

prokaryotic diversity

MAIN
HEADER

GRAM - POSITIVE BACTERIA

CATEGORIZED BY C+G content

Actinobacteria: ↑ 50% C+G, thin filamentous to coccobacilli, important to soil ecology

- *Mycobacterium* → acid fast (+) bc mycolic acid on cell wall, TB + leprosy
- *Corynebacterium* → diaminopimelic acid on cell wall, C. diphtheria
- *Bifidobacterium* → filamentous + anaerobic, used as probiotic
- *Gardnerella vaginalis* → GRAM VARIABLE, bacterial vaginosis

Firmicutes: ↓ 50% C+G
(mostly)

- *Clostridium*: anaerobic, endospore producers, live in soil, common food contaminant
 - *C. perfringens* → food poisoning + gangrene
 - *C. tetani* → neurotoxins + tetany
 - *C. botulinum* → botulinum neurotoxin
 - *C. difficile* → hospital infection, severe colitis

BACILLI + COCCI
order Lactobacillus

- Streptococcus
 - *S. pyogenes* → β-hemolytic cocci associated w/ pus production + strep throat
- Lactobacillales:
 - microaerophilic
 - non-spore formers
 - in gut microbiome
 - starter culture for yogurt, etc.

class Bacilli

- Enterococcus ^{PREFER!}
- Bacillus: aerobes or facultative anaerobics, endospore producers, important in industrial micro
 - *B. anthracis* → anthrax
 - *B. cereus* → food poisoning
 - *B. thuringiensis* → in insecticide compounds
- Staphylococcus: cocci-shaped facultative anaerobics, halophilic, nonmotile
 - *S. aureus* → skin infection, some antibx resistant (MRSA + VRSA)
 - *S. epidermis* → common on skin, can cause infection in wounds

TENERICUTES

- mycoplasma: no cell wall (pleomorphic), do not retain crystal violet, small, cell wall antibx don't work
- *M. pneumoniae* → walking pneumonia

PHOTOTROPHIC BACTERIA

based on function, sunlight is main source of energy via photosynthesis

contains proteo + non-proteo, color from bacteriochlorophylls

anoxygenic
photosynthesis

- purple sulfur → hydrogen sulfide to elemental sulfur + sulfuric acid
- purple non-sulfur → ONLY hydrogen
- green sulfur → oxidize sulfide
- green non-sulfur → oxidize non-sulfide substrates
- cyanobacteria → oxygenic, adaptable + diverse habitats

IPAD
PRO