**Course: Advance Bio Informatics**

**Module Title: Ontology**

**Module No: 70**

**Ontology**

Common words andconcepts (the meaning) used to describe andrepresent an area ofknowledge. Repositories used for meaninginterpretations. Relationship used among different words & for SW,relationships amongdifferent resources.

**Why Use Ontology?**

**Motivation for Ontologies**

For one type of info thereexist several DBs ofdifferent scope andorganization. Naming conventions of data objects, object. Identifier codes andrecord labels differsbetween DBs and do notfollow a unified scheme.

**Example:** For concept **gene**

**For GDB:** A gene is a DNA fragment that can be transcribed &translated into a protein

**For GenBank and GSDB:** A gene is a DNA region of biological interest with a name and that carries a genetic trait or phenotype

**Example**

Difference between those twonotions of gene but both continues to be usedinterchangeably causingmisunderstanding. To eliminate Semanticconfusion, it is necessary tohave a list of important andfrequently used conceptscoherently defined in the formof Ontology

**Usefulness:** When all relevant concepts of an applicationdomain will have beenspecified in ontology, a computer program can search for conceptsinstead of words in aset of heterogeneousautonomous databases

**Ontology Building**

* Over 500 databanks andanalysis tools.
* Knowledge often held asfree text.
* Controlled vocabularies
* Semantic heterogeneity
* Poor query facilities
* Knowledge about servicesnot always apparent

**Ontology Types for Bioinformatics**

1. **Domain-oriented:**domain specific (e.g. E. coli) or domain generalizations (e.g. gene function or ribosomes);
2. **Task-oriented:** task specific (annotationanalysis) or taskgeneralizations (problem solving).
3. **Generic:**capture common highlevel concepts, such as Physical, Abstract andSubstance. Important inontology managementand languageapplications