

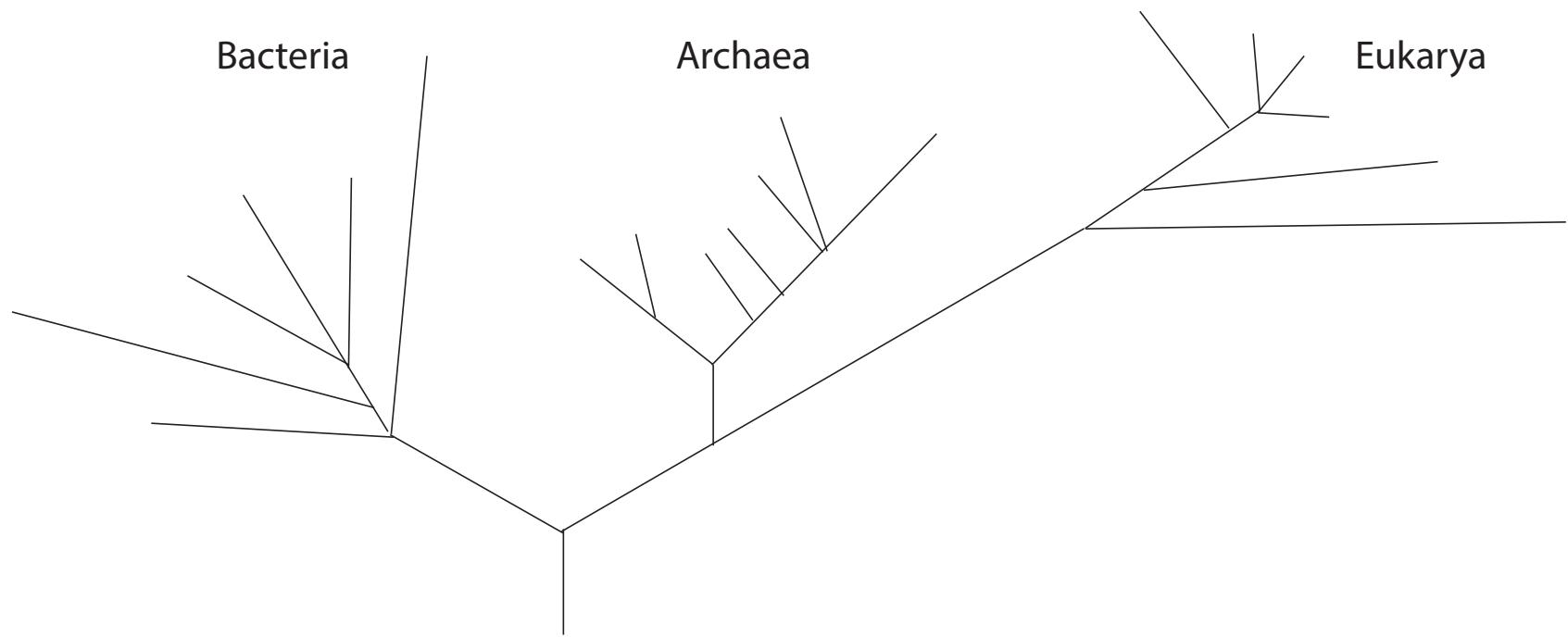
INTRODUKTION TILL MIKROBIOLOGI

Bilder

Karin Carlson Claës Linder
Klas Flärdh Stefan Bertilsson
Magnus Lundgren Staffan Svärd

1

Vad är mikrobiologi?

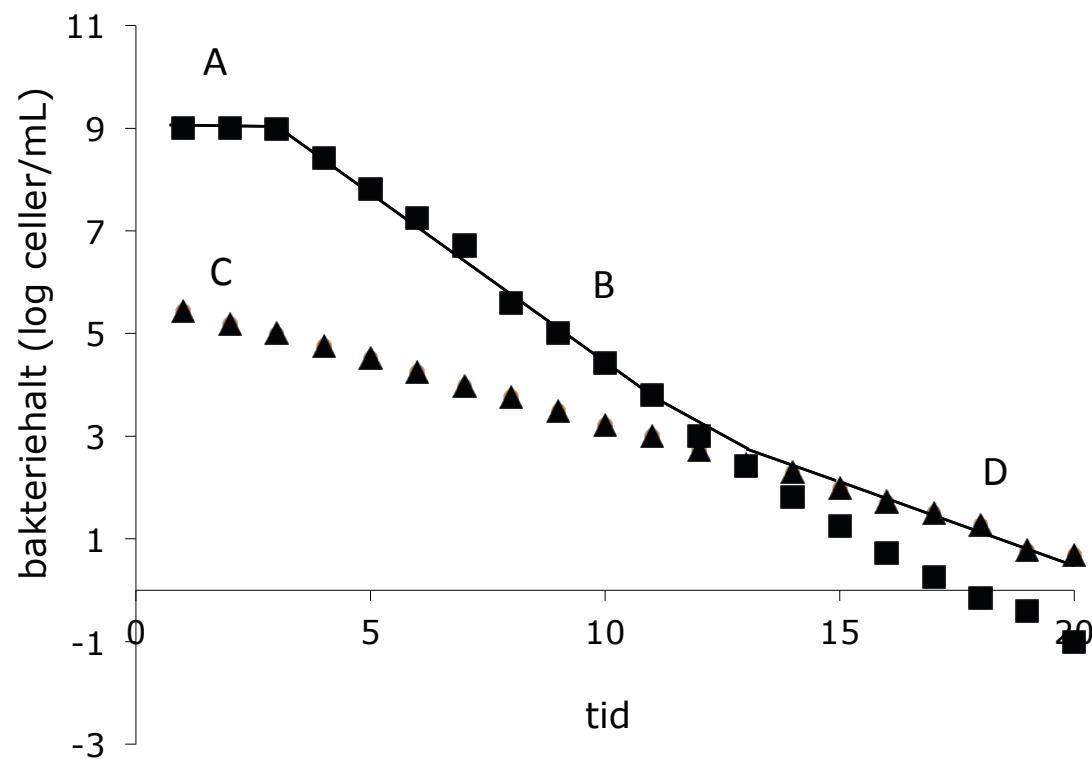


Figur 1.1

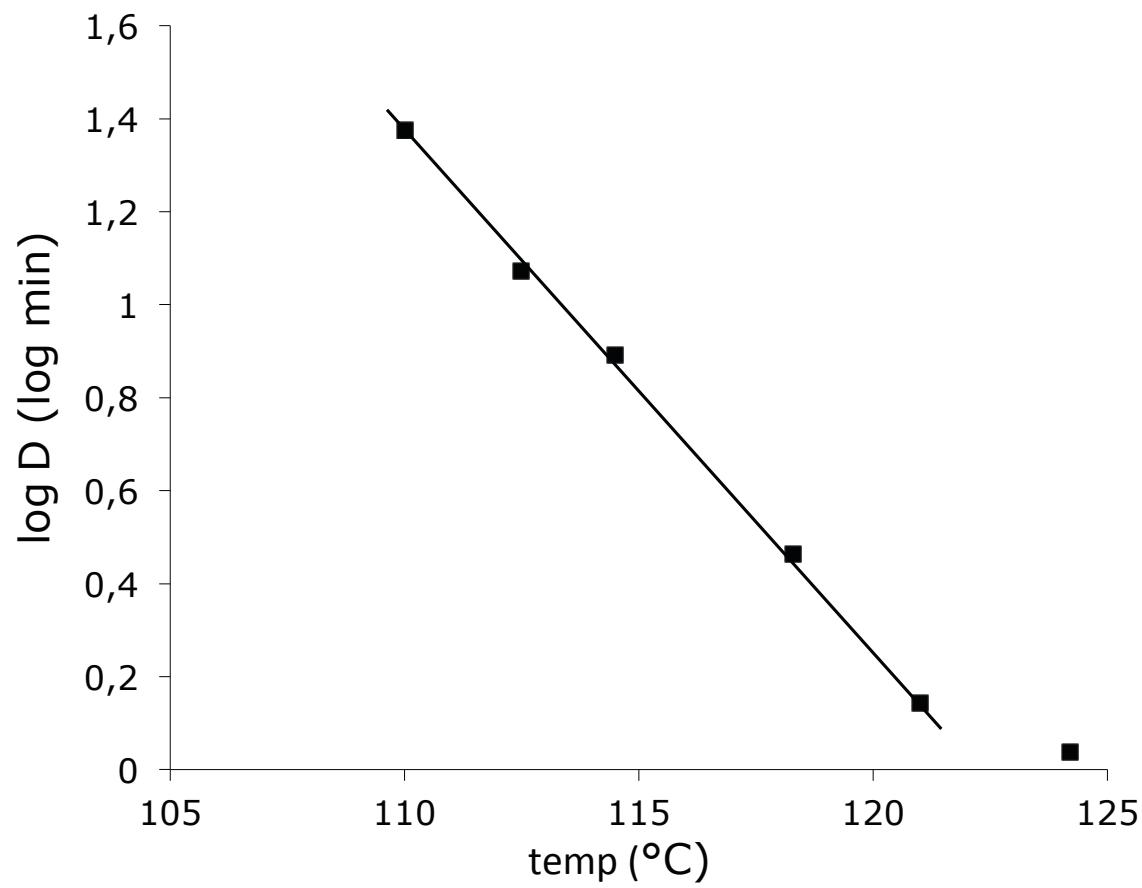
A red-tinted microscopic image showing a variety of microorganisms. In the foreground, several rod-shaped bacteria are visible, some appearing slightly curved. Interspersed among them are several larger, round yeast cells. The background is dark, making the reddish-brown organisms stand out.

2

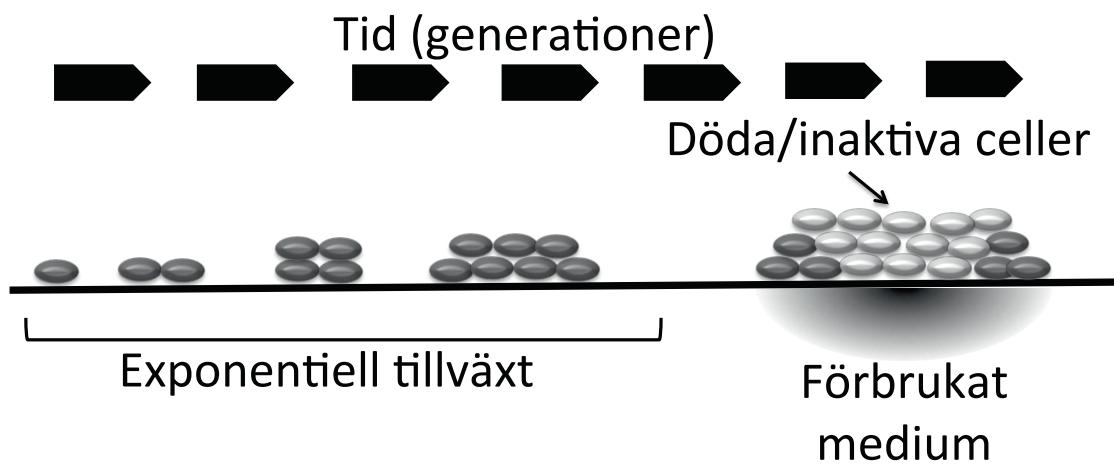
Mikrobiologisk arbetsmetodik



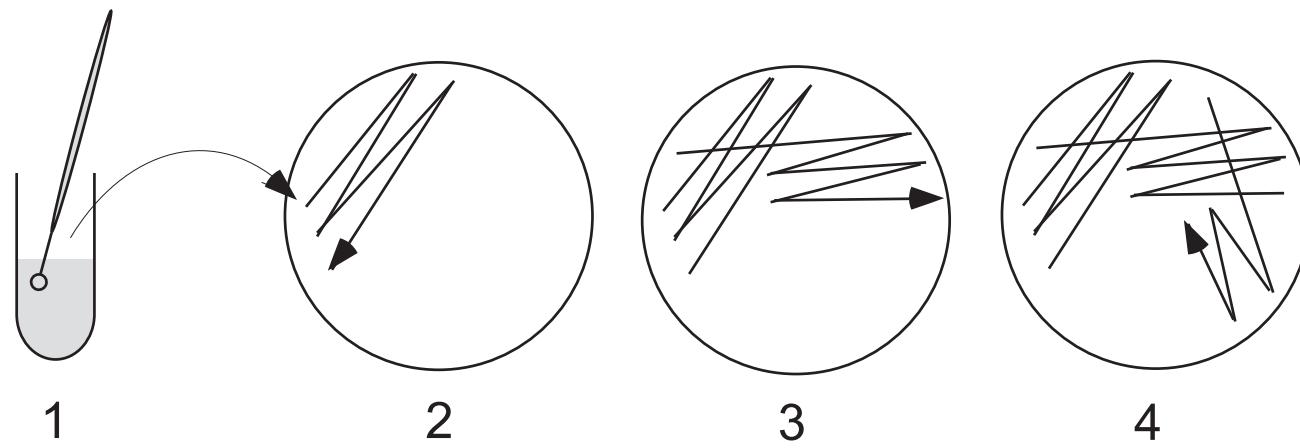
Figur 2.1



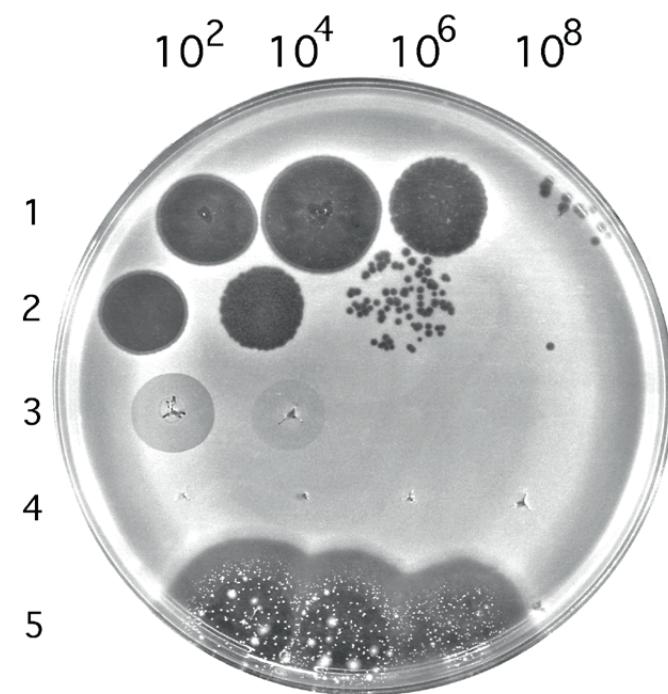
Figur 2.2



Figur 2.3



Figur 2.4

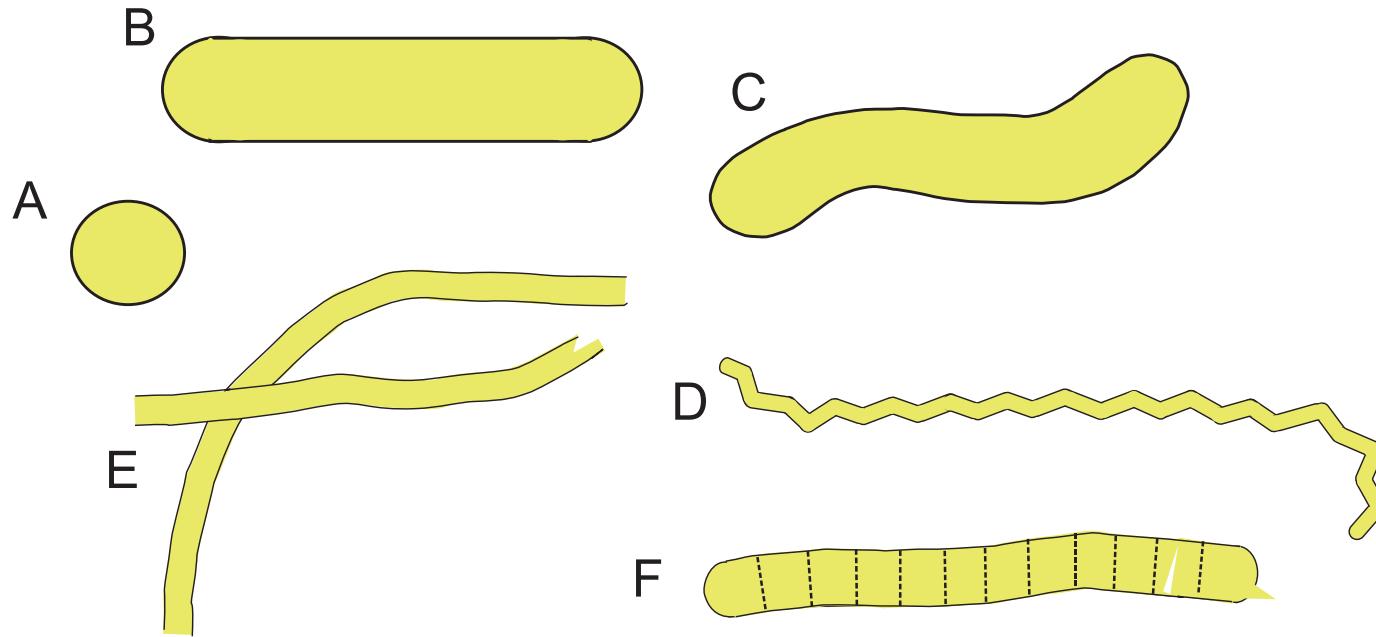


Figur 2.5

A microscopic view of various bacterial cells against a dark background. The cells are shown in different orientations, some appearing as long rods and others as smaller, rounded spheres. They have a translucent, slightly textured appearance.

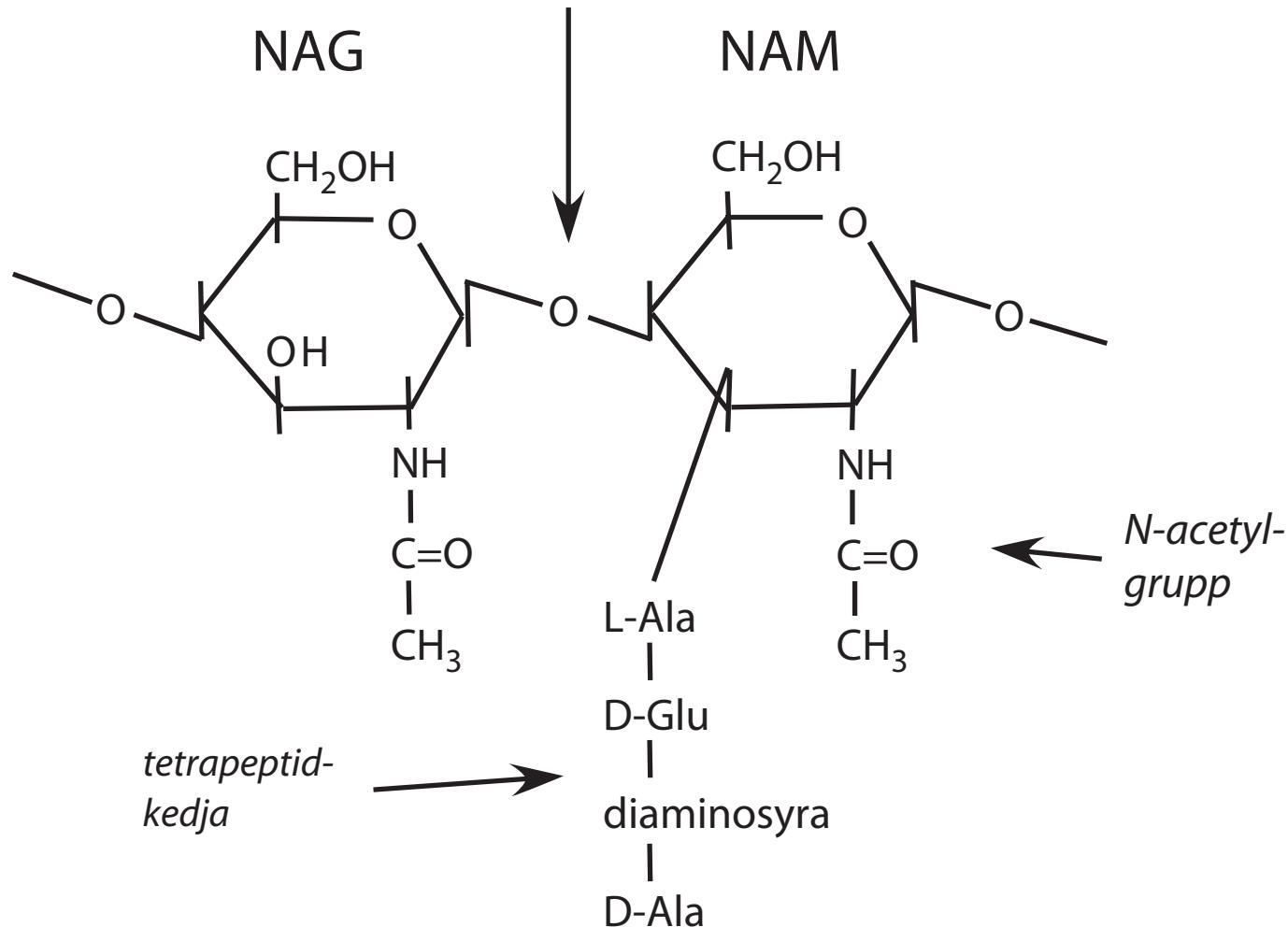
3

Bakterieceller

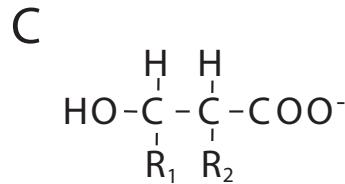
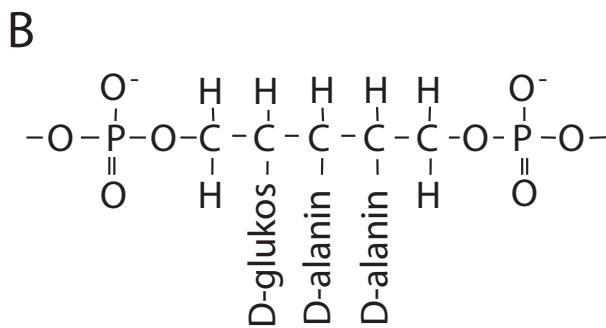
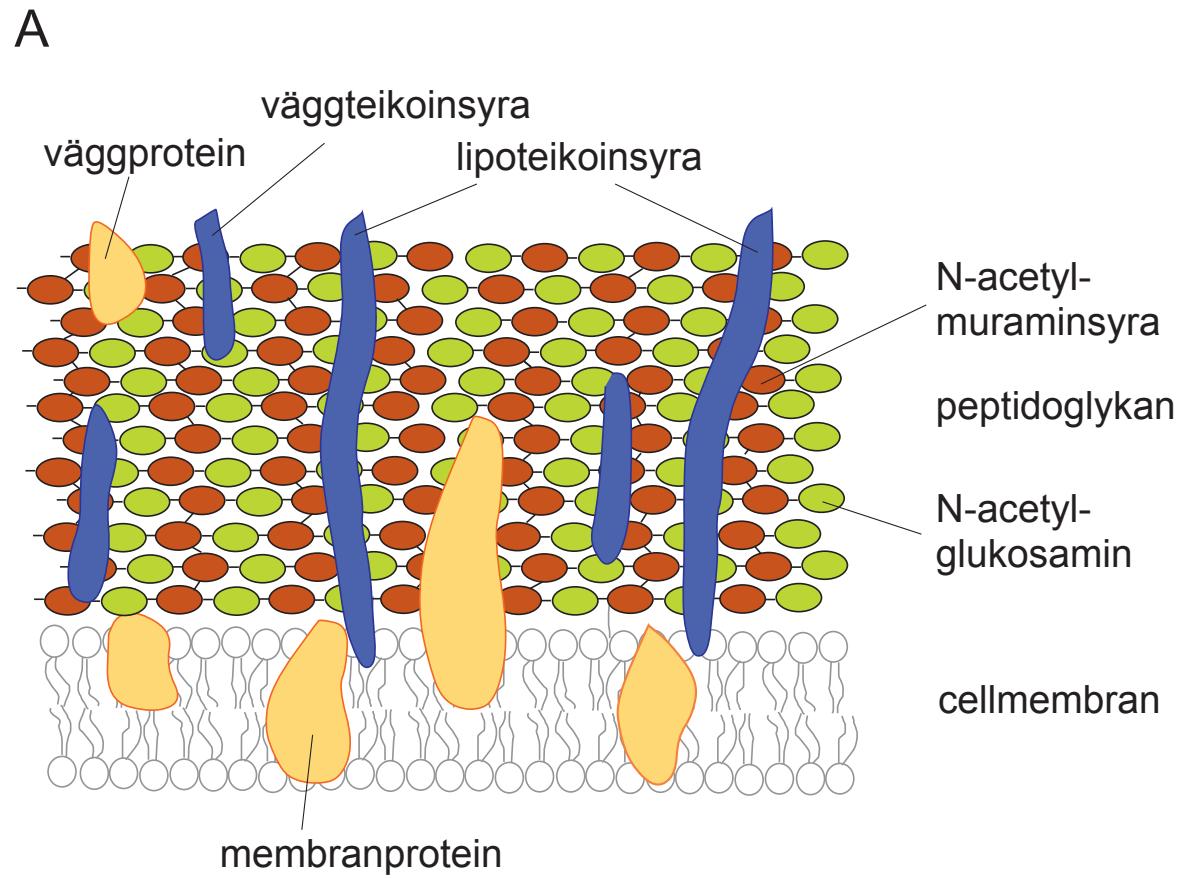


