# TAXONOMY

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Taxonomy in Science and method of naming organisms is a fundamental basis for all biological Science and its application. The principal task of taxonomy is to describe, establish and give an account of the order that is an inherent property of biological diversity.

The order of names provided by taxonomy is 21 arranged as a hierarchical classification, which is considered to portray the hierarchy of species and more inclusive taxa as a result of the continuous chain of species splitting in the evolutionary history of life on earth.

Generalizations on organisms as a basic principle in biology are only possible if the infinite number of items in Science is classified statements about the overwhelming diversity of nature would be impossible without methods for bringing order to this diversity .

The world's biota is a vast library of information concerning any aspect of life and taxonomy is the cataloguing system that everybody must use to access its information .All kinds of biological Science and application link their specific data to species names and use these names for effective communication.

Longino (1993) has paraphrased "taxonomy is the raw material from which hypothesis of phylogeny are derived". All kinds of comparative biology rely on

sound phylogenetic hypotheses immediately depends on the reliability of the underlying taxonomic data. Moreover society has an increasing need for reliable taxonomic information in order to allow to manage and understood the world's biodiversity .Until recently , taxonomy was confronted with what Godfray called a new bioinformatics crisis evidenced " by a lack of prestige and resources that is crippling the continuing cataloguing of biodiversity ".

Current biological taxonomy quite successfully adopt methods ,data structure and other demands of techniques and theories invented by new entrant to the biological Science as the fields of molecular biology .However ,all other useful sources of information are simultaneously gathered in modern taxonomy and this multicharacter integrative approach has been called integrative taxonomy. It allows taxonomists to create new common visions to meet changing demands of a changing global view on global diversity and threats to it.

**Cytotaxonomy** It is the branch of biology dealing with the relationship and classification of organism using comparative studies of chromosomes. The structure , number and behaviour of chromosomes is of great value in taxonomy , with chromosome number being the most widely used and quoted character .Chromosome numbers are usually determined at mitosis and quoted as the diploid number(2n) , unless dealing with a polyploidy series in which case the base number of chromosomes in the genome of the original haploid quoted. 22 Another useful taxonomic character is the position of the centromere .Meiotic behavior may show the heterozygosity of inversions. This may be constant for a taxon ,offering further taxonomic evidence . The cytotaxonomy is more significant over physiological taxonomy because cytotaxonomy is dealing with the comparative study of chromosome and with this method minute variation among the individuals among the individuals can be detected. DNA are present in the chromosome and the variation in DNA are responsible for the variation among the individuals, species, genus and so on . The difference in physiological variation are too less among the individuals of same species and other higher taxa.

**Molecular Taxonomy**: Molecular Taxonomy is the classification of organisms on the basis of the distribution and composition of chemical substances in them. Molecular techniques in the field of biology have helped to establish genetic relationship between the members of different taxonomic categories .

DNA and protein sequencing, immunological methods, DNA-DNA or DNA-RNA hybridization methods are more informative in the study of different species. The data obtained from such studies are used to construct phylogenetic trees. Fitch and Margoliash ,(1967) made first phylogenetic tree based on molecular data .This tree was so close to the already established phylogenetic trees of the vertebrates that the taxonomists realized significance of molecular data and this made them understand that other traditional methods are although important but molecular evidences could be final or confirmatory evidences.