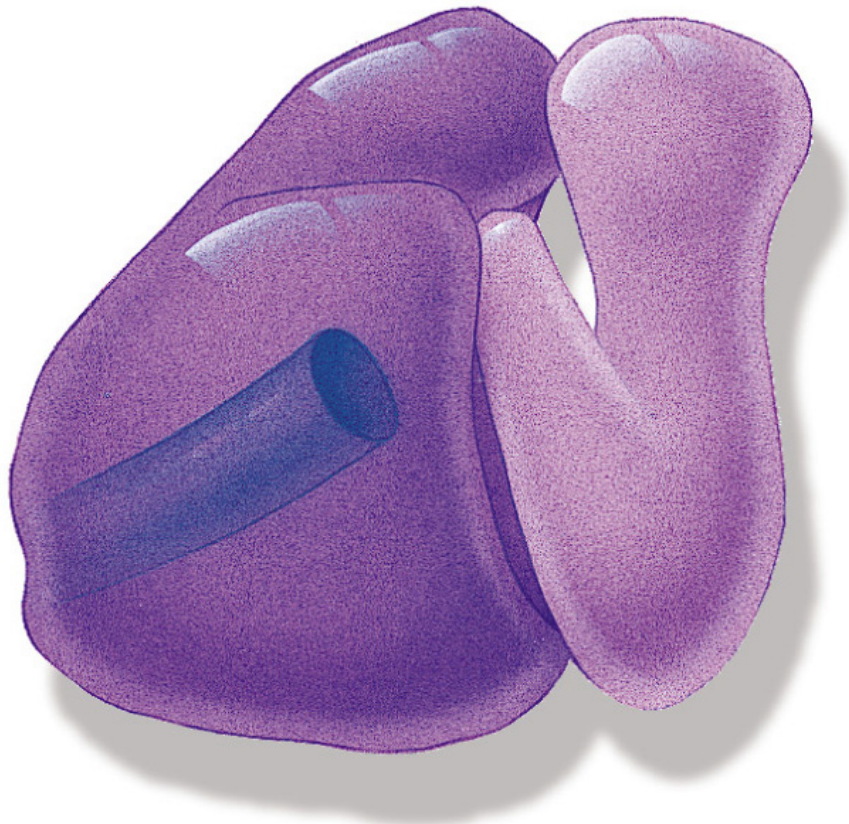
5-4. Les antibiotiques inhibiteurs de la traduction