Figur 3.1

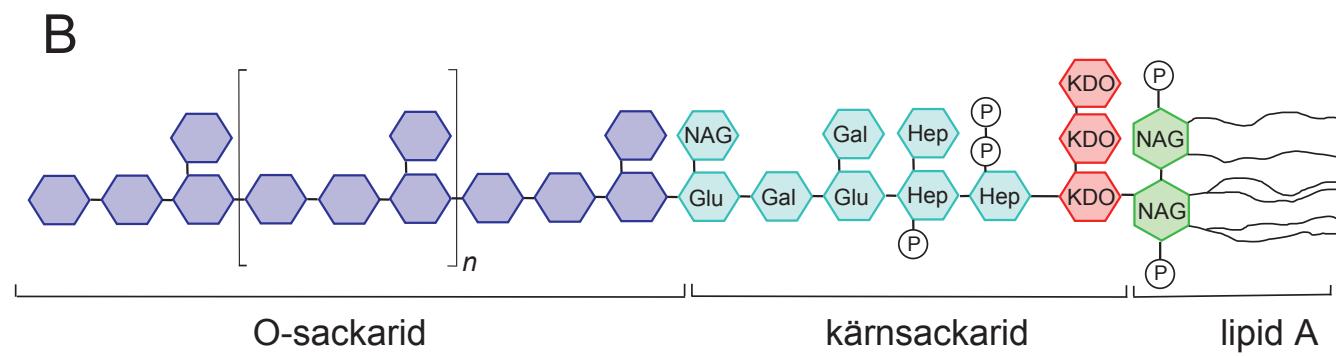
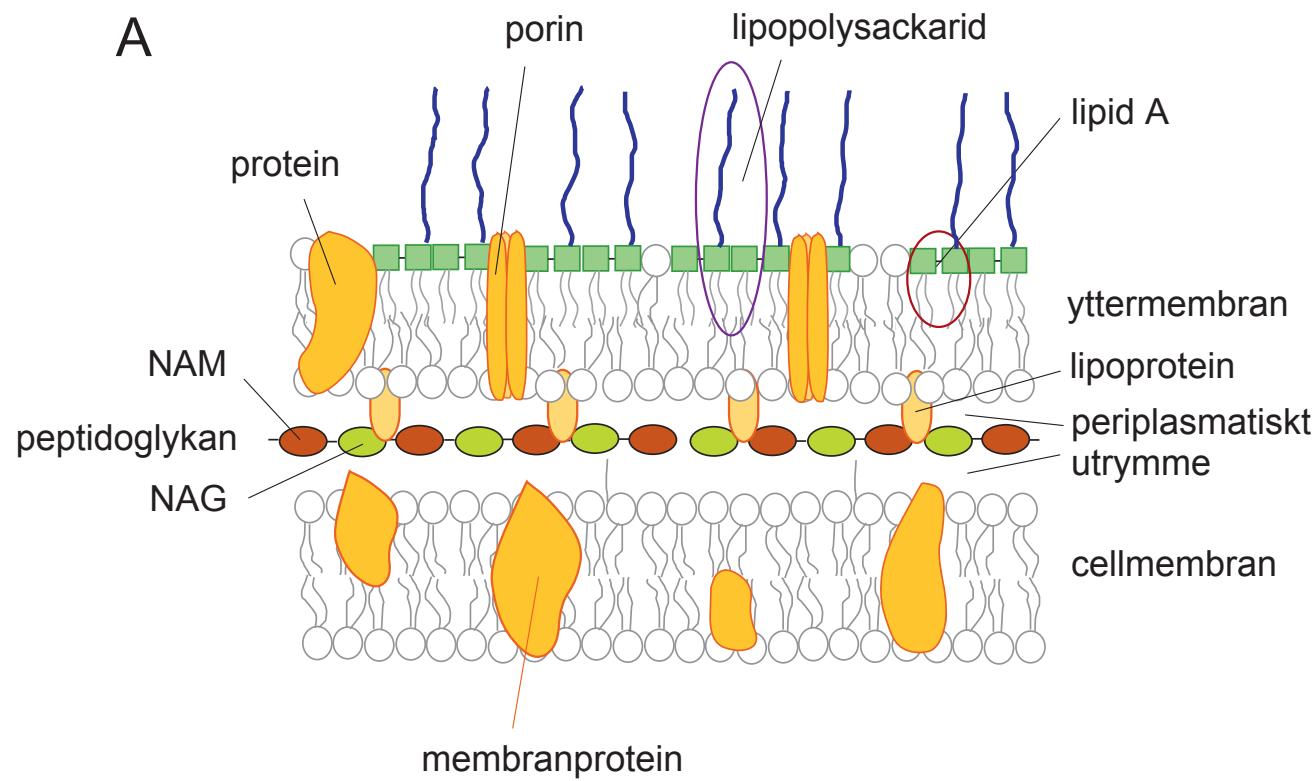
$\beta(1,4)$ glykosid-bindning, känslig för lysozym



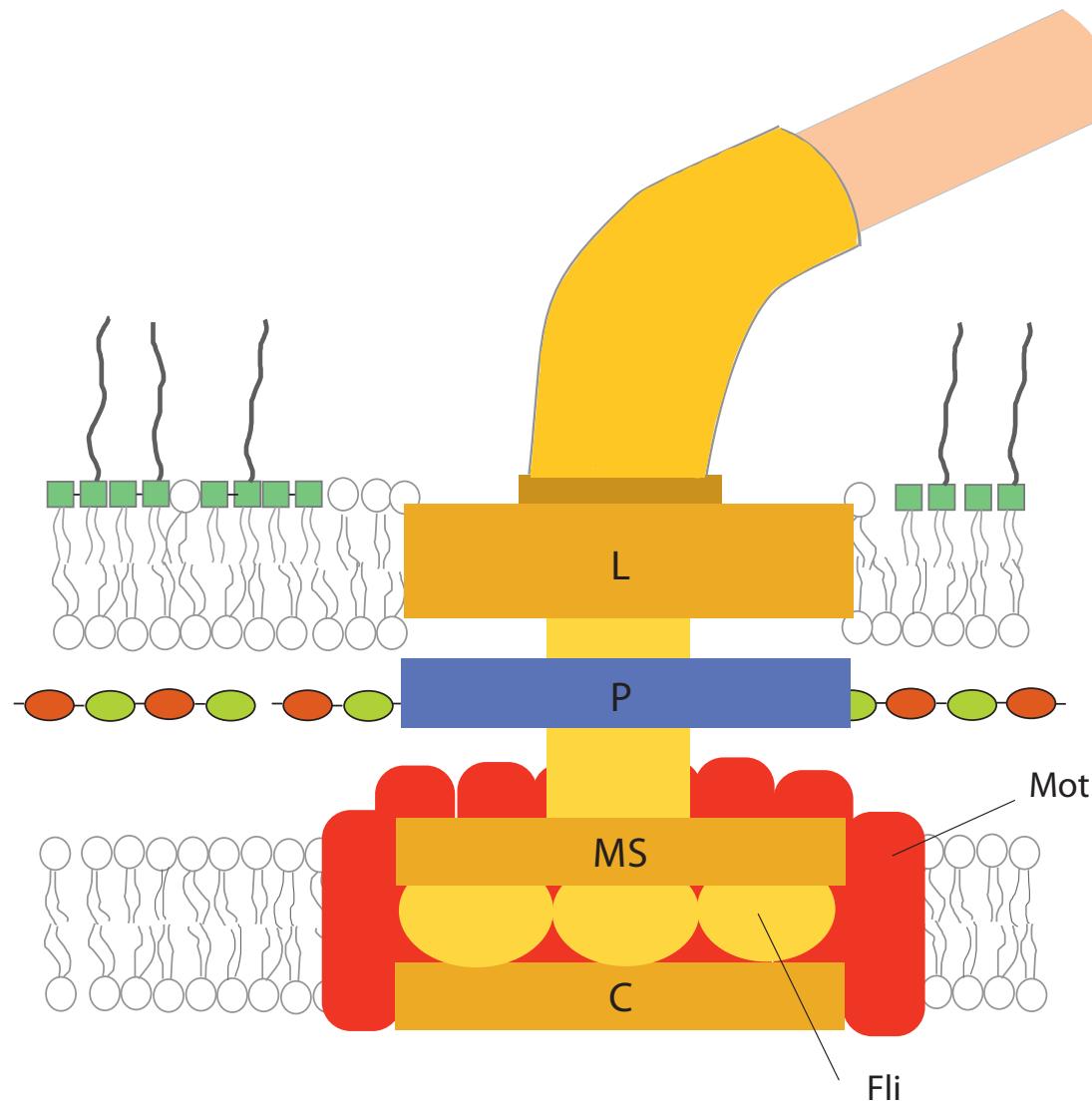
Figur 3.2



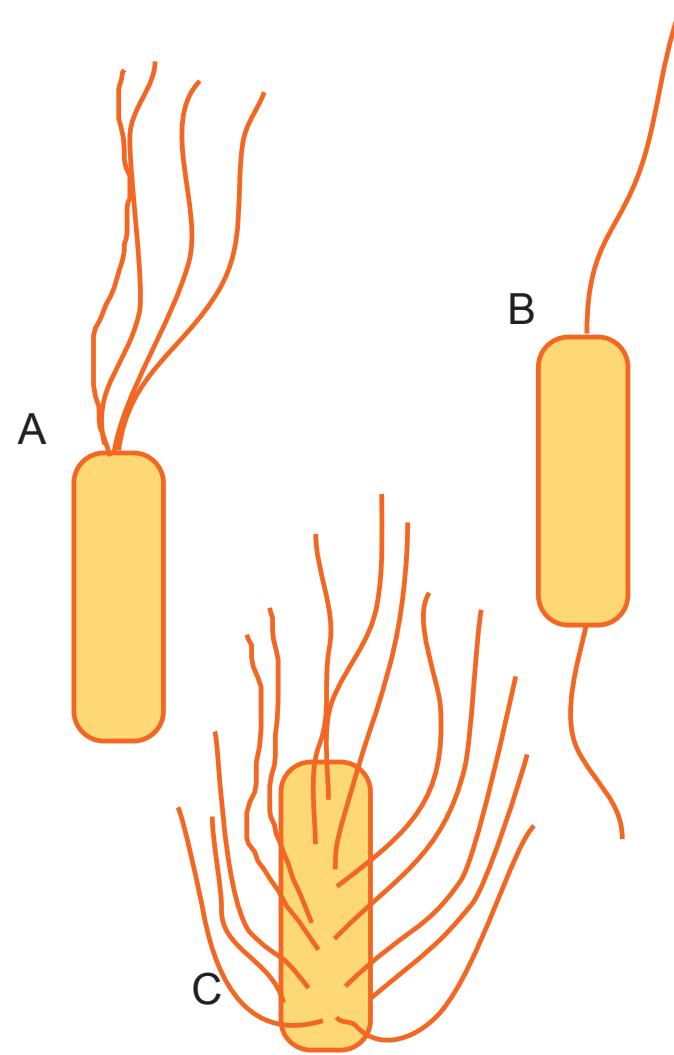
Figur 3.3



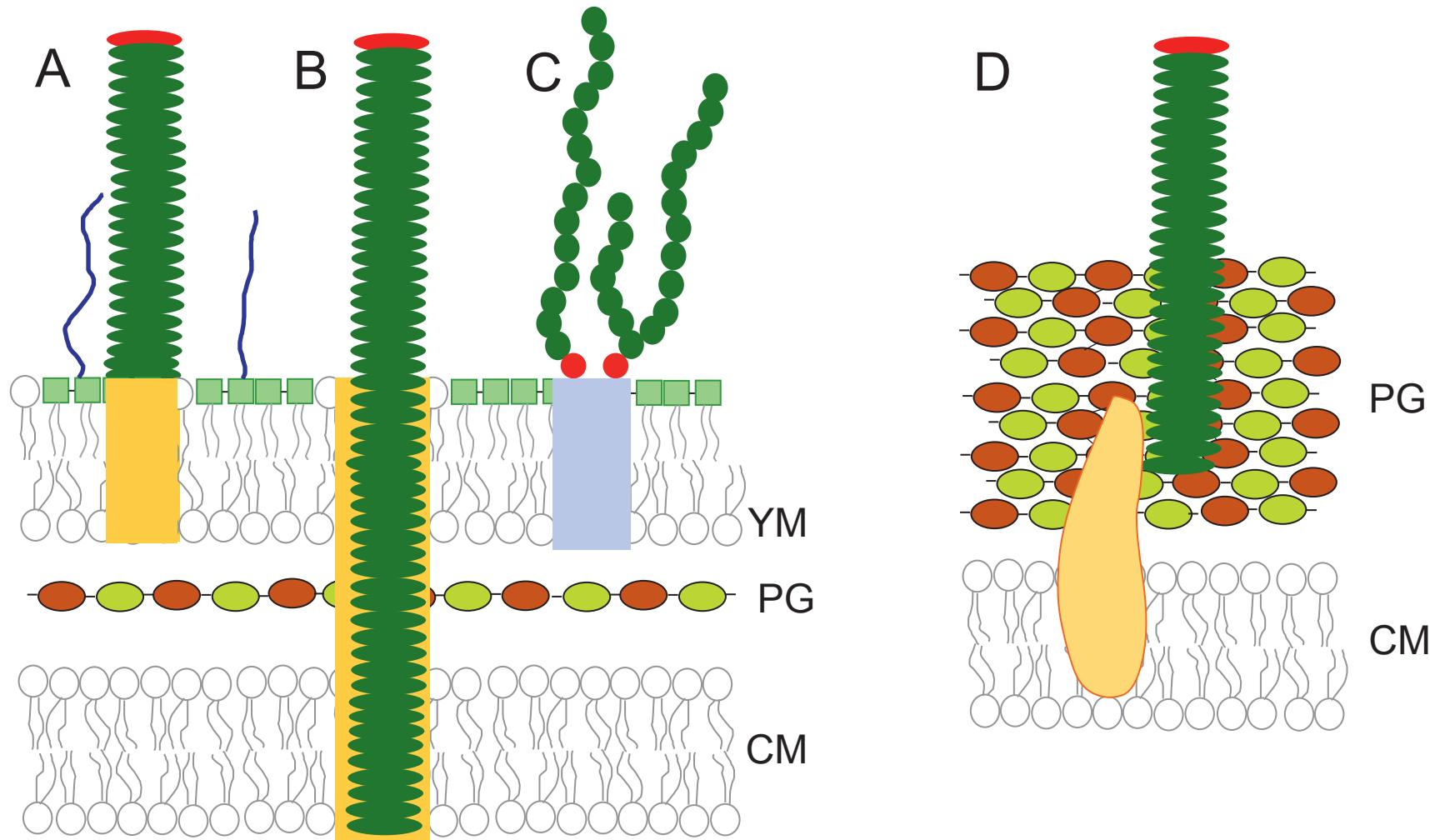
Figur 3.4A–B



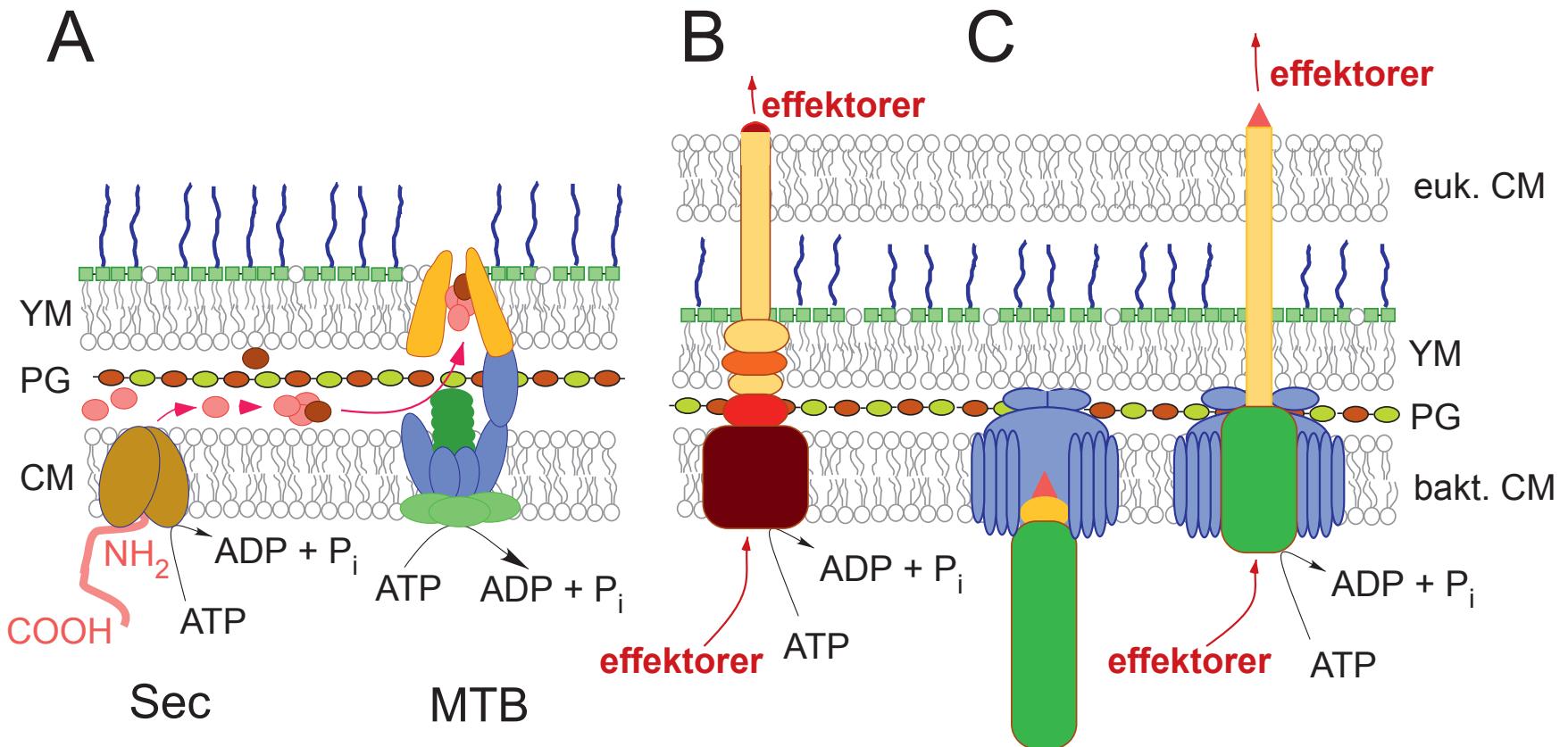
Figur 3.5



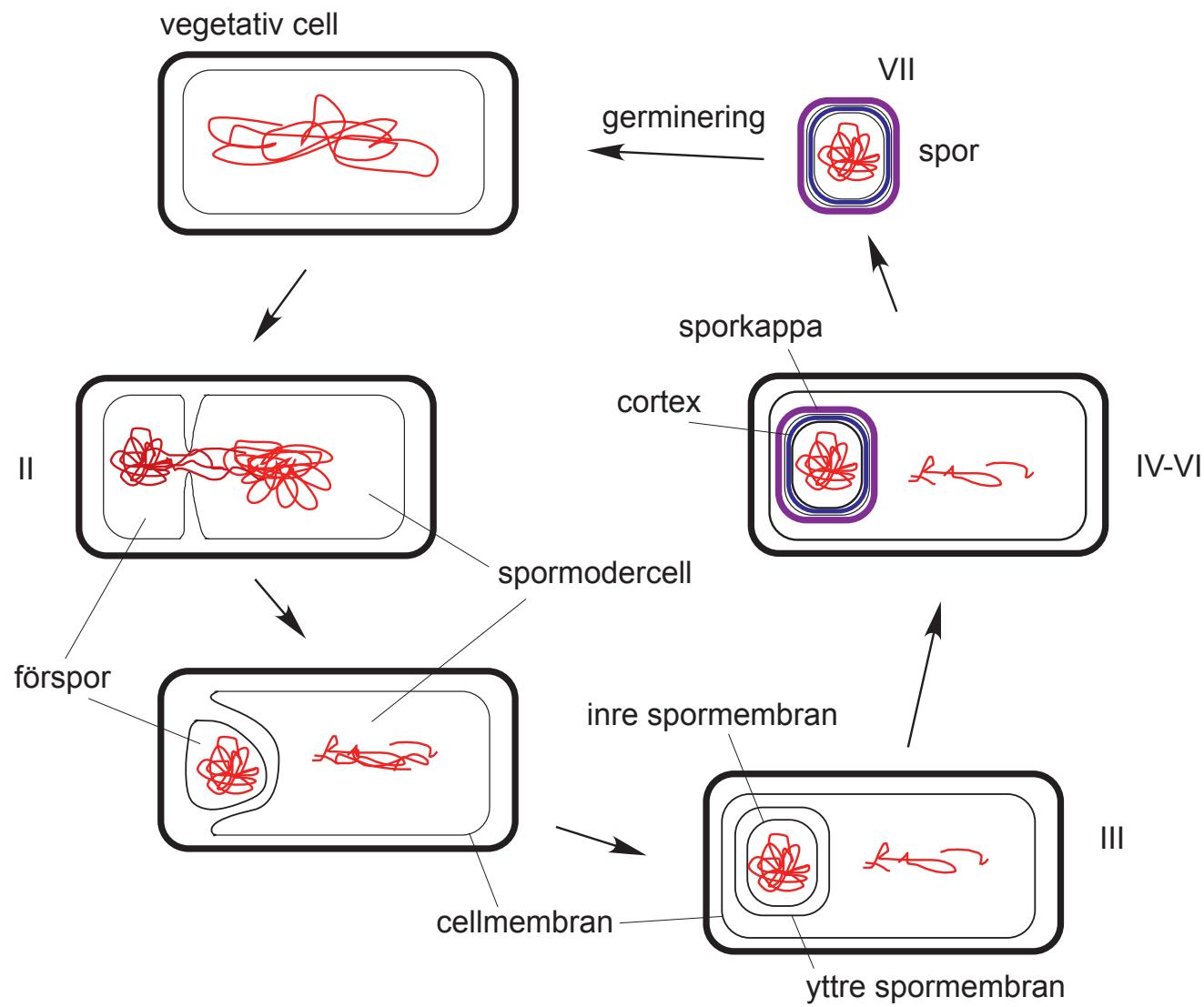
Figur 3.6



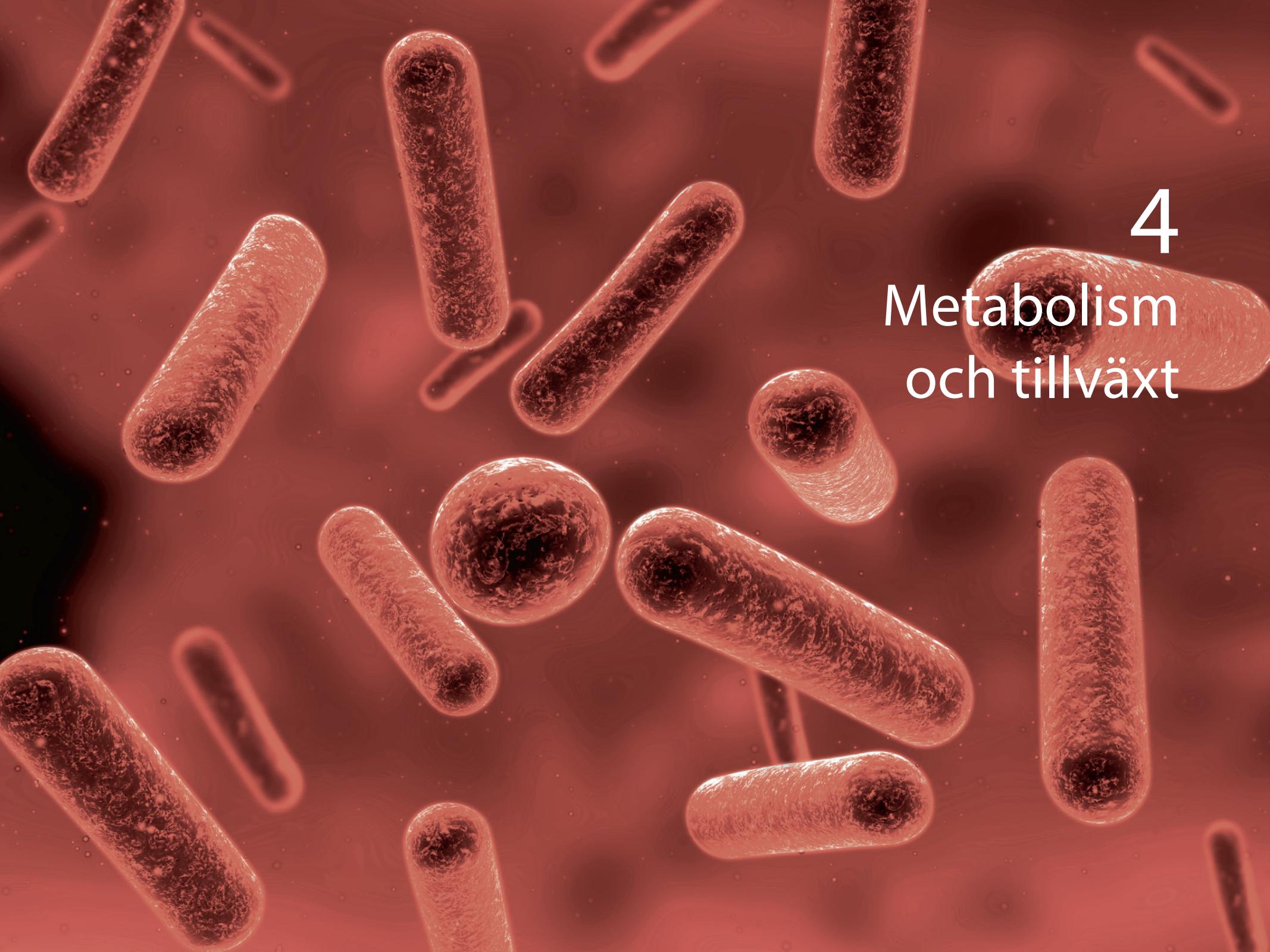
Figur 3.7A–D



Figur 3.8

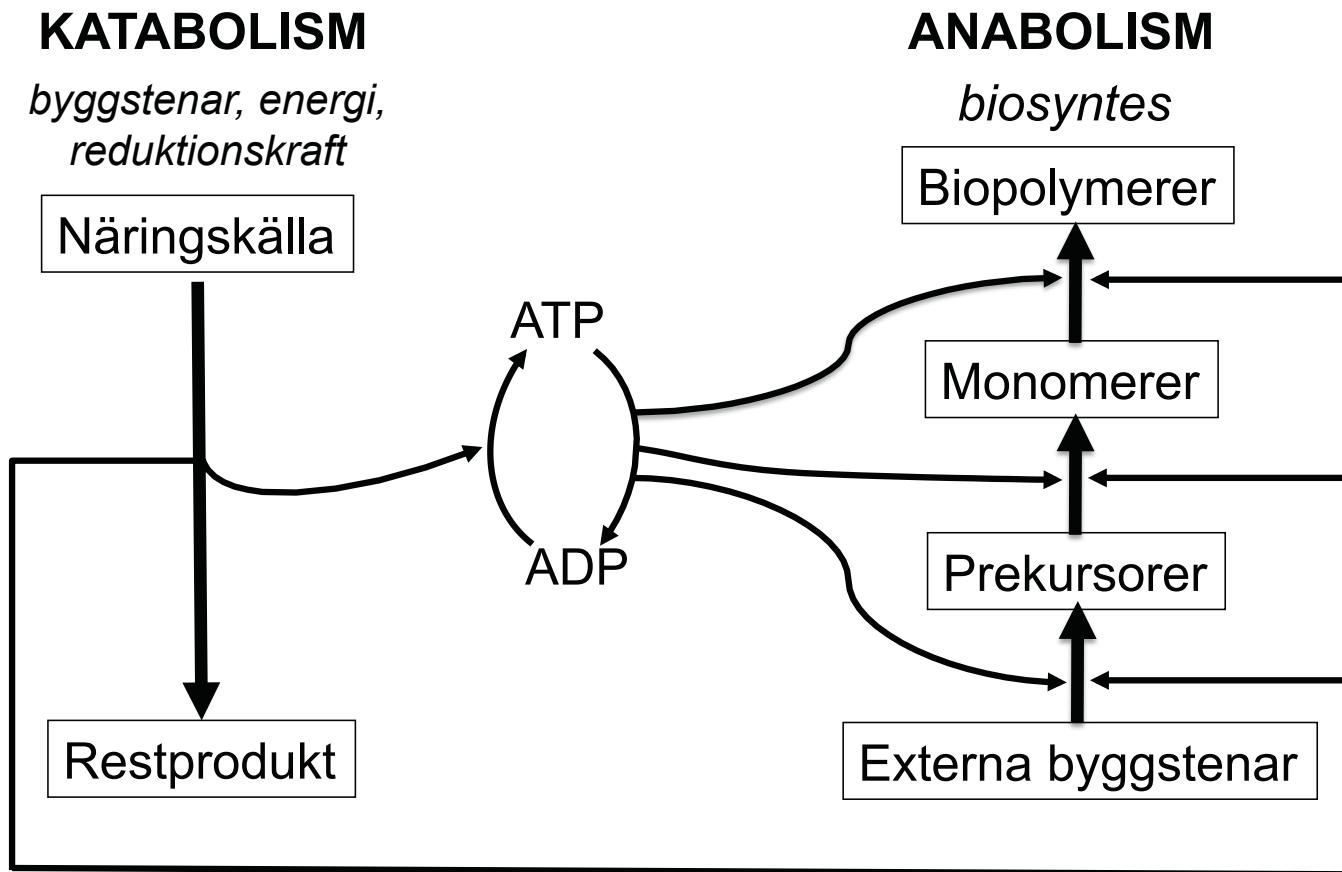


Figur 3.9

A red-tinted microscopic image showing various microorganisms, including several rod-shaped bacteria and one spherical yeast-like cell, against a dark background.

