Grunnleggende mikrobiologi

Line Nateland

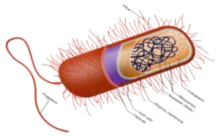
Grunnkurs i dekontaminering

Mikrobiologi

Vitenskapen om mikroorganismer

Mikroorganismer

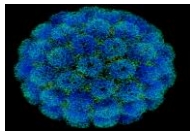
Bakterier



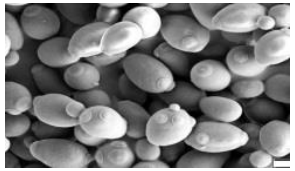
Protister

Selvstendige livsformer man ikke kan se med det blotte øye

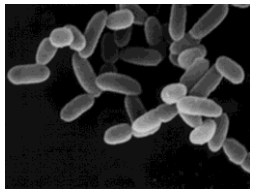
Virus



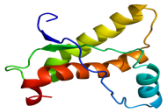
Mikroskopiske sopper

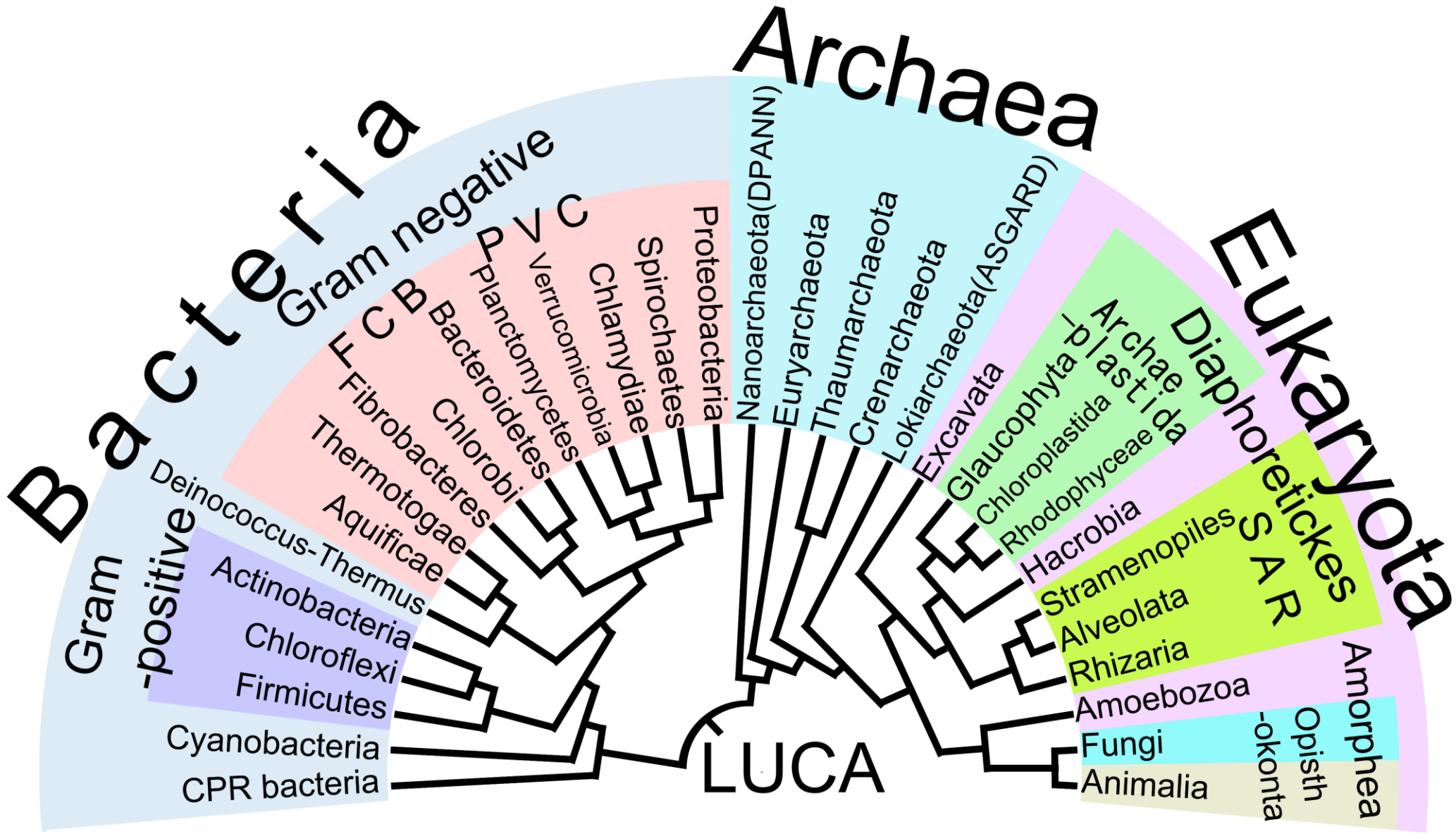


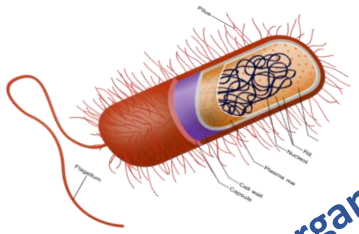
Arkebakterier



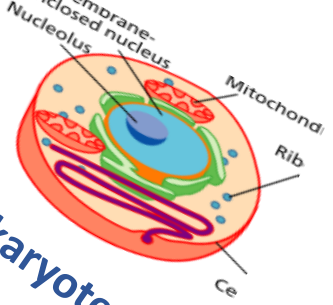
Prioner







Prokaryote organismer



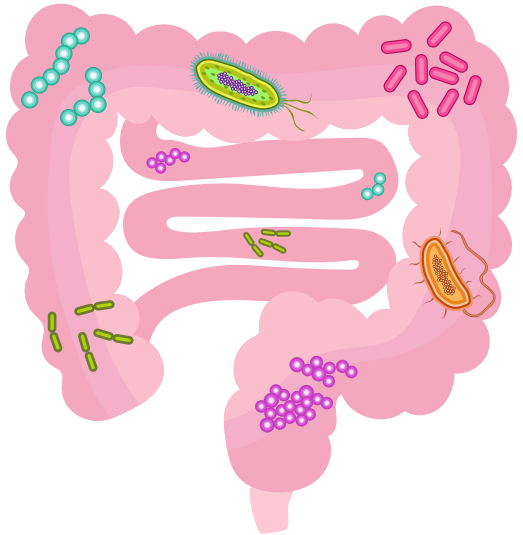
Eukaryote organismer

Bacteria
Gram negative
Proteobacteria
Spirochaetes
Chlamydiae
Verrucomicrobia
Planctomycetes
Bacteroidetes
Chlorobi
Fibrobacteres
Thermotogae
Aquificae
Deinococcus-Thermus
Gram -positive
Actinobacteria
Chloroflexi
Firmicutes
Cyanobacteria
CPR bacteria