Couplage Transcription / traduction chez *E. coli*

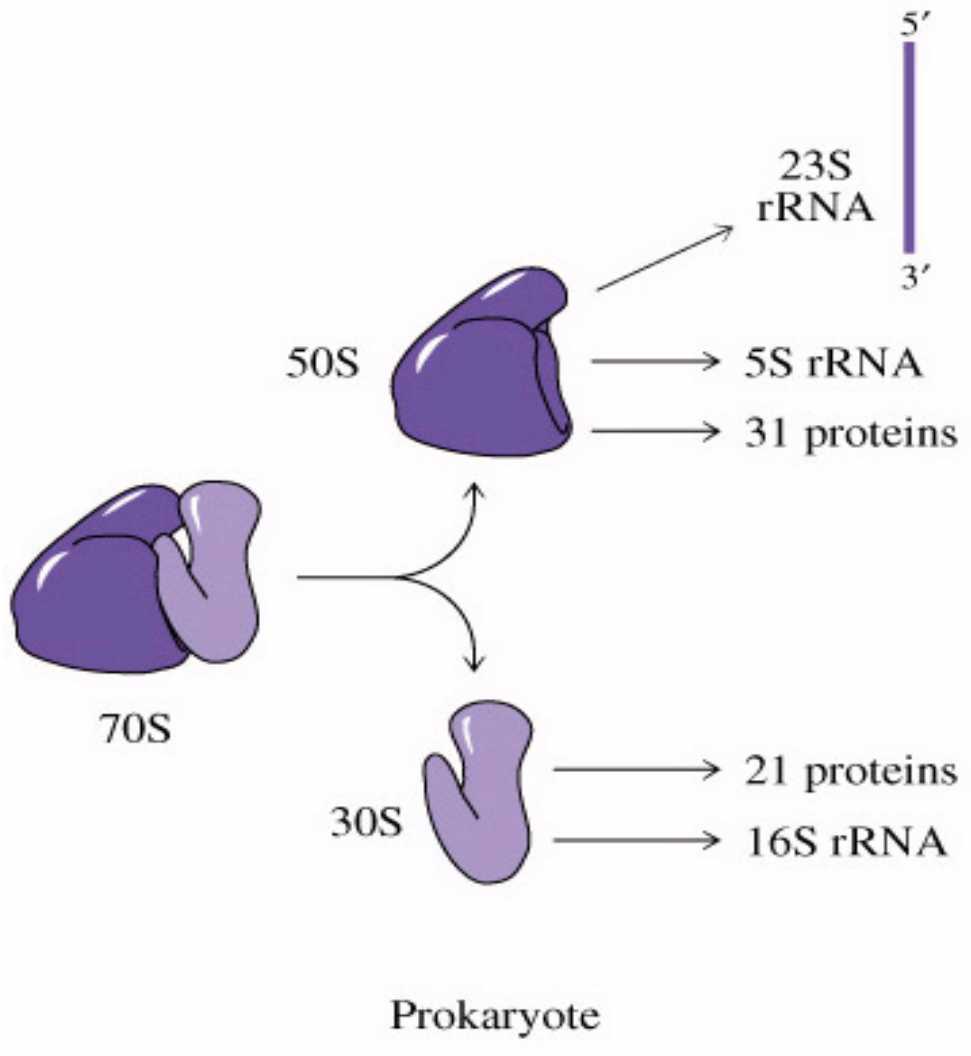


Les Ribosomes

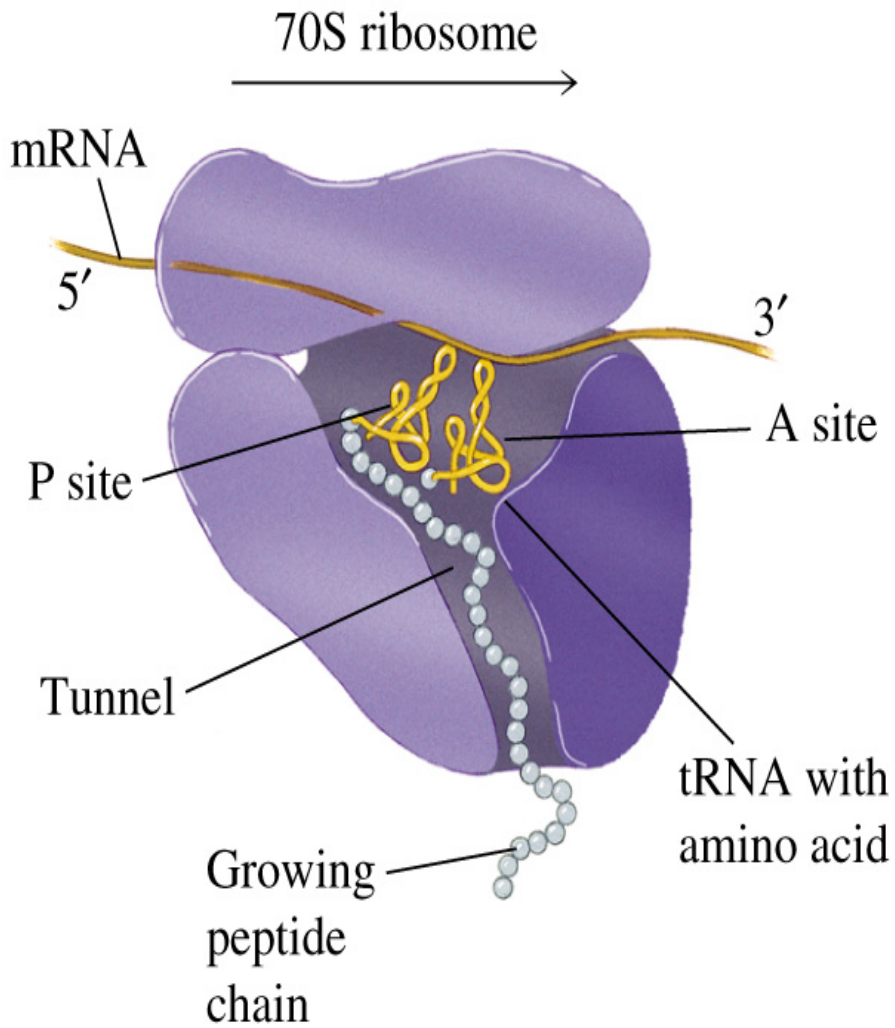
- **La machine de production des protéines.**
- **Le ribosome entier : 70S chez les Procaryotes et 80S chez les Eucaryotes**
- **Constitué de 2 sous unités (Bactéries: 30S et 50S, Eucaryotes: 40S et 60S)**
- **Chez les bactéries, 20000 ribosomes par cellule, 20% de la masse de la cellule.**
- **La masse des ribosomes est constituée d'environ 2/3 d'ARN**