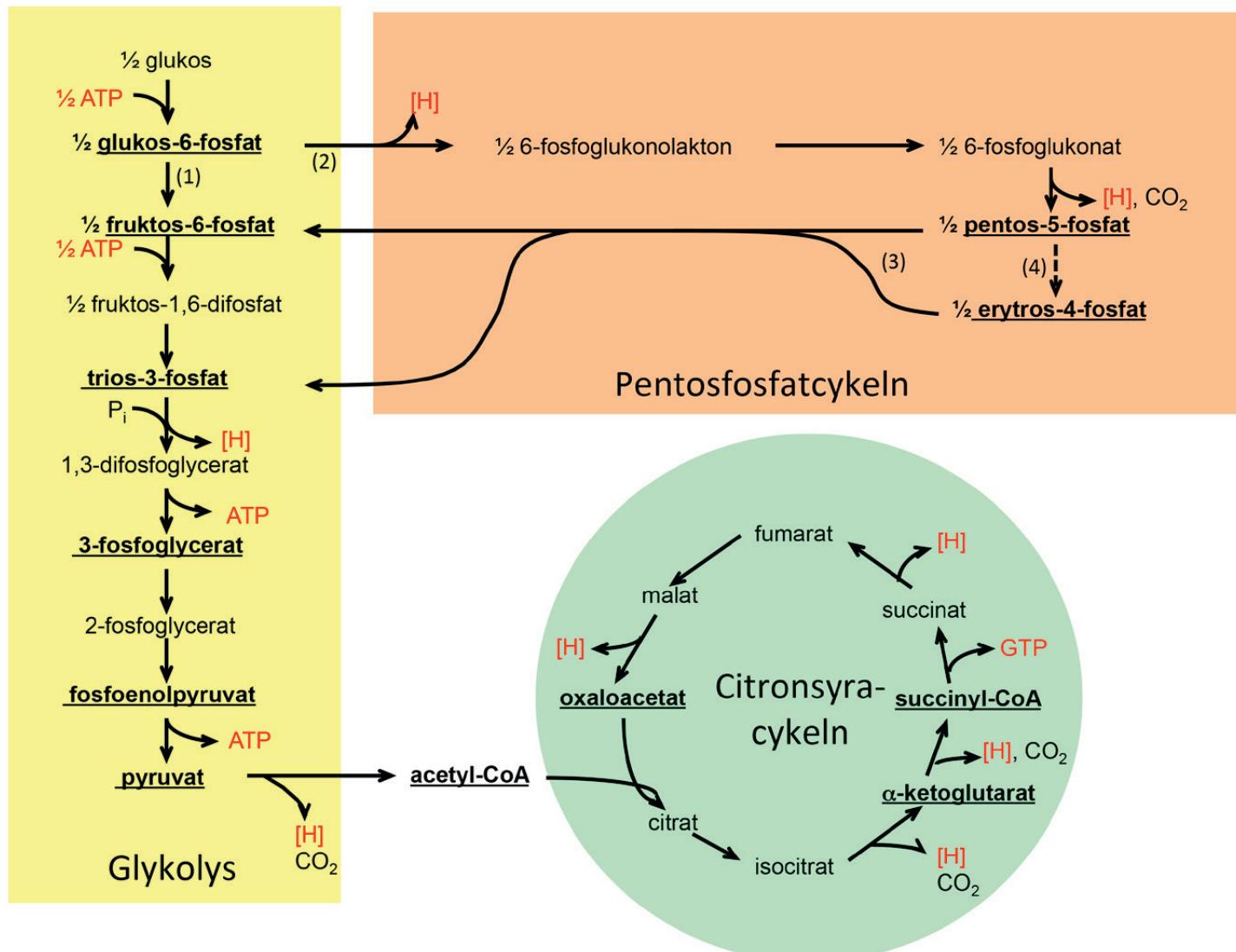
4

Metabolism och tillväxt



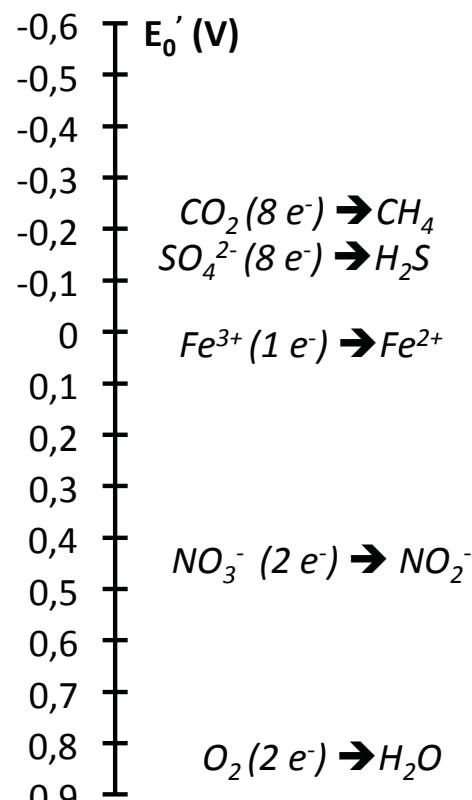
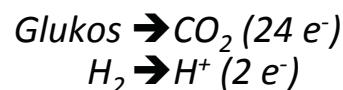
Byggstenar, reduktionskraft via exempelvis NADH

Figur 4.1



Figur 4.2

**Substrat + oxiderad elektronbärare ger
reducerad elektronbärare + produkt**



Tillgänglig energi

*Exempel: aerob
glukosoxidation*

$$\Delta E_0' = 0.82 - (-0.43)$$

$$\Delta E_0' = 1.25 \text{ V}$$

Gibbs fria energi

$$\Delta G^0' = -nF\Delta E_0'$$

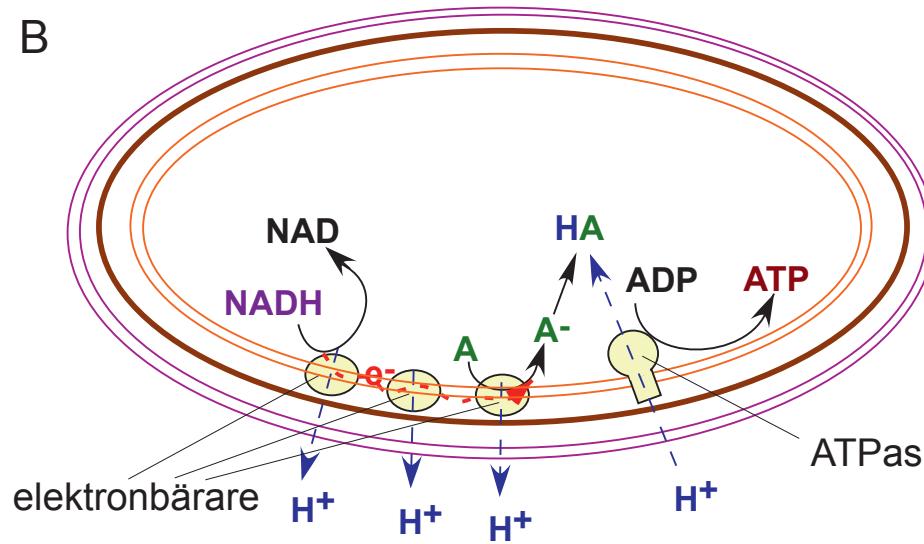
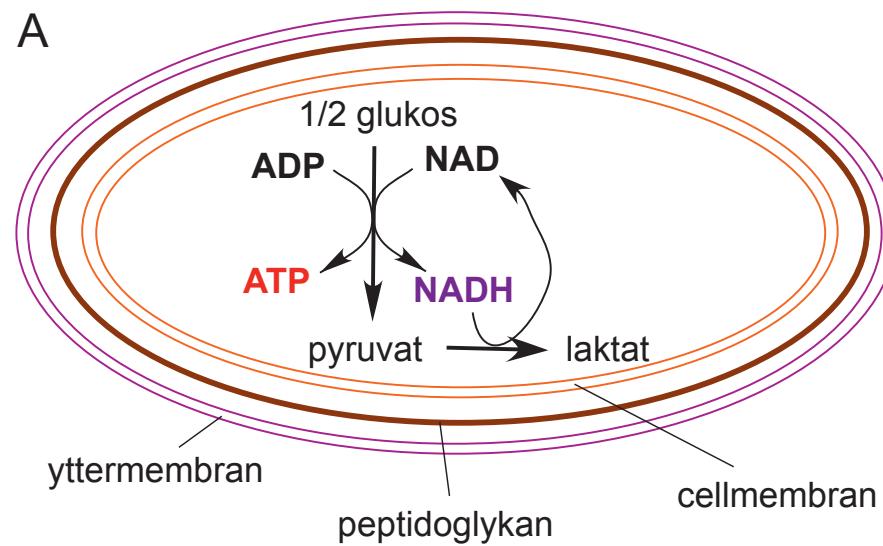
n = antal elektroner

F = Faradays konstant

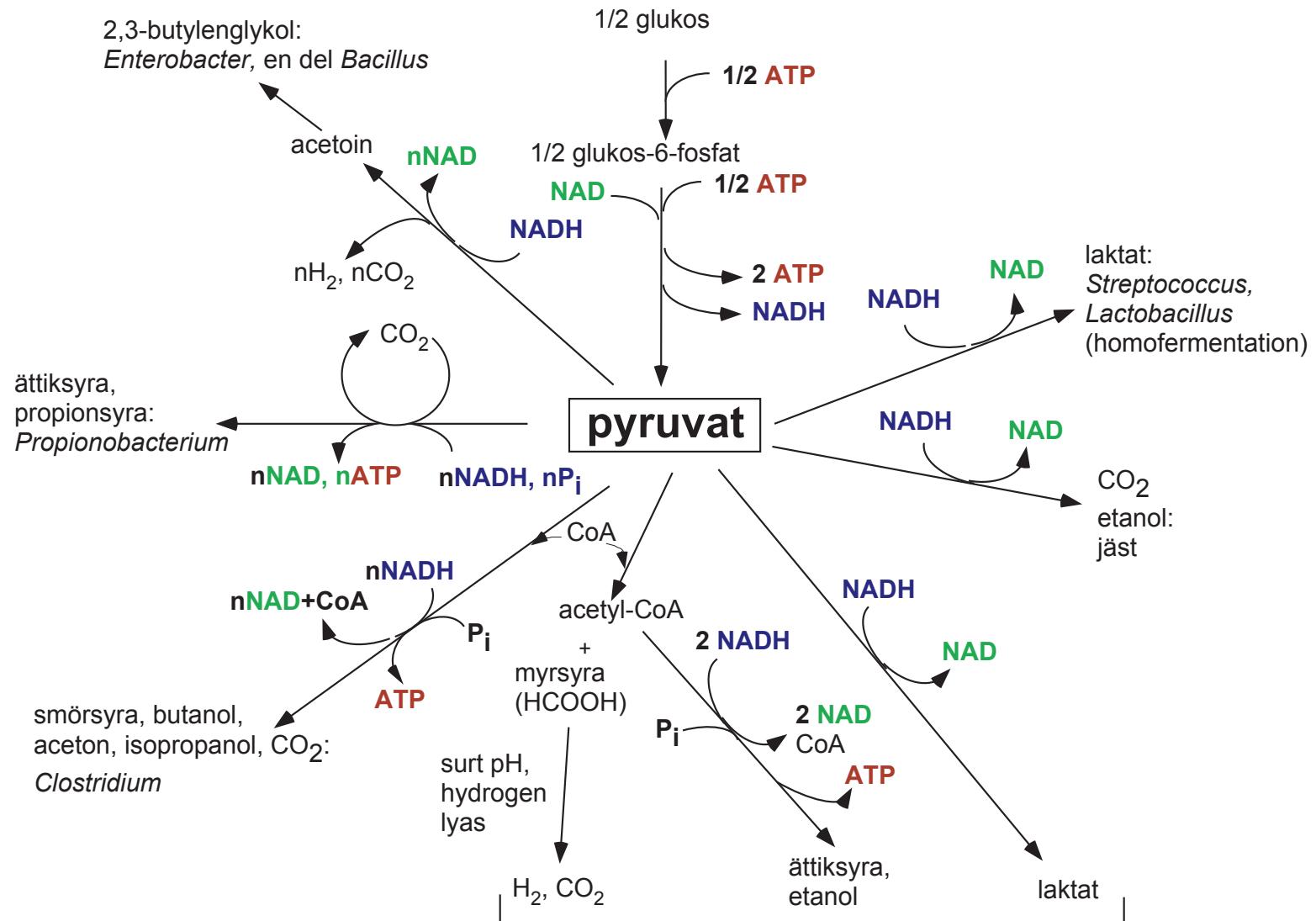
$$\Delta G^0' = -2,9 \text{ megajoule per mol glukos}$$

