

MBIO3470 Microbial Systematics

(Topics may be deleted or new topics may be added)

Course Outline

- **Introduction**
 - Systematics: Characterization and taxonomy of microorganisms
 - Taxonomy: Classification, identification, and nomenclature of bacterial species
 - Characterization of prokaryotes
 - **Phenetic Systems of Bacterial Classification**
 - Traditional characterization: Classical Bergey's system of classification
 - Numerical taxonomy
 - **Phylogenetic (Phyletic) Classification and Approaches**
 - Hybridization and phyletic relatedness
 - DNA-DNA hybridization
 - rRNA-DNA hybridization
 - 16S rRNA sequence analysis (Dr C. Woese's phylogeny)
 - **Summary: Modern Polyphasic Approach to Bacterial Systematics**
 - **The Archaea Domain**
 - Physiological groups comprising the Archaea
 - **The Eubacteria: Relationship between Dr Woese's Phyletic and Bergey's groupings**
 - **The Oxygenic and Anoxygenic Phototrophs**
 - Taxonomic and phylogenetic comparison of phototrophic bacteria
 - Nutritional versatility of purple bacteria
 - **The Purple Bacteria Phylum (*Proteobacteria*)**
 - **The Gram Negative Aerobes**
 - **The Gram Negative Facultative Anaerobes**
 - **The Gram negative, anaerobic, fermentative Eubacteria**
 - Classification and relatedness to Gram positive phylum
 - **The Gram positive phylum**
 - Major phyletic groups, unicellular spore formers, the high GC Gram positive organisms
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