

Types of Microorganisms

Cyanobacteria

- **Cyanobacteria** , **blue-green algae**, **blue-green bacteria** obtain their energy through photosynthesis
- significant component of the marine nitrogen cycle and an important primary producer

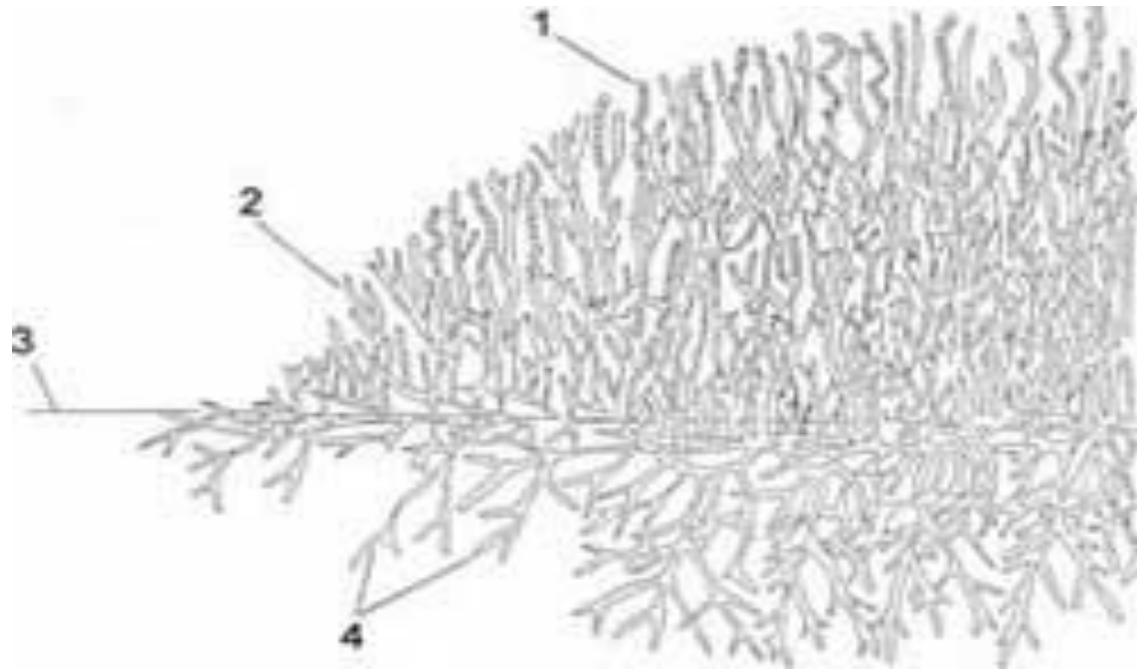


- The cyanobacteria were classified into five sections, I-V.
- Chlorococcales, Pleurocapsales, Oscillatoriales, Nostocales and Stigonematales

- **Actinomycetes (The Filamentous Bacteria)**
- aerobic, high G-C percentage gram-positive bacteria form branching filaments or hyphae and asexual spores
- closely resemble fungi in overall morphology
- aerial hyphae, substrate hyphae
- Septa
- aerial hyphae reproduce asexually
- Most actinomycetes are non-motile
- they break down hard organic materials like newspaper