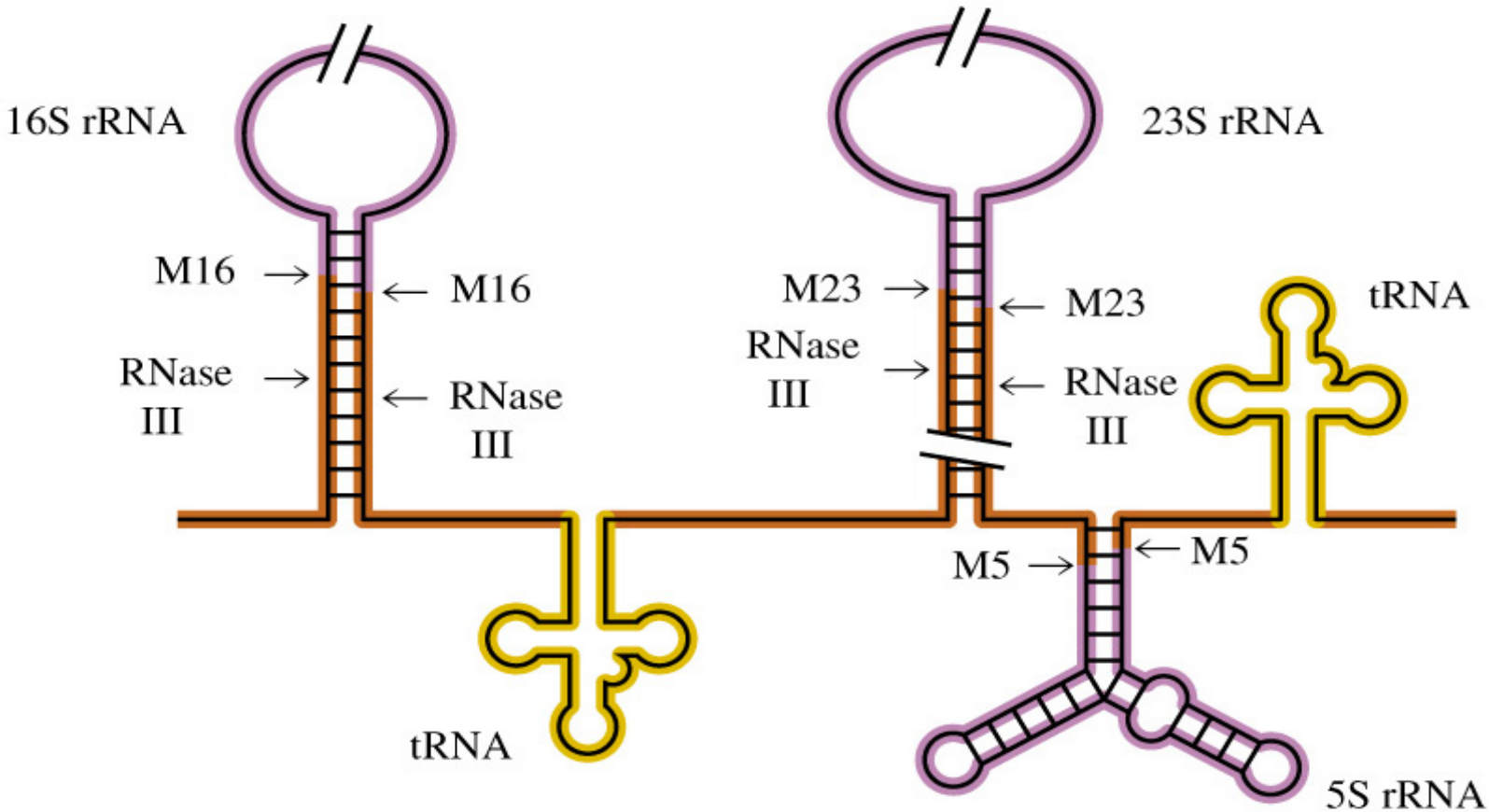
Structure des Ribosomes Procaryotes



Structure des Ribosomes Procaryotes



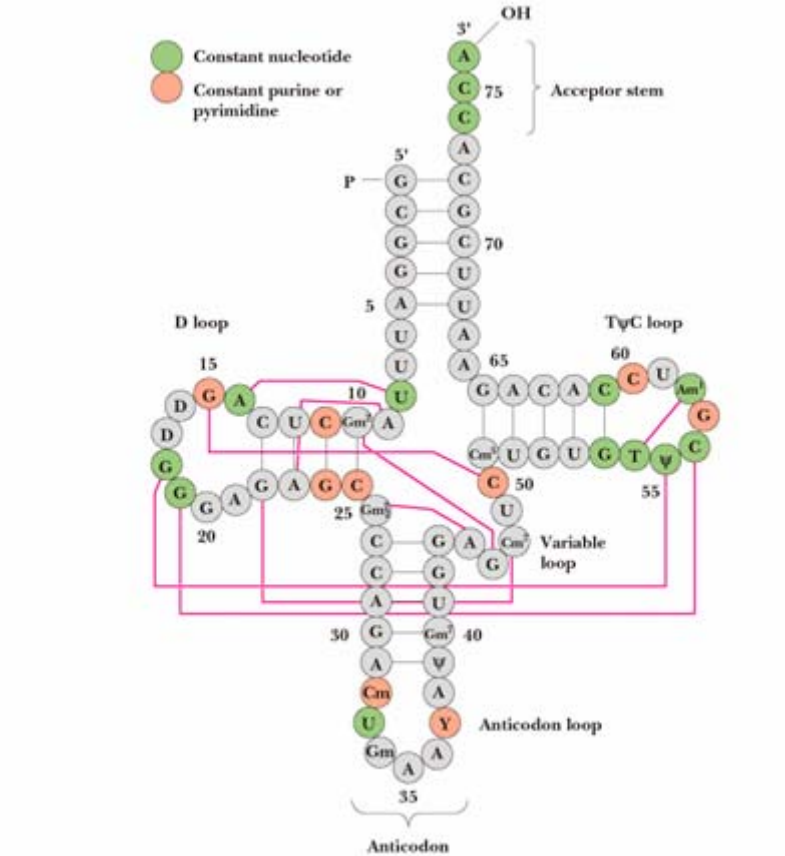
La Maturation des ARNr