**Substrat + reducerad elektronbärare ger
oxiderad elektronbärare + produkt**

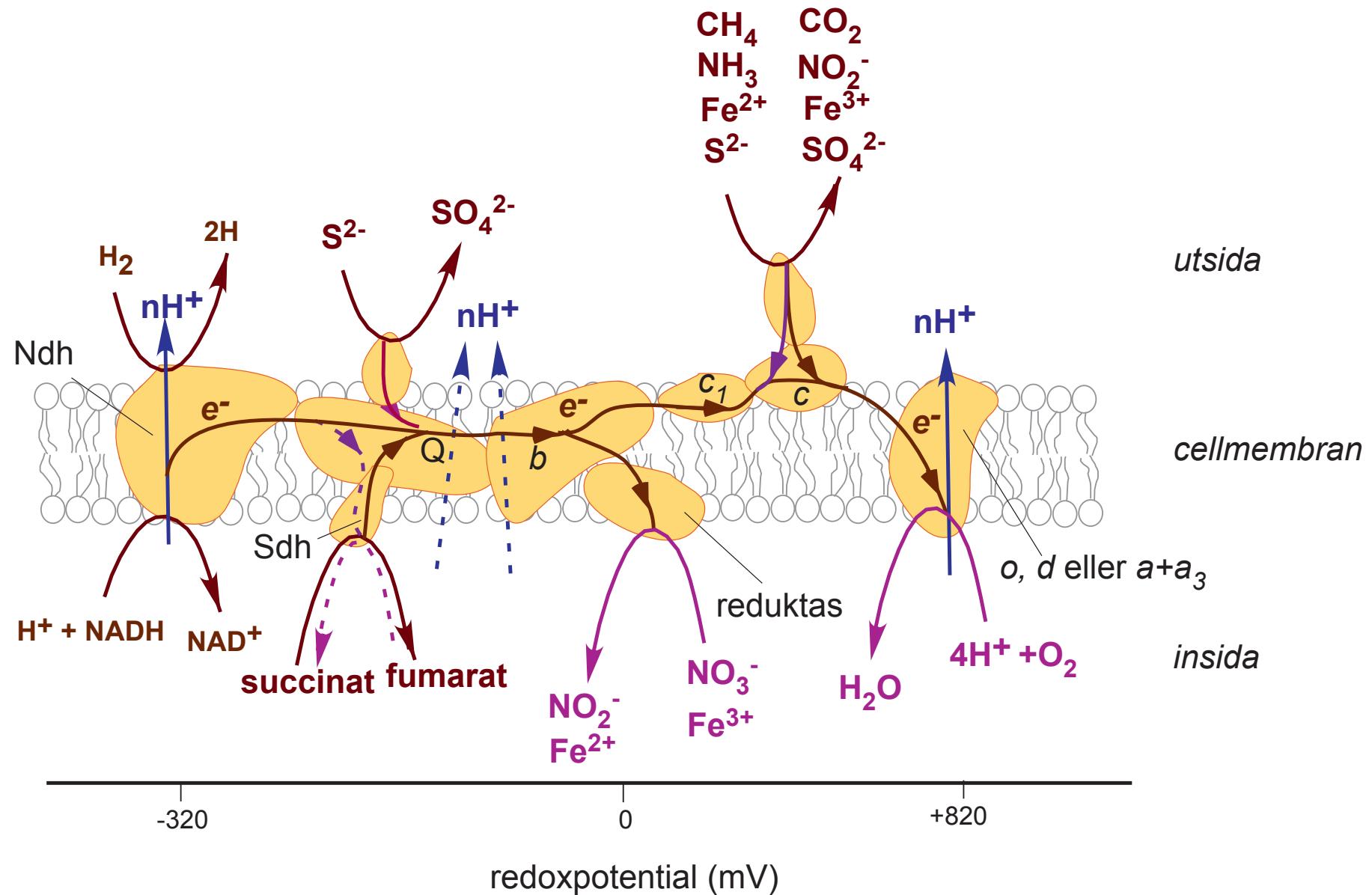
Figur 4.3



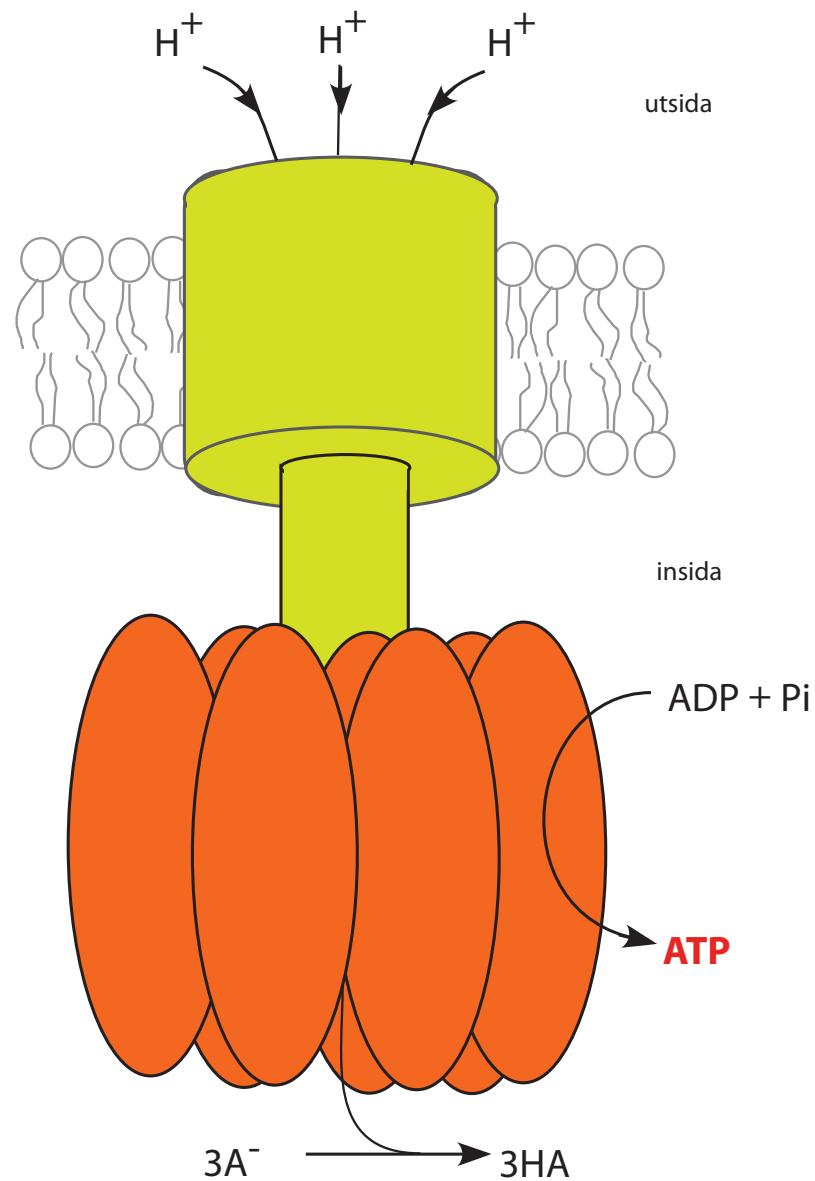
Figur 4.4



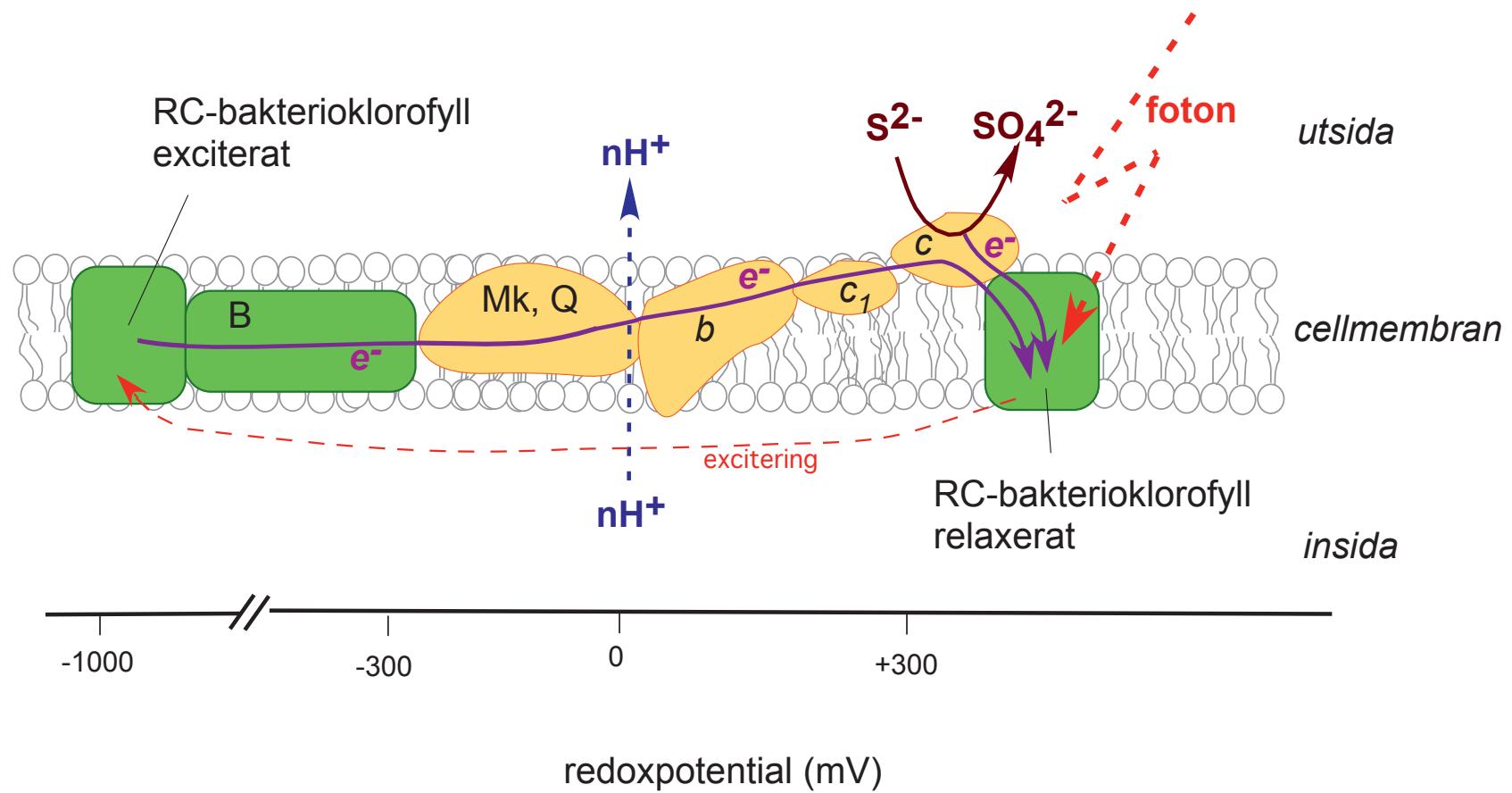
Figur 4.5



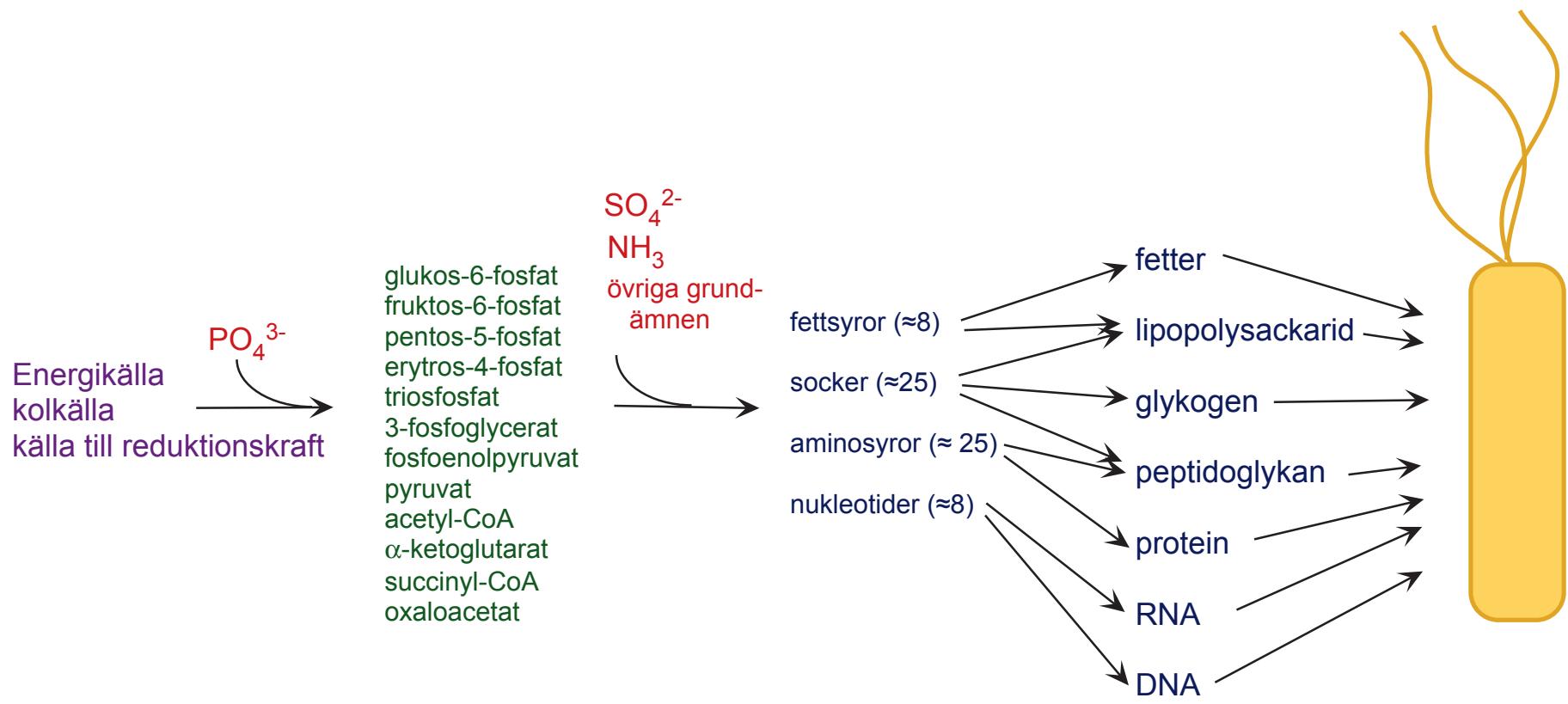
Figur 4.6



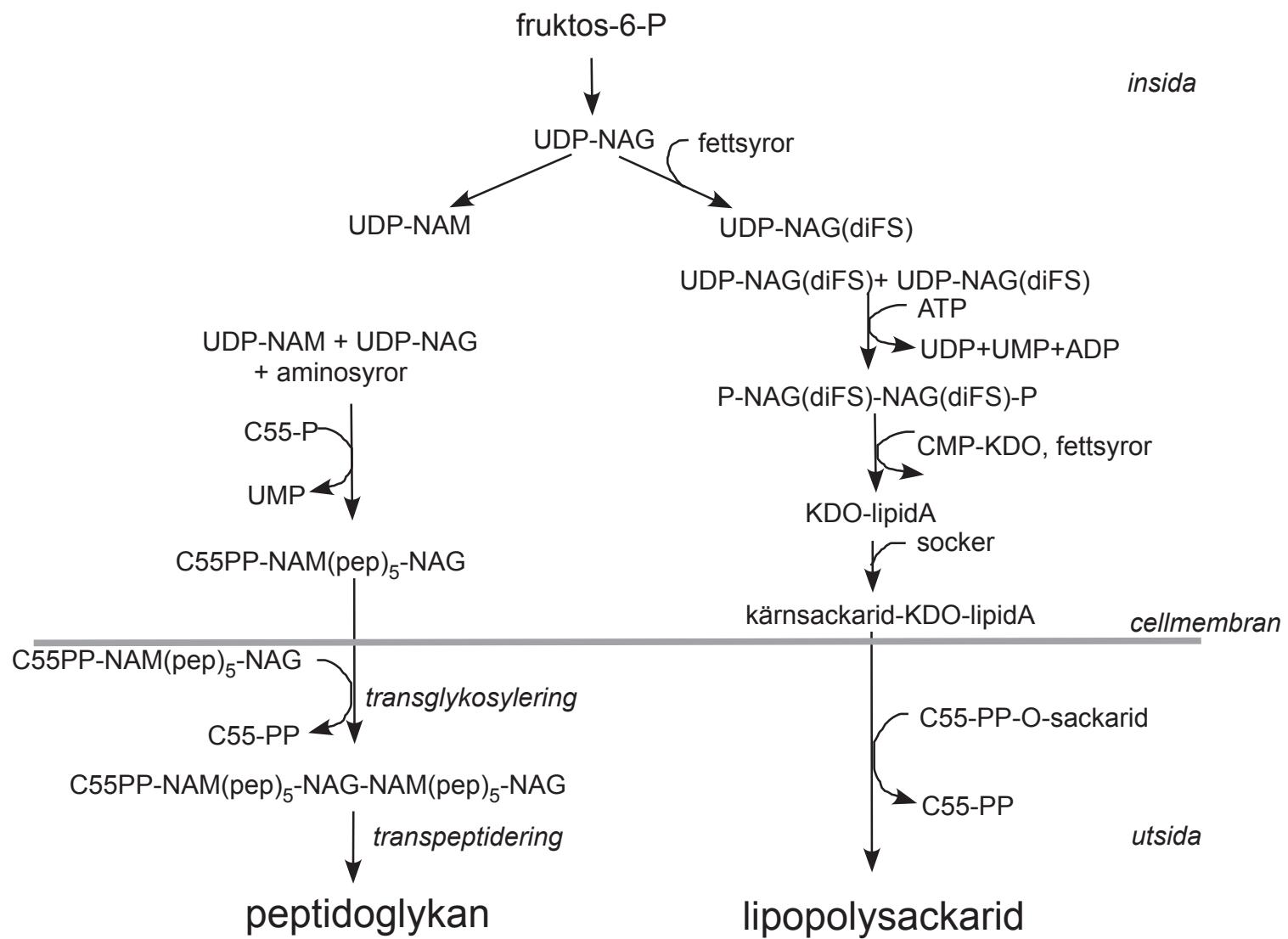
Figur 4.7



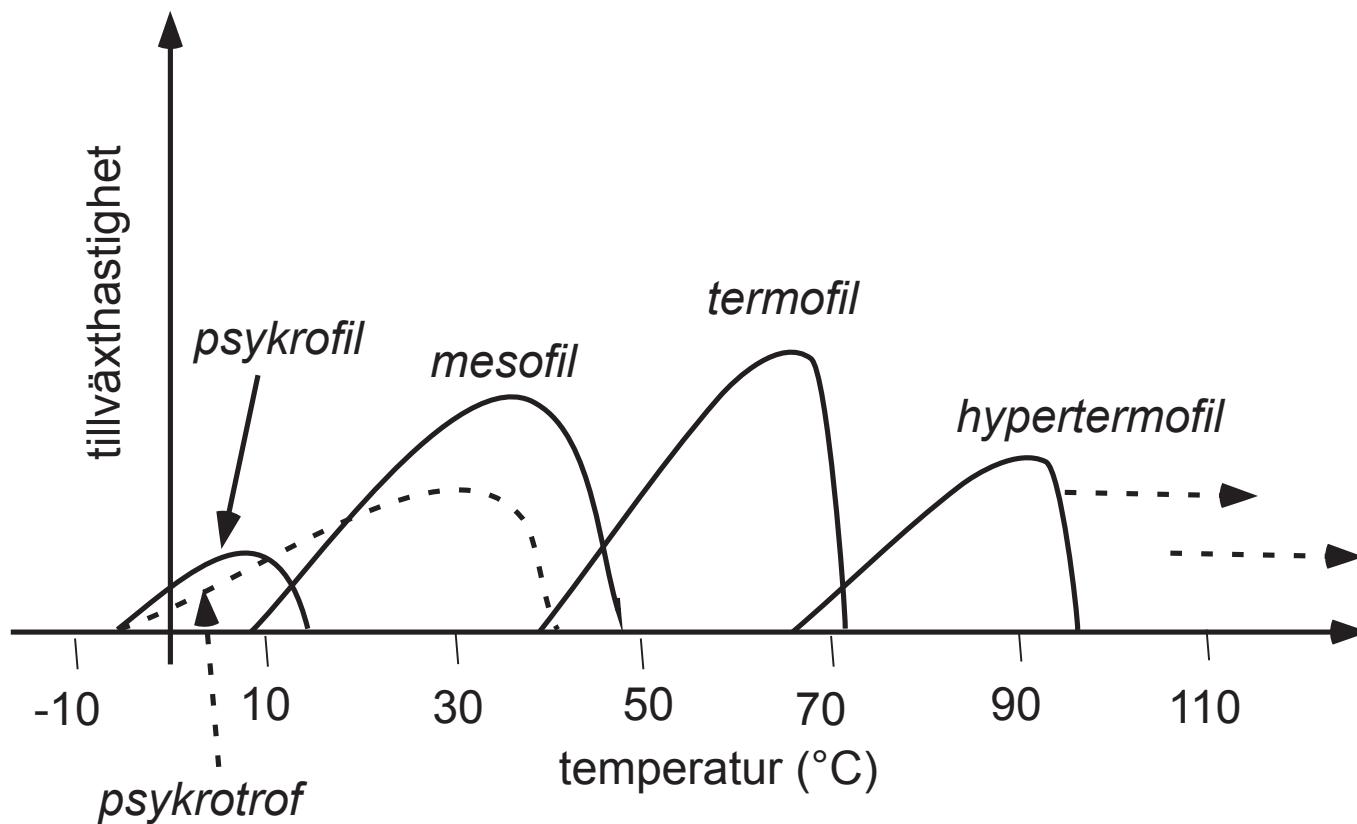
Figur 4.8



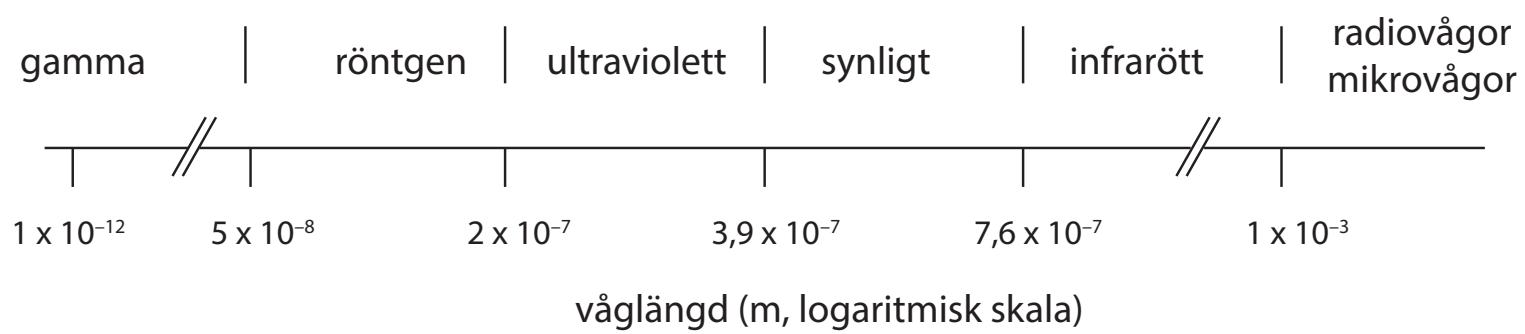
Figur 4.9



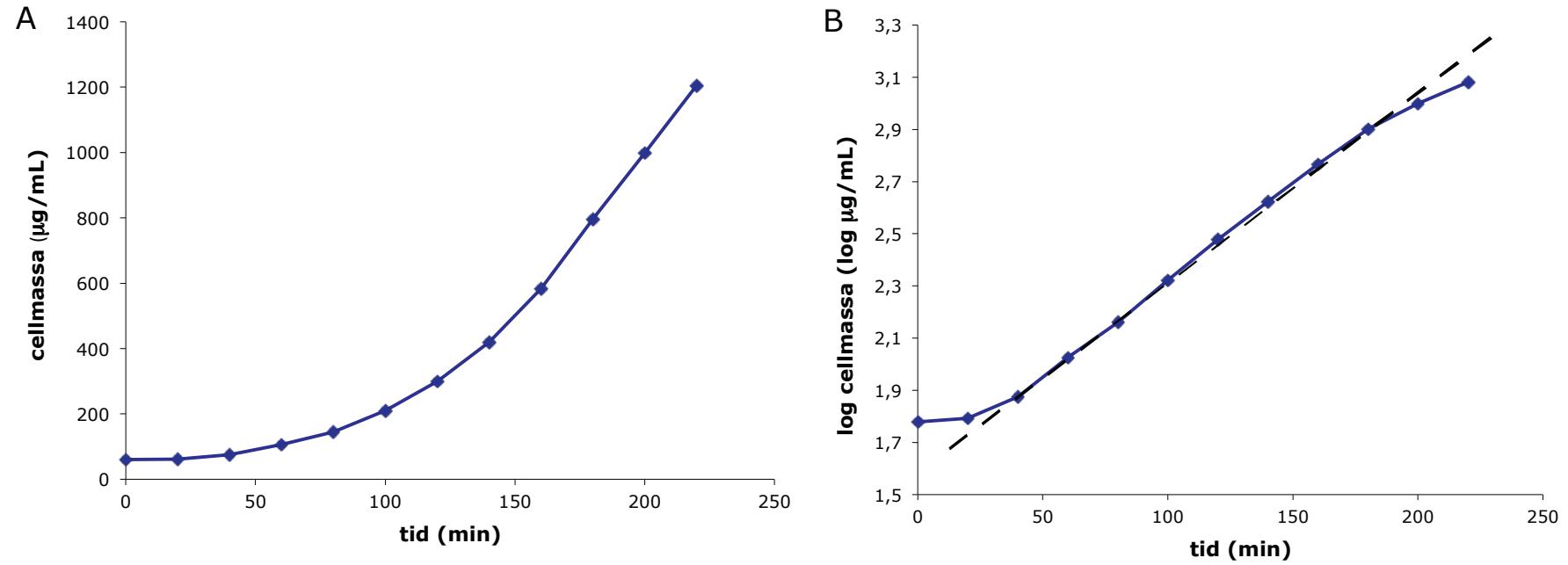
Figur 4.10



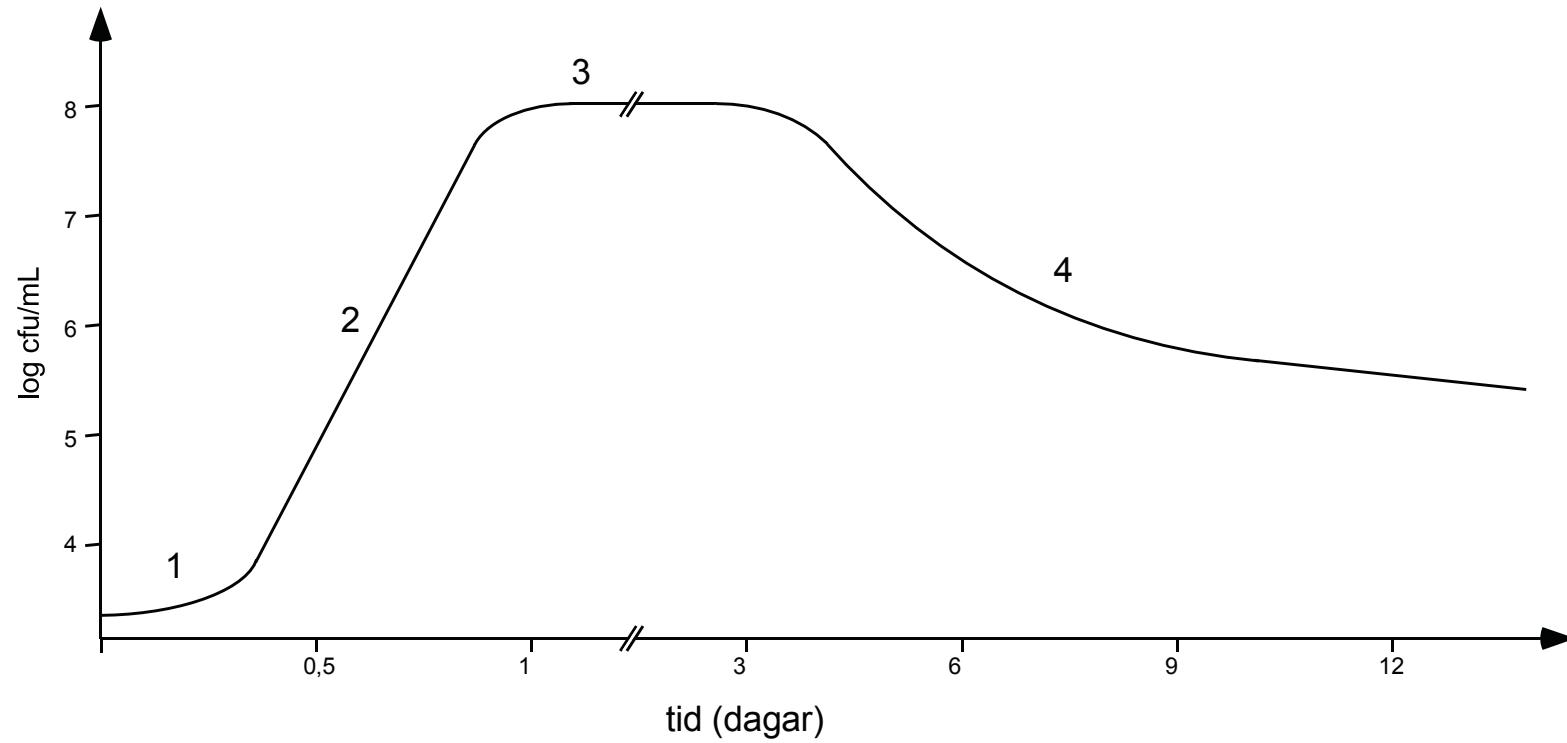
Figur 4.11



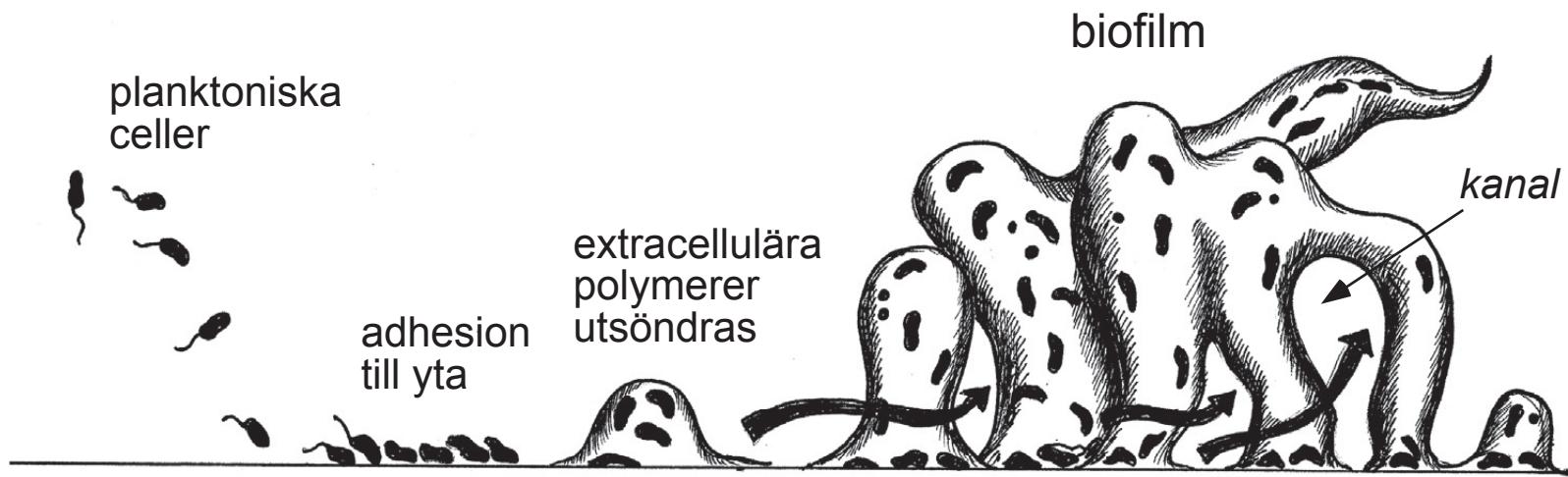
Figur 4.12



Figur 4.13



Figur 4.14

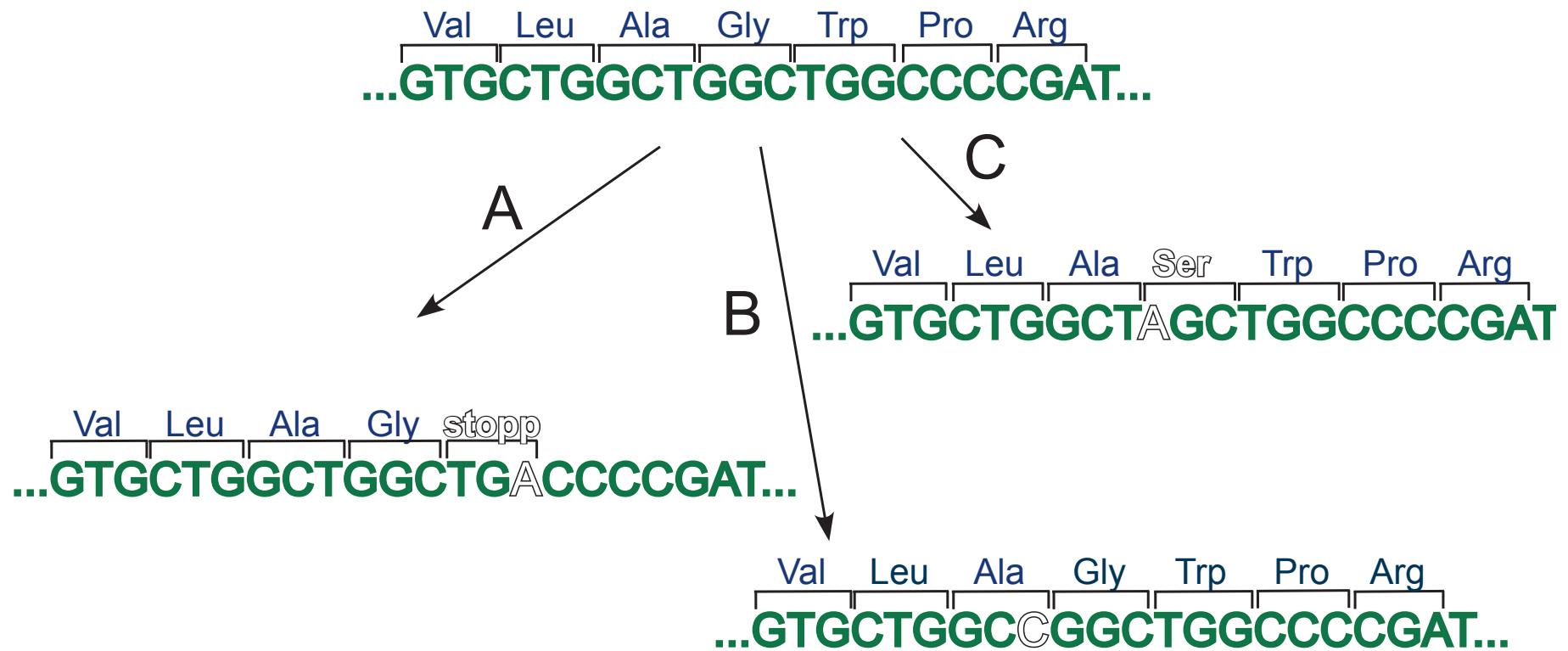


Figur 4.15

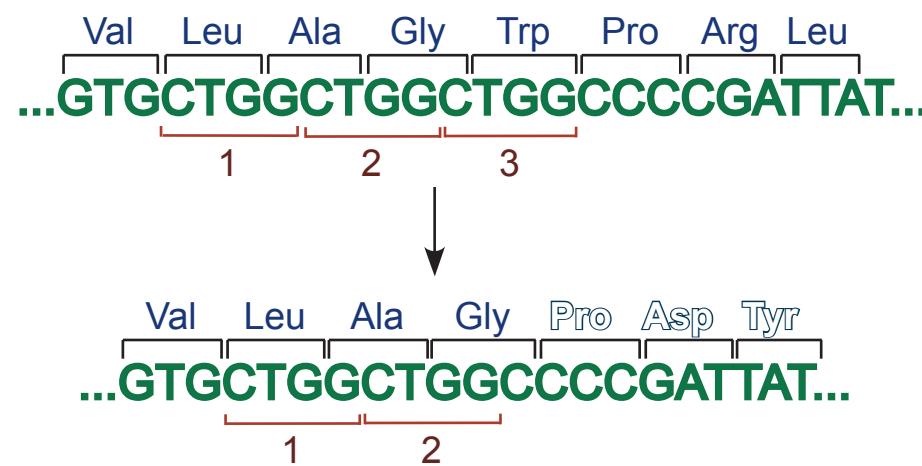
A red-tinted microscopic image showing various microorganisms, including several long, rod-shaped bacteria and a few larger, spherical or oval cells, distributed across a dark, textured background.