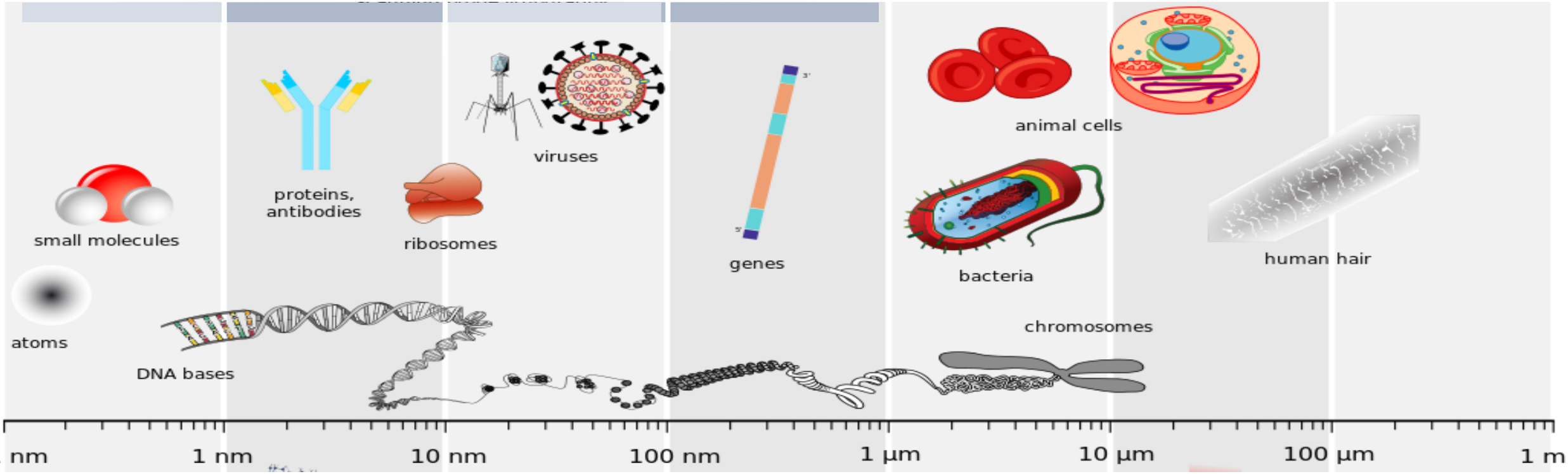
Archaea
Nanoarchaeota(DPANN)
Euryarchaeota
Thaumarchaeota
Crenarchaeota
Lokiarchaeota(ASGARD)

Eukaryota
Excavata
Archaeplastida
Glaucophyta
Chloroplastida
Rhodophyceae
Diaphoretickes
Hacrobia
SAR
Stramenopiles
Alveolata
Rhizaria
Amorphea
Amoebozoa
Opisthokonta
Fungi
Animalia

LUCA

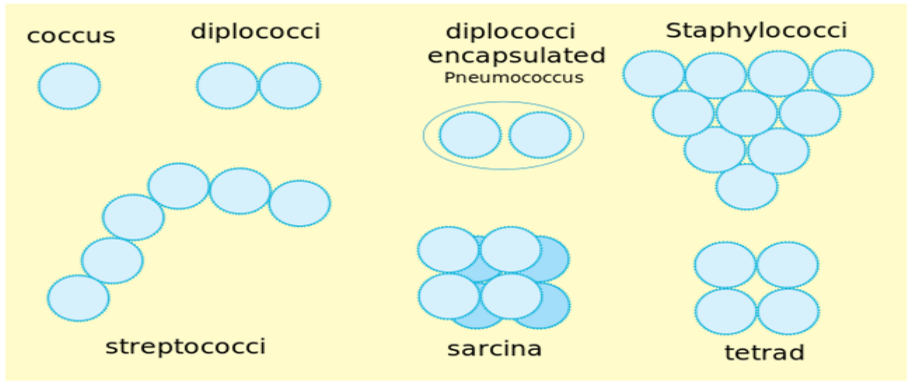


Sammenligning av størrelse

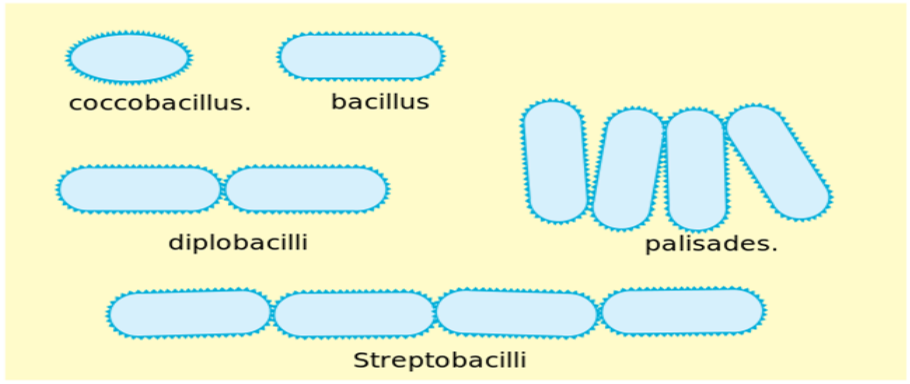


Bilde:https://commons.wikimedia.org/wiki/File:Biological_and_technological_scales_compared-en.svg

