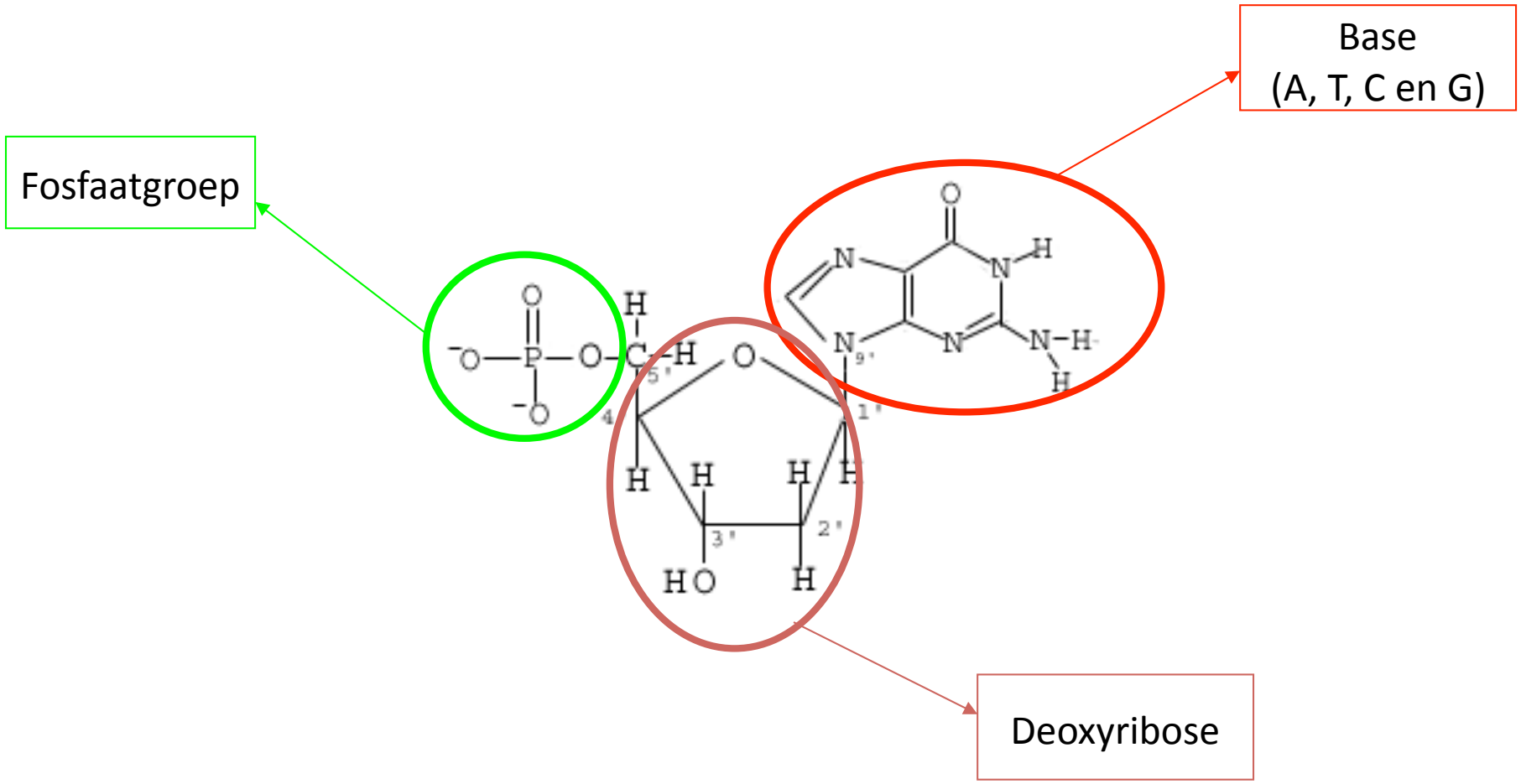
Cell biology for newbies

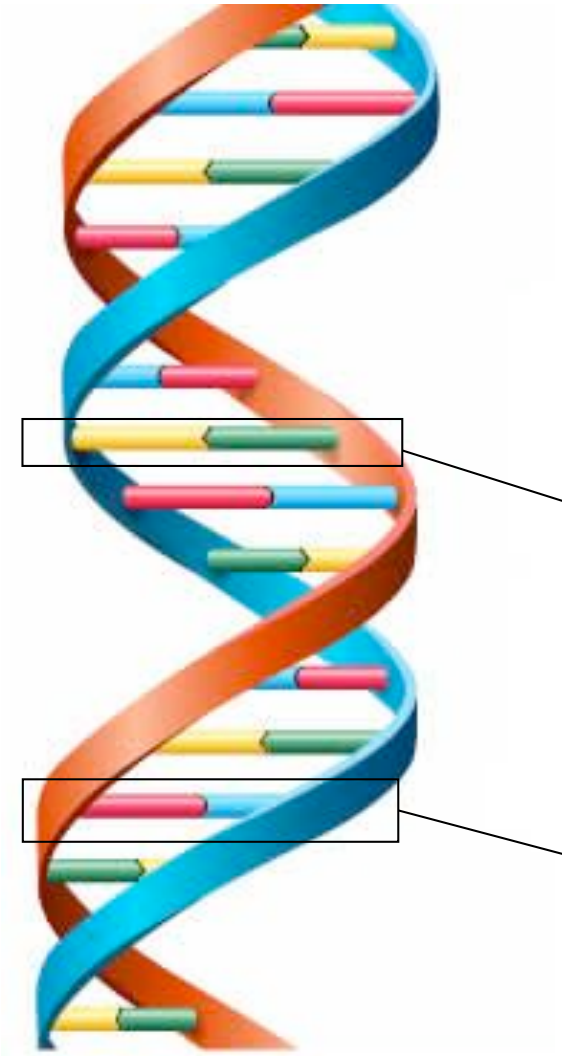
Wat is DNA?

