

Sr. No	Videos	Description	Duration	Category	Main Category
<b>Segment 1: Bioinformatics Databases</b>					
1	Introduction to NCBI	<ul style="list-style-type: none"> <li>• Basic introduction to NCBI</li> <li>• Functionality and search categories provided by NCBI</li> </ul>	18:01	NCBI	Biological Databases
2	Sequence Retrieval	<ul style="list-style-type: none"> <li>• Biological sequence data storage, retrieval and analysis.</li> <li>• Describes the research methodologies on NCBI.</li> </ul>	16:16	NCBI	Biological Databases
3	Sequence Analysis	<ul style="list-style-type: none"> <li>• Biological sequence data storage, retrieval and analysis.</li> <li>• Retrieval of various sequence related information.</li> </ul>	17:59	NCBI	Biological Databases
4	PubMed Central & ENTREZ	<ul style="list-style-type: none"> <li>• Introduction to PubMed</li> <li>• Retrieval of millions of citations for Biomedical literature from MEDLINE and Life Sciences journals.</li> </ul>	11:06	NCBI	Biological Databases
5	FASTA vs GenBank	<ul style="list-style-type: none"> <li>• Basic difference between the FASTA and Genbank formats.</li> <li>• Main differences of their structures and the information they provide.</li> </ul>	18:26	NCBI	Biological Databases
6	Gene	<ul style="list-style-type: none"> <li>• Describes the use of Gene Database.</li> <li>• Analyze a particular gene, its location, expression and functional information.</li> </ul>	30:21:00	NCBI	Biological Databases
7	GenBank	<ul style="list-style-type: none"> <li>• Description of GenBank database.</li> <li>• Accession of the most up-to-date and comprehensive DNA sequence information within scientific community.</li> </ul>	6:50	NCBI	Biological Databases
8	Assembly & NCBI Genome	<ul style="list-style-type: none"> <li>• Introduction to NCBI Genomes &amp; Assembly databases.</li> <li>• Retrieval and analysis of an entire genome using Genome database.</li> <li>• Procedure to download and retrieve the fully sequenced genome using Assembly database.</li> </ul>	36:14:00	NCBI	Biological Databases
9	Genome Reference Consortium (GRC)	<ul style="list-style-type: none"> <li>• Describes the main purpose of establishing Genome Reference Consortium (GRC).</li> <li>• Discuss about 4 main genome assemblies of Human, Mouse, Zebrafish and Chicken along with their details.</li> </ul>	7:48	NCBI	Biological Databases
10	BioProject	<ul style="list-style-type: none"> <li>• Introduction to BioProject, a sub-database of NCBI.</li> <li>• Retrieval of various information for a particular organism/species from the respective BioProject.</li> </ul>	6:39	NCBI	Biological Databases
11	BioSystems	<ul style="list-style-type: none"> <li>• Briefly introduces the BioSystems database, a sub-database of NCBI.</li> <li>• Describes the procedure of analyzing metabolic pathways of protein interactions.</li> </ul>	4:16	NCBI	Biological Databases
12	BioSample	<ul style="list-style-type: none"> <li>• Introduction to the BioSample database, sub-database National Center for Biotechnology Information.</li> <li>• Describes various features and information provided by BioSample.</li> </ul>	2:56	NCBI	Biological Databases

13	Sequence Read Archive (SRA)	<ul style="list-style-type: none"> <li>• Introduction to Sequence Read Archive (SRA) database.</li> <li>• Describes the procedure of retrieving and downloading the sequence reads for a particular genome in the specific format.</li> </ul>	7:14	NCBI	Biological Databases
14	Introduction to UCSC Genome Browser & SARS-CoV-2 Viral Genome	<ul style="list-style-type: none"> <li>• Detailed introduction to UCSC Genome Browser.</li> <li>• Retrieval and analysis of SARS-CoV-2 genome.</li> </ul>	13:40	UCSC	Biological Databases
15	Retrieve an Entire Genome & Retrieval of SARS-CoV-2 Viral Genome	<ul style="list-style-type: none"> <li>• Explains the procedure to retrieve entire genome of SARS-CoV-2 using UCSC Genome Browser.</li> <li>• Retrieval of an entire genome through two different Operating System, Linux and Windows.</li> </ul>	9:40	UCSC	Biological Databases