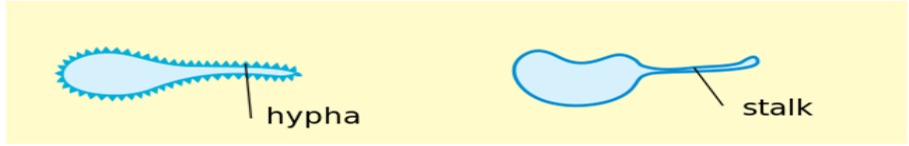
Ulike struktur

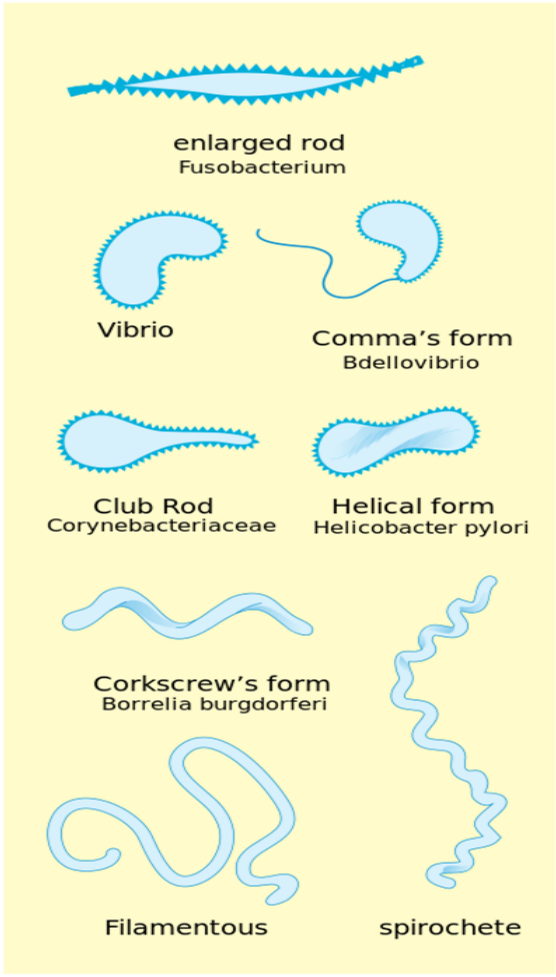


Bacilli



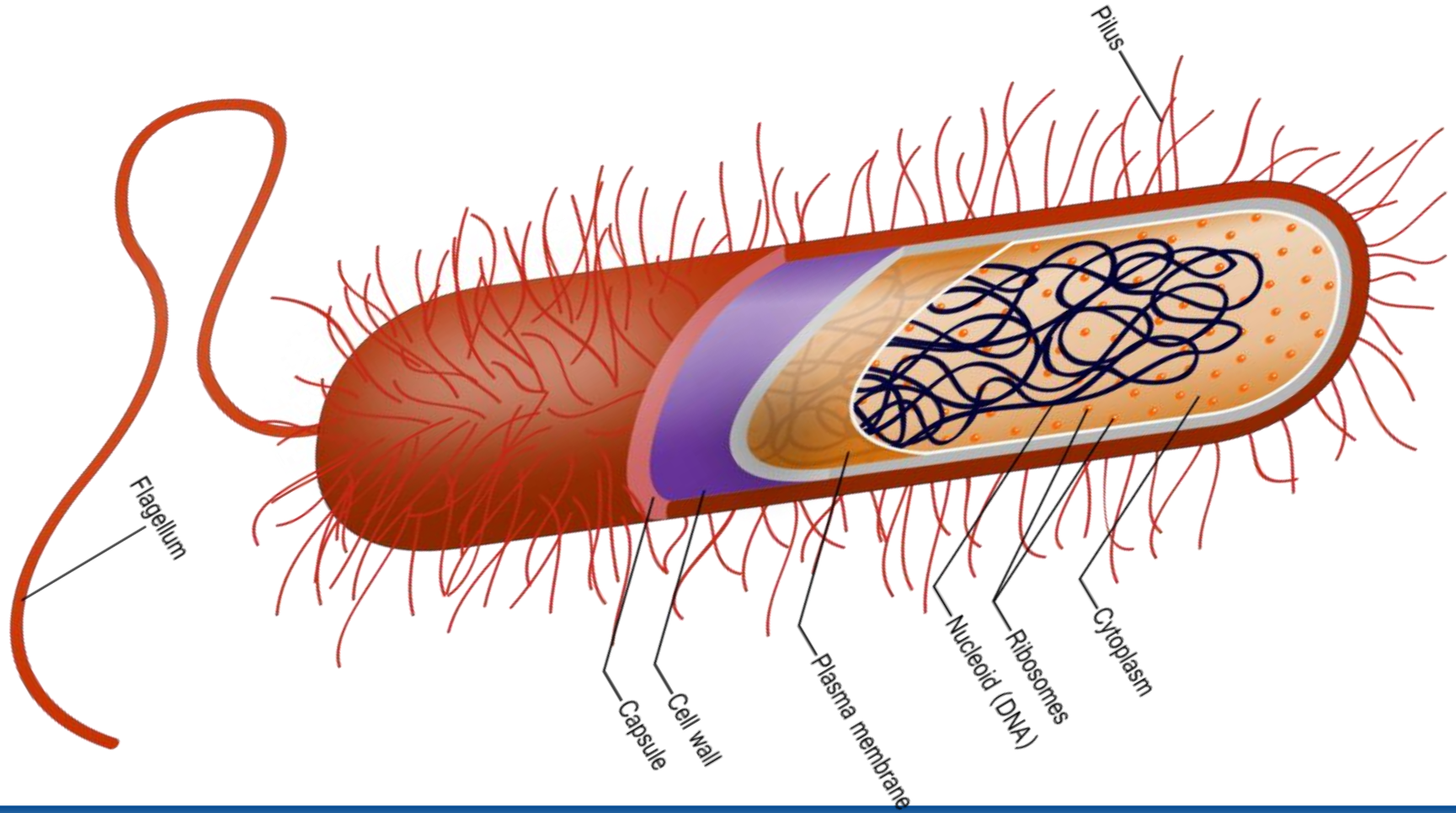
Budding and appendaged bacteria



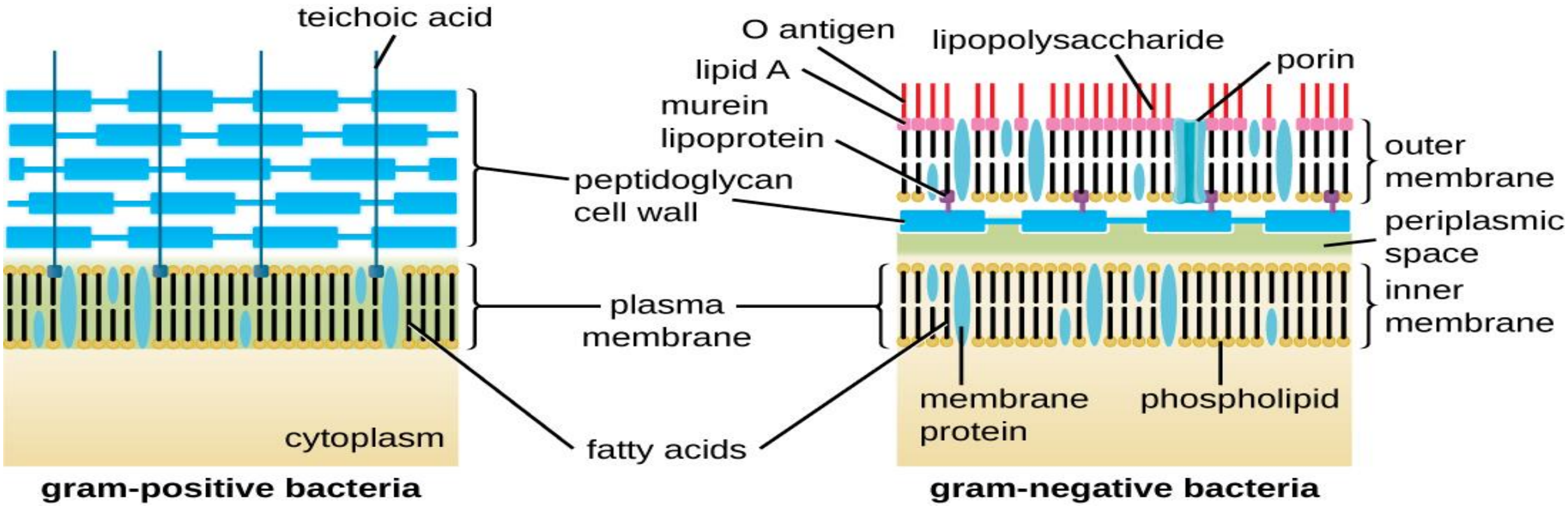


https://en.wikipedia.org/wiki/Bacterial_cellular_morphologies,