- Genetische materiaal
- Eenheid DNA: nucleotiden (A,T,C en G)
- Dubbele helix
- Semi-conservatieve replicatie

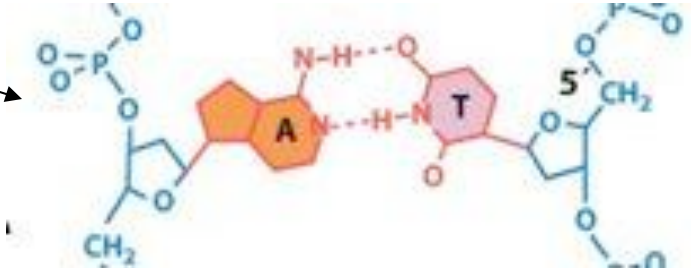
Opbouw nucleotide



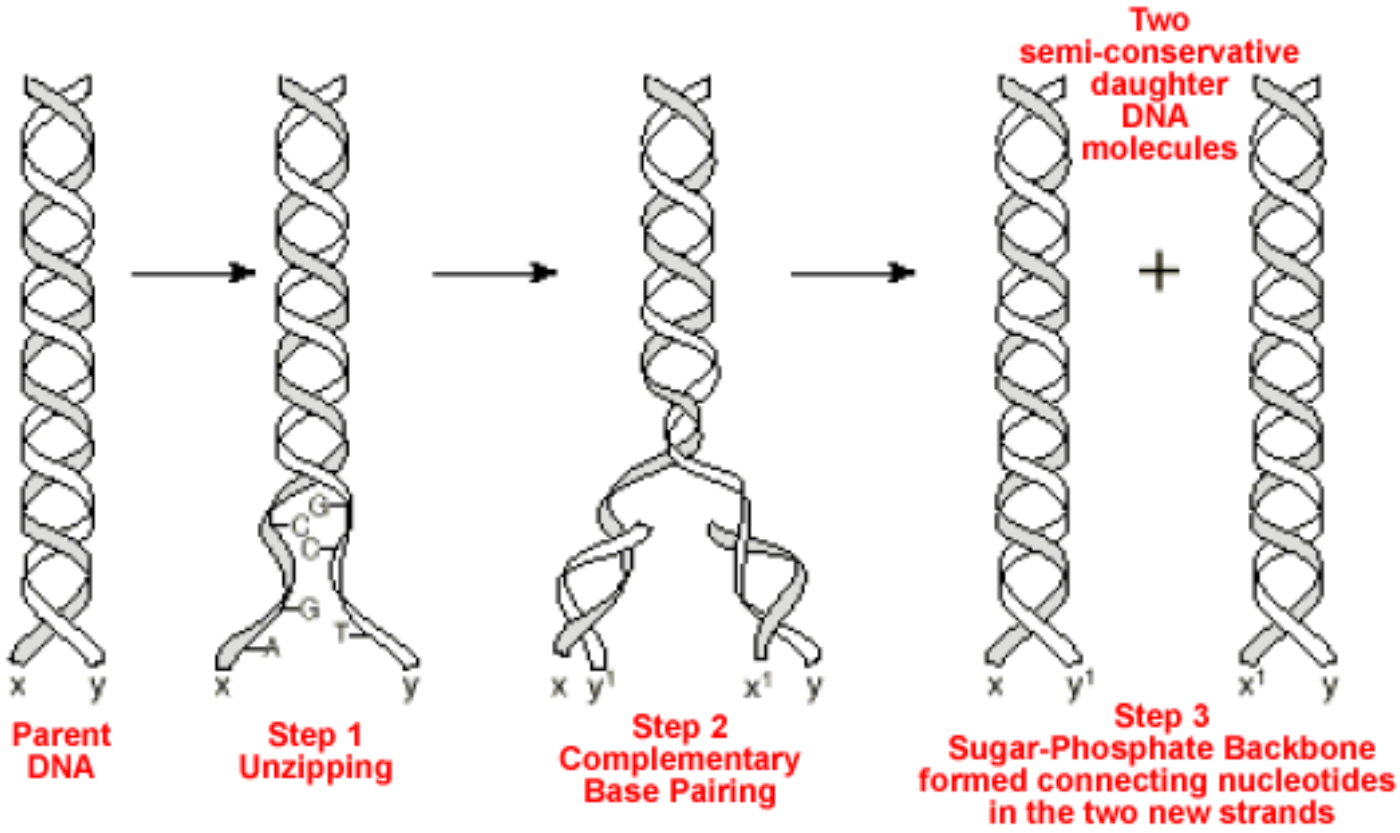
Dubbele helix



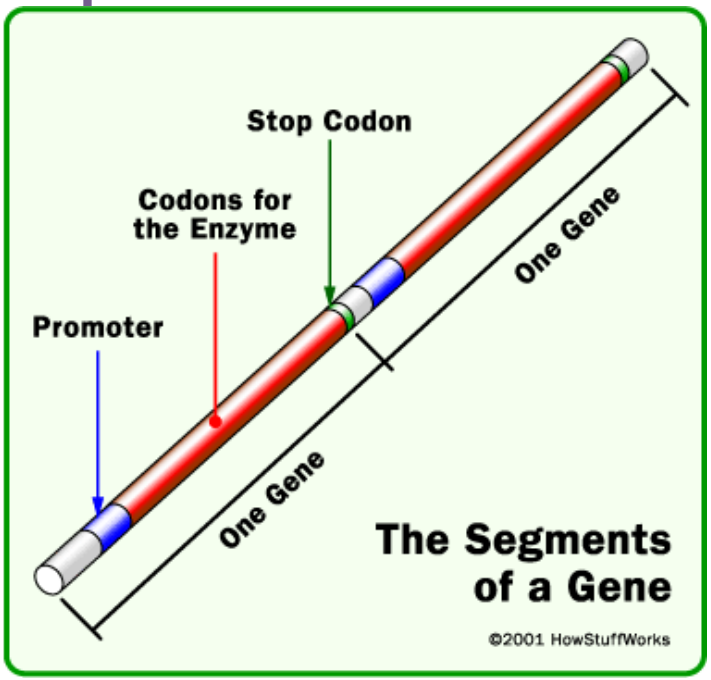
- Suiker – fosfaat ruggengraat
- Vorming baseparen via waterstofbruggen
- Kleine groef