5

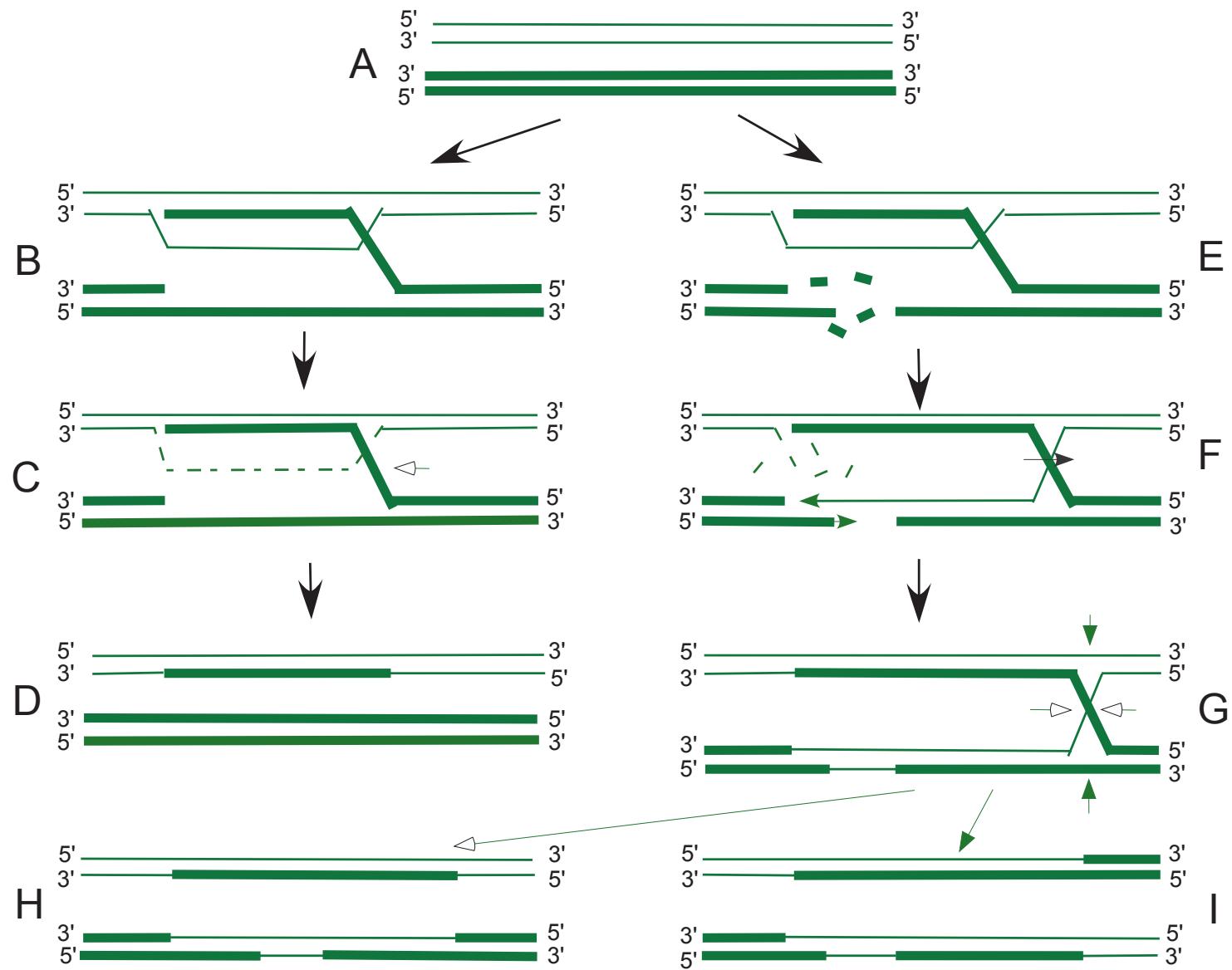
Genetik



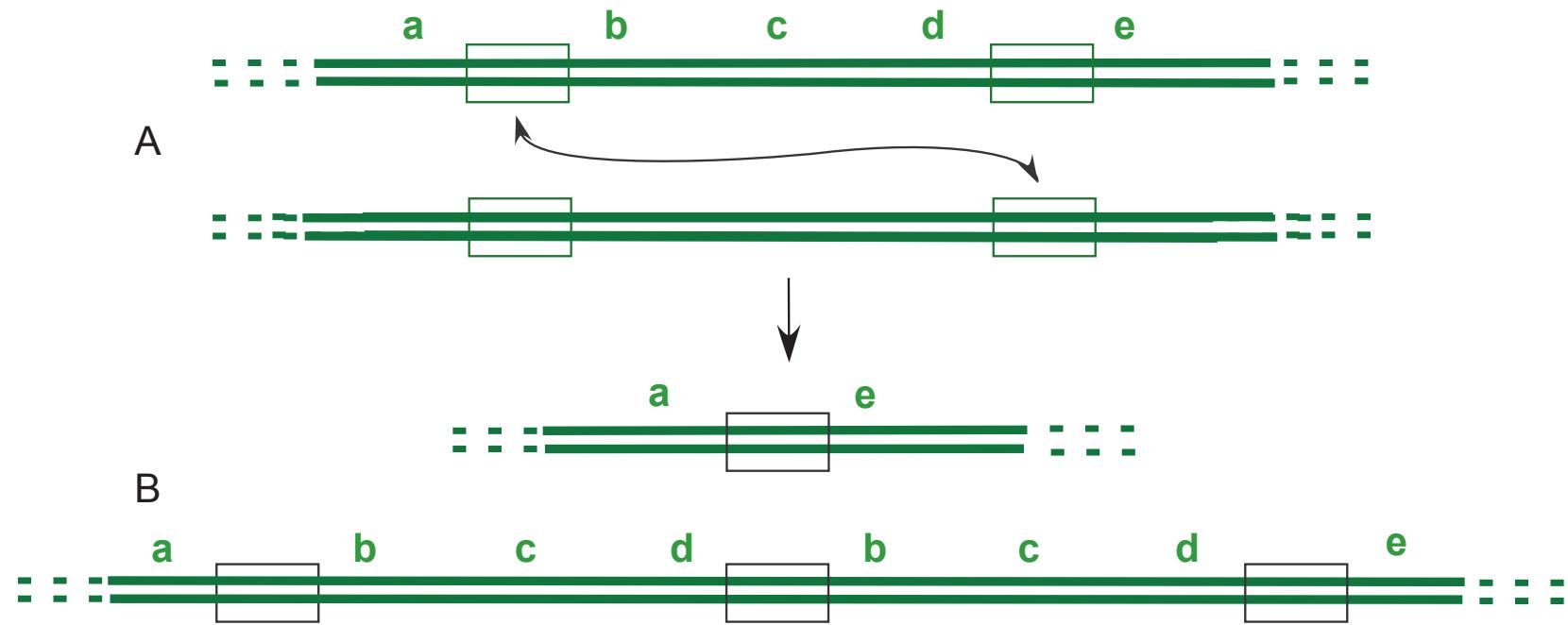
Figur 5.1



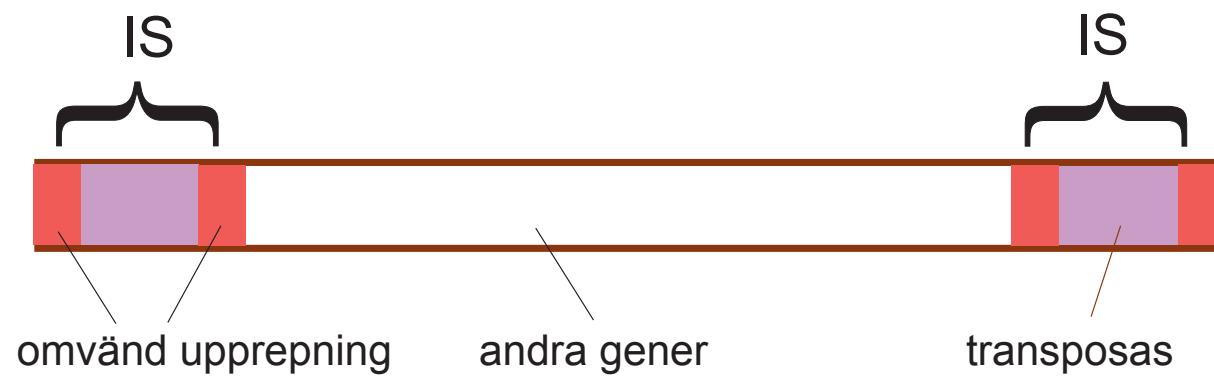
Figur 5.2



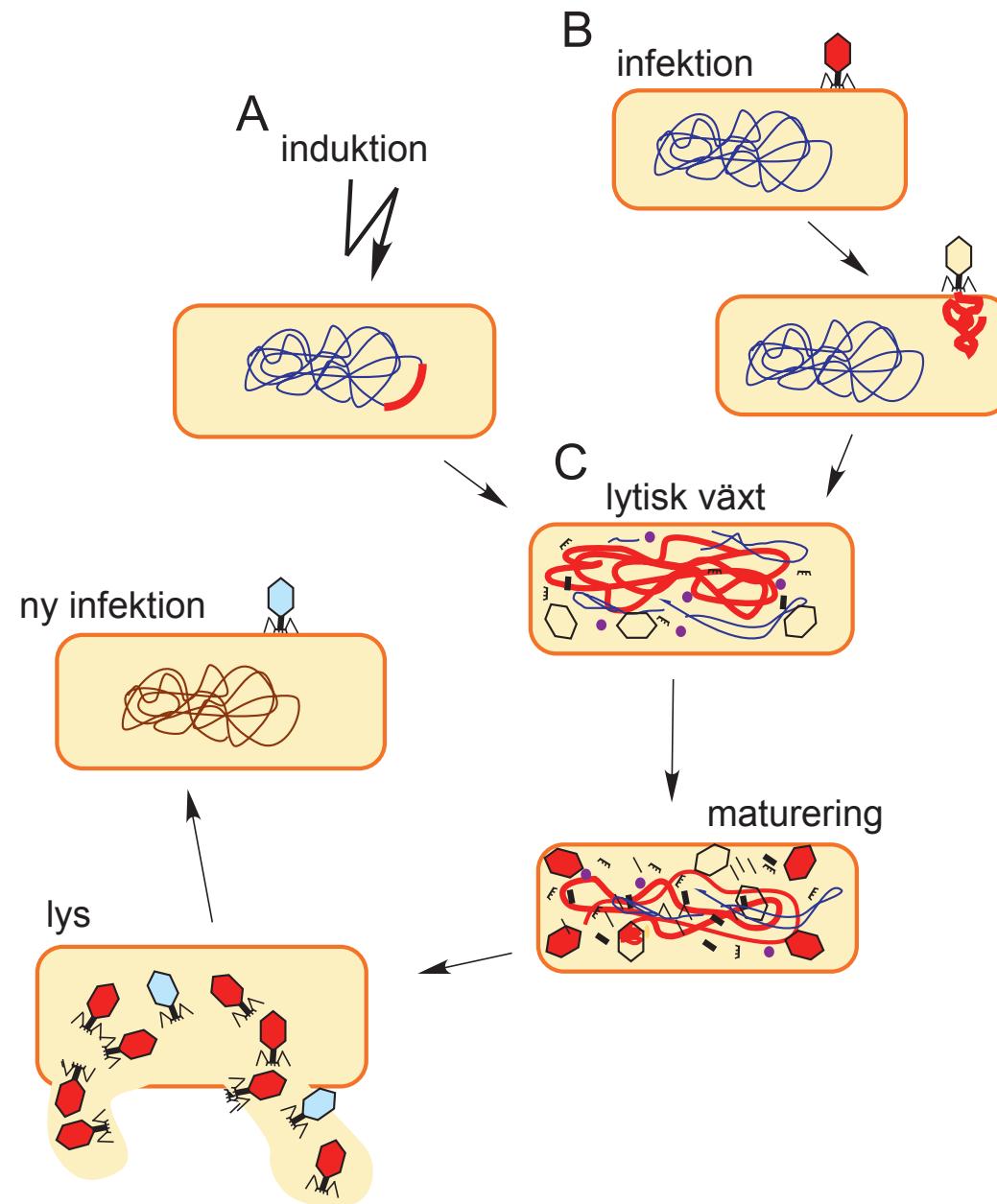
Figur 5.3



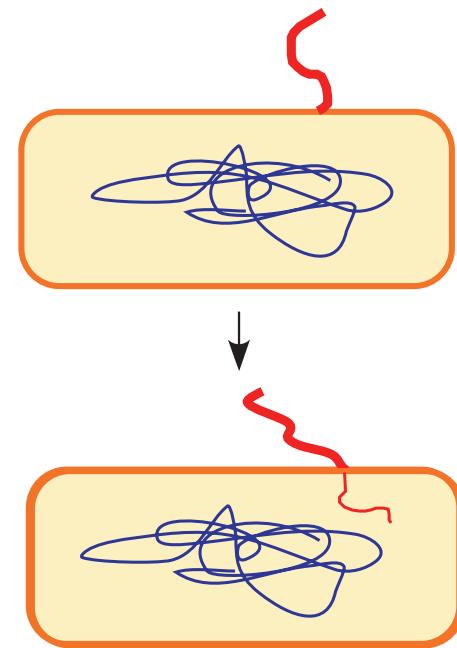
Figur 5.4



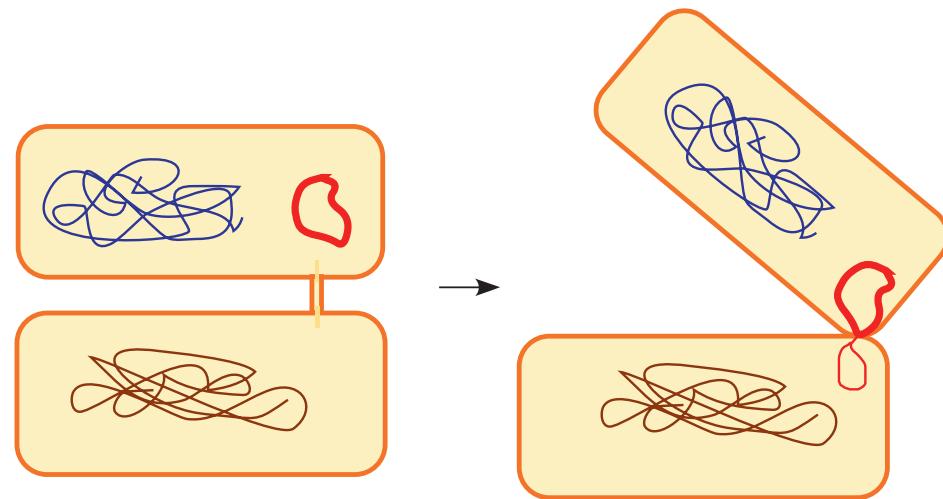
Figur 5.5



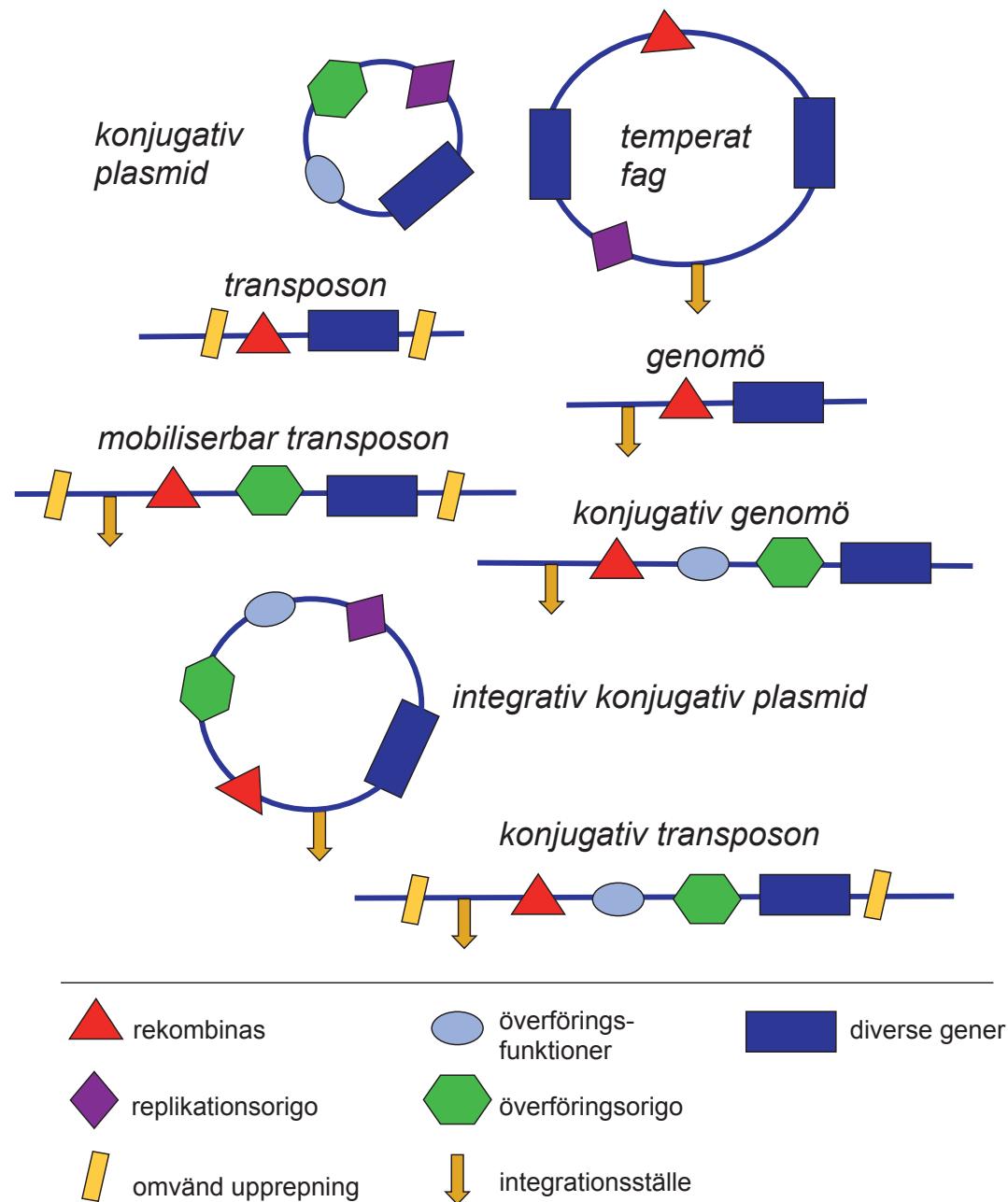
Figur 5.6



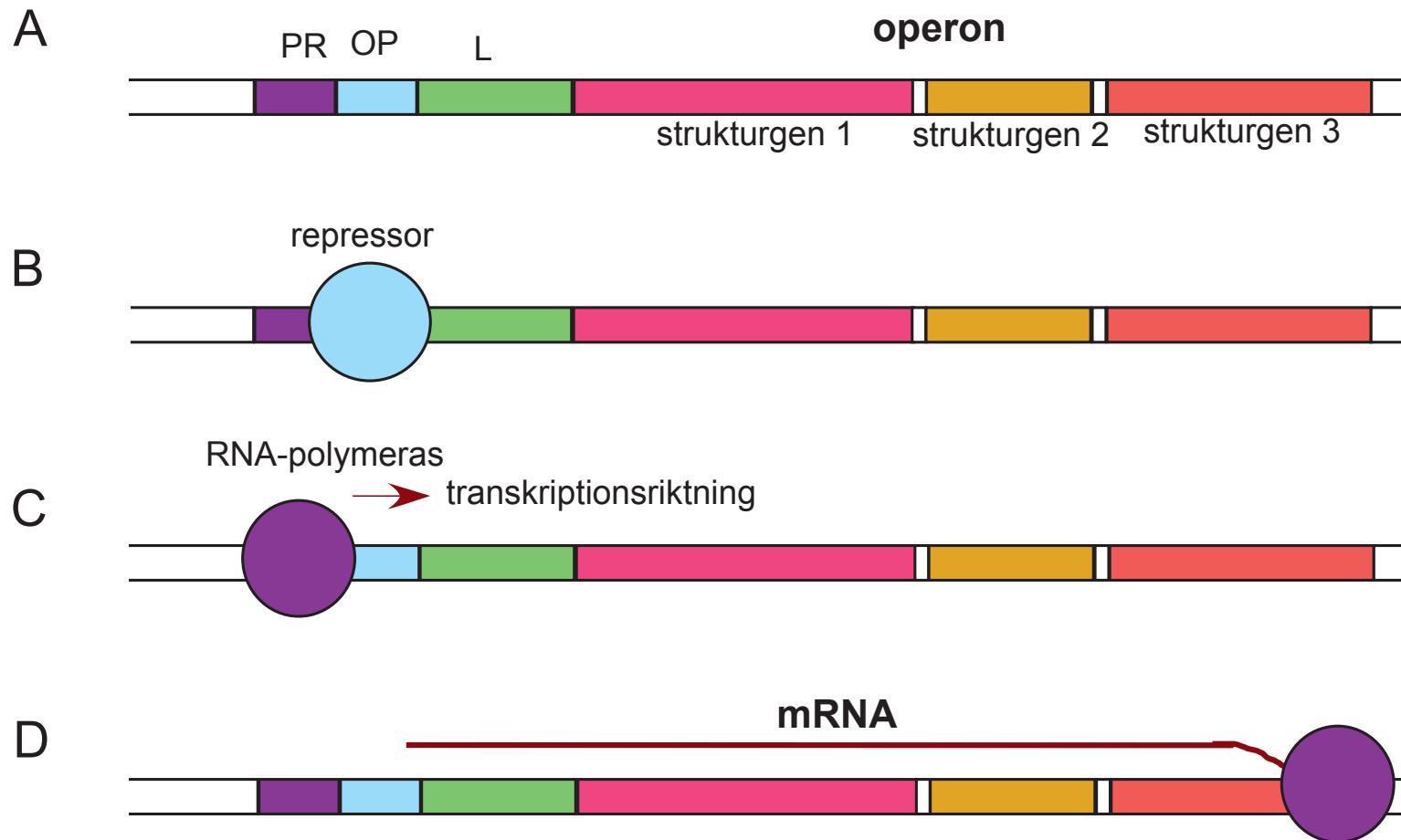
Figur 5.7