16	Table Browser & SARS-CoV-2 Viral Genome	<ul style="list-style-type: none"> <li>• Introduction to UCSC Table Browser Tool.</li> <li>• Retrieval of SARS-CoV-2 genome and its different gene sequence using Table Browser.</li> </ul>	12:15	UCSC	Biological Databases
17	Retrieval of Genomic Data & Annotation of SARS-CoV-2 Viral Genome	<ul style="list-style-type: none"> <li>• Introduction to UCSC Table Browser Tool.</li> <li>• Retrieval and annotation of SARS-CoV-2 genome</li> <li>• Difference between GFF, GFF3 and GTF annotation files.</li> </ul>	5:29	UCSC	Biological Databases
18	Visualization of Genomic Data on the Genome Browser & SARS-CoV-2 Genome	<ul style="list-style-type: none"> <li>• Interactive visualization of SARS-CoV-2 genome using UCSC Genome Browser.</li> <li>• Defines parameters for the visualization of genomic data.</li> </ul>	10:51	UCSC	Biological Databases
19	Introduction to ENSEMBL	<ul style="list-style-type: none"> <li>• Introduction to ENSEMBL Genome Browser and information it provides.</li> <li>• Describes its various features and tools utilized for particular search.</li> </ul>	7:49	ENSEMBL	Biological Databases
20	Retrieval of a Gene-Protein-Chromosomal Region	<ul style="list-style-type: none"> <li>• Procedure to retrieve gene, protein and chromosomal region and their visualization.</li> <li>• Genomic annotation.</li> </ul>	18:01	ENSEMBL	Biological Databases
21	Gene Analysis & Annotation	<ul style="list-style-type: none"> <li>• Procedure for retrieval of a particular gene and analysis of genomic data through ENSEMBL.</li> <li>• Comparative genomics.</li> </ul>	34:40:00	ENSEMBL	Biological Databases
22	Genome Assembly Retrieval and Analysis	<ul style="list-style-type: none"> <li>• Retrieval of genome assembly for a particular vertebrate species.</li> <li>• Provides analysis of genomic data for vertebrates.</li> </ul>	10:23	ENSEMBL	Biological Databases
23	Comparative Genomics Analysis	<ul style="list-style-type: none"> <li>• Retrieval of genome assembly for a particular vertebrate species.</li> <li>• Comparative genomics.</li> <li>• Download the alignment files for CDS, proteins or RNA sequences.</li> </ul>	5:34	ENSEMBL	Biological Databases
24	Database of Short Genetic Variations (dbSNP)	<ul style="list-style-type: none"> <li>• Introduction to Database of Single Nucleotide Polymorphism.</li> <li>• Retrieval of SNP variation information within Human genome.</li> <li>• Provides clinical significance and frequency of the different variations.</li> </ul>	12:16	NCBI	Biological Databases

25	Database of Genomic Structural Variation (dbVar)	<ul style="list-style-type: none"> <li>• Introduction to database of genomic structural variation.</li> <li>• Retrieval of information about the variation of Human genome.</li> </ul>	6:24	NCBI	Biological Databases
26	Variation	<ul style="list-style-type: none"> <li>• Retrieval and analysis of different types of variants through ENSEMBL.</li> <li>• Describes phenotypic relationship between variants.</li> <li>• Provides comprehensive way to access data widely used in genomic analysis.</li> </ul>	24:36:00	ENSEMBL	Biological Databases
27	NCBI BLAST Database Searching	<ul style="list-style-type: none"> <li>• Describes NCBI BLAST searching to find regions of similarity between biological sequences.</li> <li>• Calculates statistical significance.</li> <li>• Compares nucleotide and protein sequences to sequence databases.</li> </ul>	25:36:00	NCBI	Biological Databases
28	BLAST/BLAT	<ul style="list-style-type: none"> <li>• Describes ENSEMBL BLAST/BLAT searching to find regions of similarity between biological sequences.</li> <li>• Calculates statistical significance of matches</li> <li>• Analysis of sequence alignment between query and target sequence.</li> </ul>	15:08	ENSEMBL	Biological Databases
29	HomoloGene (Gene and Protein Families)	<ul style="list-style-type: none"> <li>• Description of Homologene, sub-database of NCBI.</li> <li>• Compares and sequence homologs and mapping back to the DNA sequence.</li> </ul>	6:10	NCBI	Biological Databases
