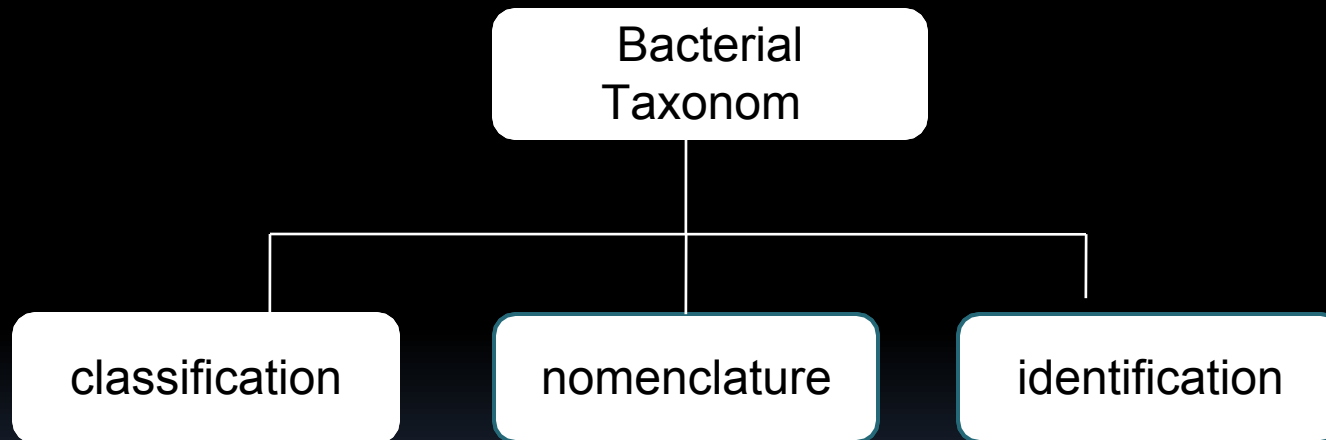


Department of
Microbiology
PPES ACS College, Veshvi


Taxonomy

- is the science of classification of organisms.






Classification

- is the arrangement of organisms into groups (taxa) on the basis of similarities or relationships.
- 




Nomenclature

- is the assignment of names to the taxonomic groups according to international rules (*International Code of Nomenclature of Bacteria* [Sneath, 1992]).
- 



Identification

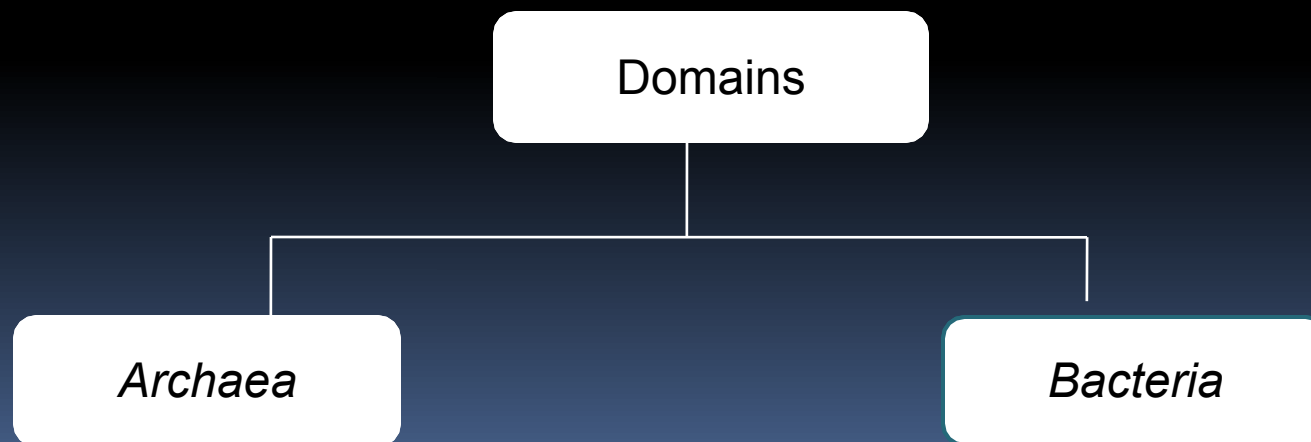
- is the practical use of a classification scheme to determine the identity of an isolate as a member of an established taxon or as a member of a previously unidentified species.
- 

- ① Classification and adequate description of bacteria require knowledge of their morphologic, biochemical, physiological, and genetic characteristics.

- ① As a science, taxonomy is dynamic and subject to change on the basis of available data.
- ② New findings often necessitate changes in taxonomy, frequently resulting in changes in the existing classification, in nomenclature, in criteria for identification, and in the recognition of new species

Taxonomic ranks

- *Several levels or ranks are used in bacterial classification.*
- The highest rank is called a Domain.
- All procaryotic organisms (i.e., bacteria) are placed within two domains



- Phylum, class, order, family, genus, species and subspecies are successively smaller, non-overlapping subsets of the Domain.

TABLE 1. Taxonomic ranks

Formal rank	Example
Domain	<i>Bacteria</i>
Phylum	<i>Proteobacteria</i>
Class	<i>Alphaproteobacteria</i>
Order	<i>Legionellales</i>
Family	<i>Legionellaceae</i>
Genus	<i>Legionella</i>
Species	<i>Legionella pneumophila</i>
Subspecies	<i>Legionella pneumophila</i> subsp. subsp. <i>pneumophila</i>

Species

S

- The basic and most important taxonomic group in bacterial systematics is the species
- The concept of a bacterial species is less definitive than for higher organisms.

- The term “species” as applied to bacteria has been defined as a distinct group of strains that have certain distinguishing features and that generally bear a close resemblance to one another in the more essential features of organization.

- ① Each species differs considerably and can be distinguished from all other species.

Subspecies

- A species may be divided into two or more subspecies based on consistent phenotypic variations or on genetically determined clusters of strains within the species.
- There is evidence that the subspecies concept is phylogenetically valid on the basis of frequency distribution of ΔT_m values.

- ① *There are presently* essentially no guidelines for the establishment of subspecies, which, although frequently useful, are usually designated at the pleasure of the investigator.

- Subspecies is the lowest taxonomic rank that is covered by the rules of nomenclature and has official standing in nomenclature.