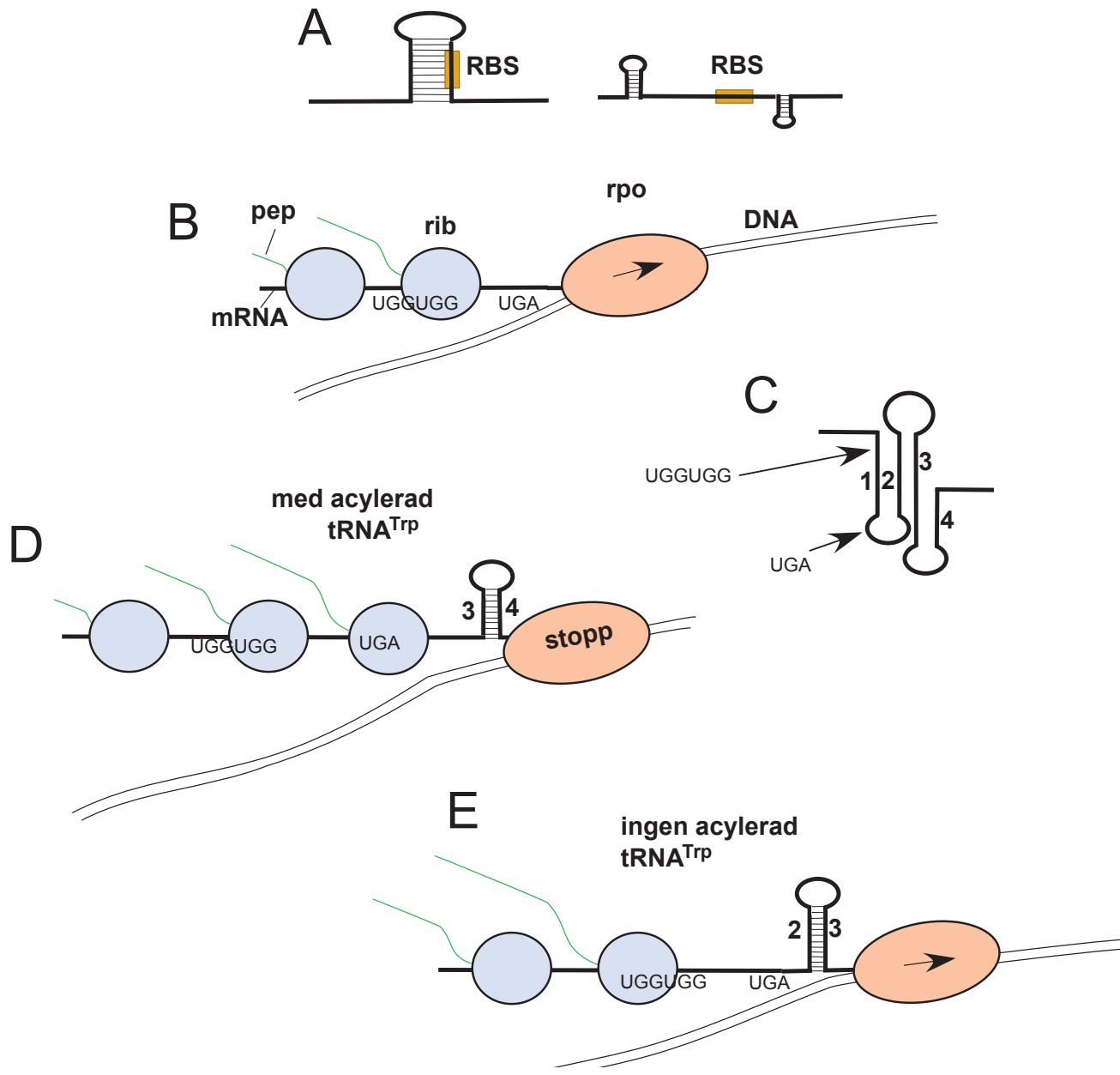
Figur 5.8



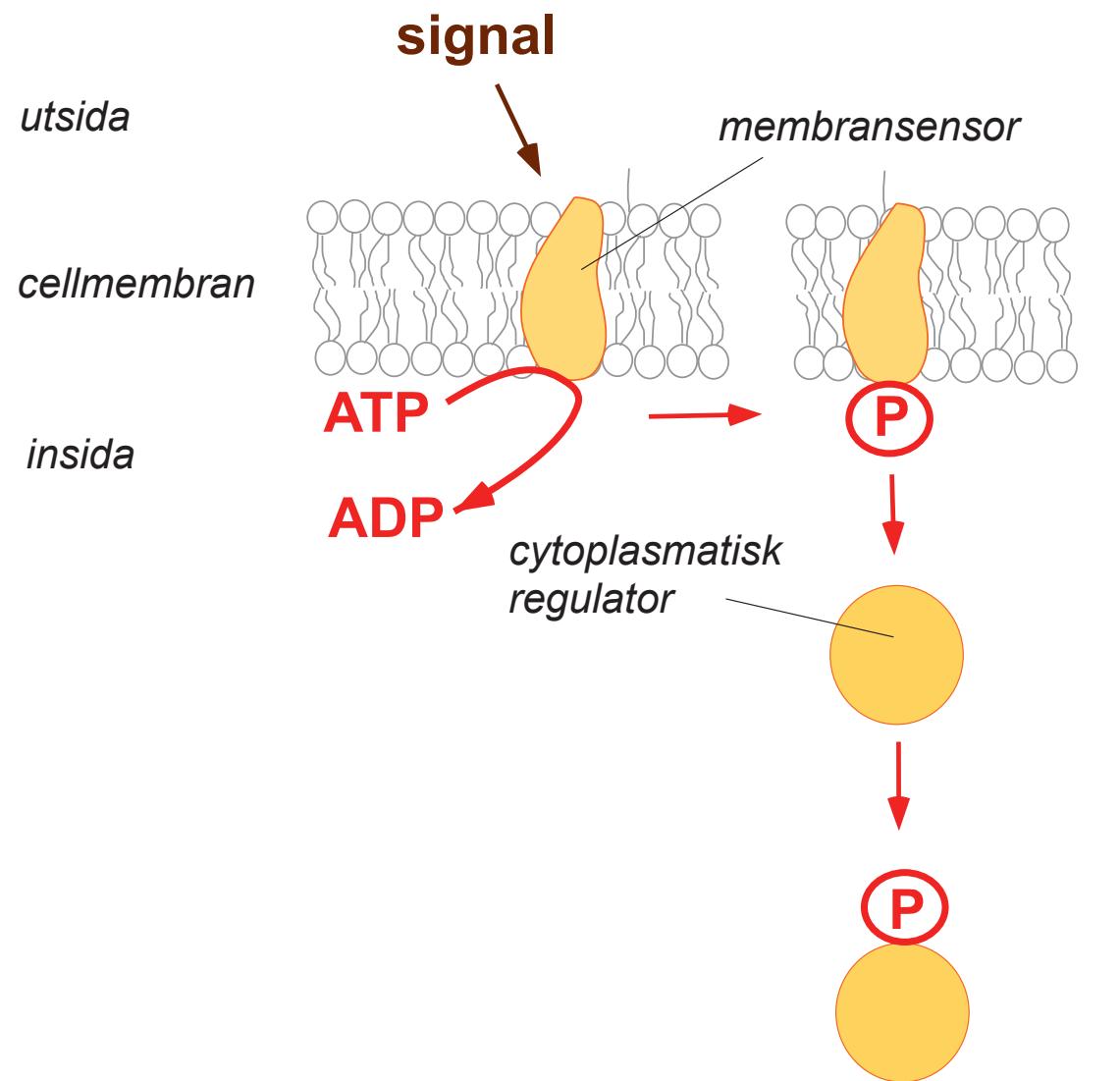
Figur 5.9



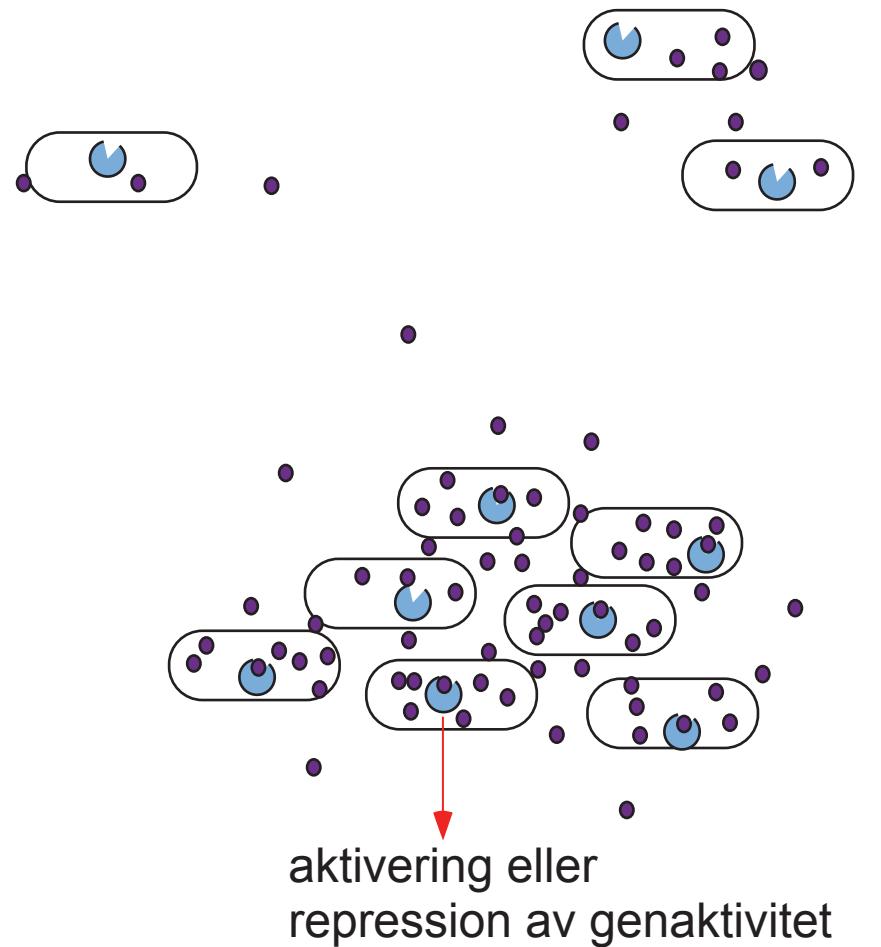
Figur 5.10



Figur 5.11



Figur 5.12

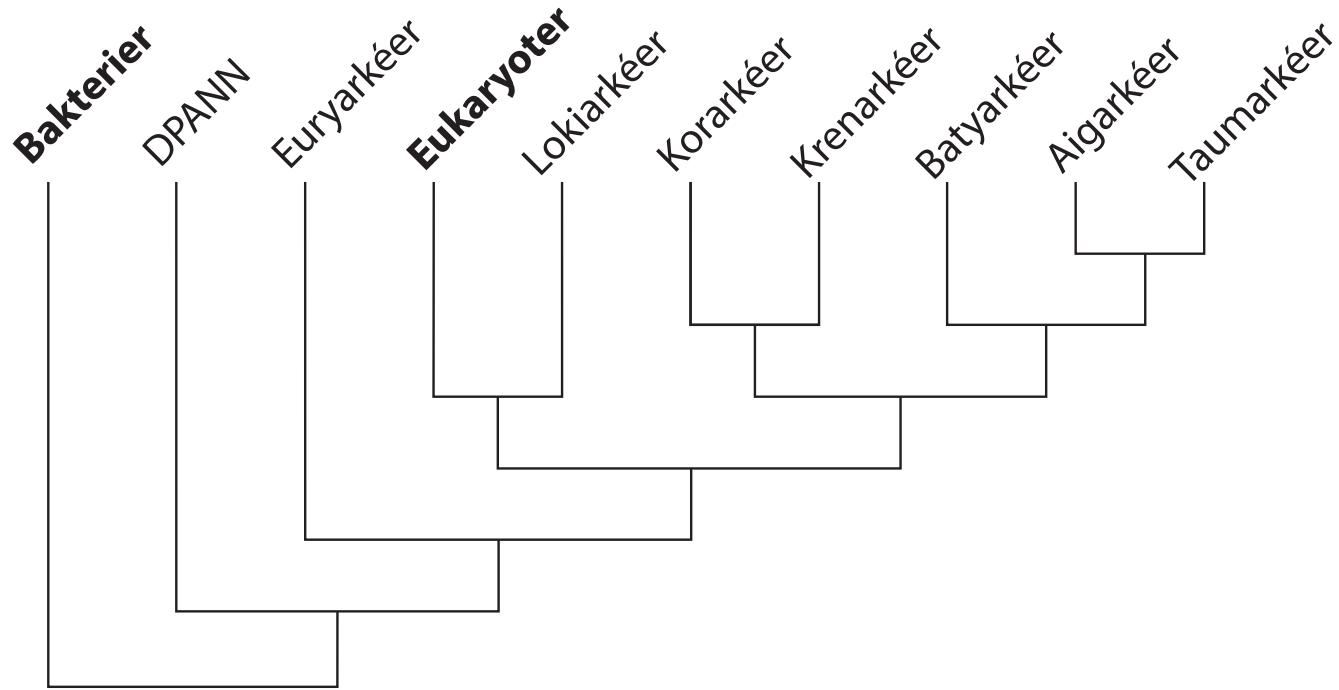


Figur 5.13



7

Arkéer

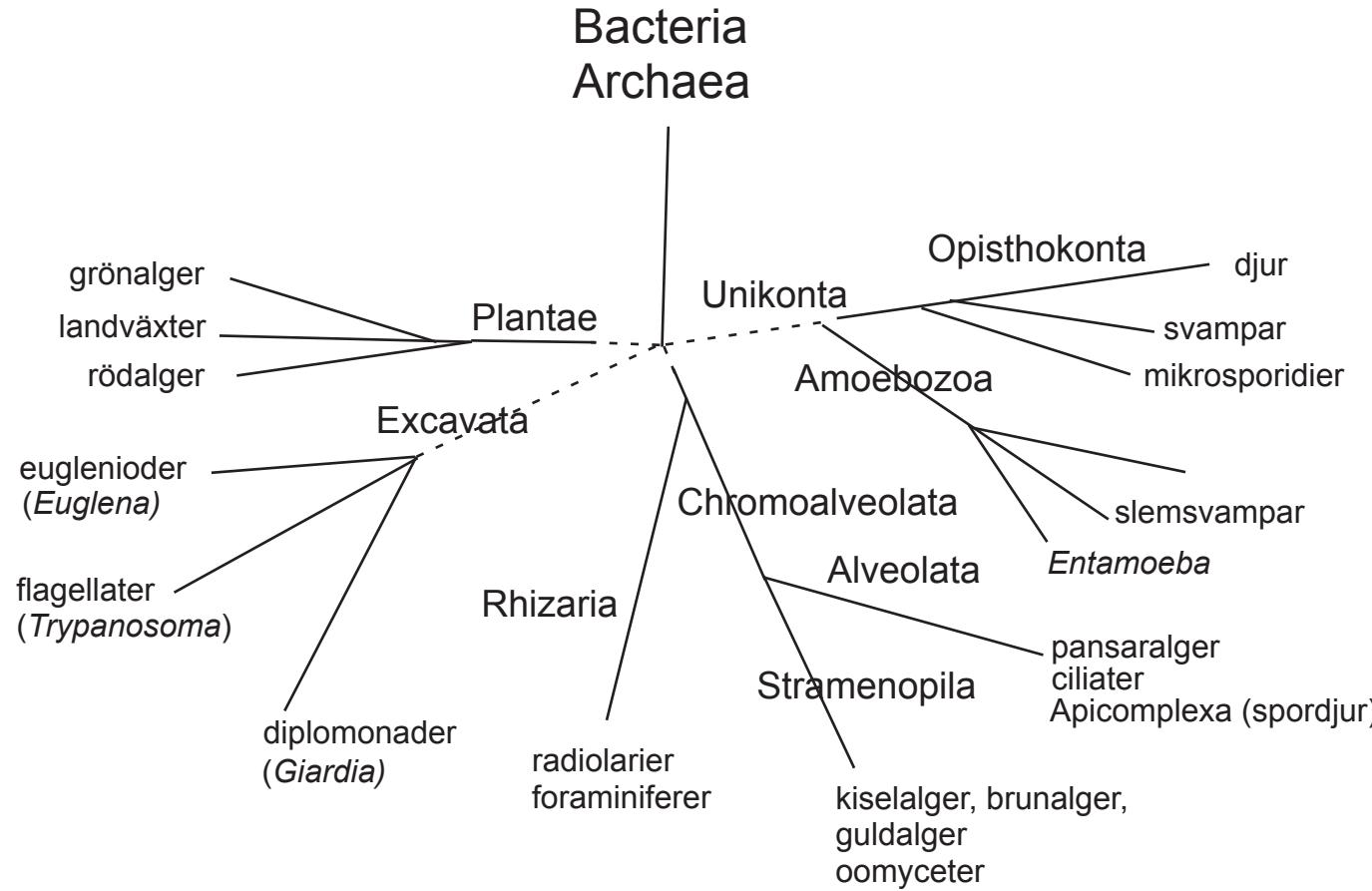


Figur 7.2

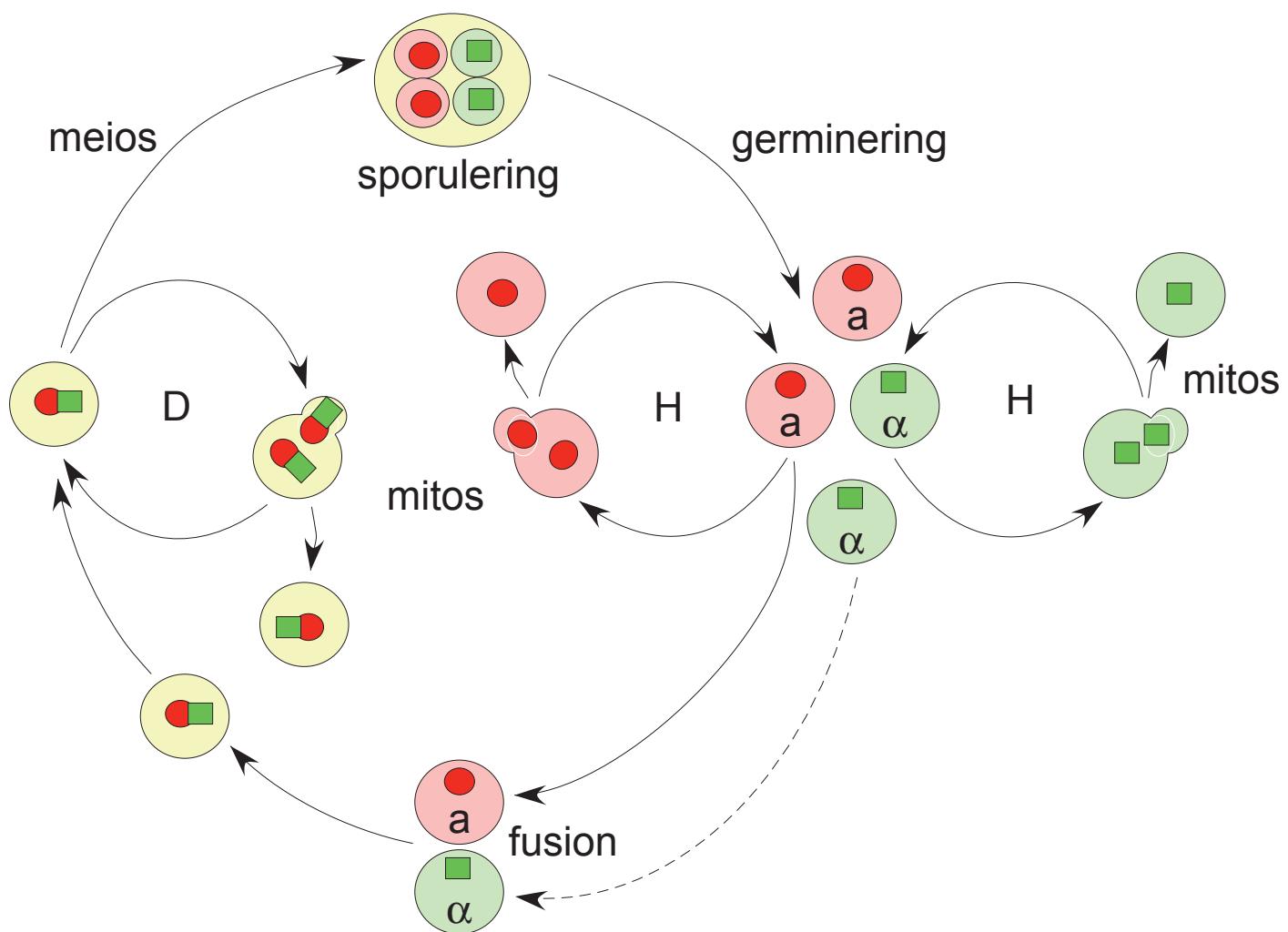
A background image showing various microorganisms, including bacteria and eukaryotic cells, in a reddish-brown hue.