- Grote groef



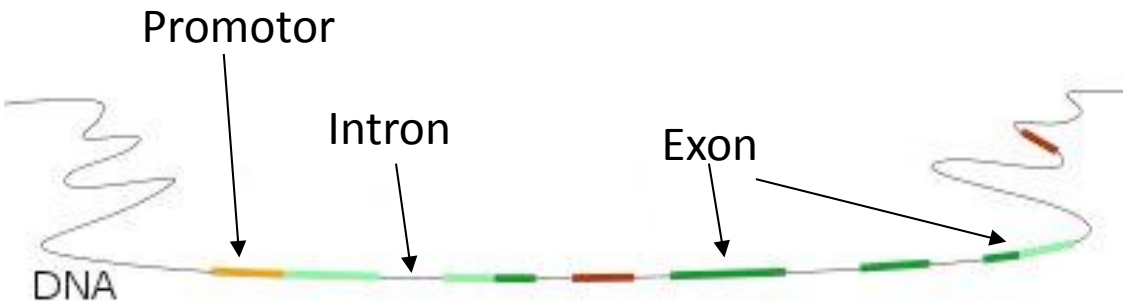
DNA replicatie



Genen



- Regulerende regio's:
  - Promotor
  - Ribosoom bindingsplaats
  - Terminator
- Coderende regio's
- Exon
- Intron



Transcriptie

filmpje

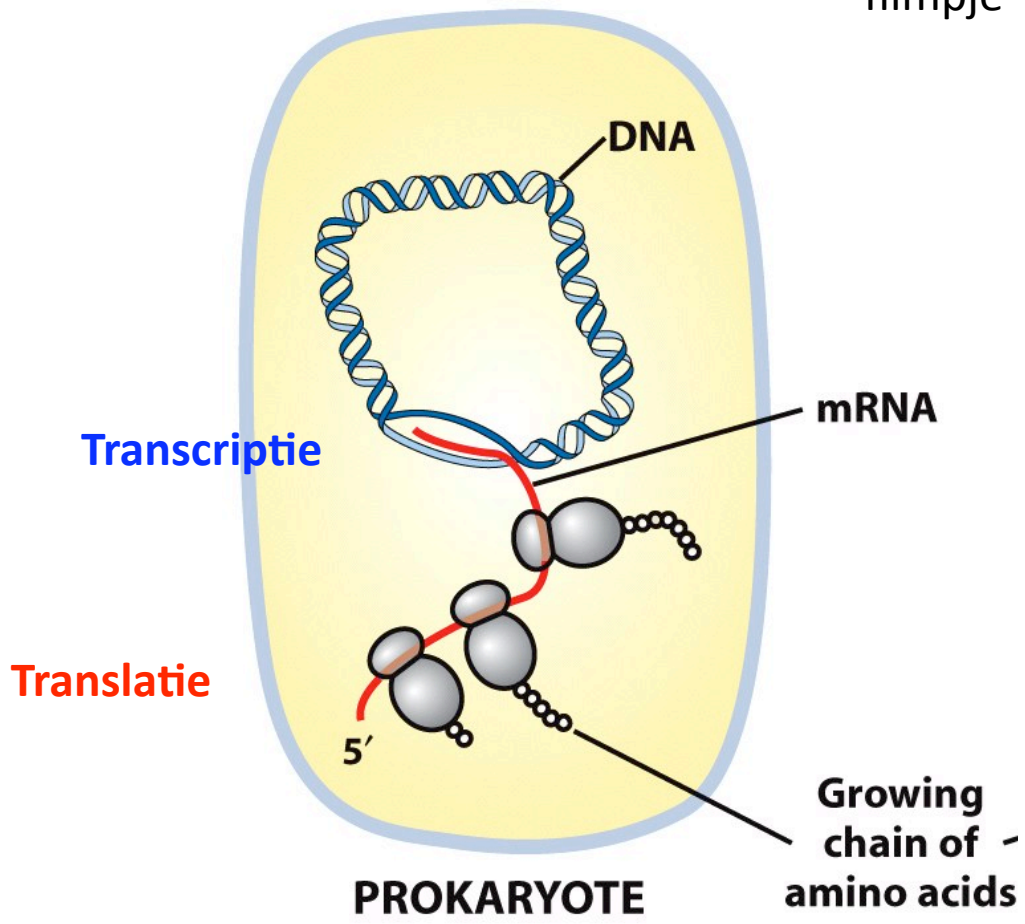


Figure 8-11
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Sequences of DNA and transcribed RNA