Growth of Actinomycetes on agar plate

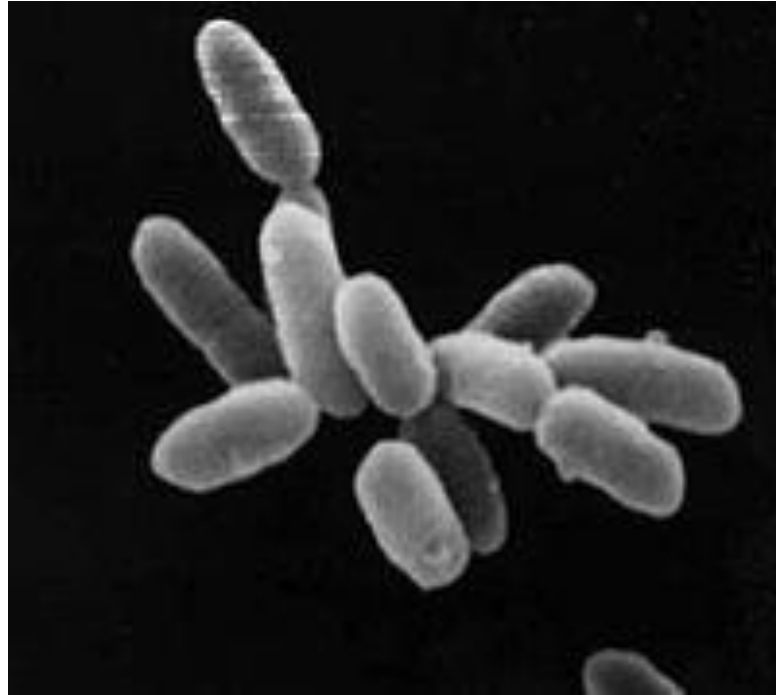
1. Chain of Conidiospores (Conidia)
2. Aerial Hyphae
3. Agar Surface
4. Substrate Hyphae



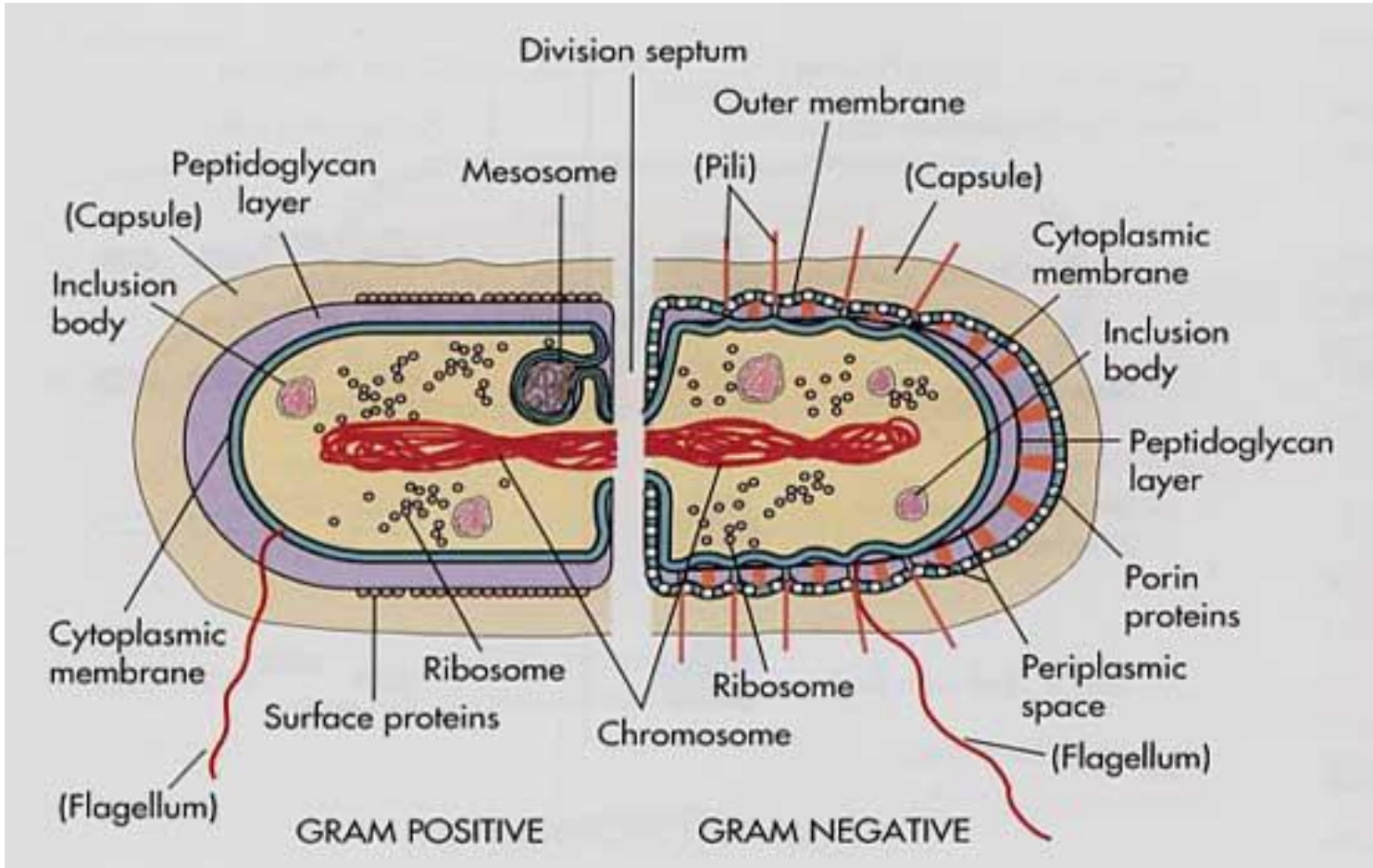
Archaeobacteria (Archaea)