8

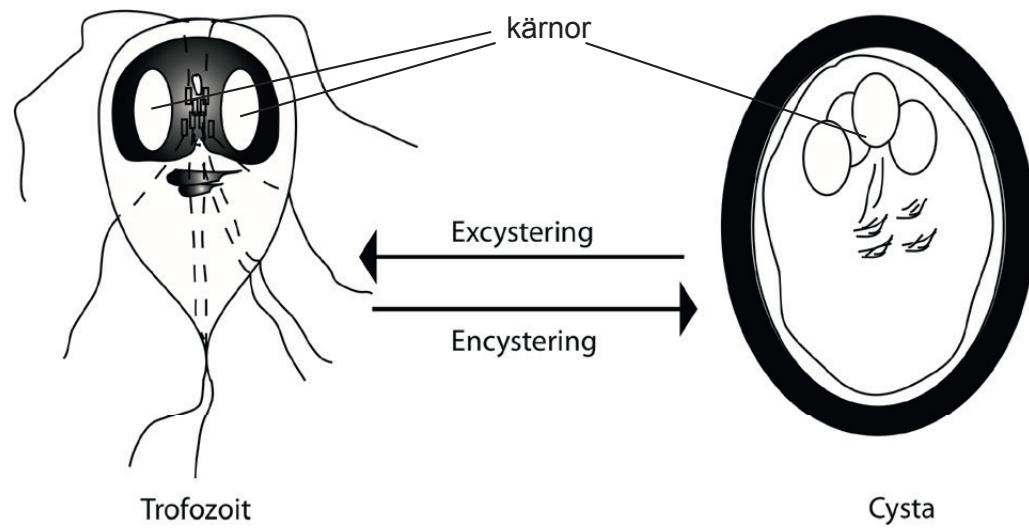
Eukaryota mikroorganismer



Figur 8.1



Figur 8.2

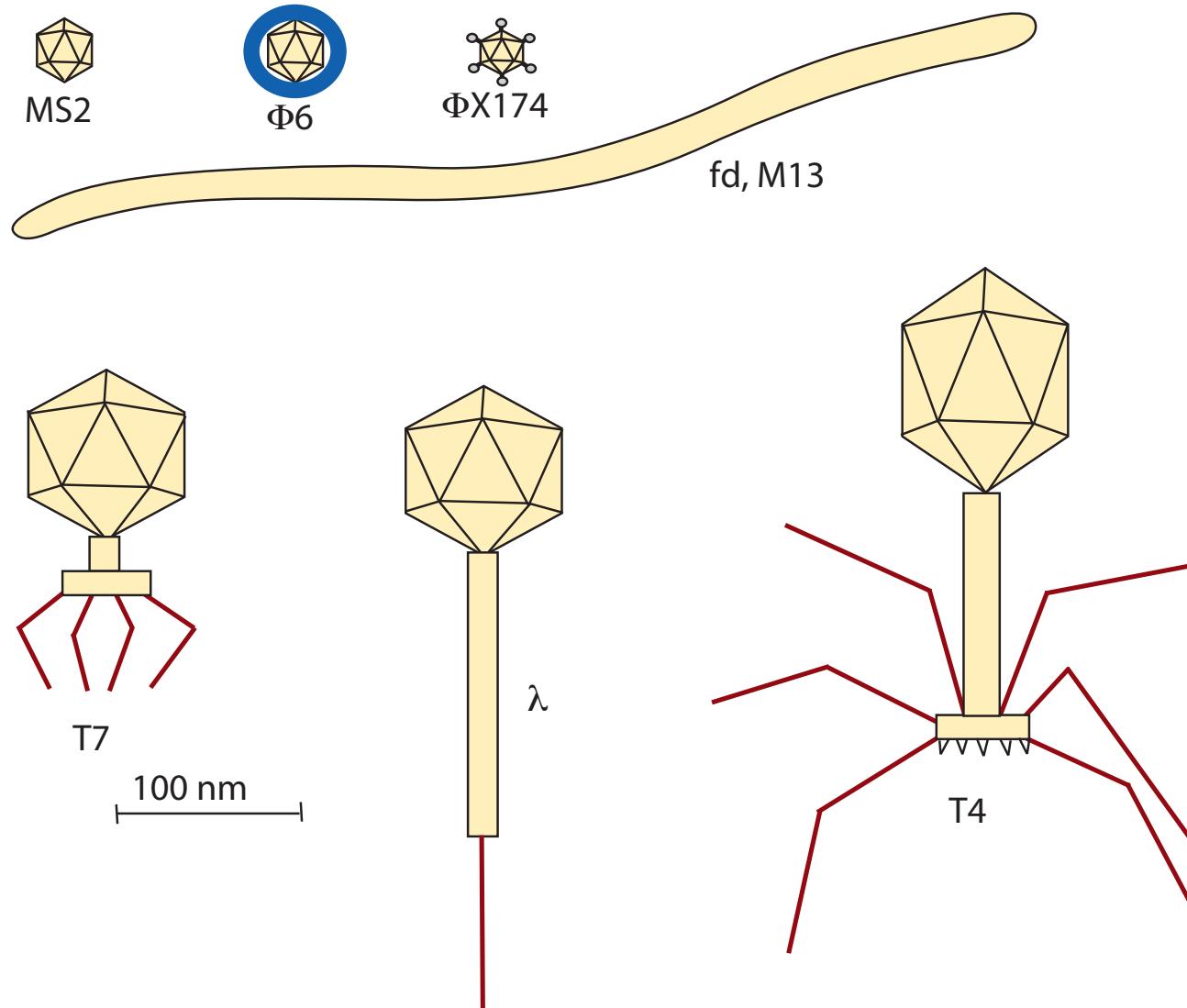


Figur 8.5

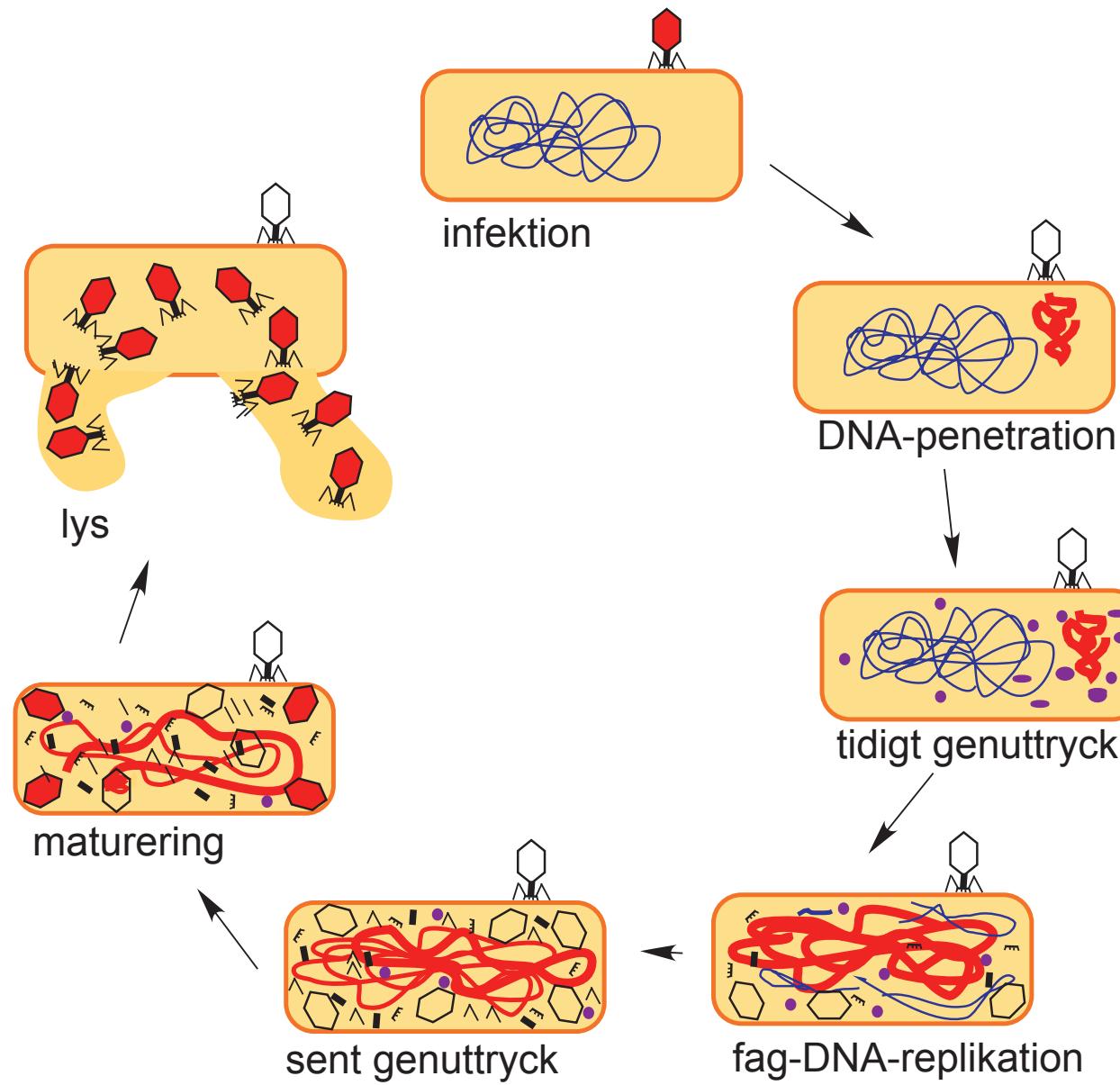


9

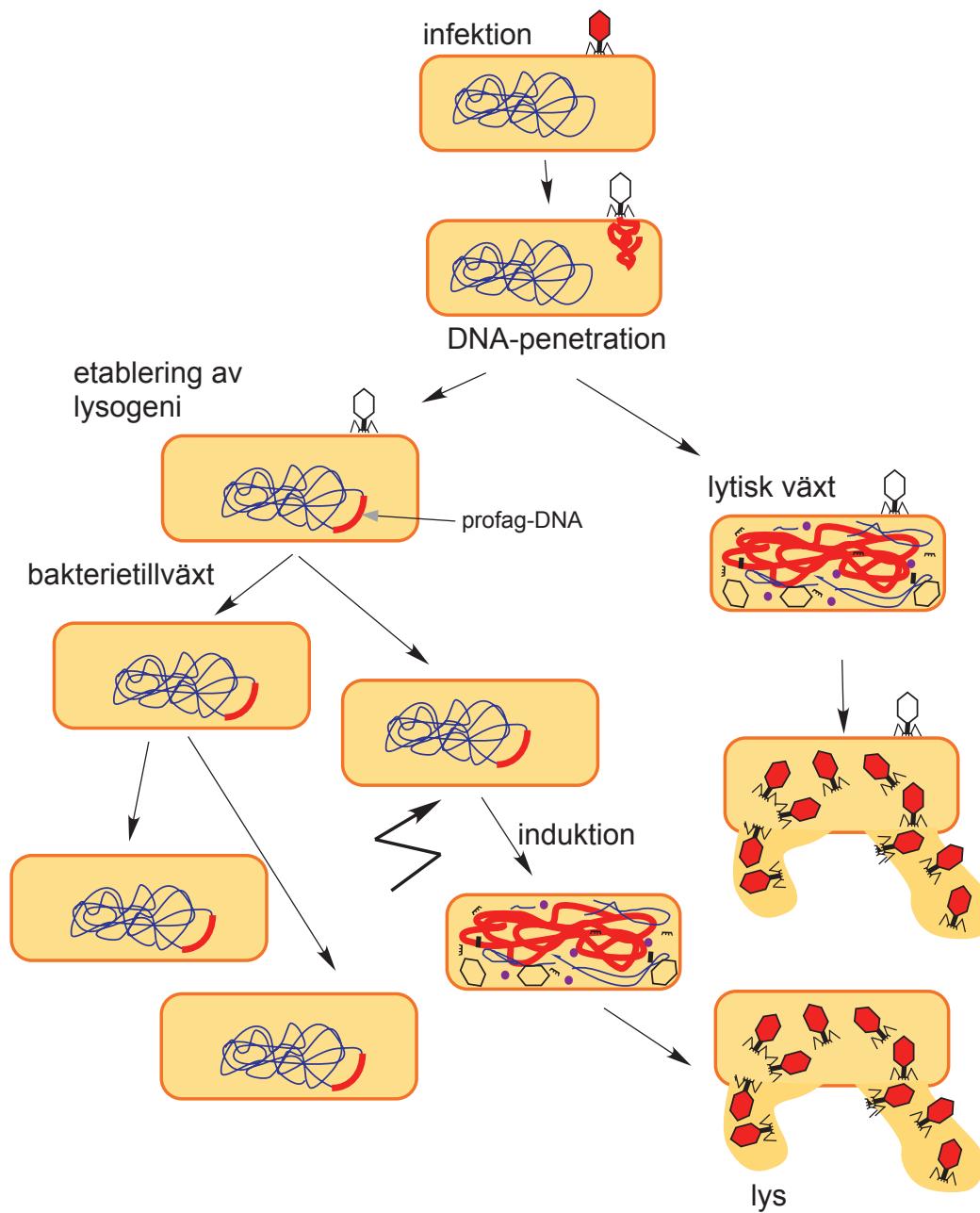
Virus



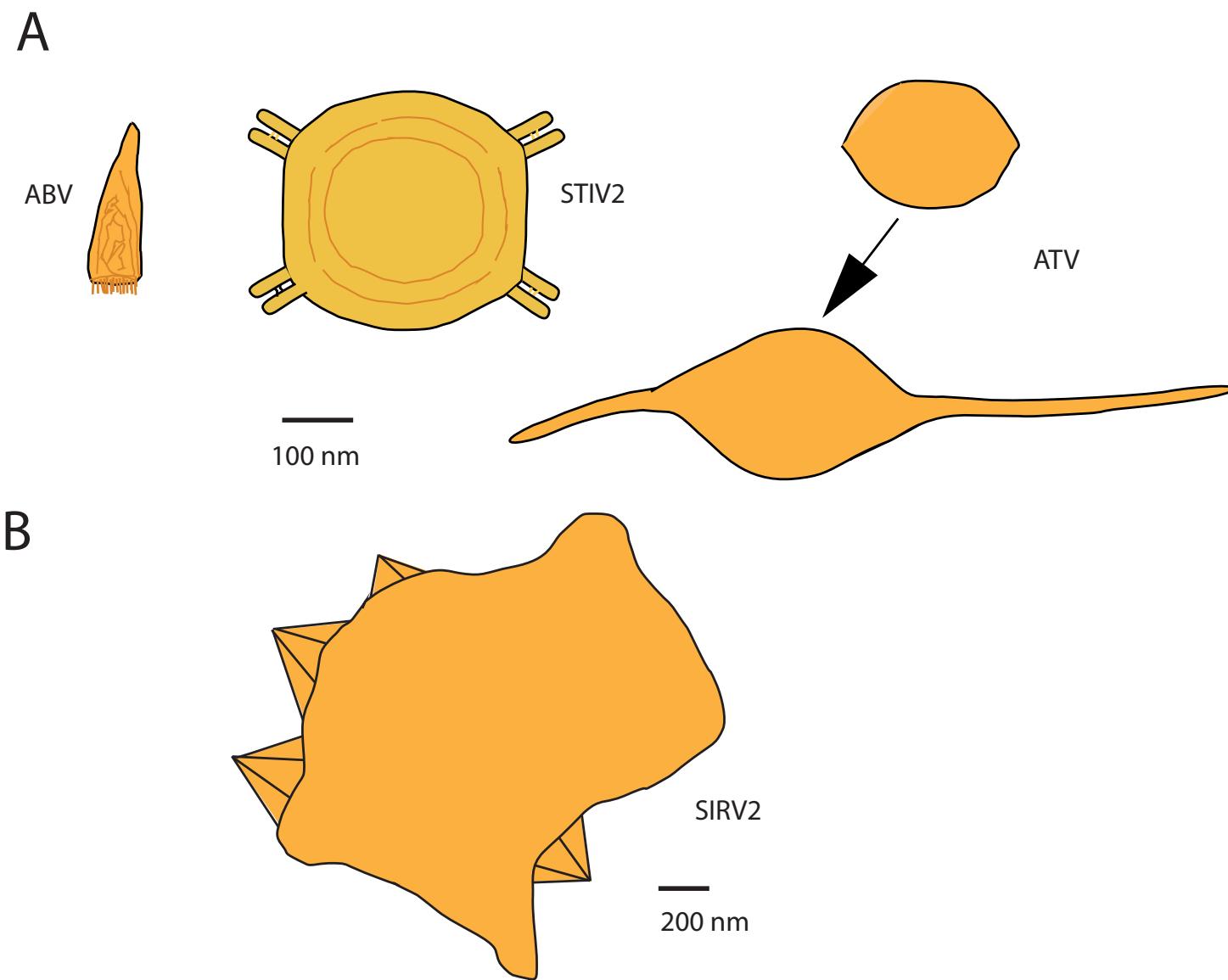
Figur 9.1



Figur 9.2

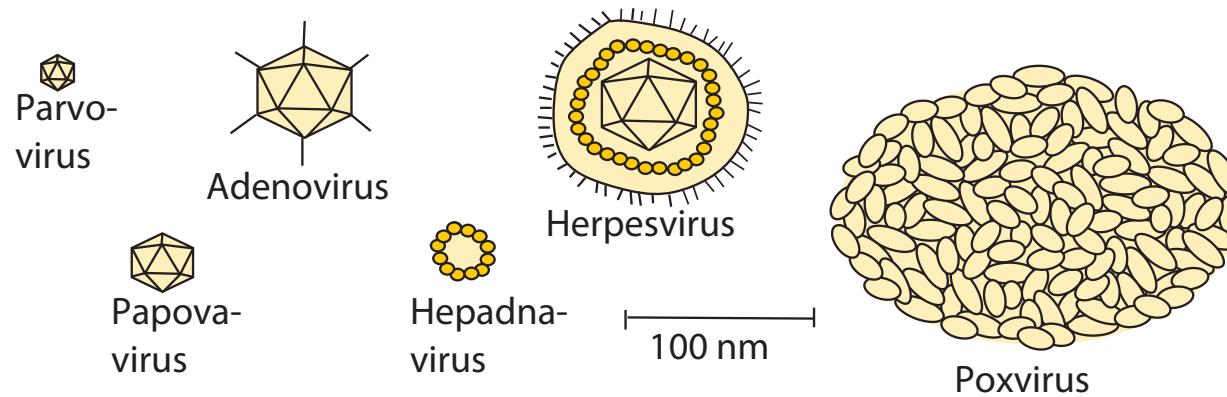


Figur 9.3

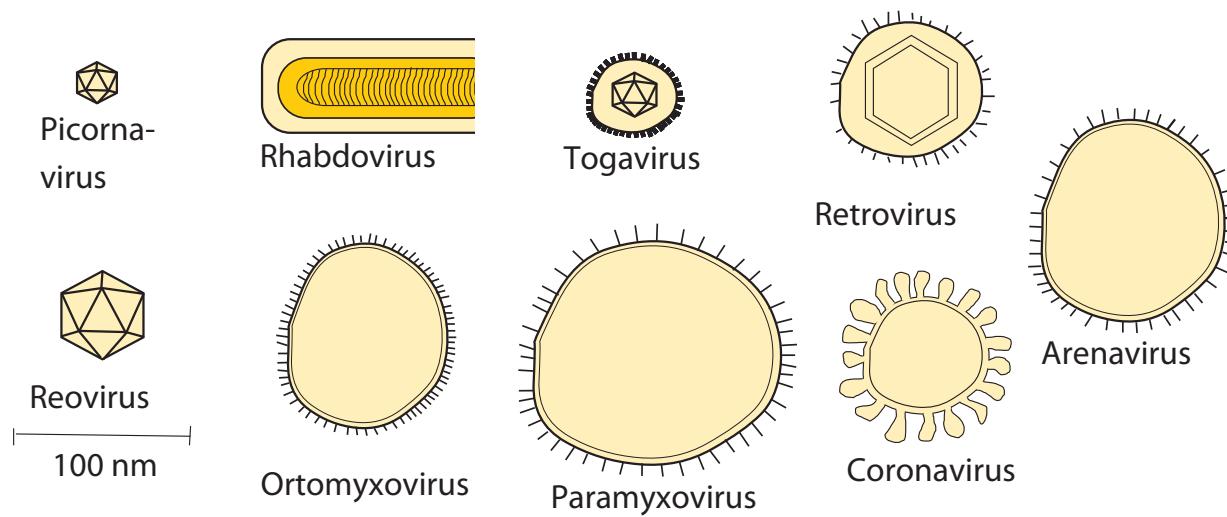


Figur 9.4

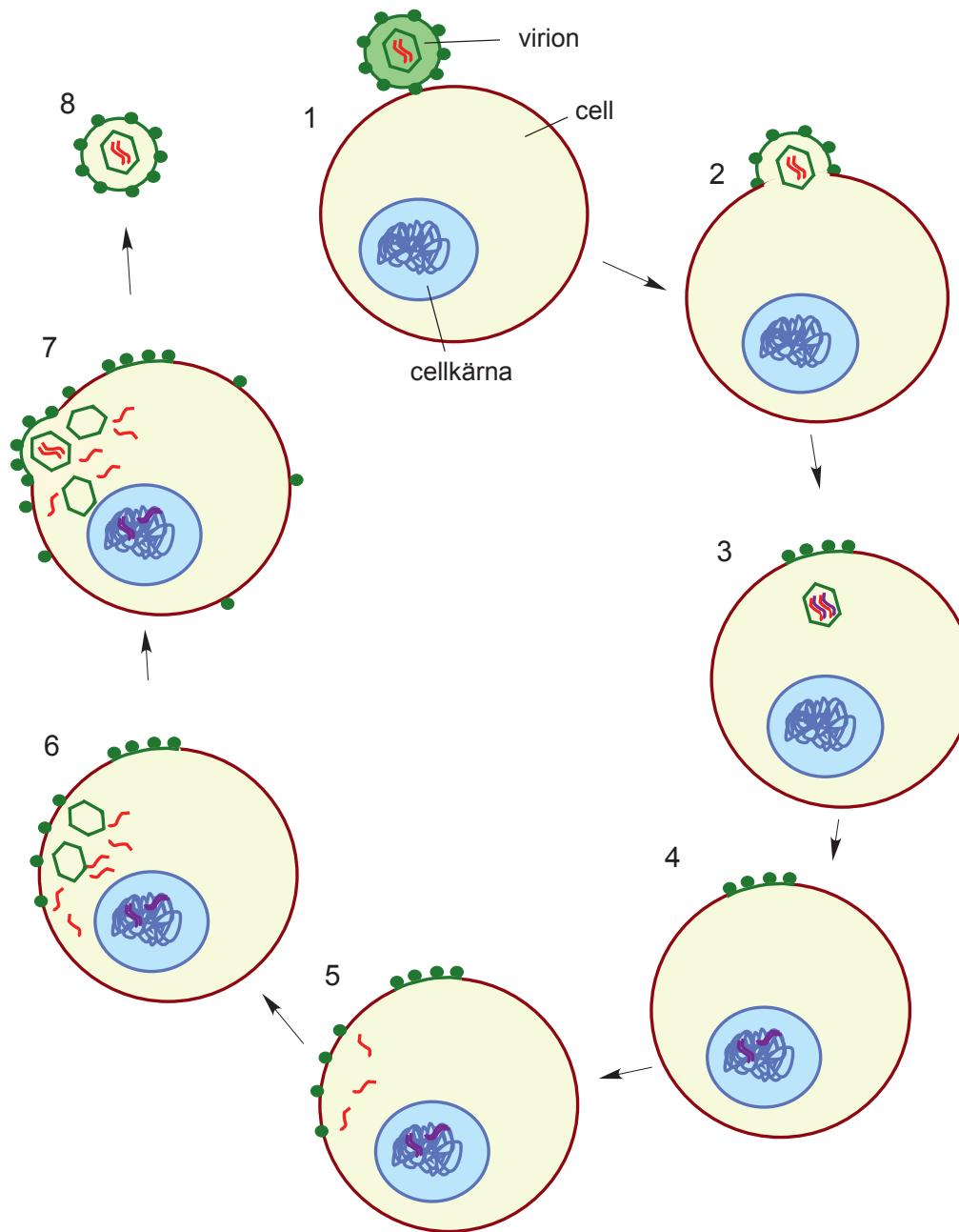
A



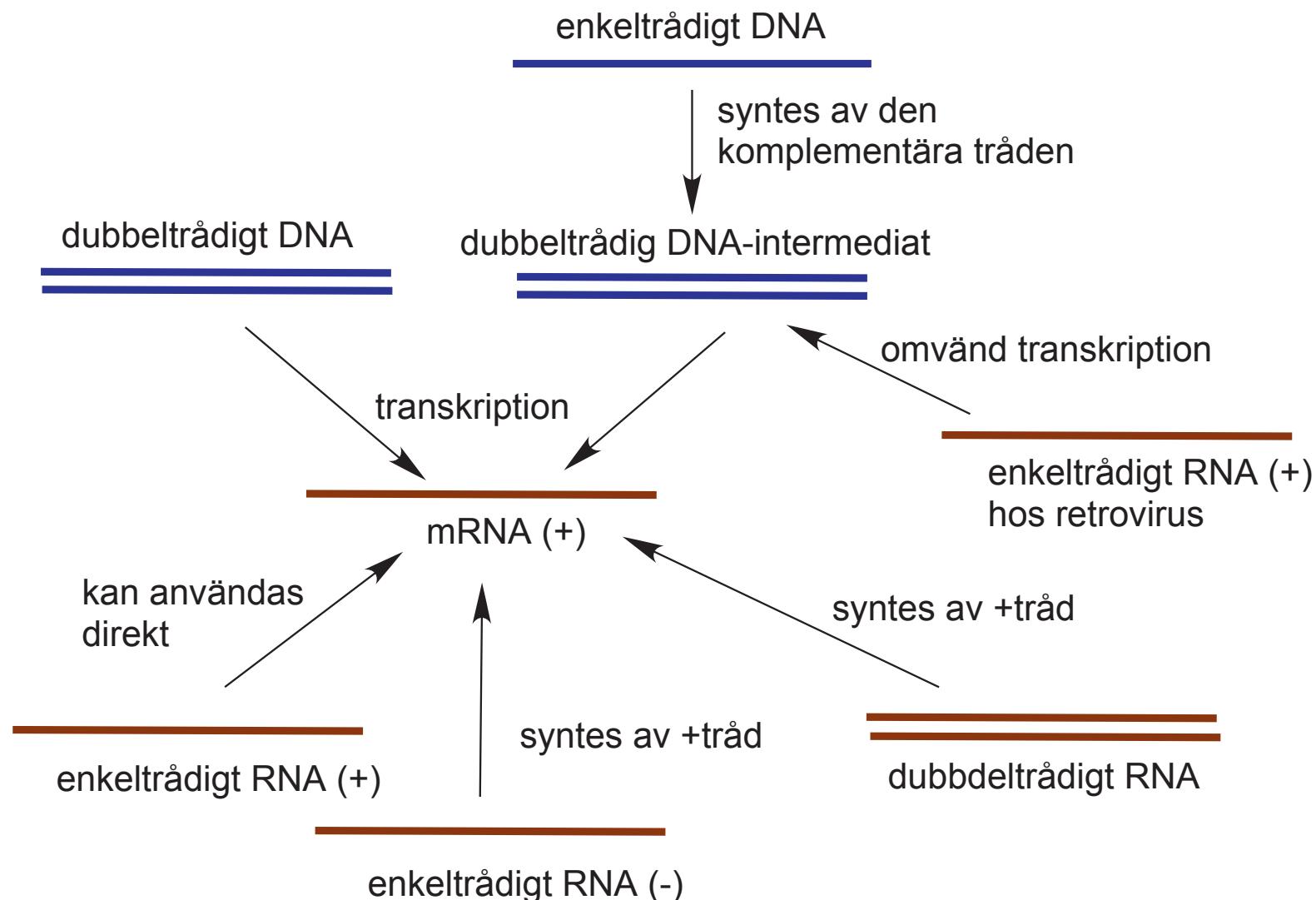
B



Figur 9.5



Figur 9.6

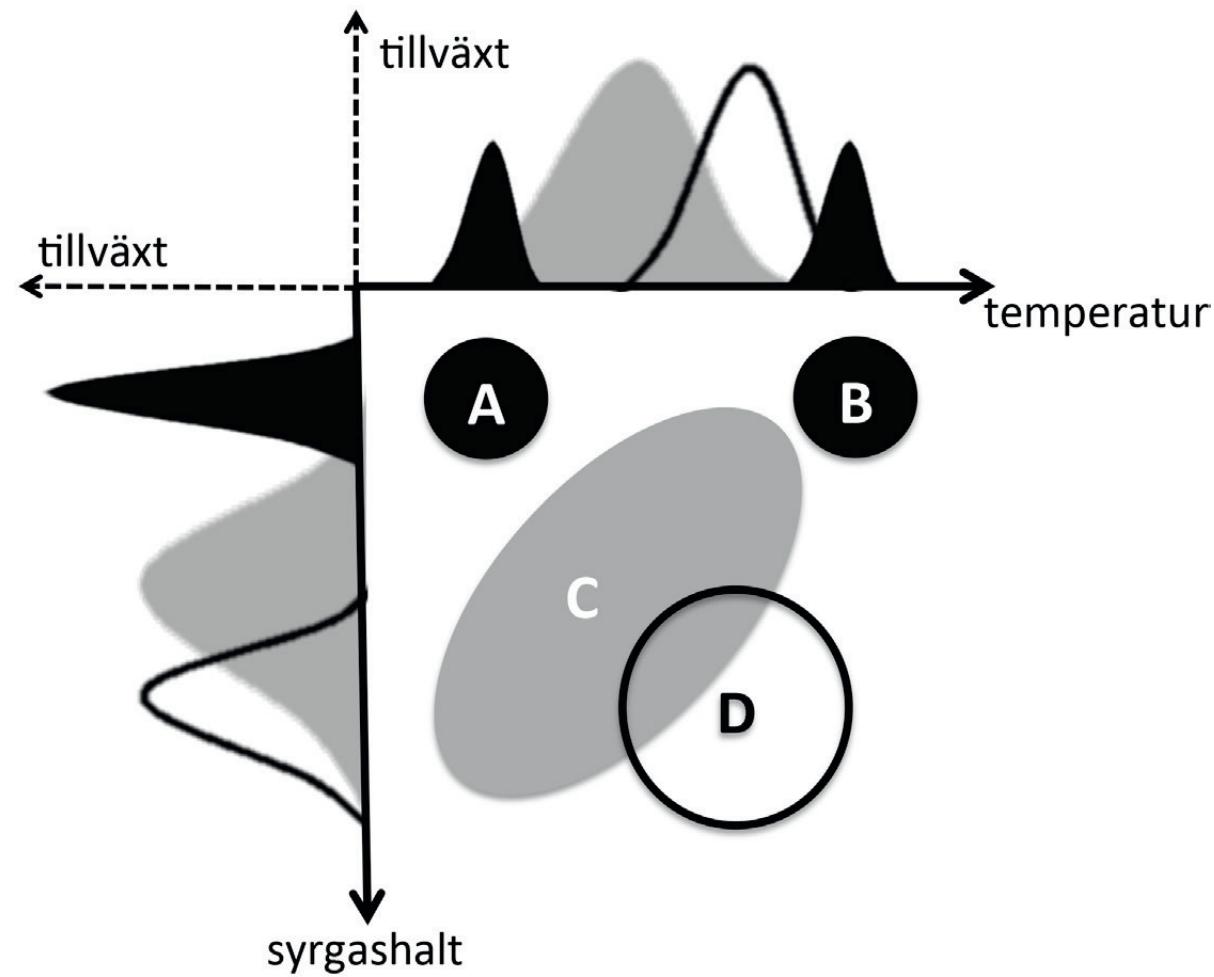


Figur 9.7

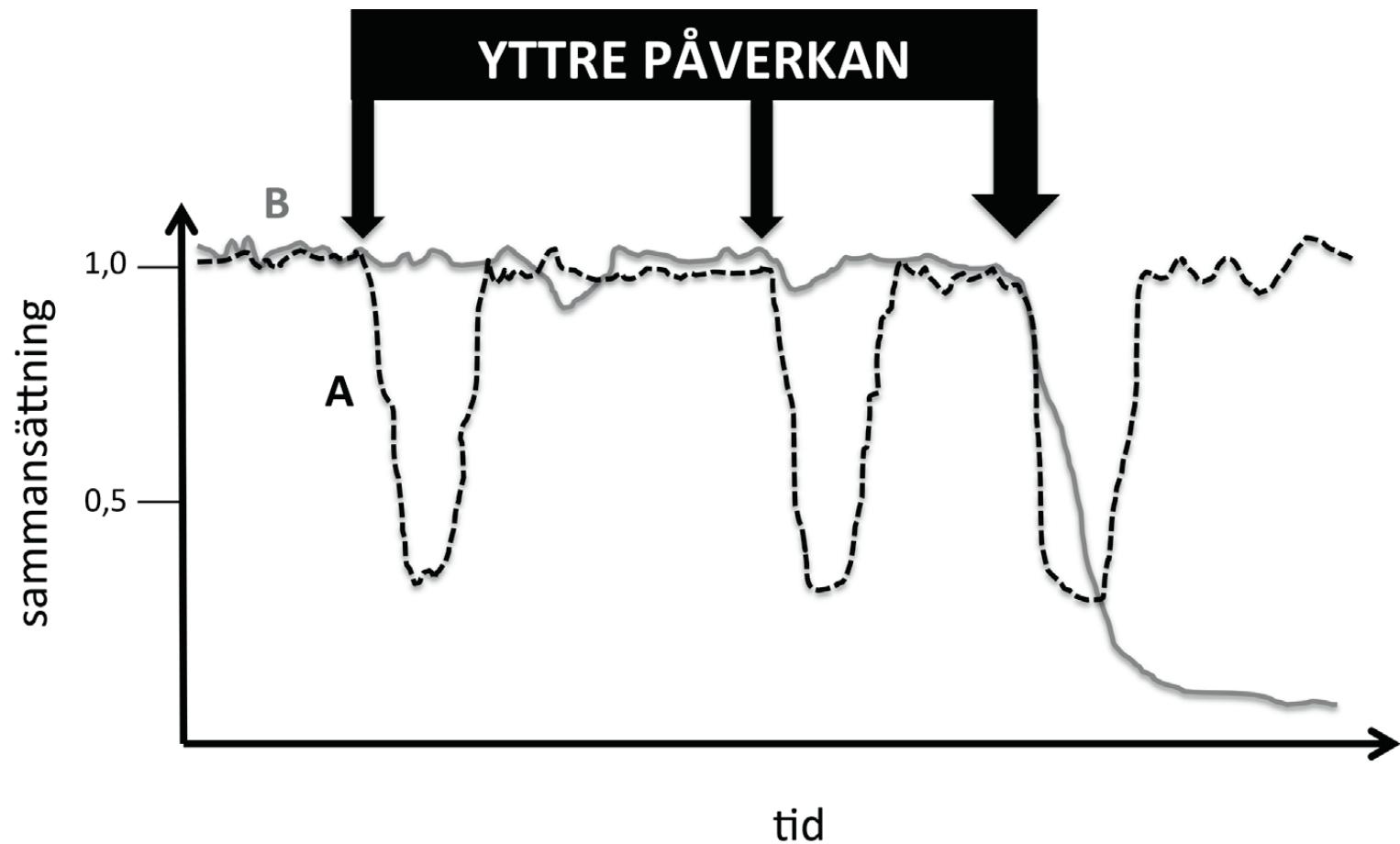
A microscopic view of various microorganisms, including several rod-shaped bacteria and a few larger, round yeast cells, set against a dark red background.