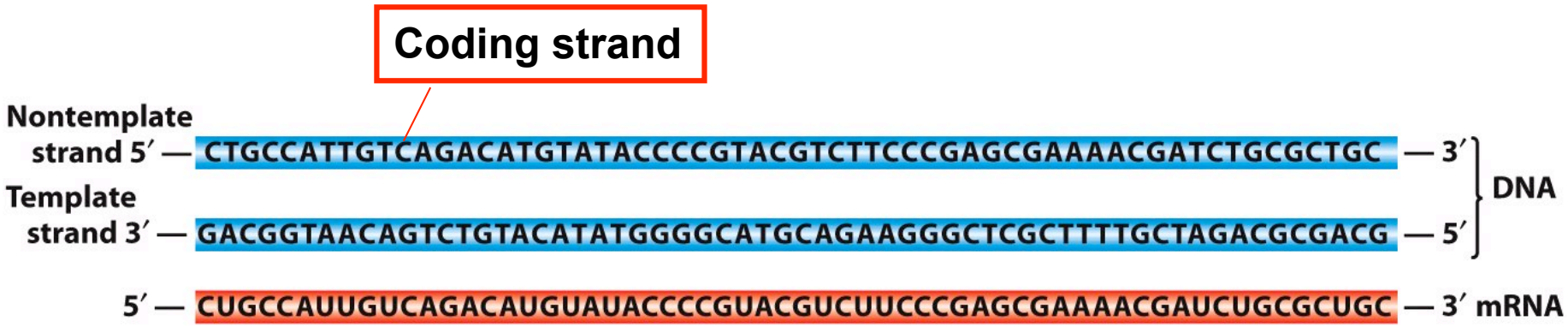

Figure 8-6
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Promoter sequences in *E. coli*