30	RefSeq Database	<ul style="list-style-type: none"> <li>• Introduction to RefSeq database, a sub-database of NCBI.</li> <li>• Provides integrated and well-annotated set of reference sequences.</li> <li>• Non-Redundant Data Storage, Retrieval, Analysis and Visualizing.</li> </ul>	11:15	NCBI	Biological Databases
31	Taxonomy	<ul style="list-style-type: none"> <li>• Provide nomenclature and classification for the source organisms in the sequence databases.</li> <li>• Information about the query's taxonomy ID and provides complete detail of the query's lineage.</li> </ul>	9:56	NCBI	Biological Databases
32	Introduction to UniProt	<ul style="list-style-type: none"> <li>• Introduction to UniProt, its purpose and uses.</li> <li>• Sub-databases hosted by UniProt database.</li> </ul>	9:56	UniProt	Protein Databases & Analysis
33	UniProtKB & Protein Analysis	<ul style="list-style-type: none"> <li>• Introduction to UniProtKB database.</li> <li>• Retrieval and analysis of protein sequences and genomic level information of proteins.</li> </ul>	39:29:00	UniProt	Protein Databases & Analysis
34	Introduction to Protein Data Bank (PDB)	<ul style="list-style-type: none"> <li>• Introduction to Protein Data Bank (PDB).</li> <li>• Describes the repository of experimentally structured biomolecules.</li> </ul>	6:44	PDB	Protein Databases & Analysis
35	Introduction to Molecular Modeling Database (MMDB)	<ul style="list-style-type: none"> <li>• Introduction to Molecular Modeling Database (MMDB).</li> <li>• Retrieval and analysis of a particular dataset from MMDB.</li> <li>• Lists the tools provided by MMDB.</li> </ul>	8:06	NCBI	Protein Databases & Analysis
36	UniProteome & Retrieval of an Entire Proteome	<ul style="list-style-type: none"> <li>• Introduction to UniProteome</li> <li>• Retrieval of an entire proteome</li> <li>• Proteomics data and data annotation</li> </ul>	13:05	UniProt	Protein Databases & Analysis

37	UniRef & Retrieve Protein Clusters	<ul style="list-style-type: none"> <li>• Introduction to UniRef</li> <li>• Describes clusters sets from UniParc and UniProtKB</li> <li>• Sequence space at three resolution (UniRef100, UniRef90, UniRef50).</li> </ul>	11:55	UniProt	Protein Databases & Analysis
38	UniParc & Find the Non-Redundant Entries	<ul style="list-style-type: none"> <li>• Introduction to UniParc</li> <li>• Retrieval of non-redundant protein sequences.</li> <li>• Non-redundant protein sequence data and data annotation.</li> </ul>	4:58	UniProt	Protein Databases & Analysis
39	Introduction to InterPro	<ul style="list-style-type: none"> <li>• Protein family classification and analysis using InterPro database.</li> <li>• Proteome analysis of a particular protein.</li> <li>• Protein families domains analysis.</li> </ul>	4:10	InterPro	Protein Databases & Analysis
40	Protein & Protein Domain Analysis	<ul style="list-style-type: none"> <li>• Protein and protein domain analysis through InterPro database.</li> <li>• Protein families domain analysis.</li> </ul>	9:29	InterPro	Protein Databases & Analysis
41	InterPro - Protein Family Classification and Analysis	<ul style="list-style-type: none"> <li>• Introduction to UniProt BLAST searching tool.</li> <li>• Finds functional and evolutionary relationship between sequences.</li> <li>• Search query sequences against the entire UniProt database.</li> </ul>	14:35	InterPro	Protein Databases & Analysis
42	Peptide Search	<ul style="list-style-type: none"> <li>• Introduction to Peptide Search tool hosted by UniProt database.</li> <li>• Search methods of retrieving a particular amino acid sequence.</li> <li>• Retrieving regions of particular protein against the entire database of UniProt.</li> </ul>	3:15	UniProt	Protein Databases & Analysis
