

Prokaryotes

Eubacteria (Domain Bacteria, Kingdom Eubacteria)

Cell walls contain peptidoglycan

Archaeobacteria (Domain Archaea, Kingdom Archaeobacteria)

Cell walls lack peptidoglycan

DNA sequences more closely related to Domain Eukarya than Domain Bacteria

Characteristics

Shapes

Bacillus(-i)

Coccus(-i)

Spirillum(-a)

Cell walls (Gram Staining, Eubacteria)

Gram (-): thin peptidoglycan layer, that does not hold violet stain

Gram (+): thick peptidoglycan layer, that does hold violet stain

Movement

Sessile: cannot move on its own

Motile: can move using a flagellum

Metabolism

Heterotrophs: food/energy from other sources

Chemoheterotrophs: food from chemical energy

Photoheterotrophs: light drives production of food, but need OTHER food sources

Autotrophs

Photoautotrophs: light reactions and photosynthesis

Chemoautotrophs: use chemical energy to produce own food

Obligate aerobes: must have oxygen (*Mycobacterium tuberculosis*)

Obligate anaerobes: oxygen is toxic (*Clostridium botulinum*)

Facultative anaerobes (*E. coli*)

Reproduction

Binary fission

Conjugation

Spore formation (endospore)

Bacteria Importance

Decomposers

Nitrogen fixers

Nitrogen fixation

Human uses

Pathogens