- Archaea although look like bacteria are not closely related to them
- divided into two evolutionary lineages based on rRNA sequences, crenarchaeotae, Euryarcheotae
- Crenarchaeotae grow at high temperatures and metabolize elemental sulfur
- Euryarchaeotes are methanogens some grow aerobically very high concentrations of salt
- Archaea possess membrane lipids of branched-chain hydrocarbons bound to one or two glycerol molecules by ether bonds

ARCHAEA



Halobacteria sp

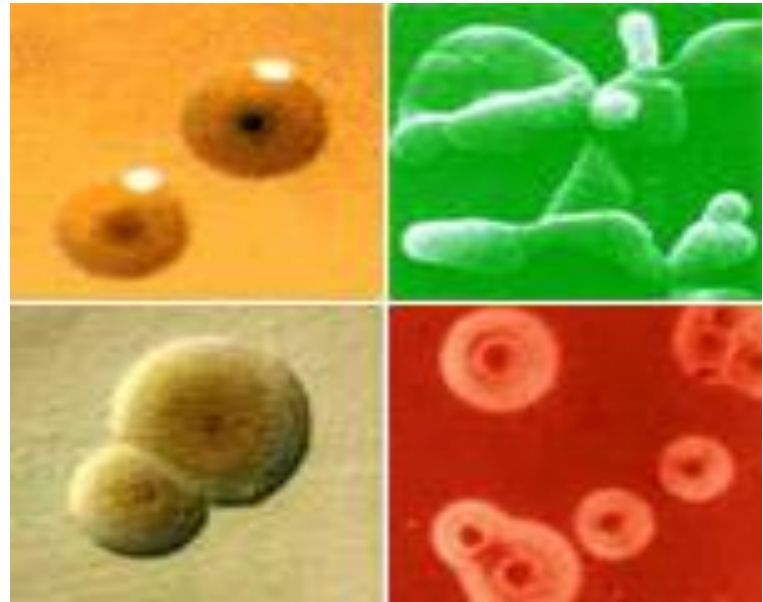


Mycoplasma

- *Mycoplasmas* lack a cell wall
- unaffected by many common antibiotics such as penicillin beta-lactam antibiotics
- parasitic or saprotrophic
- pathogenic in humans, *M. pneumoniae*,
- *Mycoplasma* is by definition restricted to vertebrate hosts
- Cholesterol is required for the growth

Cell wall structure

- *M. pneumoniae* cells are of small size and pleomorphic
- Mycoplasmas are unusual among bacteria – possess sterols for the stability of their cytoplasmic membrane
- low GC-content



Rickettsiae

- *Rickettsia* is a genus of motile, Gram-negative, pleomorphic bacteria present as cocci, rods thread-like
- Obligate intracellular parasites, survival depends on entry, growth, and replication within the cytoplasm of eukaryotic host cells
- cannot live in artificial nutrient environments are grown either in tissue or embryo cultures
- *Rickettsia* carried as parasites by
cause diseases typhus, rickettsialpox, Boutonneuse fever, African Tick Bite Fever, Rocky Mountain spotted fever, Australian Tick Typhus