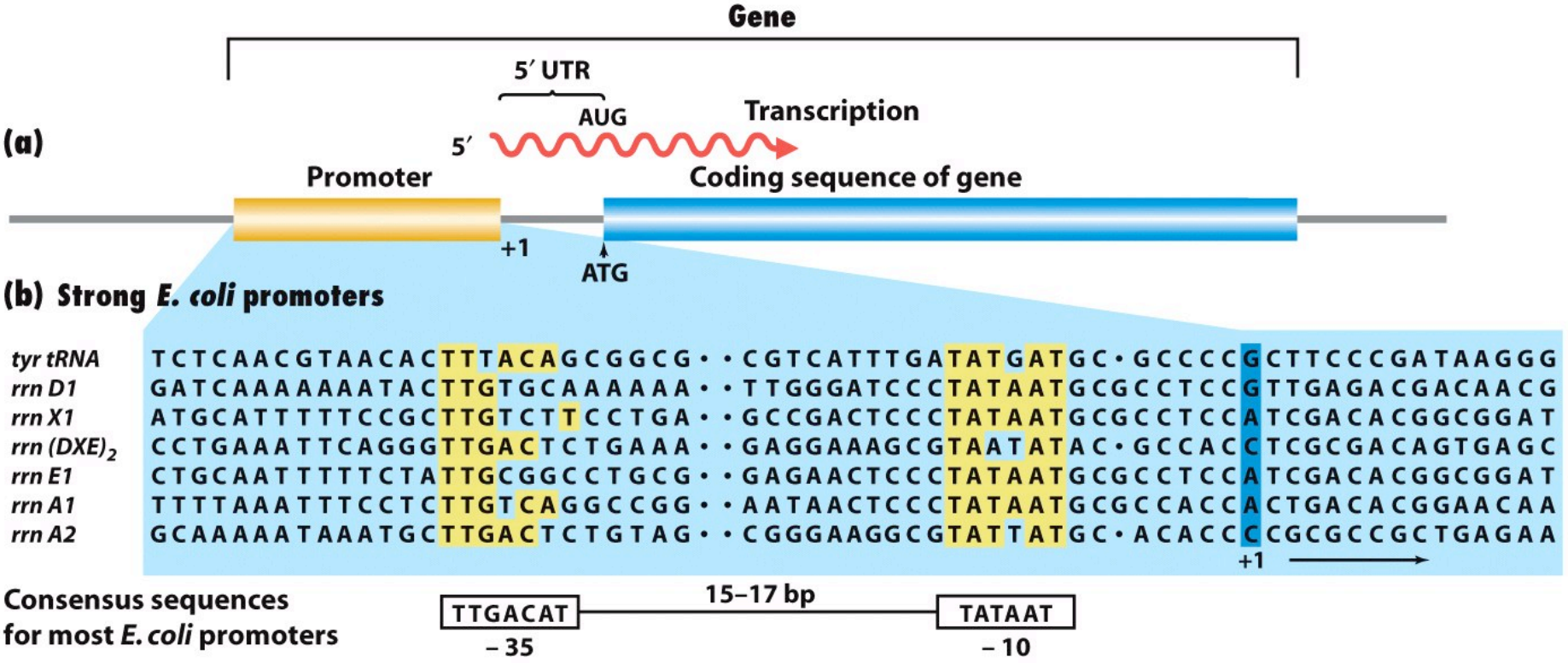
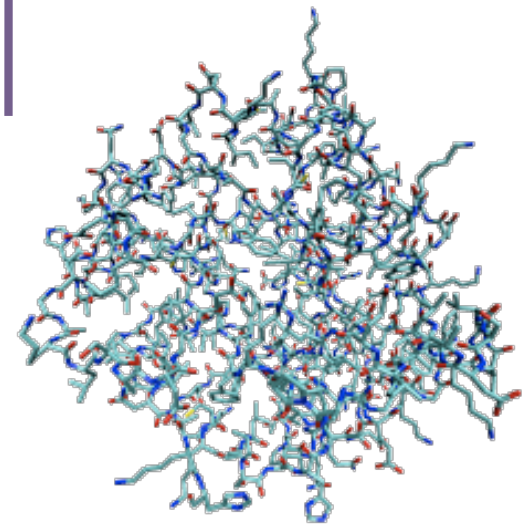
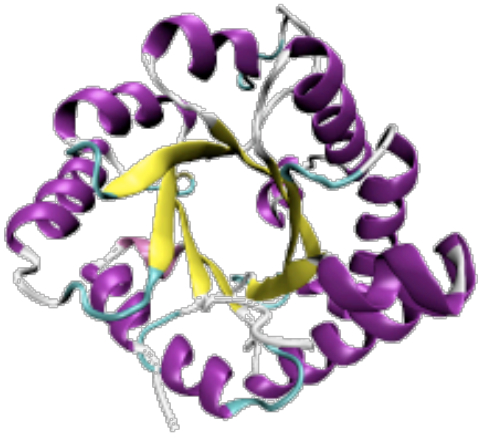
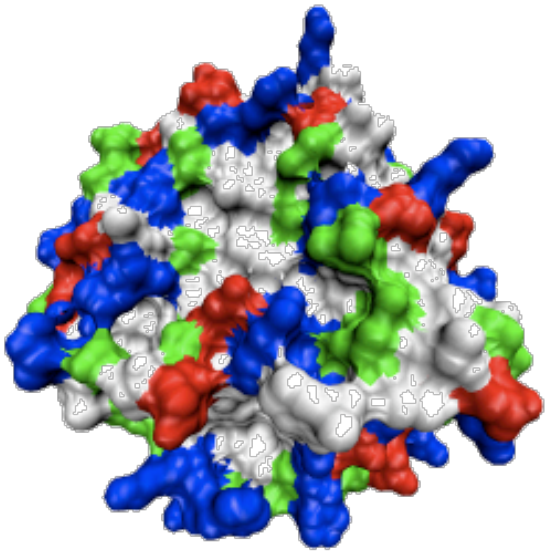


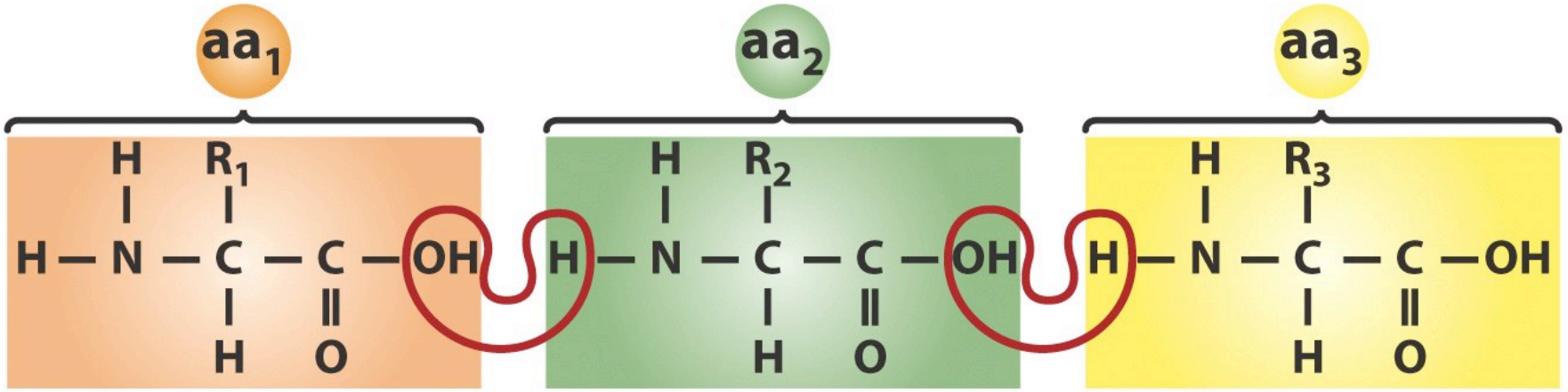
Figure 8-7
Introduction to Genetic Analysis, Ninth Edition