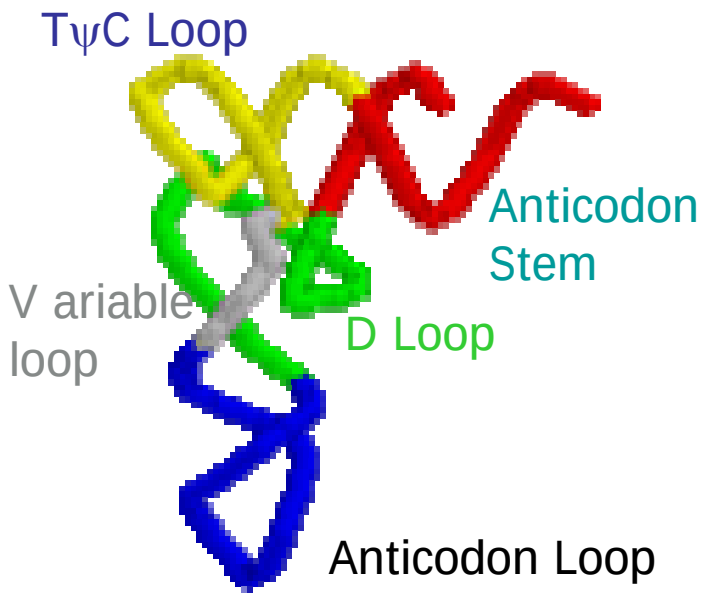
Structures des ARN de Transfert

En feuille de trèfle

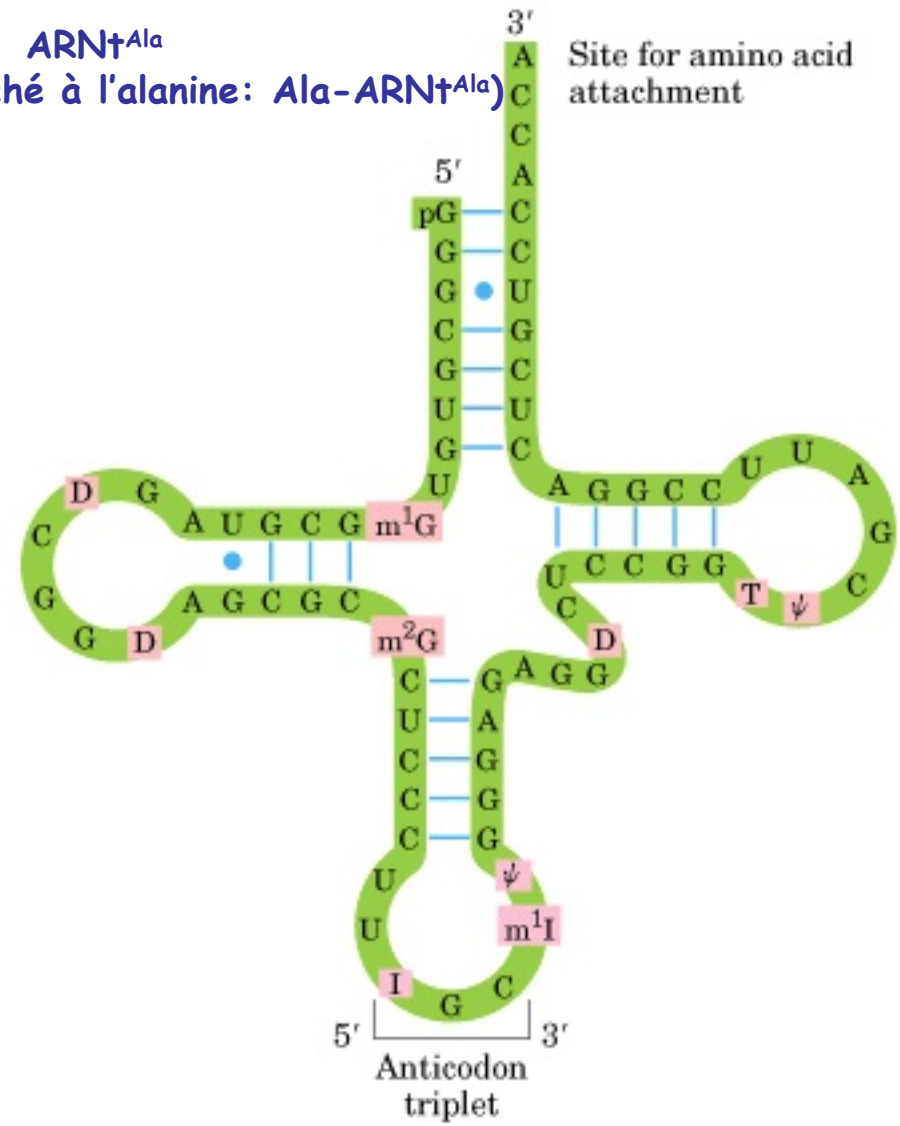
Structure Secondaire des ARNt