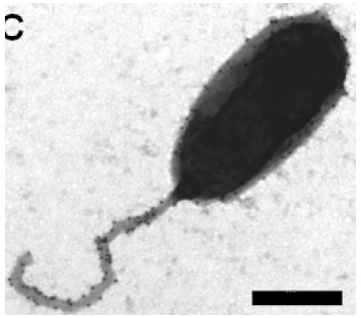
Struktur



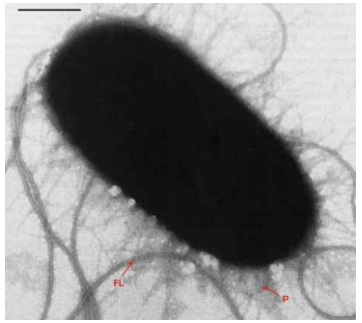
Cellevegg



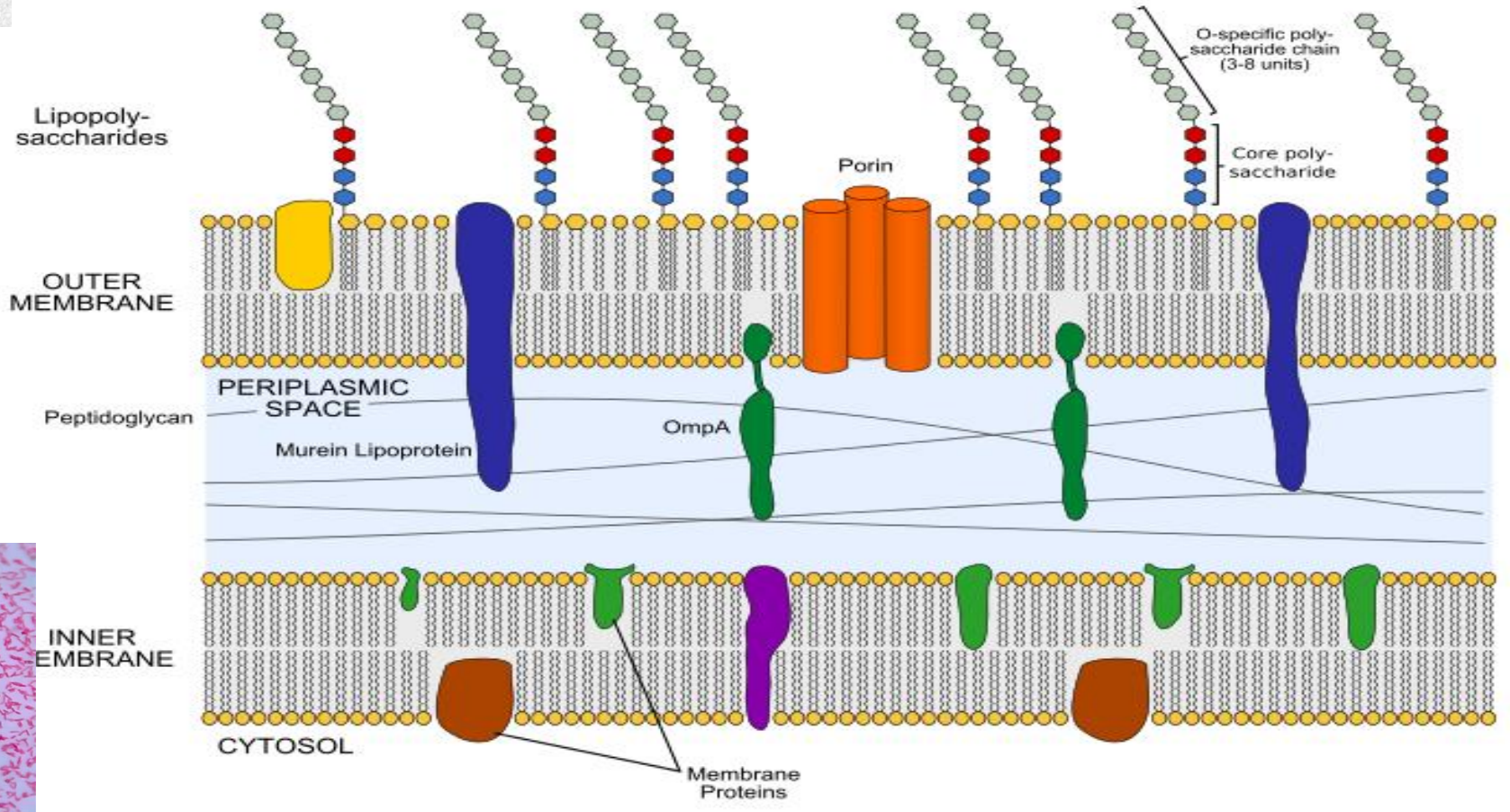
Celleveggen



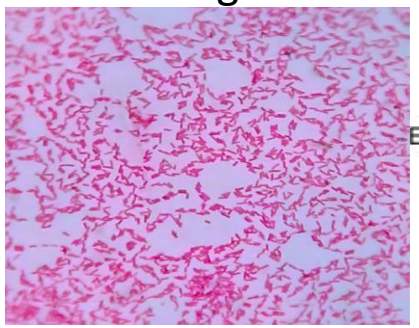
Flagell



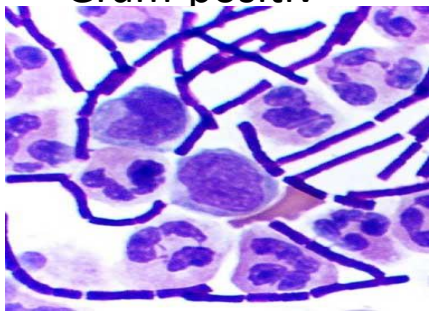