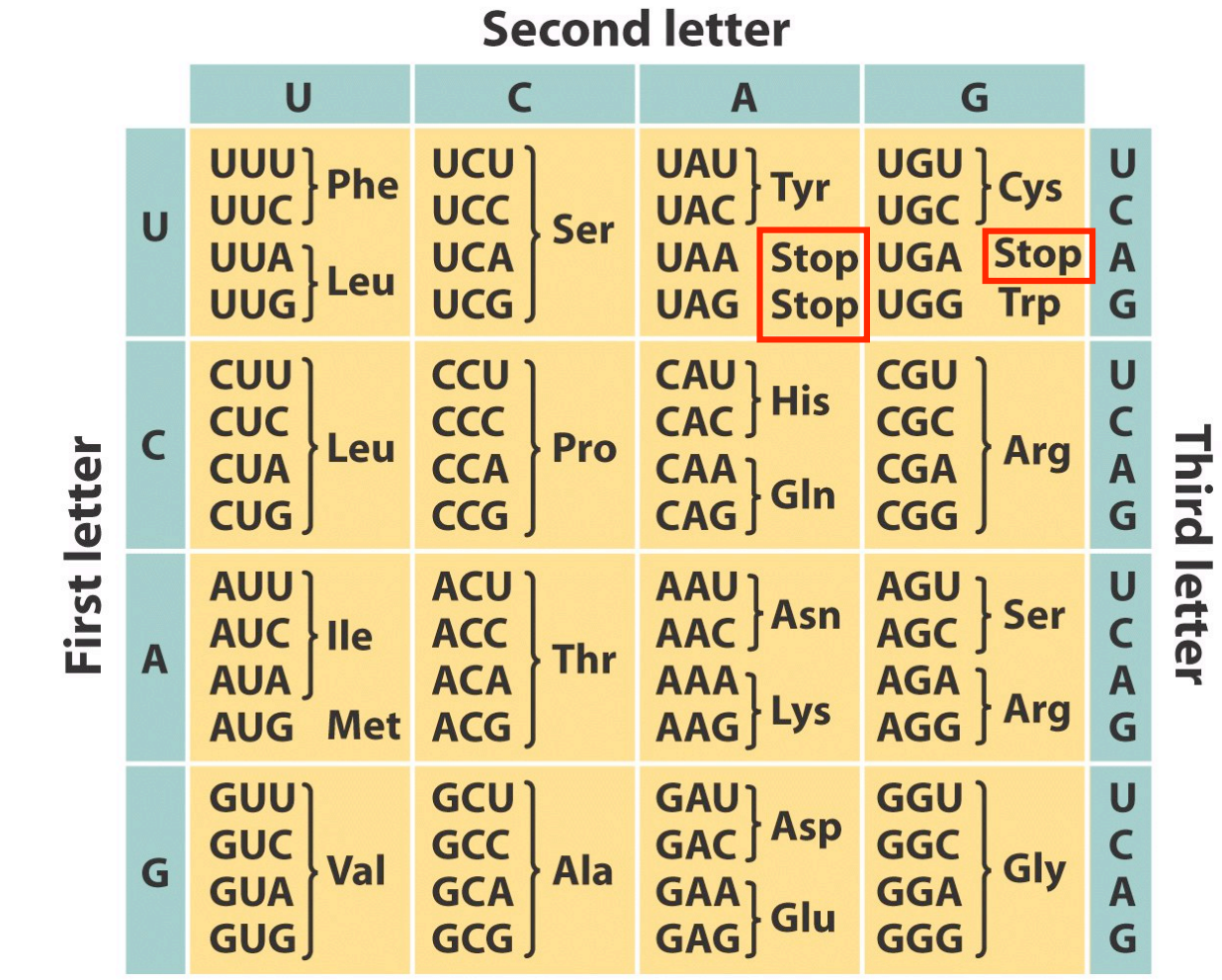
Vorming van een polypeptide











Degeneration of the code:
Multiple codons for the same amino acid

STOP codons:

Amber: UAG
Opal: UGA
Ochre: UAA

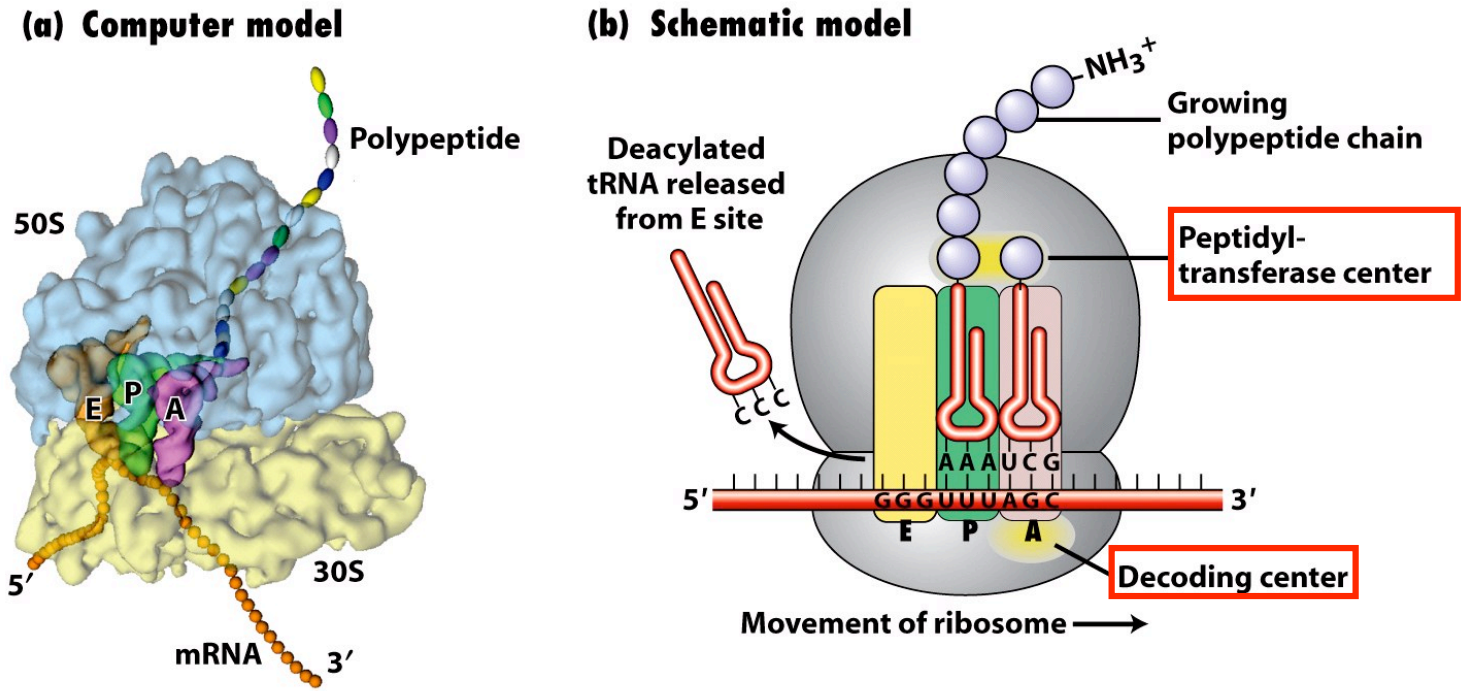


Figure 9-13
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A position (aminoacyl) is the entry site.
P position (peptidyl) contains tRNA attached to growing peptide.
E position ("exit") contains the deacetylated tRNA ready to leave the ribosome.

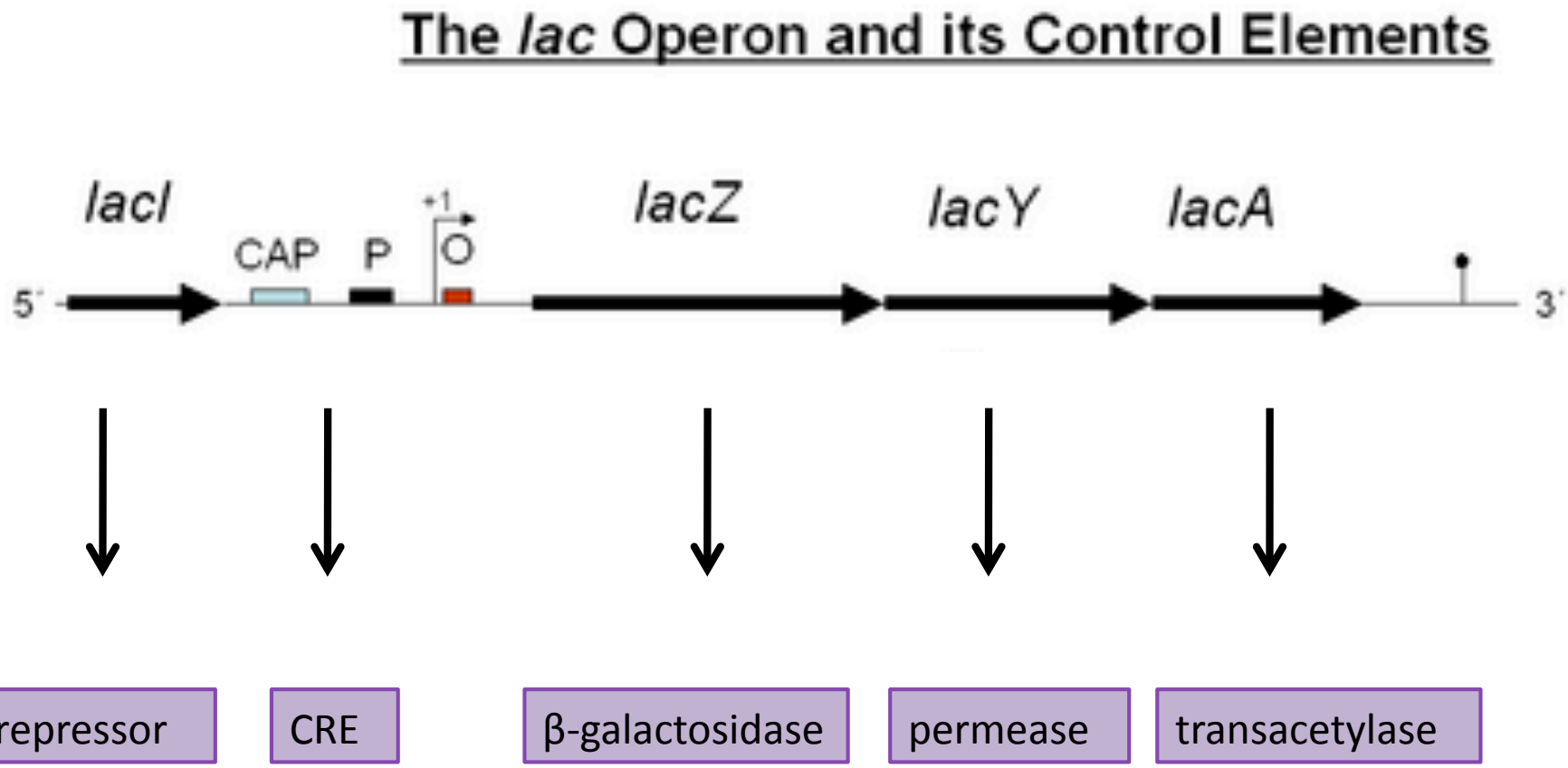
GEN REGULATIE

op verschillende niveau's

- Transcriptie
  - Bv: Lac operon
- Translatie
  - Bv: anti-sense RNA zoals R-proteines
- Proteines
  - Bv: degradatie via proteasen/proteasoom