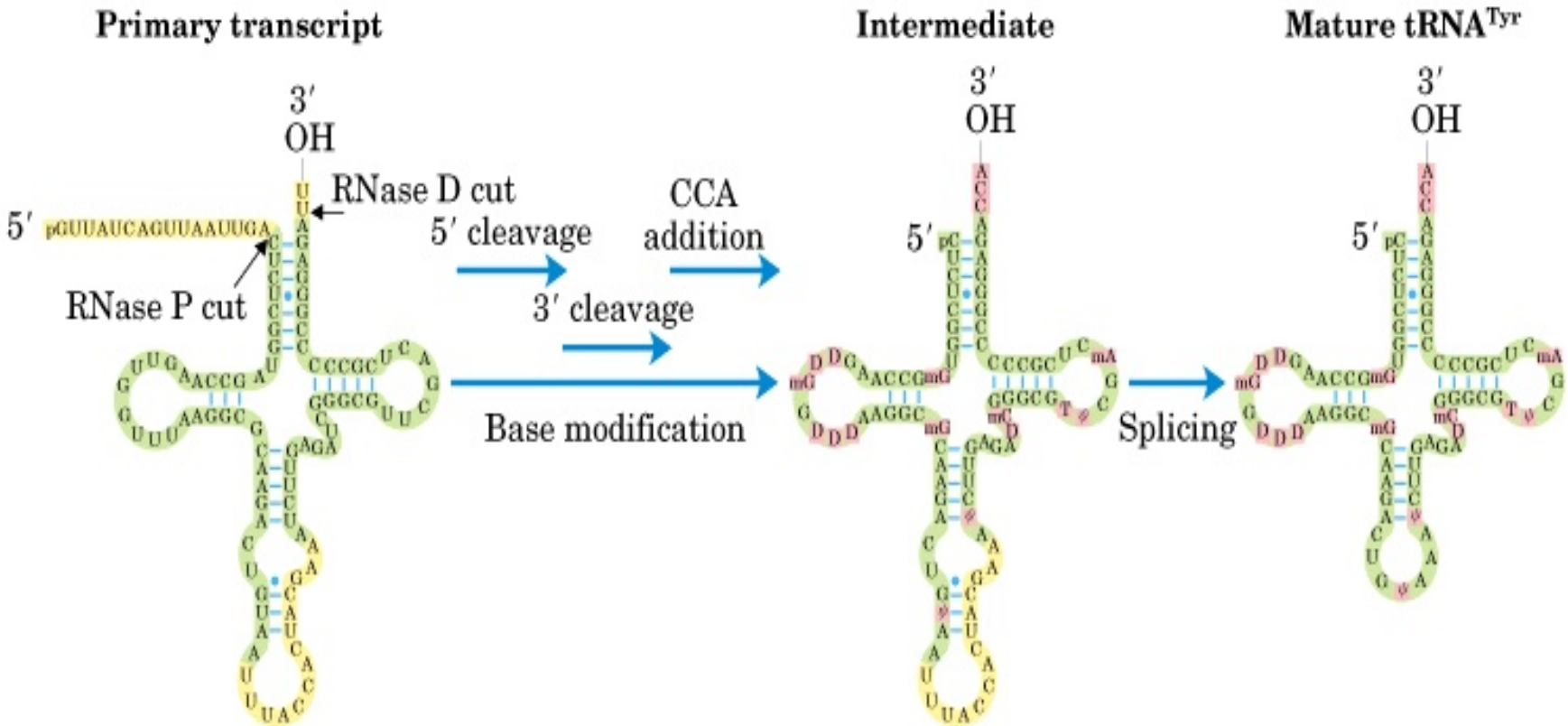
Structure Tertiaire des ARNt



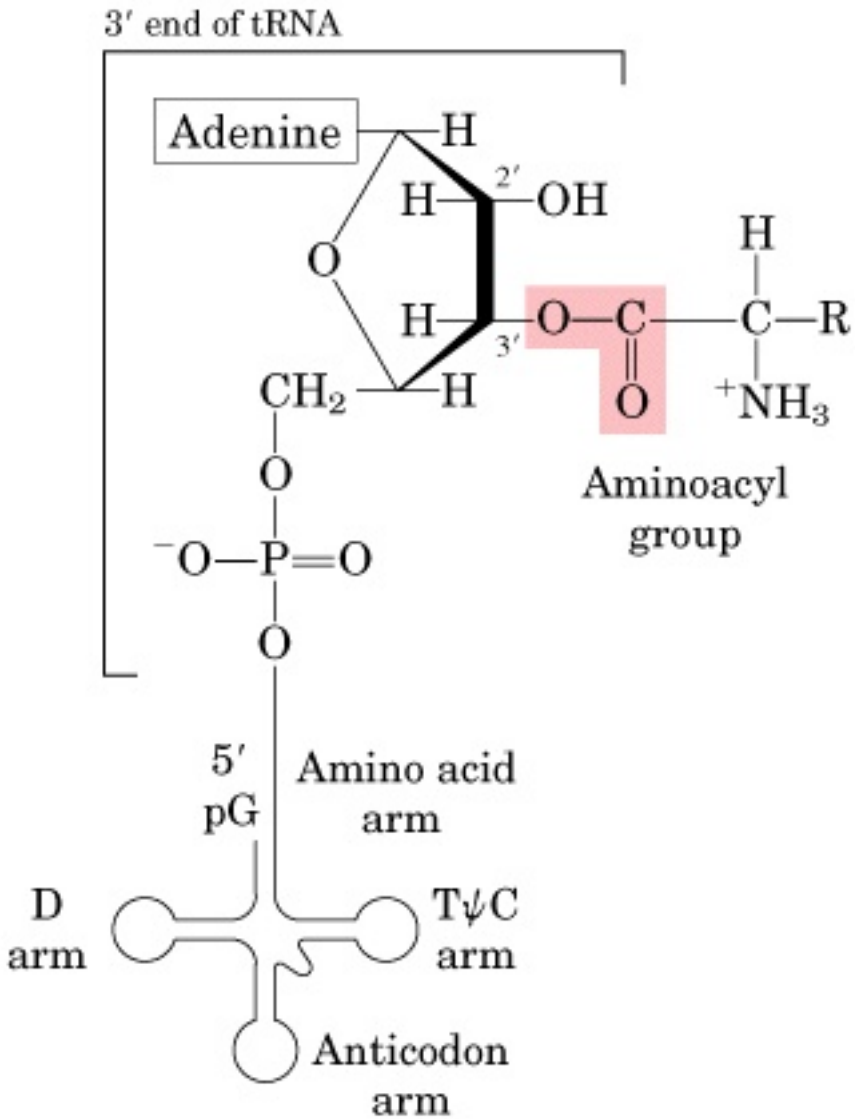
ARNt^{Ala}
(lorsqu'il est attaché à l'alanine: Ala-ARNt^{Ala})