Pilier



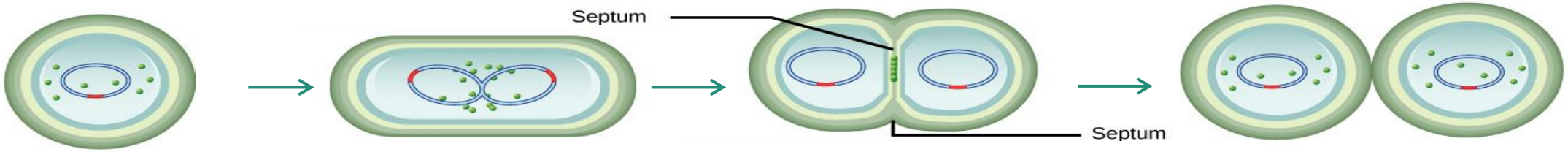
Gram-negativ

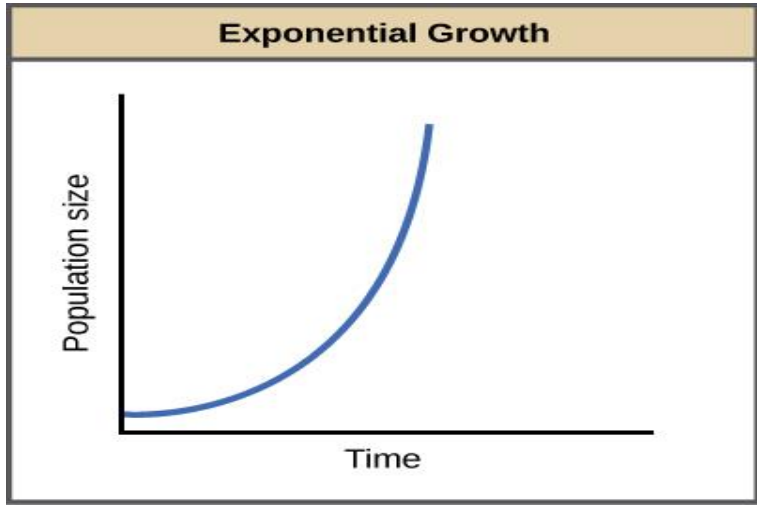


Gram-positiv



Formering





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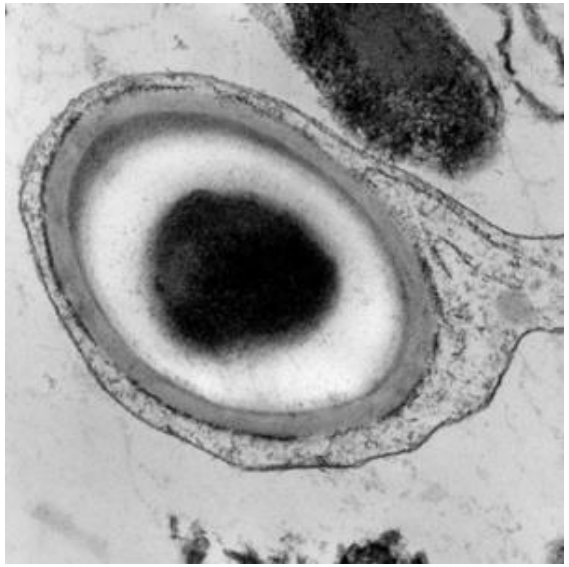
Bakteriers overlevelsesmekanismer

