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Industry Driven Bioinformatics Hands on Training Course Details

Course I: Bioinformatics - 6 Months course

Course code: EMBI03

Practical Module 1: Genomics

1. Whole Genome analysis

- Gene finding from prokaryotes (3- softwares)
- Eukaryotic gene finding (3 -softwares)
- Gene finding in Virus (3- softwares).

9 Softwares will be using this session for Whole Genome analysis
duration : 3 to 4 days

2. Gene sequence analysis

- FASTA/FLAT file Gb analysis
- Annotation of genes and genomes
- Molecular weight analysis of gene
- GC% , AT%, Nucleotide composition,
- Restriction Enzymes analysis,
- Primer Designing, Probe Designing,
- cDNA Conversion,
- Introns and exons analysis,
- SNP analysis, EST analysis,
- Poly-A tail analysis
- SSR analysis (microsatellites/mini satellites)
- STS analysis, Promoter analysis,
- Transcription start site analysis,
- UTR analysis, Fuzzy techniques,
- Sequence chopping analysis,
- Pairwise alignment,
- Multiple sequence alignment,
- local alignment, global alignment,
- Conserved region analysis, Phylogenetic analysis,
- Distance matrices analysis, Neighbor Joining,
- Dynamic programming,
- Protein Coding Regions prediction(CDS)

Duration: 15 days
20 to 25 techniques will be covering this session with
various softwares

Practical Module 2: Proteomics

1. Protein sequence analysis,

- Protein amino acid composition
- Molecular weight analysis,
- Iso electric point
- Biochemical studies such as hydrophobic ,
- hydrophilic, polar, non-polar, positive residues,
- negative residues, Aromatic analysis, aliphatic residues,
- Protein Primary structure prediction,
- Protein secondary structure prediction,
- Protein Motif analysis
- Protein Domain analysis

2. Protein 3D structure analysis

- Protein structure retrieval and analysis
- Protein 3D structure mutagenesis,
- Protein Structure Ramachandran Mapping
- Loop Modeling
- Side chain modeling
- Protein 3D structure modeling using various softwares
- Structure Validation
- Protein Cavity Prediction
- Protein Structure – Structure comparison

(15 to 20 softwares will be using for the above analysis)

Duration: 5 to 10 days
20 to 25 techniques will be covering
during this session with various softwares

Practical Module 3: Drug Designing

- Molecular Modeling of Drug and other chemical compounds
- Ligand preparation
- Physicochemical properties of drugs analysis
- Molecular docking
- Pharmacophore studies
- Lipinski's Rule of 5
- ADMET Studies
- Virtual Screening

Duration 3 days
5 softwares will be using here

Total Duration of Training: 30 to 45 days , Project duration: depends on Project 2 to 3 Months approx + Thesis/Dissertation)

6 Months Certificate

Fees : INR: 20,000/- (Training fees 10,000/- + Project (dissertation/thesis - 10,000/-)