43	UniProt Align & Alignment of 2 Proteins	<ul style="list-style-type: none"> <li>• Description of UniProt Align tool hosted by UniProt Database.</li> <li>• Aligning multiple sequences using UniProt Align tool.</li> <li>• Annotation of alignment results.</li> </ul>	3:47	UniProt	Protein Databases & Analysis
44	Accurately Searching for a Protein Structure on PDB & Protein Analysis	<ul style="list-style-type: none"> <li>• Describes different search methods to retrieve query protein molecule on PDB.</li> <li>• Defines parameters and filters to specify the searches.</li> <li>• Accurately searching a protein structure on Protein Data Bank (PDB).</li> </ul>	13:55	PDB	Protein Databases & Analysis
45	Browsing PDB According to Annotation	<ul style="list-style-type: none"> <li>• Retrieval of a protein structure using Biological annotation on PDB.</li> <li>• Describes categories of annotation and their description.</li> </ul>	6:52	PDB	Protein Databases & Analysis
46	Digging Out Categorized & Specific Protein Structures from PDB Archives	<ul style="list-style-type: none"> <li>• Retrieval of detailed information for a particular protein structure through Protein Data Bank (PDB).</li> <li>• Accessing the PDB Archive using multiple sorts of parameters.</li> </ul>	6:23	PDB	Protein Databases & Analysis
47	3D Structure Visualization on PDB	<ul style="list-style-type: none"> <li>• Visualization and analysis of protein structure using visualization tool hosted by PDB.</li> <li>• Defines parameters to interactively visualize the protein.</li> </ul>	10:49	PDB	Protein Databases & Analysis

48	Biological Annotation and Protein Features View & Analysis	<ul style="list-style-type: none"> <li>• Visualization of features of the query protein through Protein Data Bank.</li> <li>• Procedure to look into the visualization and analysis of the protein features.</li> </ul>	8:18	PDB	Protein Databases & Analysis
49	Genomic Discovery of Protein Structure Through Gene	<ul style="list-style-type: none"> <li>• Search the query gene against a genome and discovered the protein structure by utilizing PDB.</li> <li>• Describes correspondence between the 3D structure of the protein and the human genome.</li> </ul>	4:07	PDB	Protein Databases & Analysis
50	Mapping Genomic Position to Protein Sequence and 3D Structure	<ul style="list-style-type: none"> <li>• Description to map a genomic position to a protein sequence and 3D structure.</li> <li>• Defines conditions to map genomic position to protein sequence and structure.</li> </ul>	4:34	PDB	Protein Databases & Analysis
51	Alignment Between Two PDB Sequences & Structures	<ul style="list-style-type: none"> <li>• Alignment of biomolecular structures and sequences through a PDB tool; sequence &amp; structure alignment.</li> <li>• Defines parameters to align two query molecules and its analysis.</li> </ul>	6:07	PDB	Protein Databases & Analysis
52	Ligands	<ul style="list-style-type: none"> <li>• Retrieval of a particular ligand molecule from PDB-Ligand dictionary on Protein Data Bank (PDB).</li> <li>• Defines parameters and filters to specify the Ligand search.</li> <li>• Visualization of ligand molecule in various structure visualization tool.</li> </ul>	5:23	PDB	Protein Databases & Analysis
53	Protein Symmetry	<ul style="list-style-type: none"> <li>• Description of protein symmetry page of Protein Data Bank (PDB).</li> <li>• Visualization and analysis of protein of interest.</li> </ul>	2:34	PDB	Protein Databases & Analysis
54	Introduction to Phytozome	<ul style="list-style-type: none"> <li>• A detailed introduction to Phytozome genome browser.</li> <li>• Describes different features and services provided by Phytozome.</li> <li>• Retrieval of dataset of plant genome through Phytozome.</li> </ul>	9:38	Phytozome	Biological Databases
55	Interpret Plant Genome Records	<ul style="list-style-type: none"> <li>• Retrieval of a particular plant genome dataset through Phytozome database.</li> <li>• Description of information of plant genome provided by Phytozome database.</li> </ul>	9:06	Phytozome	Biological Databases