Dannelse av endosporer

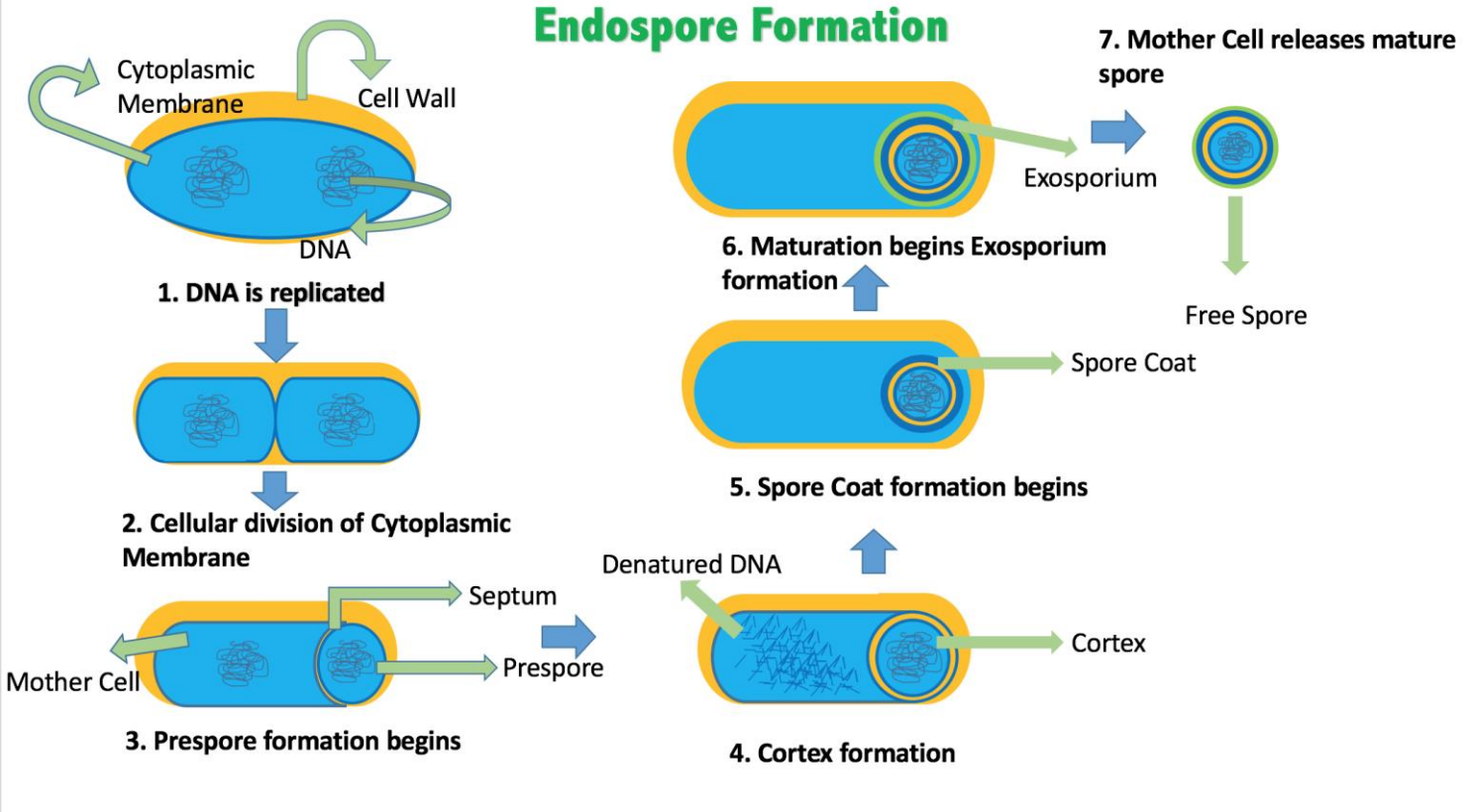


Biofilm

Antibiotikaresistens

Bakteriesporer

- Enkelte bakterier kan danne sporer når vekstforholdene blir dårlige
- Ekstremt motstandsdyktige mot tørke, varme, stråling og giftstoffer – inkludert noen desinfeksjonsmidler
- Kan overleve i årevis uten noen form for næring

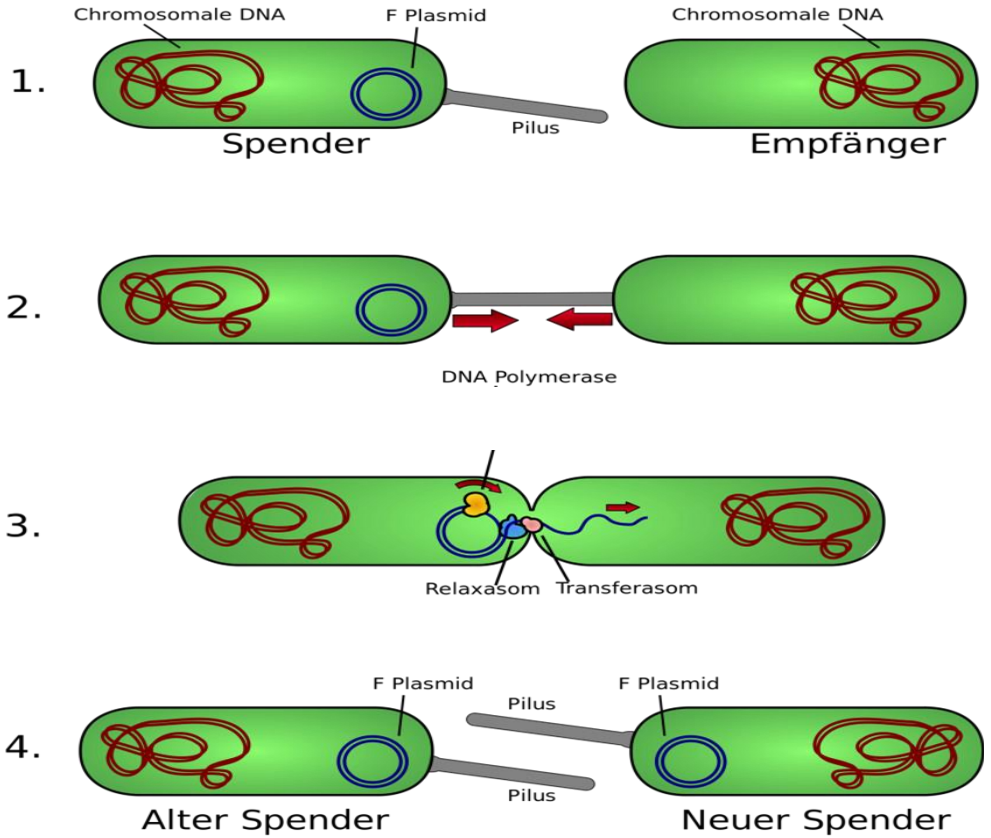


Biofilm

- Belegg av mange forskjellige typer bakterier som fester seg til underlag og danner en glatt overflate
- Kan dannes på medisinsk utstyr som katetre og endoskop, i vannrør, kjøletårn osv.
- Mikroorganismene festes tett sammen i en matriks som gjør at biofilmen blir svært vanskelig å fjerne med desinfeksjonsmidler, må derfor ofte fjernes mekanisk