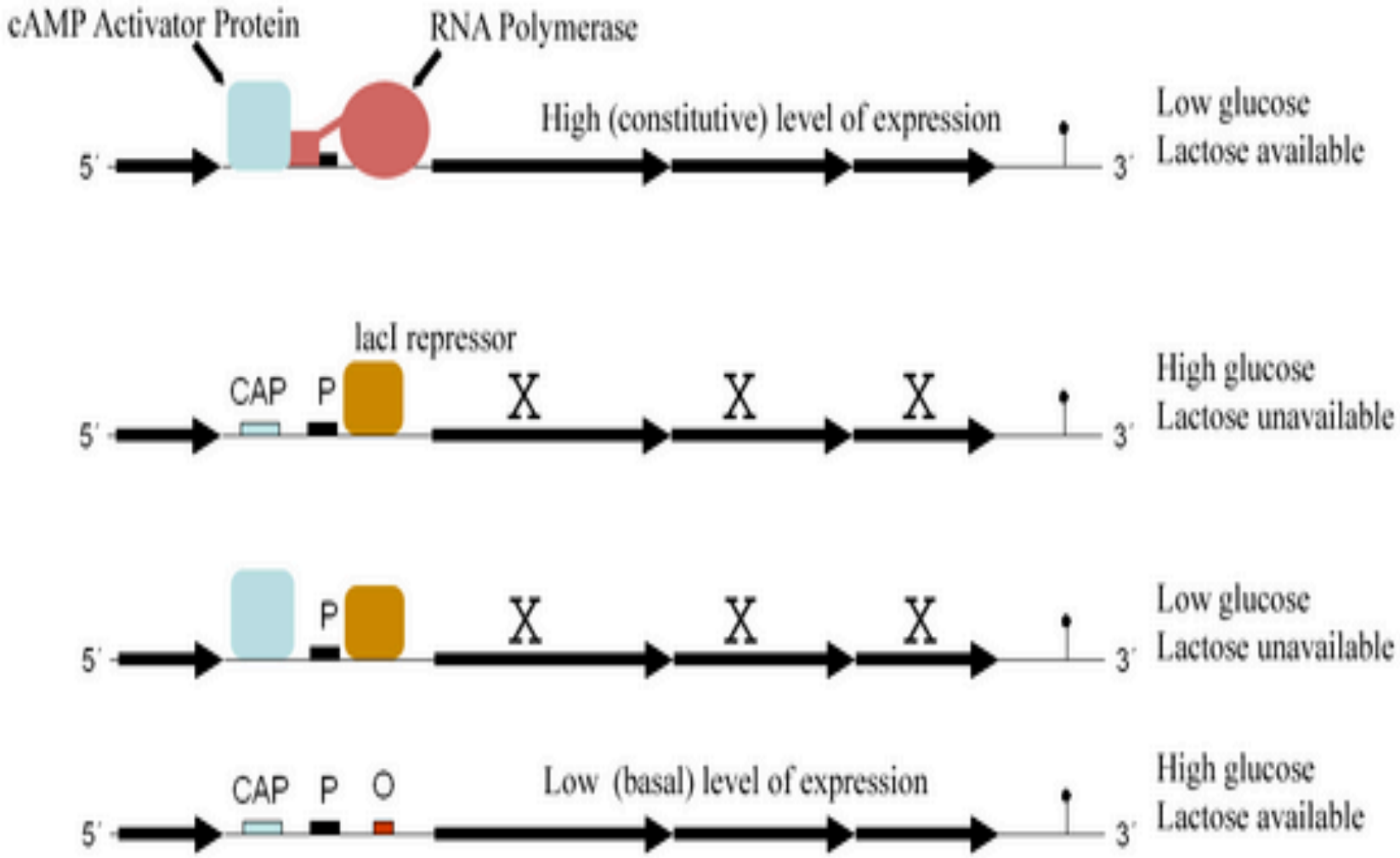
GEN REGULATIE

Lac – Operon spelers:



repressor | CRE | β-galactosidase | permease | transacetylase

mechanisme


cAMP Activator Protein
RNA Polymerase
High (constitutive) level of expression
Low glucose
Lactose available
5'
3'
lacI repressor
CAP
P
X
X
X
High glucose
Lactose unavailable
P
X
X
X
Low glucose
Lactose unavailable
CAP
P
O
Low (basal) level of expression
High glucose
Lactose available

resultaat

	Repressor	**CRP**	**Resultaat**
Lactose + Glucose -	Niet actief	Actief	Veel expressie
Lactose + Glucose+	Niet actief	Niet actief	Weinig expressie
Lacotose - Glucose +	Actief	Niet actief	Geen expressie
Lactose - Glucose -	Actief	Actief	Geen expressie