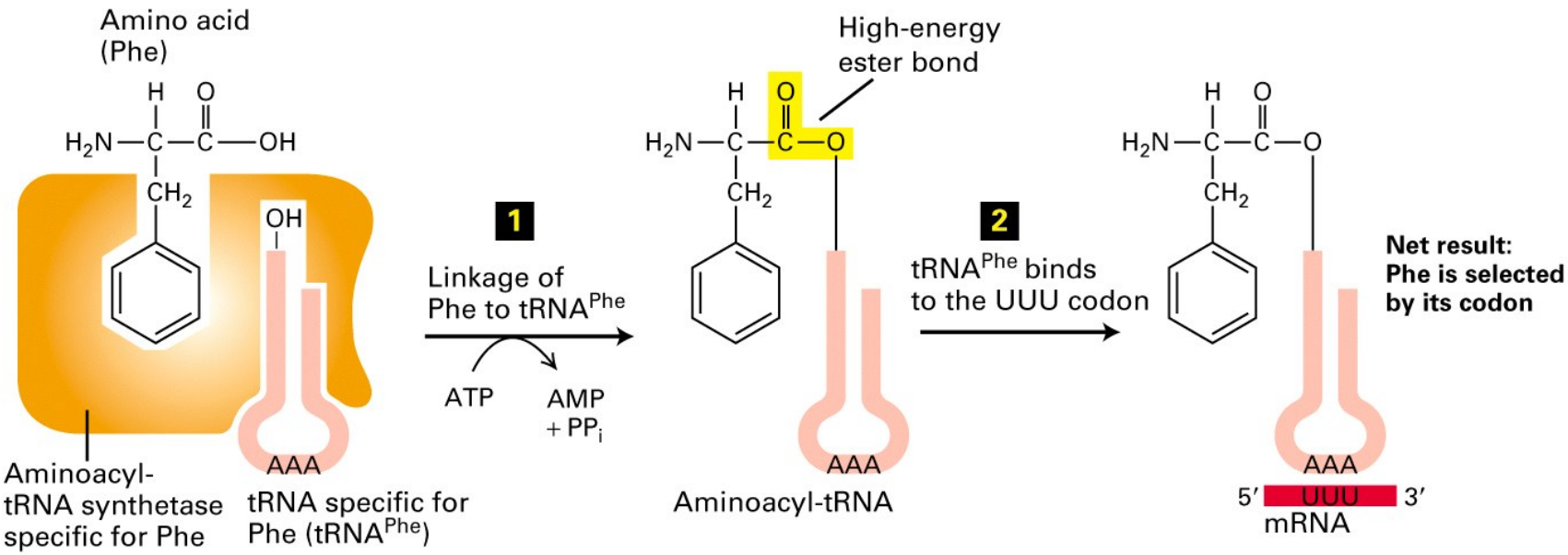
La maturation des ARNt



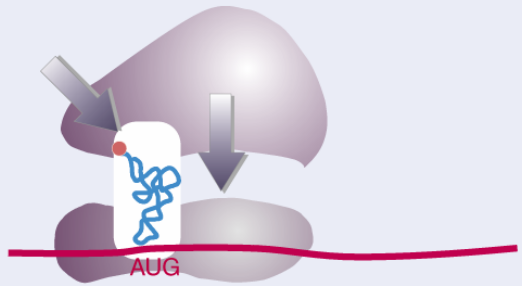
Les ARNt Synthétases Chargent les ARNt avec les Acides Aminés adéquats



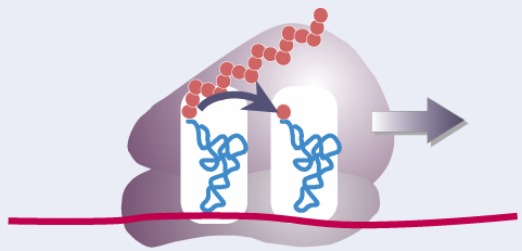
Exemple: ARNt-Phénylalanine



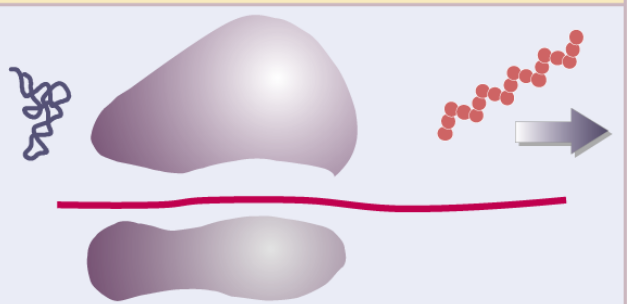
Initiation
30S subunit on mRNA binding site is joined by 50S subunit and aminoacyl-tRNA binds



Elongation
Ribosome moves along mRNA and length of protein chain extends by transfer from peptidyl-tRNA to aminoacyl-tRNA



Termination
Polypeptide chain is released from tRNA, and ribosome dissociates from mRNA