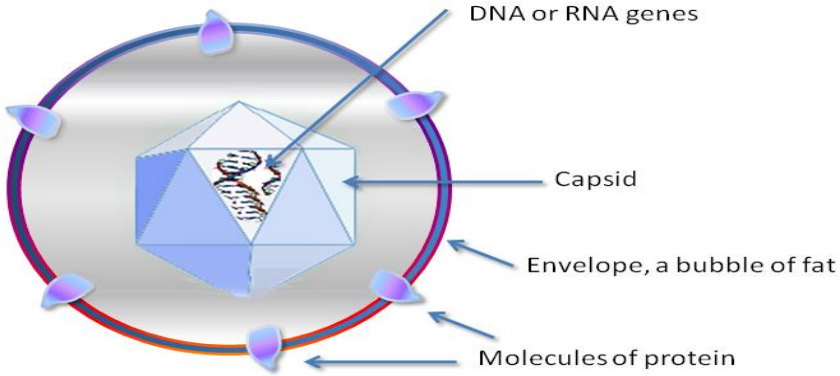
Antibiotikaresistens

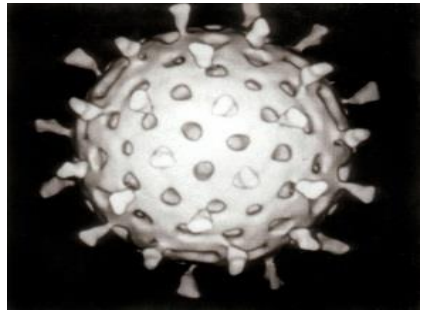
- Bakterier som motstår virkningen av antibiotika
- Antibiotikaresistens kan oppstå:
  - Naturlig
  - Ervervet
    - Genoverføring
    - Mutasjoner



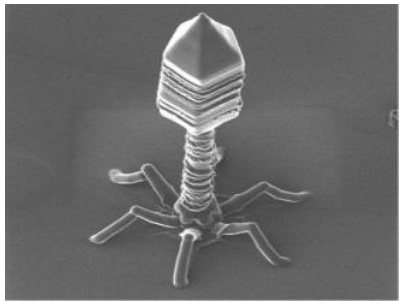
Virus

- Kan infisere alle livsformer
- Størrelse: 0,02- 0,3 µm
- Kan ikke sees i vanlig lysmikroskop
- Enkel struktur:
  - DNA/RNA
  - Proteinkapsel
  - (Lipidkappe)
- Virus er avhengig av en levende celle for å formere seg
- Virus uten lipidkappe er vanskeligere å inaktivere





