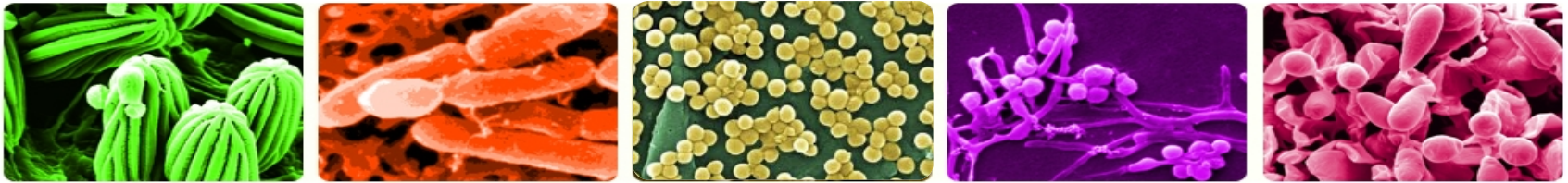


Techniques of bacterial taxonomy



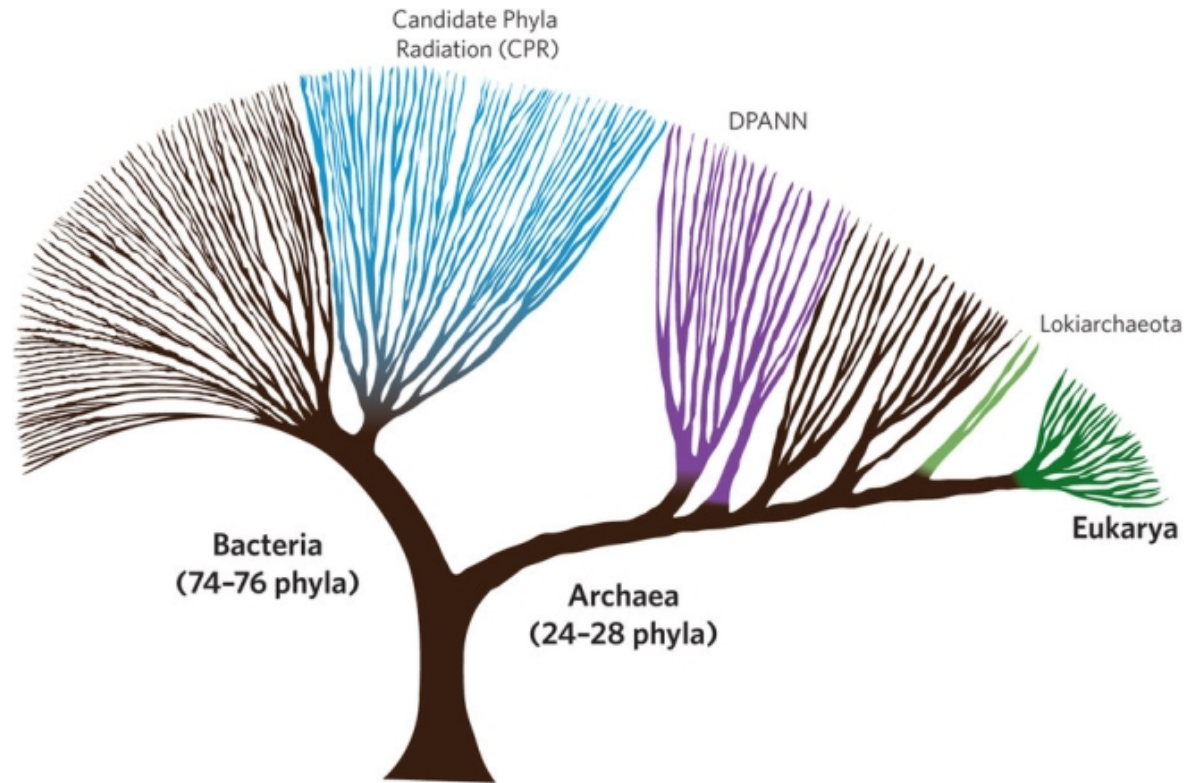
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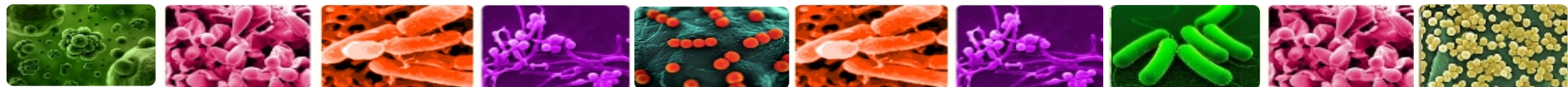




Hug *et al.* present a new view of the tree of life, revealing the existence of two extraordinarily diverse and poorly characterized prokaryotic lineages: CPR bacteria (blue) and DPANN archaea (purple).

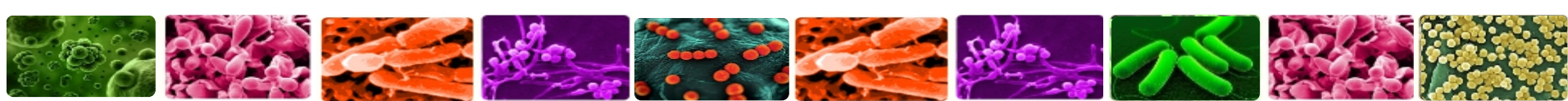
Bacterial Taxonomy

- **Microbiol taxonomy** is a science of study and grouping of microorganisms.
- **Bacterial Taxonomy** concludes three separate but interrelated areas
 - **Classification**
 - Arrangement of organisms into groups (taxa) on the basis of similarities or relationships.
 - **Identification**
 - Process of characterizing organisms to determine an isolate as a member of an established taxon or a previously unidentified species.
 - **Nomenclature**
 - Assignment of a specific name according to international rules (International Code of Nomenclature of Bacteria[Sneath,1992]).



Bacterial Taxonomy

- Bacterial taxonomy incorporates multiple methods for identification and description of new species
- The *polyphasic approach* to taxonomy uses three methods
 - 1) Phenotypic analysis
 - 2) Genotypic analysis
 - 3) Phylogenetic analysis



Polyphasic Taxonomy

- **Phenotypic characteristics**
 - Morphological data
 - physiological and biochemical data
 - Chemotaxonomic characteristics
 - Fatty acid analysis
 - The patterns of polar lipids present in the membranes
 - Composition of cell wall
- **Genotypic characteristics**
 - DNA-DNA Hybridization
 - the guanine (G)+ cytosine (C) content (% GC).
 - Multilocus Sequence Typing (MLST)
 - DNA profiling
- **Phylogenetic Analysis**
 - 16S rRNA gene sequence analysis
 - Multi-gene sequence analysis
 - Whole-genome sequence analysis

