Ngs Inplant Training

NTHRYS provides Ngs Inplant Training for interested candidates at its Hyderabad facility, Telangana. Please refer below for more details including Fee strctures, Eligibility, Protocols and Modules etc.,. Please do call / message / whatsapp for more details on 9014935156 [India - +91]

Eligibility: BSc / BTech / MSc / MTech / MPhil / PhD in any Life Sciences studying or completed students

Protocols / Techniques Covered

Topic	Description	Tools
1. Introduction	- Data Types, data formats -(Fastq, Qseq etc. most of the types including color space) - Understanding raw read data from the NGS sequencers	
2. Understanding NCBI, PUBMED,MESH and CDD	NCBI, PUBMED,MESH and CDD	
3. Sequence alignment and its application	1. Introduction 2. Algorithms 3. Multiple sequence alignment	1. BLAST 2. FASTA 3. Needleman wunch 4. Smith waterman 5. Clustal omega 6. t-coffee
4. Genomics	1. Introduction with gene databases-GENE, SNP 2. Genome Annotation and Visualization 3. Gene finding and function prediction 4. General introduction to Gene expression in prokaryotes and eukaryotes, transcription factors Binding sites (SNP, EST, STS)	GENSCAN
5. ORF finder and its application	Online tools with ORF	ORF finder

6. Gene Prediction AND Expression	1. Introduction to gene and gene prediction 2. Determine Beginning and end positions of gene in genome and gene structure 3. Codons; Discovery of split genes; Exons and Introns; Splicing;	1. Human Splicing finder 2. GenMark and GenScan
7. Phylogenetic tree-detail	1. Definitions of homologues, orthologues, paralogues 2. Methods of phylogenetic analysis: UPGMA, WPGMA, neighbour joining method, Maximum likelihood	1. PHYLIP 2. MEGA 3. Tree finder
8. Next Generation Sequencing Technology	1. What is NGS? And Basic concepts 2. Sequencing Methods 3. Platform overview and 4. Biological applications 5. Recent scientific breakthroughs using NGS technology 6. Applications	1. Illumina hi seq 2. mi seq 3. phylogenetic analysis 4. MUMmer 3.12
9. Introduction to Sequencing	1. Traditional Methods 2. Sanger sequencing 3. Drawbacks of Sanger's sequencing	
10. NGS Data Generation	- Generation of large scale molecular biology data	
11. Next Generation Sequencing Methods	- Concept of sequence quality scores (Overview of Phred, Illumina, SoliD sequencing) - Issues and Filtering Next-Gen data (coverage, depth, short-reads, Chimeras) - Emulsion based PCR and polonies - SAM tools and SAM alignment format - Single molecules sequencing methods. - Applications of High throughput sequencing methods.	

12. NGS Data Analysis	- Alignment and mapping highlighting differences with conventional alignment, tools used and brief parameters (BWA, Bowtie, MAQ, etc) - Brief Concepts of - ChiP-seq, - DNase-seq, - MNase-seq, - RNA-seq. - Transcript Assembly and gene expression (RNA-Seq) with tools like Tophat/Cufflinks - Variation detection (DNA-Seq and Exome sequencing) - Protein Binding Site detection (Chip-Seq) with tools like MACS - CpG Islands and Methylaion Patterns (Bisu lphite-Seq) with tools like bismark	
13. Genome Databases and File Formats	1. Databases 2. File formats	1. GENEBANK 2. GENE 3. SNP 4. fast q 5. gbk
14. Galaxy	1. How to upload data 2. Explore published histories 3. Generate new history 4. Changing dataset formats and editing attributes	1. SRA data FTP download 2. SAM tools
15. Data processing	1. Analysis workflow 2. Sequence quality evaluation 3. Alignment theories 4. Data formats and Data visualization to explore various NGS nodes	1. FastQC 2. BLAST All 3. Stand alone 4. Blast 5. SAM tools 6. Bed Format
16. DNA-Seq	1. Genetic variation 2. Variant Calling using various methods 3. Variant Annotations	1. GATK 2. Snver 3. VarScan 4. Picard 5. SAMtool
17. RNA-Seq	1. Biological theories on RNA-Seq experiments 2. Alignment 3. Gene expression analysis 4. Alternative splicing 5. Transcript variation 6. Allele-specific expression	1. BlAST All 2. Standalone blast
18. ChIP-seq	1. Biological theories on ChIP-seq analysis 2. DNA fragment evaluation 3. Peak identification	1. Trimmomatic 2. FAST QC

19. NGS Data Visualization with Exploration with IGV	- View, Navigate and Browse large dataset - Visualize specific region on Genome and View Alignment	BLAST

Topics Covered for various durations:

5 Days - Topics 1, 9, 11, 15 and 16 + (Optional Minor Project)

10 Days - Topics 1, 4, 8, 9, 10, 11, 12, 14 and 16 + (Optional Minor Project)

20 Days - Topics 1, 4, 6, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17 and 18 + (Optional Minor Project)

30 Days to 45 Days - All Topics Mentioned above + (Optional Minor Project)

3 Months - All Topics mentioned above + Minor Project (On Live Secondary Research Data), Fee Rs 25000/- additional to 45 Days Module

6 Months - All Topics mentioned above + Publication Project (On Live Secondary Research Data - This project will be guided by respective research guides to get published in respective Scopus or Science Citation Indexed Journals. Research Design for the Publication Project will be provided by NTHRYS Research Panel), Fee Rs 65000/- additional to 45 Days Moduel

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Fee details in Rs per student					
Fee	5 Days	10 Days	20 days	1 Month	45 Days
Individual	29700	31400	40600	50900	61000
Group 2 - 4	28100	28100	38500	48500	58000
Group 5 - 7	27800	27800	38100	48000	57400
Group 8 - 10	27400	27400	37600	47500	56900