Initiation de la traduction chez les Procaryotes

Identification du Codon Initiateur chez les Procaryotes

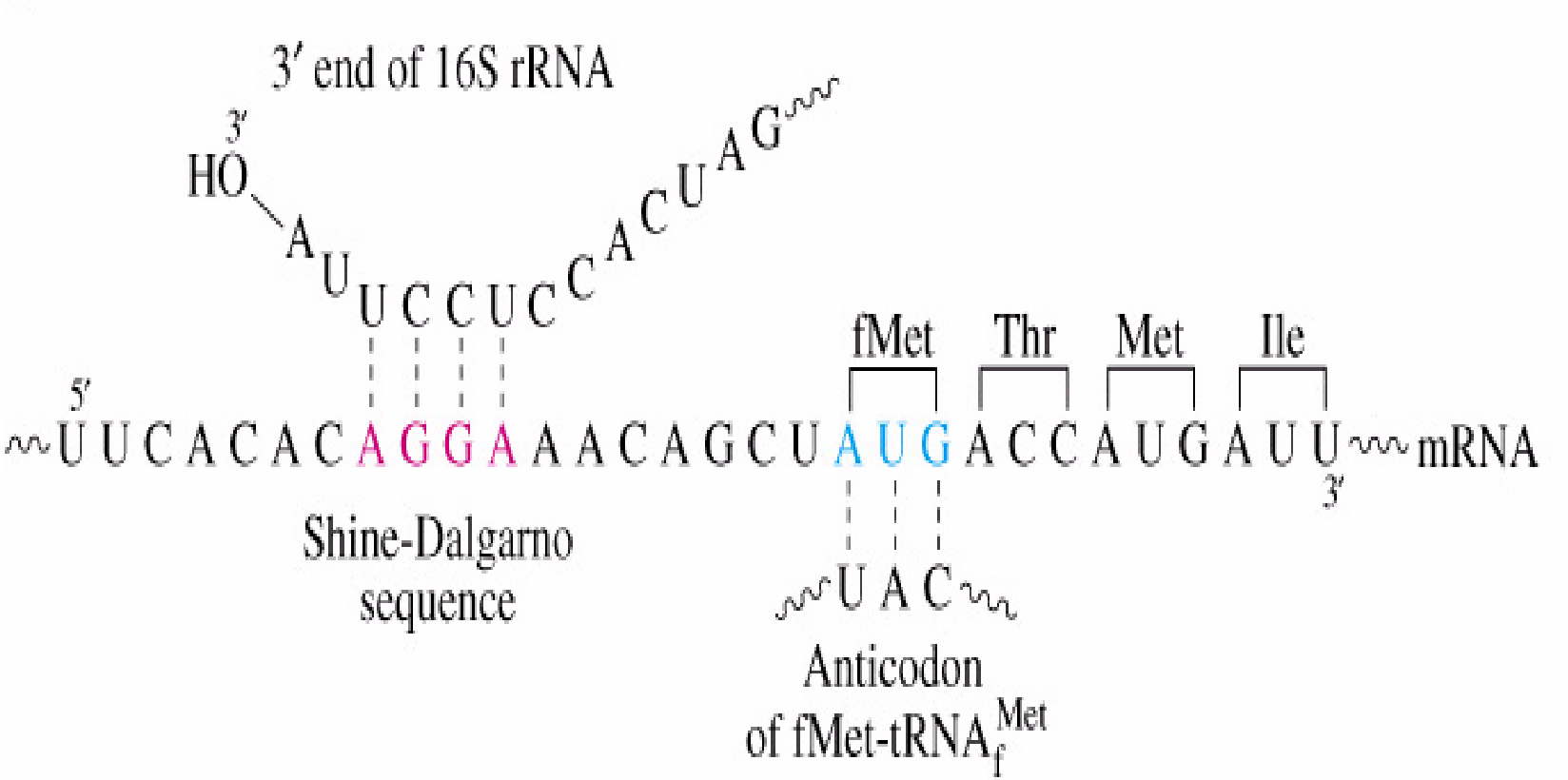
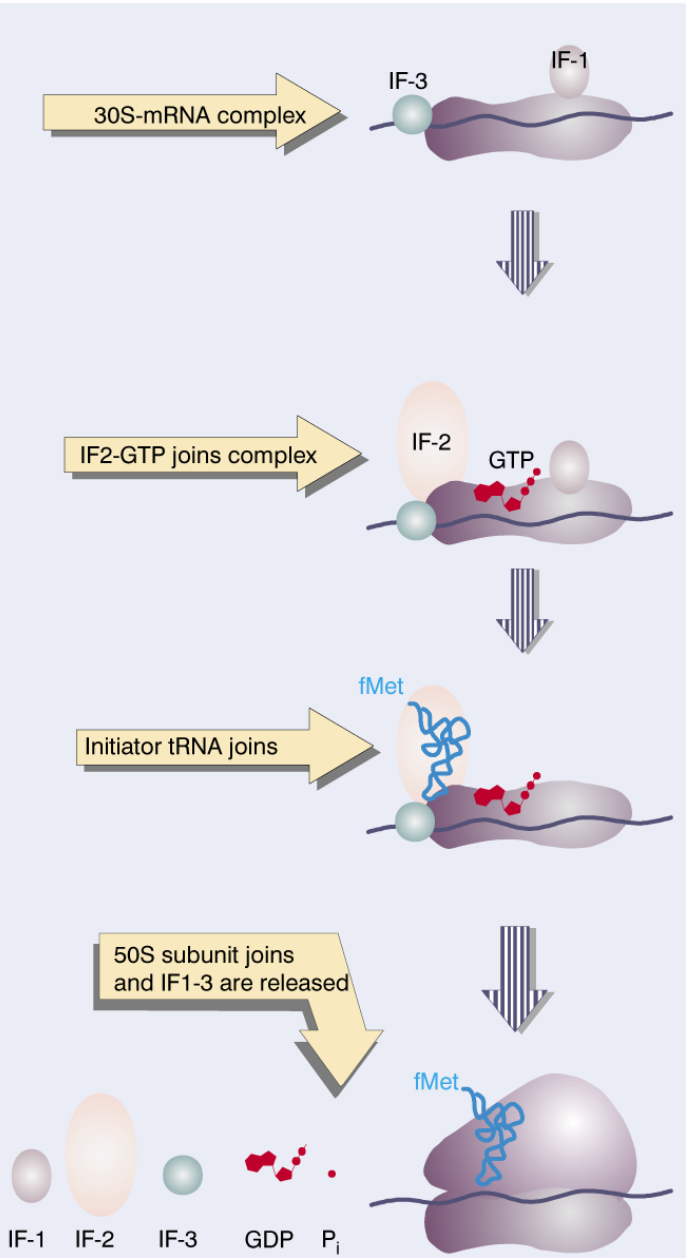
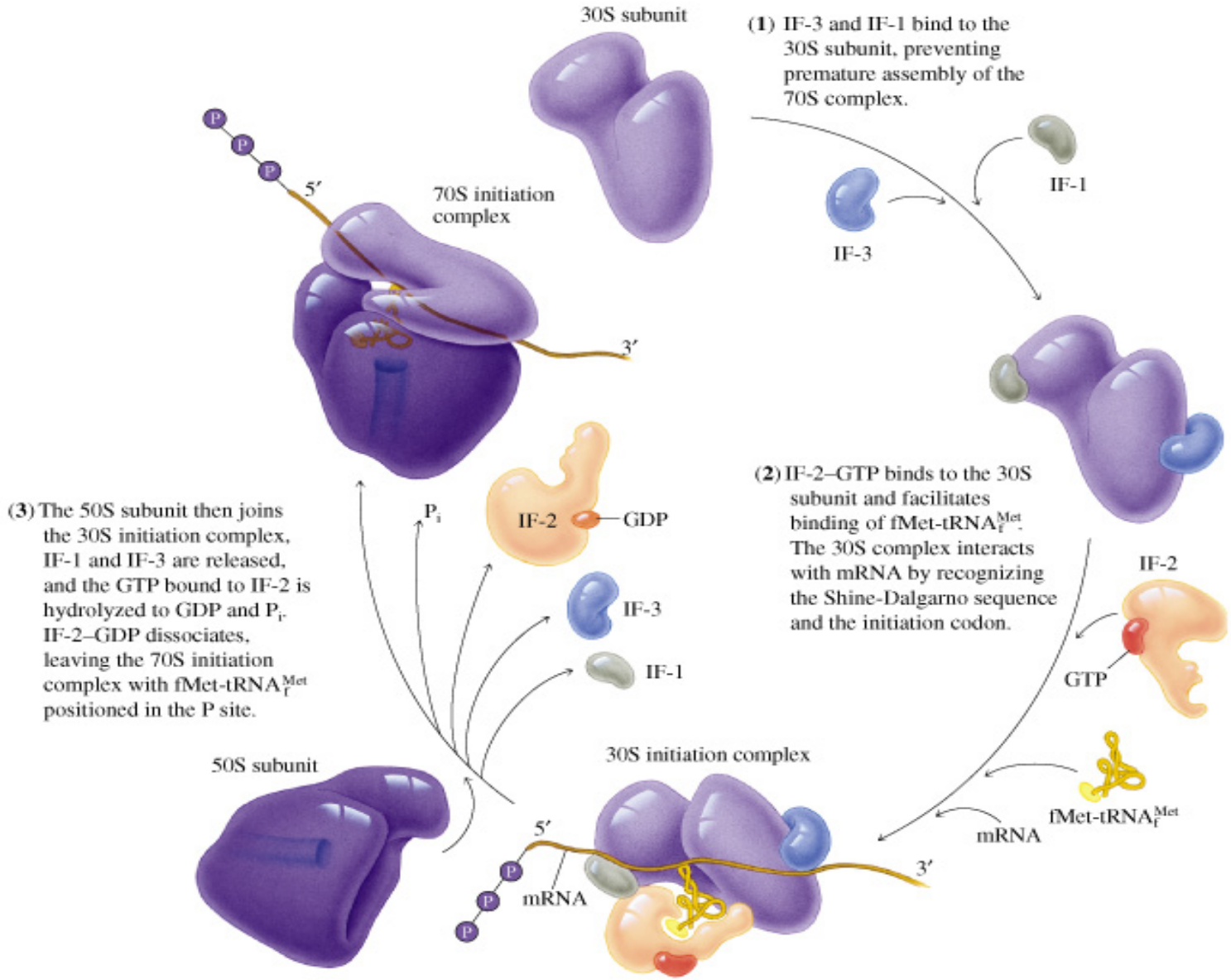