10

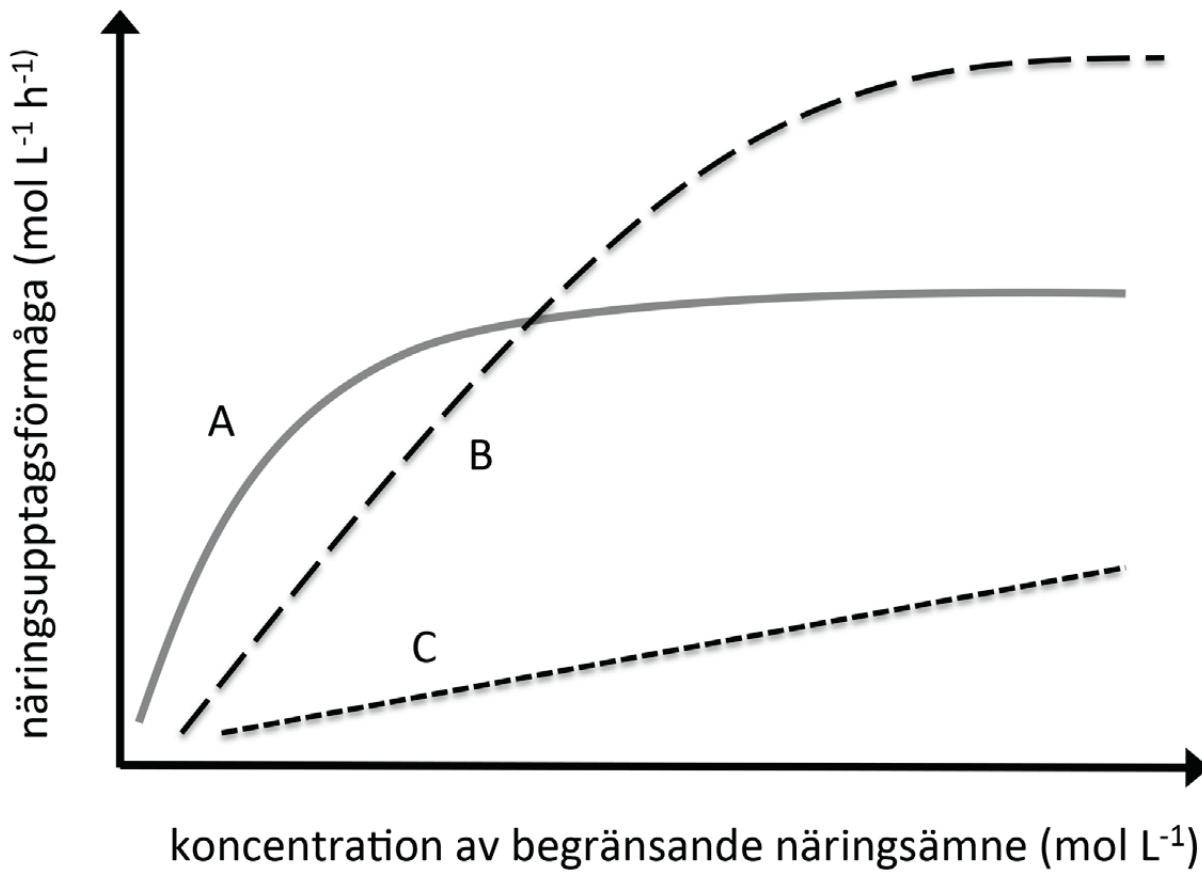
Mikrobiel ekologi



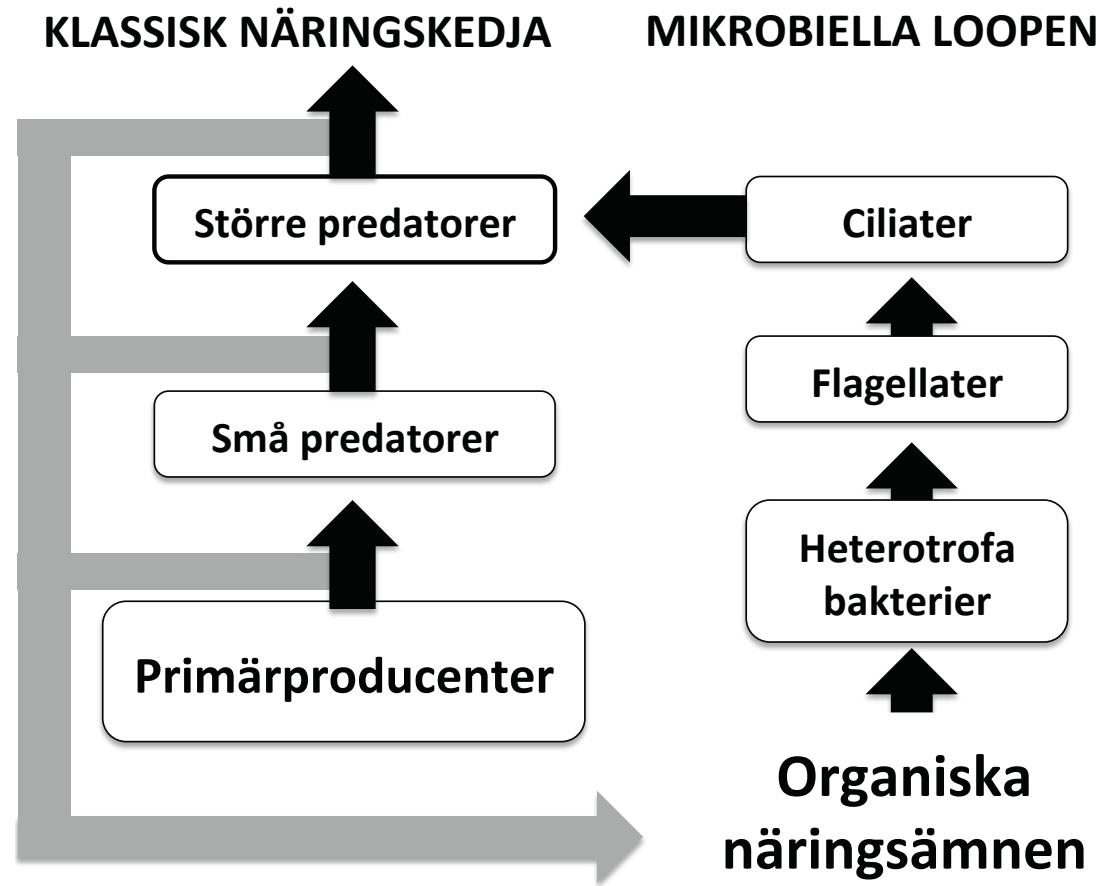
Figur 10.1



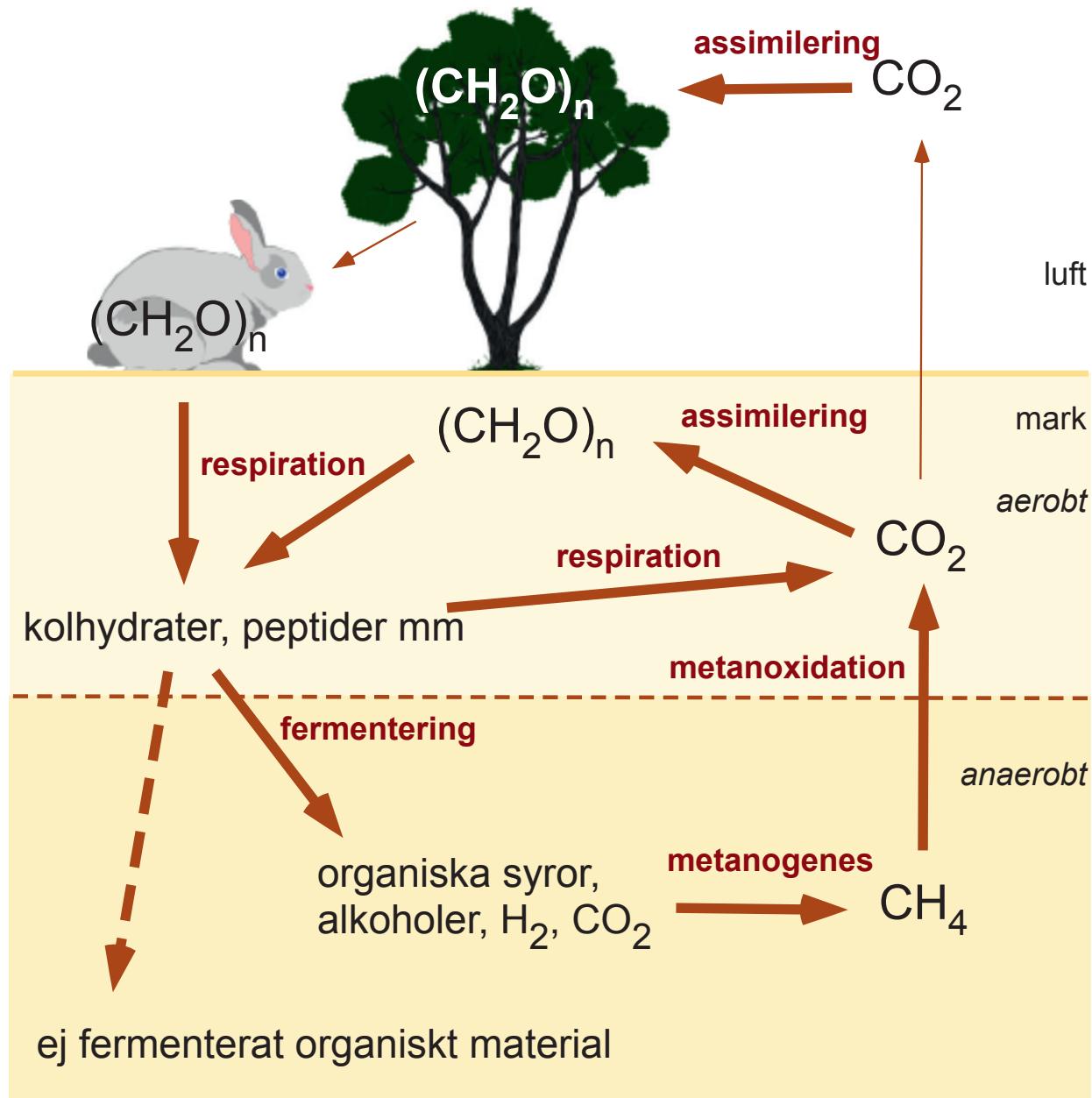
Figur 10.2



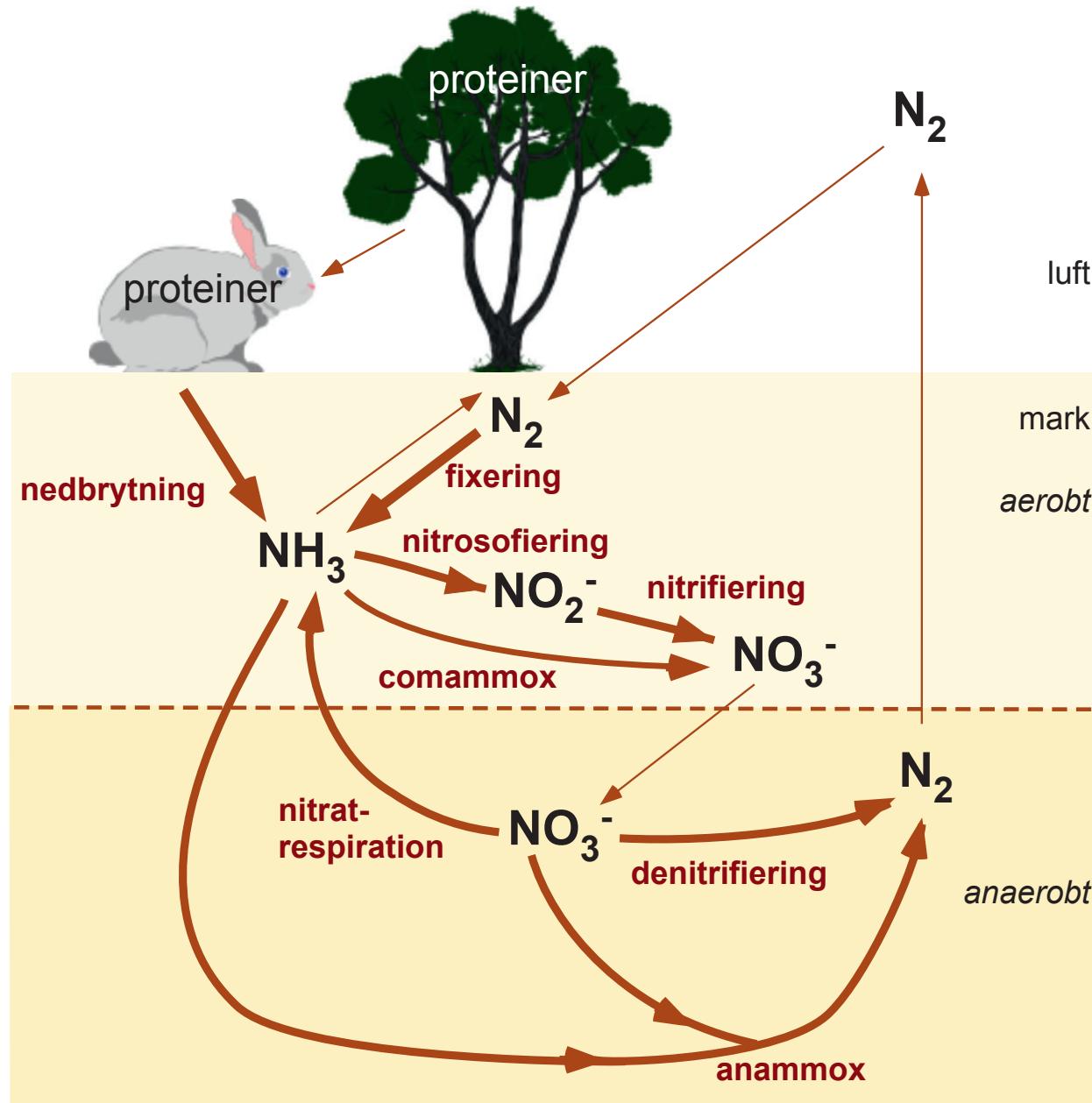
Figur 10.3



Figur 10.4



Figur 10.5

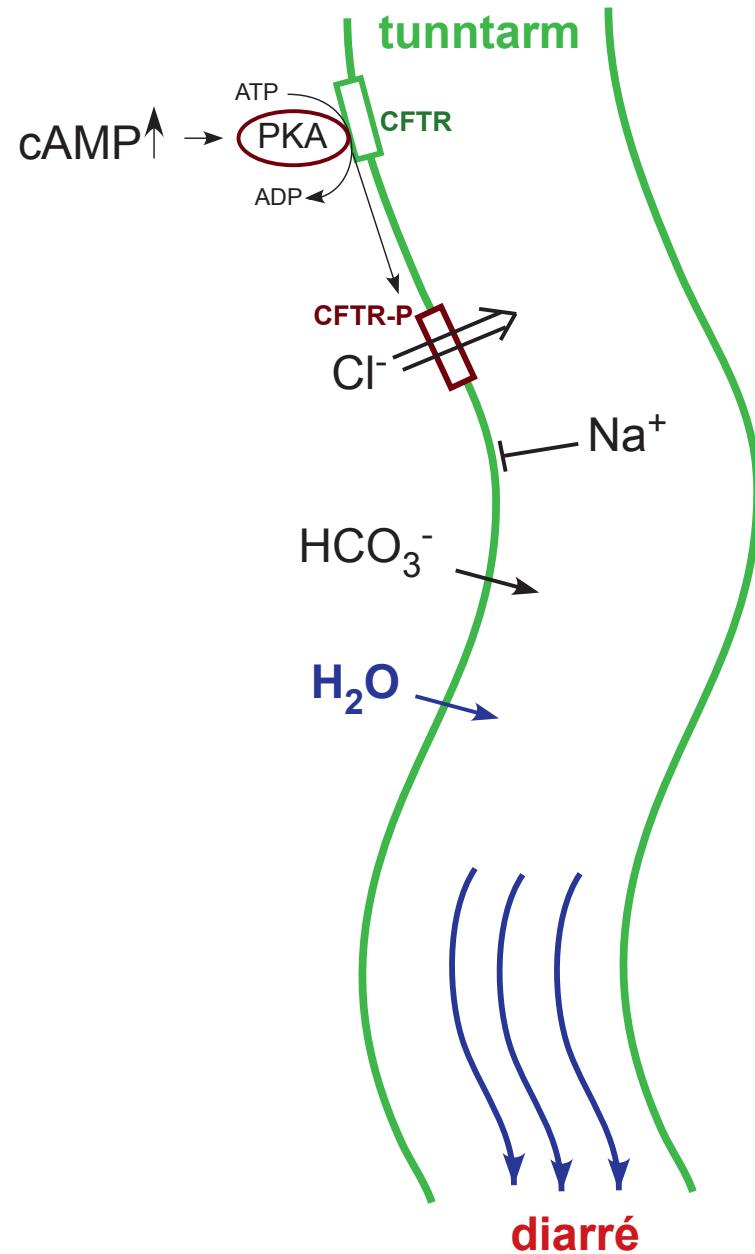


Figur 10.6

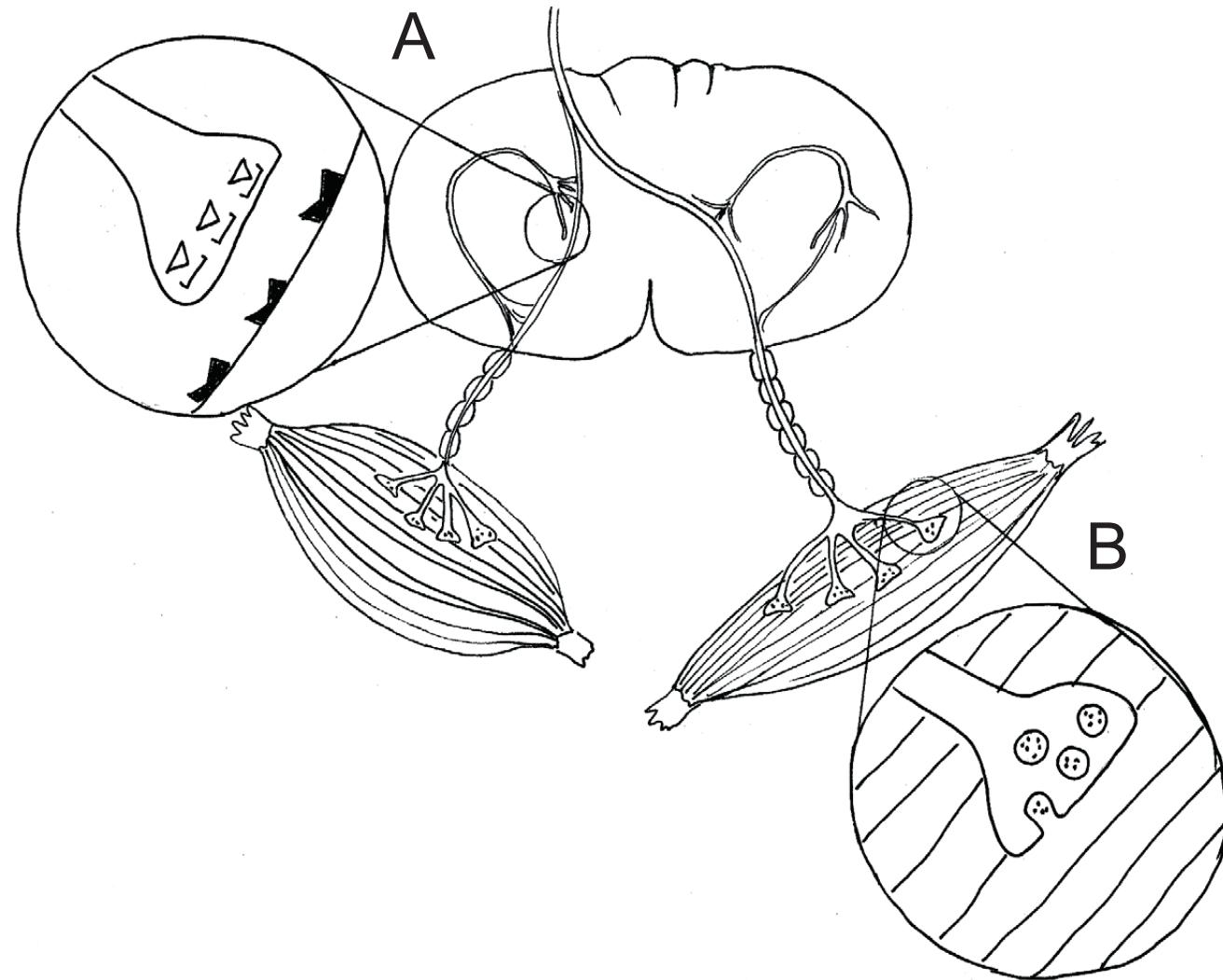


11

Mänskans mikrobiota



Figur 11.1

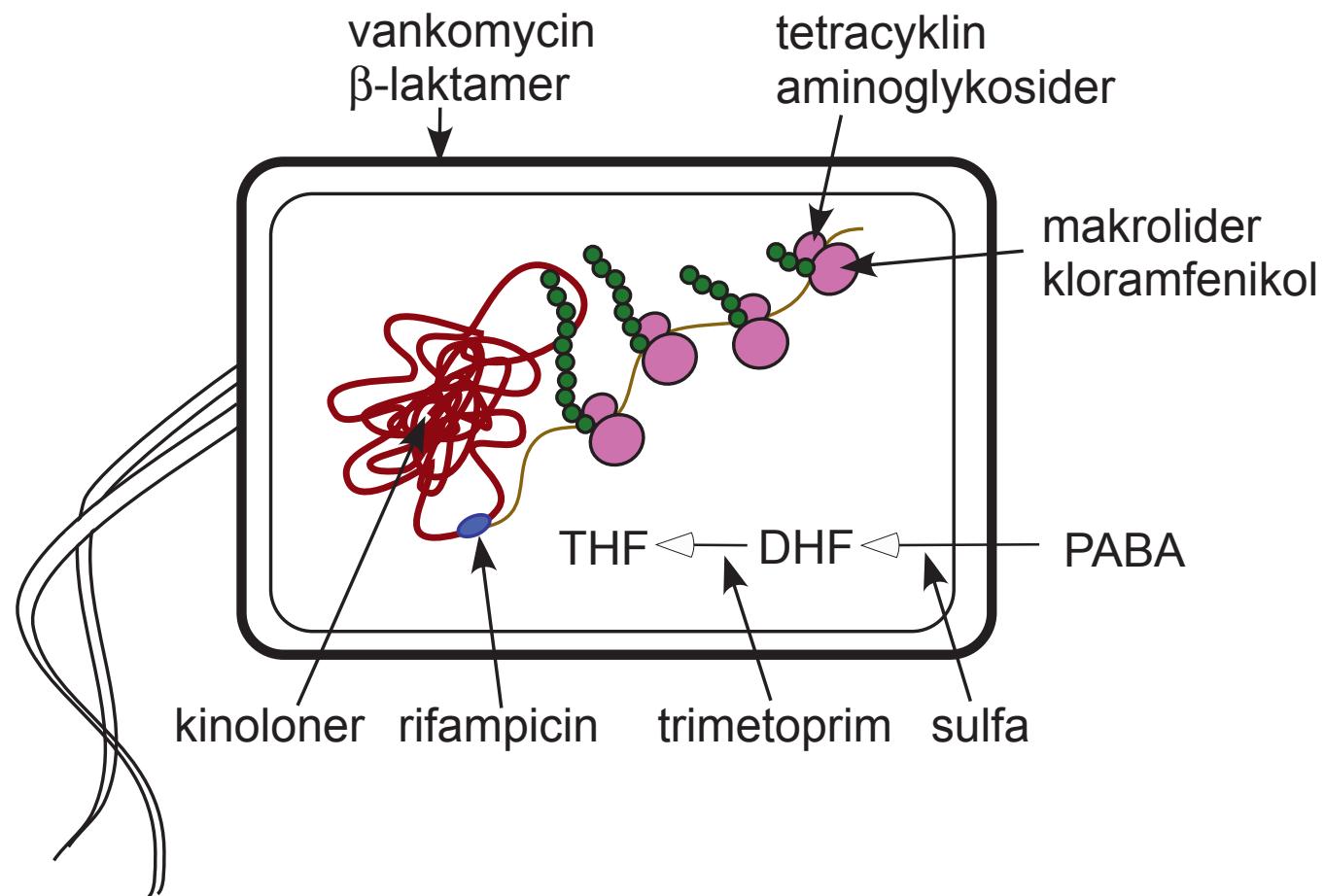


Figur 11.2

A microscopic view of various bacterial cells, including rod-shaped and spherical ones, against a dark background.

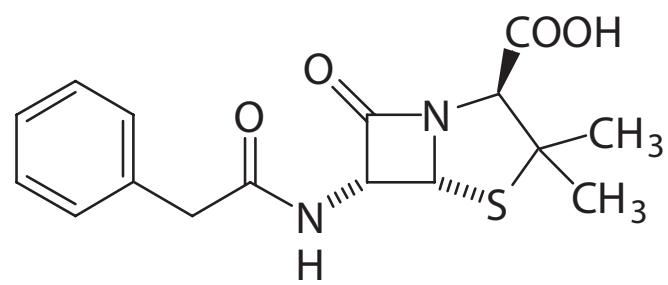
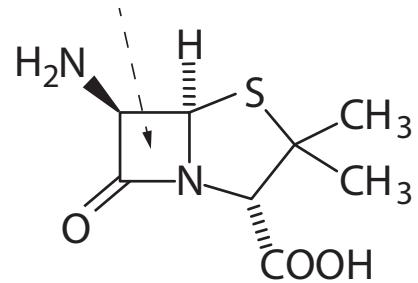
12

Antibiotika

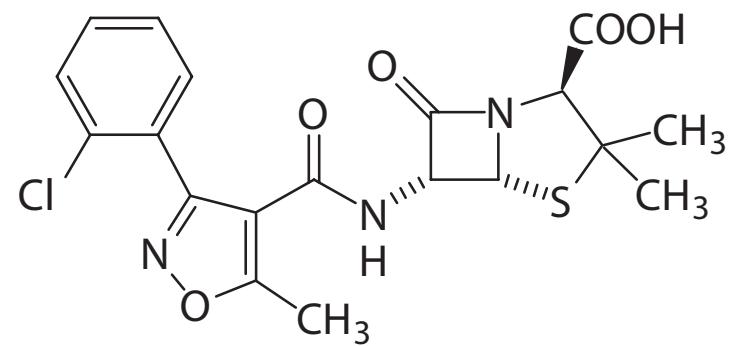
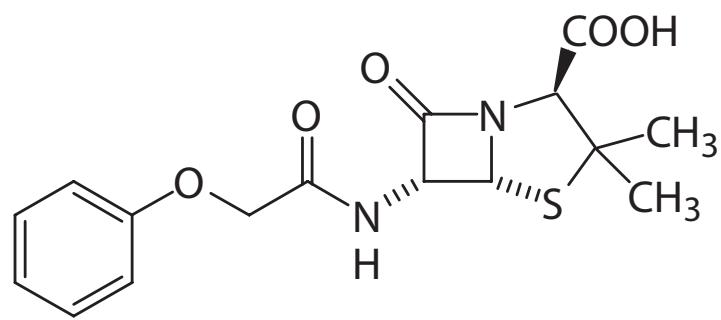


Figur 12.1

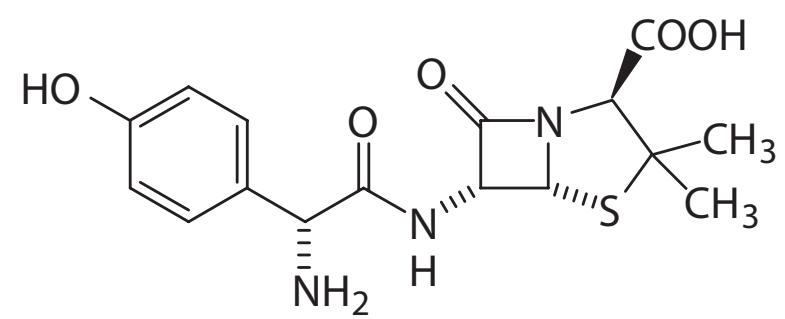
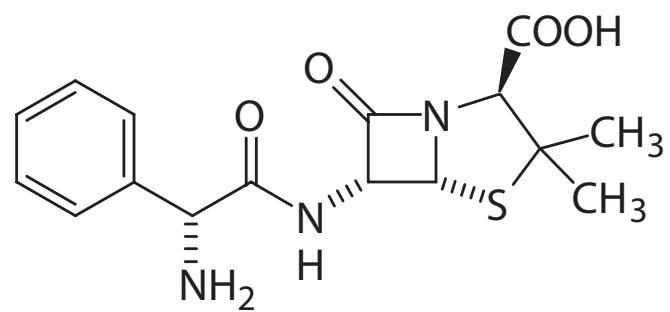
β -laktamring



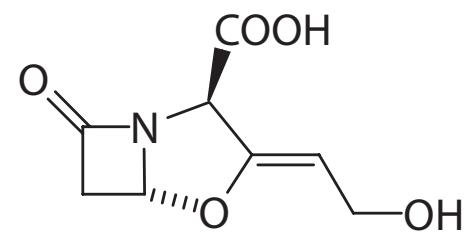
Figur 12.2



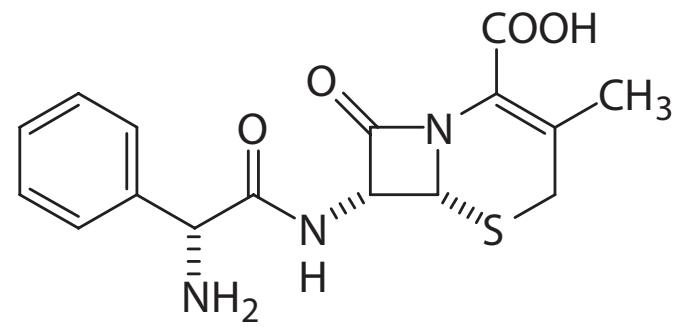
Figur 12.3



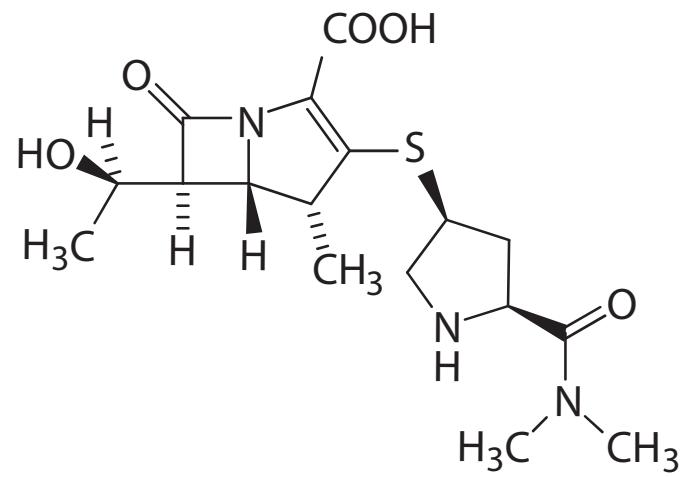
Figur 12.4



Figur 12.5



Figur 12.6

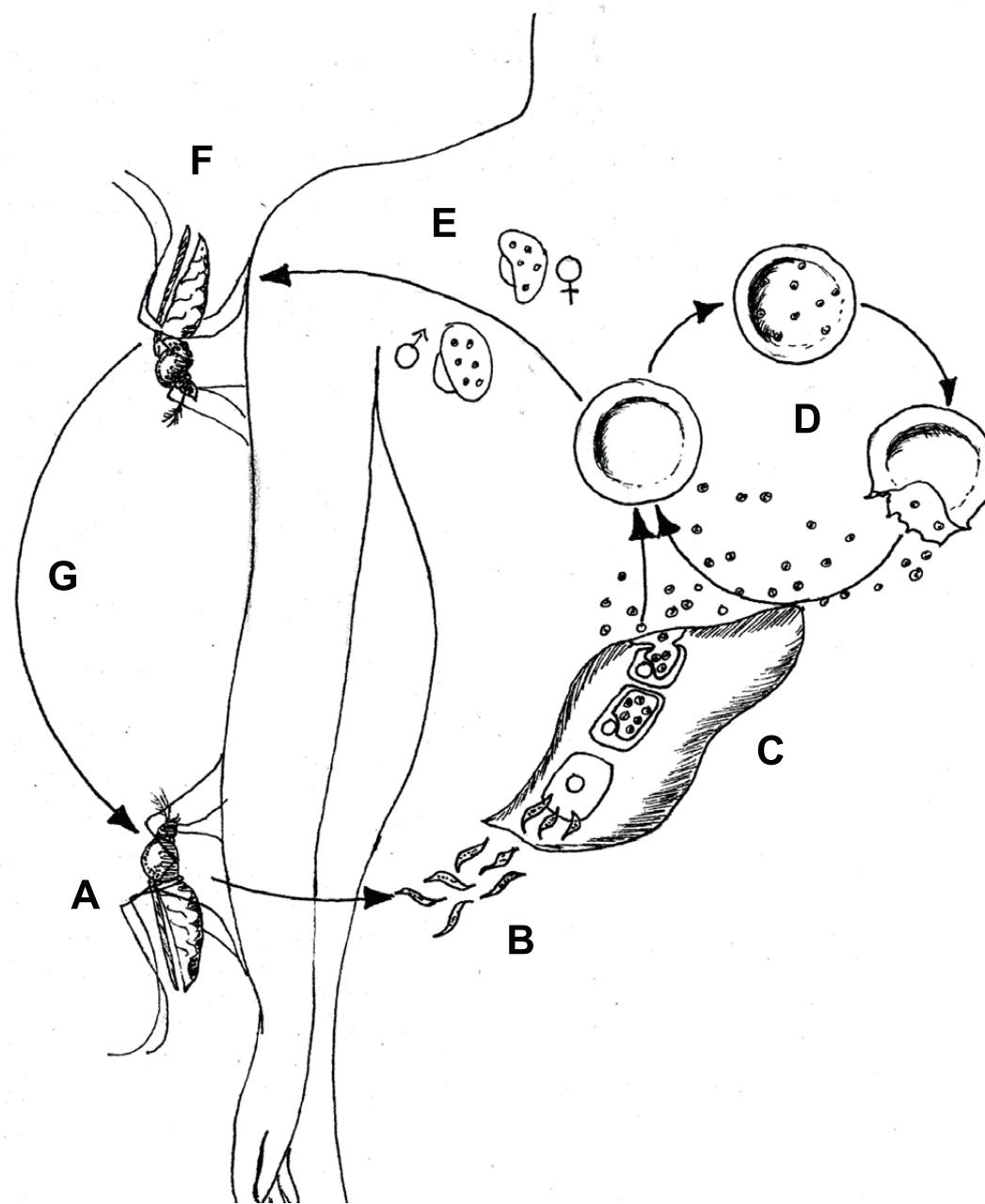


Figur 12.7

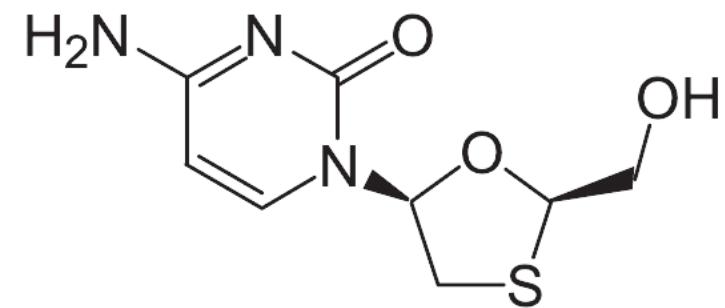
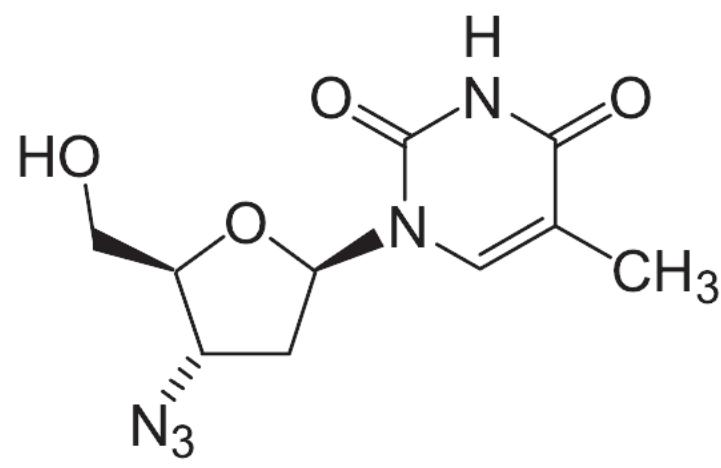


13

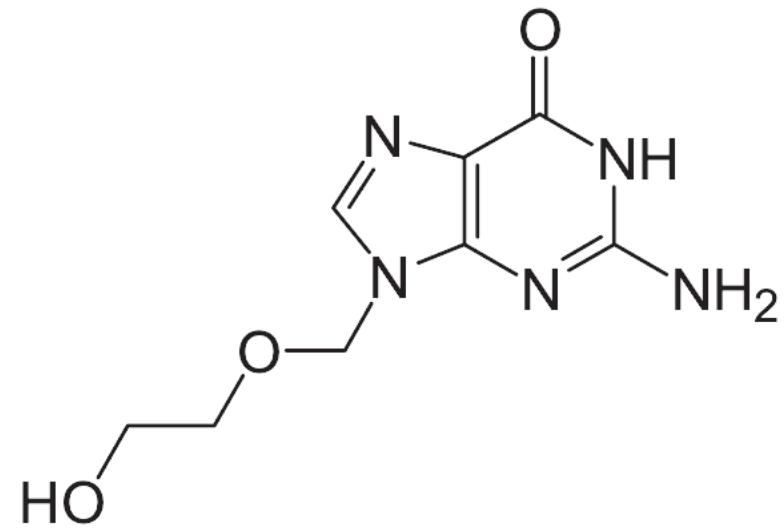
Sjukdomar orsakade av eukaryoter och virus



Figur 13.1



Figur 13.2



Figur 13.3