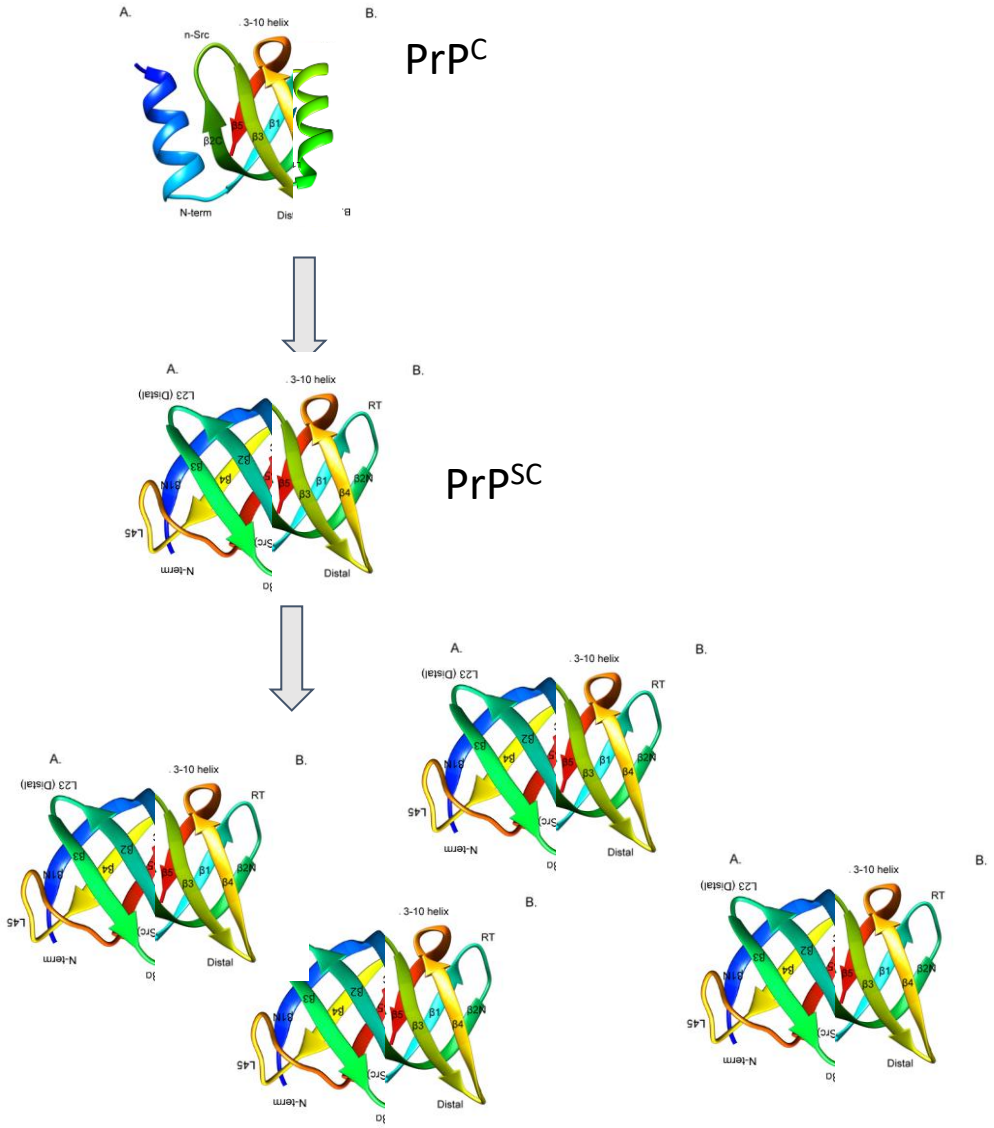
Rotavirus



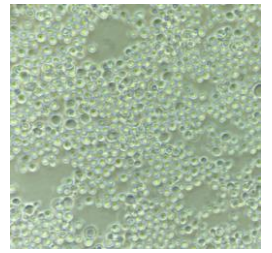
Bakteriofag

Prioner

- Proteiner som finnes hos organismer med cellekjerne
- Er kun farlig i «unormal» form
- Kan oppstå spontant, arves og overføres
- Kan ikke ødelegges med tradisjonelle steriliseringsmetoder



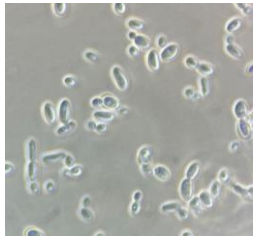
Mikroskopiske sopper



- Overflatiske soppinfeksjoner – dermatofytter og gjærsopp
- Subkutane soppinfeksjoner
- Sopper som gir dype infeksjoner

Inhalering, hudkontakt eller sår

- Infeksjon i hud og slimhinner
  - Fotsopp, ringorm
- Allergi
- Respiratoriske problemer
- Systemiske soppinfeksjoner
  - Alvorlige lidelser som angriper indre organer, oftest hos immunsupprimerte



Korrekt dekontaminering tar knekken på alle mikrober…

Free svg, pixabay, needpix

Korrekt dekontaminering tar knekken på alle mikrober….

… både «slemme» og «snille»

Free svg, pixabay, needpix

Én bakterie er vel ikke så farlig?

Pixabay.com

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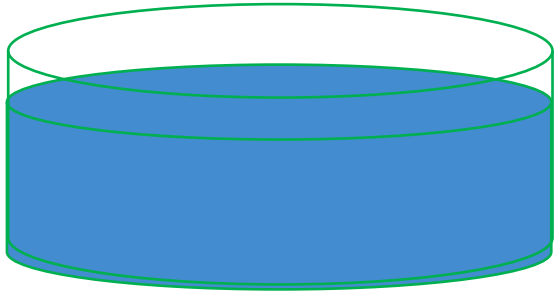

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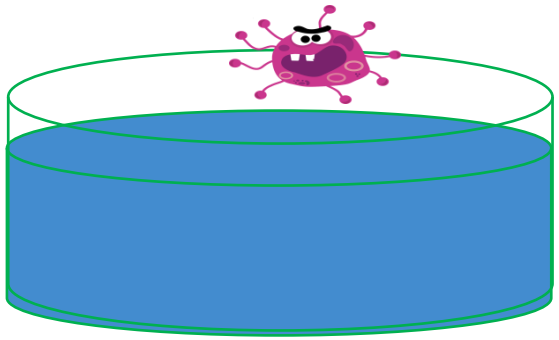

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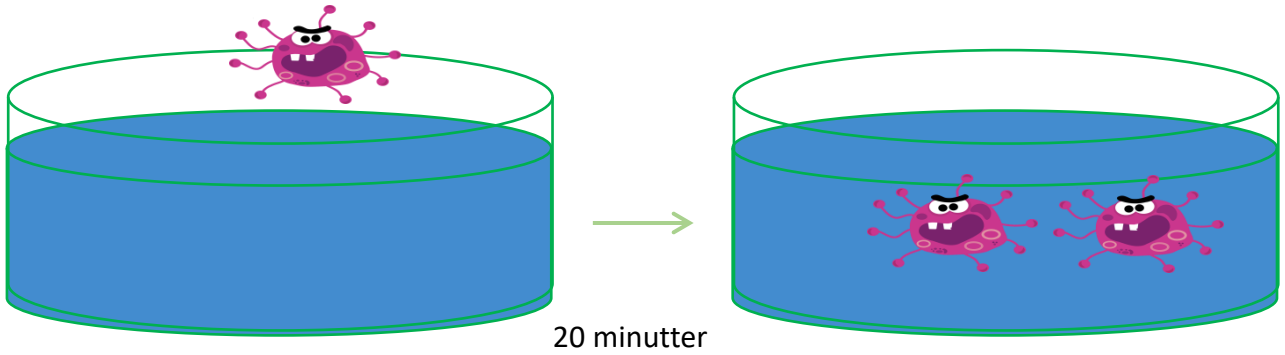

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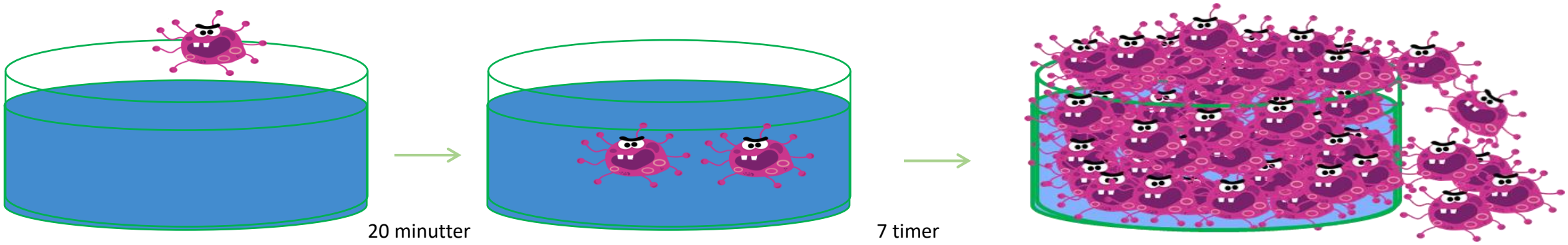

2 100 000

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24 timer senere …