Figure 6.12 IF-2 is needed to bind fmet-tRNA$_f$ to the 30S-mRNA complex. After 50S binding, all IF factors are released and GTP is cleaved.

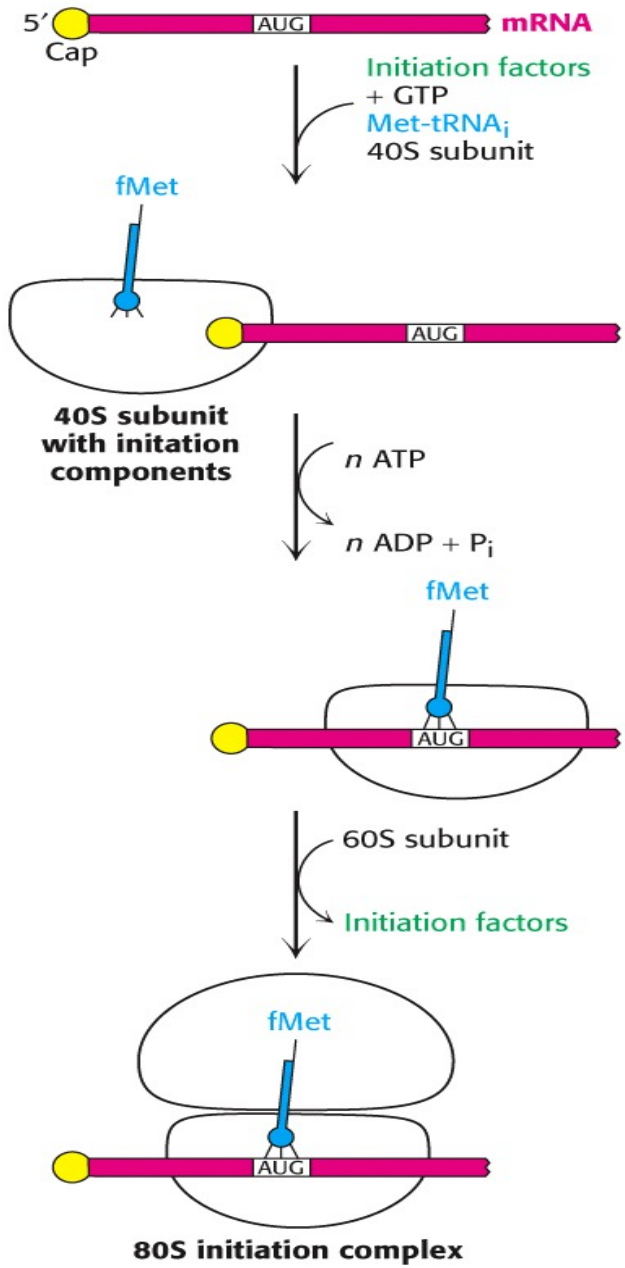


Initiation de la Traduction chez les Procaryotes

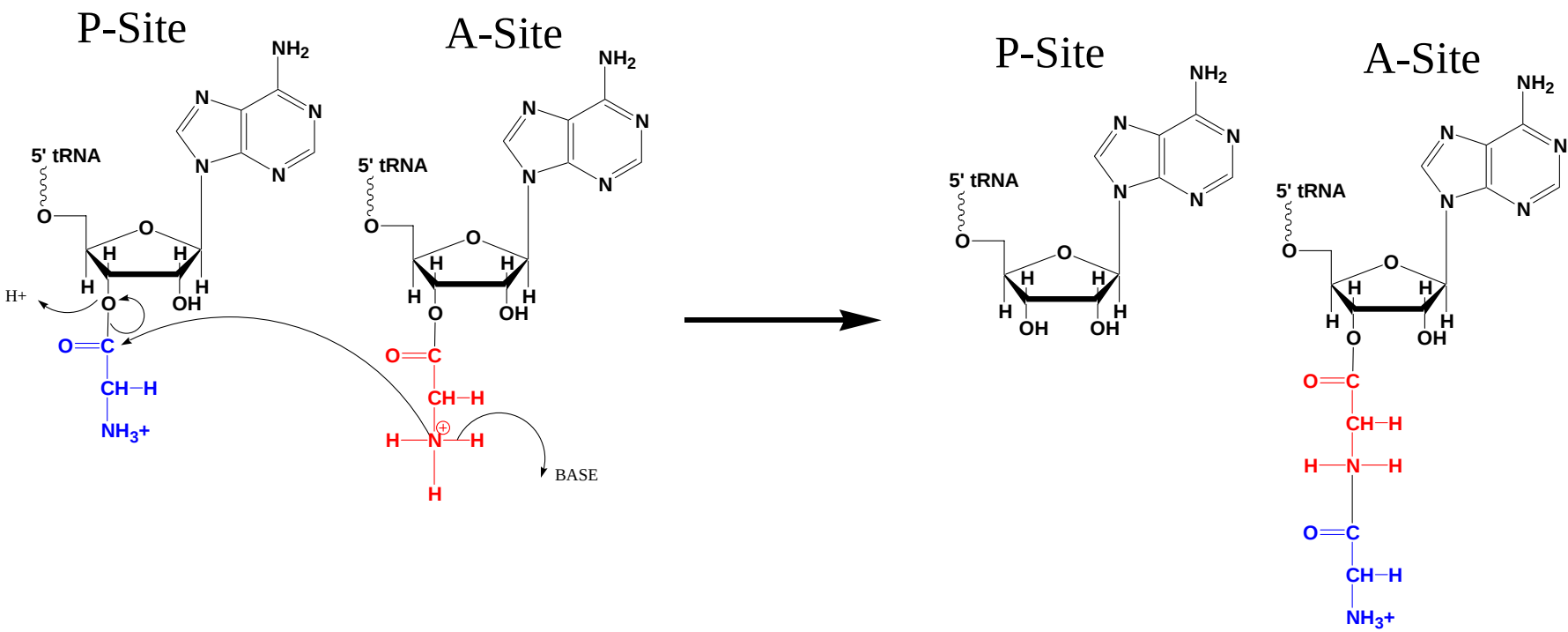


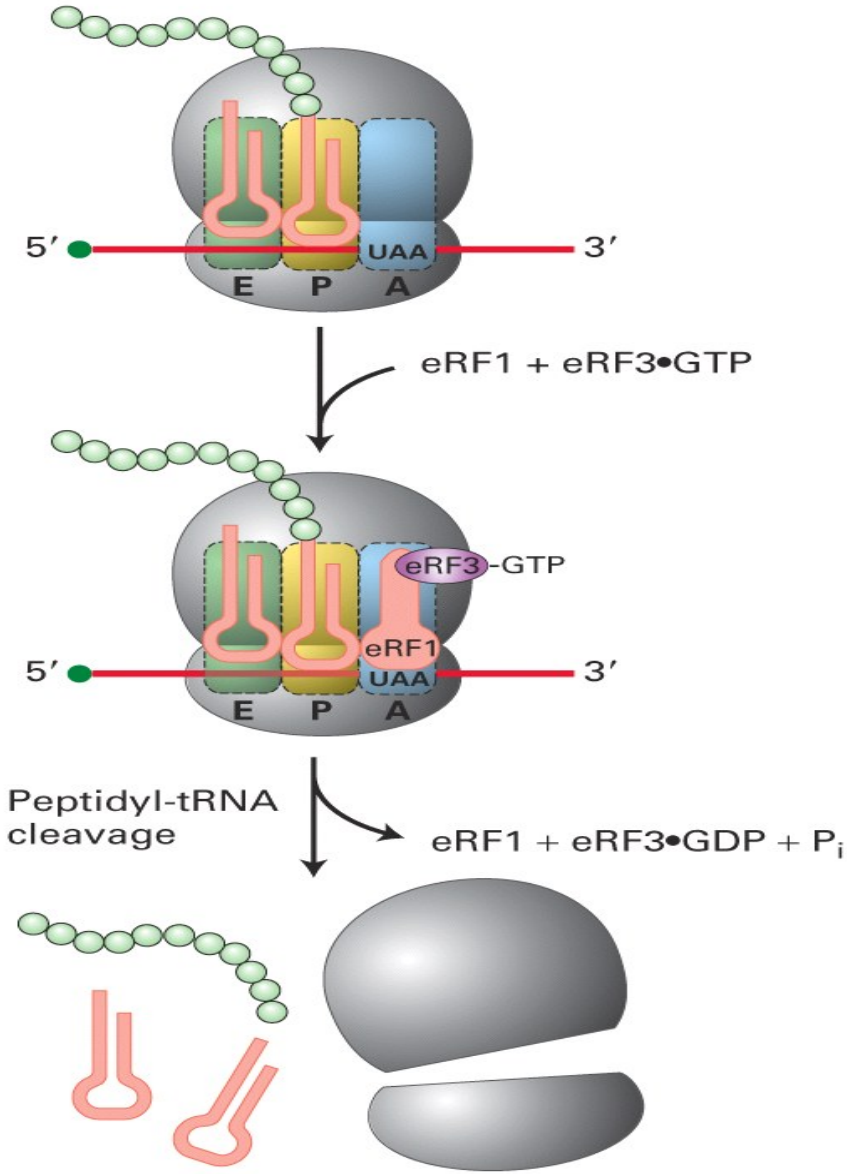
Initiation de la traduction chez les Eucaryotes

Initiation de la traduction chez les Eucaryotes

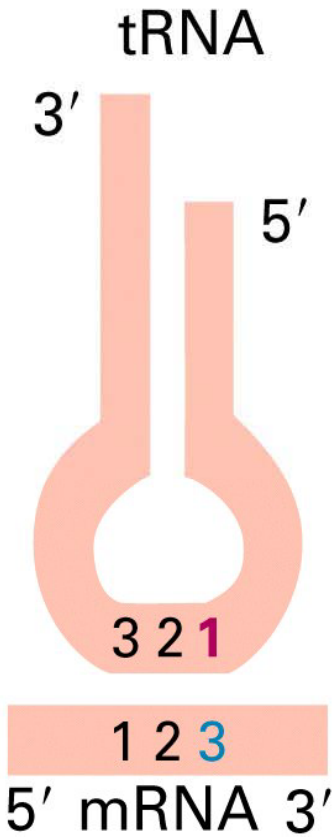


Formation de liaison peptidique




5′
UAA
3′
E
P
A
eRF1 + eRF3•GTP
eRF3-GTP
eRF1
5′
UAA
3′
E
P
A
Peptidyl-tRNA
cleavage
eRF1 + eRF3•GDP + Pi

Effet Wobble



C	A	G	U	I
G	U	C U	A G	C A U

Première Base de l'Anticodon

Troisième Base du codon