56	Keyword or BLAST Search in a Plant Genome	<ul style="list-style-type: none"> <li>• Searching efficiently through keyword(s) on Phytozome database.</li> <li>• Describes different parameters to analyze the results.</li> <li>• BLAST search on a particular species in the Phytozome.</li> </ul>	15:58	Phytozome	Biological Databases
57	Visualize a Plant Genome using JBrowse	<ul style="list-style-type: none"> <li>• Visualization of plant genome using Phytozome database.</li> <li>• Description of analysis options.</li> <li>• Plotting VISTA plots for visualization of plant genome.</li> </ul>	17:38	Phytozome	Biological Databases

58	Download an Entire Plant Genome & Proteome	<ul style="list-style-type: none"> <li>Retrieval and downloading a particular genome or proteome using Phytozome database.</li> <li>Describes different ways to retrieve genome through Phytozome.</li> <li>Analysis of dataset files for a particular species and their information.</li> </ul>	26:41:00	Phytozome	Biological Databases
59	Gene Expression Omnibus (GEO) Database	<ul style="list-style-type: none"> <li>Introduction to Gene Expression Omnibus Database hosted by NCBI and it's Goal.</li> <li>Describes the subdatabases and the kind of data they store.</li> </ul>	9:15	NCBI	Biological Databases
60	Gene Expression Omnibus (GEO) Platforms	<ul style="list-style-type: none"> <li>Elaborated introduction to GEO 'Platform' repository.</li> <li>Look through the data it stores and analyze an entry.</li> </ul>	5:42	NCBI	Biological Databases
61	Gene Expression Omnibus (GEO) Samples	<ul style="list-style-type: none"> <li>Elaborated introduction to GEO 'Sample' repository.</li> <li>Look through the data it stores and analyze an entry.</li> </ul>	4:15	NCBI	Biological Databases
62	Gene Expression Omnibus (GEO) Datasets	<ul style="list-style-type: none"> <li>Introduction to Datasets of biologically and statistically comparable GEO Samples and forms.</li> <li>Look through the data it stores and analyze an entry.</li> </ul>	4:44	NCBI	Biological Databases
63	Gene Expression Omnibus (GEO) Series	<ul style="list-style-type: none"> <li>Elaborated introduction to GEO 'Series' repository.</li> <li>Look through the data it stores and analyze an entry's record.</li> </ul>	4:00	NCBI	Biological Databases
64	Regulation	<ul style="list-style-type: none"> <li>A detailed introduction of a subdatabase of ENSEMBL, Regulation.</li> <li>Comprehension of the regulatory elements influencing the query gene.</li> </ul>	4:18	ENSEMBL	Biological Databases
65	UniProt BLAST & Protein Database Searching	<ul style="list-style-type: none"> <li>Searching a query against the entire UniProt database using UniProt BLAST</li> <li>Detailed analysis of local similarity, functional and evolutionary relationship between different sequences</li> </ul>	12:32	UniProt	Protein Databases & Analysis
66	ID Mapping & Making Analysis Easier	<ul style="list-style-type: none"> <li>Introduction to ID Mapping tool provided by UniProt.</li> <li>ID mapping of different types of identifiers and batch search with UniProt IDs.</li> <li>Convert UniProt IDs to another type of database ID utilizing this tool.</li> </ul>	7:17	UniProt	Protein Databases & Analysis
67	PROSITE	<ul style="list-style-type: none"> <li>Introduction to protein domain, families and functional sites database , PROSITE.</li> <li>Analyze various informative sections provided by the documentation page.</li> </ul>	13:46	Protein Families Database	Protein Databases & Analysis
68	Pfam	<ul style="list-style-type: none"> <li>Detailed introduction of a database of curated protein families, Pfam.</li> <li>Analyze a protein and retrieve significant information related to that protein.</li> </ul>	15:55	Protein Families Database	Protein Databases & Analysis
69	STRING	<ul style="list-style-type: none"> <li>Introduction to protein-protein iInteraction database, STRING.</li> <li>Understanding of protein interaction network through analyzing the query protein result and visualization.</li> </ul>	13:16	PPI Database	PPI Database