**REPORT ON VISIT TO CCMB (CENTRE CELLULAR MOLECULAR BIOLOGY)**

**OPEN DAY 22**

Date: 26-09-2022

On the occasion of CCMB open day 2022 with the help of Dr. Neeradi Dinesh MS Pharm., PhD Research scientist CSIR-CCMB Hyderabad we the 6 faculty of SNVPMV along with 70 B. Pharm II & IV YR students visited to CCMB located at Habsiguda on the occasion of "Foundation Day of CSIR" i.e. on 26-9-22. The main aim of this tour to interact with the scientist and inculcate the research methodologies and ideas to develop the nation.

We reached to CCMB at 1.45 pm with the warm welcome of Dr.Dinesh sir completed the registration and moved to exhibits and labs. Chief in charge address the gathering by introducing their parent organization CSIR and given us the information about the founder Dr. Pushpa Mitra Bhargava and their 16 other organizations and achievements. He divided us into 4 groups and allotted one research scholar as a guide to show us the labs and facilities.

Along with our allotted guide we moved to very sophisticated and interesting labs those are working on living organisms The buildings were huge and had a good infrastructure with a well equipped laboratories and our guides started with TEM(Transmission Electron Microscopy) which is one of the sophisticated electron microscopy with 10 lakh magnification and its principle and letting us know how big how we can see organs at cellular level & tissue level .Explained us about the applications of TEM in the area of microbiological studies. The sample is visualized through various chambers of set up of electron microscope.

Second lab -**Advanced Microscopy and Imaging Facility** where they shown us equipments such as **Confocal Microscopy , Sted Microscopy** and **Light –sheet Microscopy** and principles of this equipments for 3D view of different organoids & tissues which are grown in lab for transplantation and gene therapy.

Third lab is DNA **Sequencing lab** where they have shown the isolation of specific protein from sample through IR spectra and how the organism undergoes mutation by DNA sequencing and how to know the minute functional groups on virus and Drosphilla lab where they are used for

study even it have only 4 pairs of chromosome it has lot of genetically relatability with human and it's huge availability .

Forth lab- **Proteomix lab** where they find out the protein structure by separating with the help of Mass spectroscopy and first step is sample is run with reverse phase HPLC based on mass ratio they will analyze the protein present on organism through which they did so much work during Covid -19 to identify the various mutants of virus by using this technology.

After completing the labs visit guide moved us to exhibits where they shown the working models to exhibit their work schemes in research.

In exhibit no -1 (Zebra fish Model) they explained the benefits on usage of Zebra fish as a clinical model which was found in Ganga River used for *in vivo* studies drugs related to pregnancy related issues. Benefits of this model is we can clearly see the changes in this model and it takes only 3 days to complete the reproduction cycle .Male and female fishes are distinguished by color and belly fish is in golden black stripes and female as silver and black swollen valley.

Next is exhibit number 2 is named rice bowl the name itself says it was about how the scientist of CCMB develop a new variety of SAMBA MASURI rice which is in black color and can with stand from bacterial infections and they are offering a free distribution seeds which effects the yield and also good benefits due to its low glycemic index. Next we move to wildlife DNA forensic exhibit -3 where they have shown models of and sequence of DNA to identify species in crime and displayed the various objects made from animals

Next exhibit-4 is DNA isolation from banana by using the household items i.e soap solution and isopropyl alcohol / sanitizer for the isolation of DNA .He questioned the students about the length of DNA , how many &how the chimpanzee and humans are related genetically whoever answered he distributed the kits to isolate the DNA from their saliva. Next exhibits 5 & 6 is about the Bioinformatics and Genomic data centre to know how we can use the computer-based study to overcome the funding issues and usage of artificial intelligence in their studies.

Next we moved to exhibit 7 they explained about what are the precautions we should take while we are treating the patients with snakebite. How they collect the venom to prepare the antidote for snake bite we are very happy how these young research scholars & scientist are doing great job to

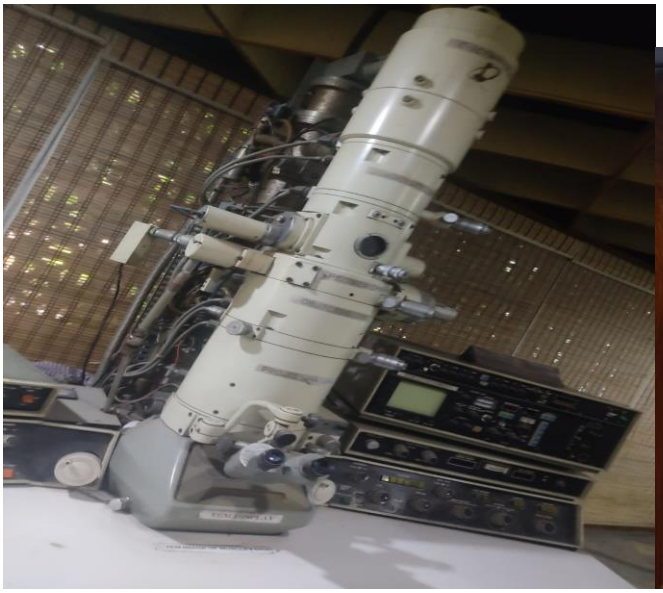
reduce the death rate of farmers. Next exhibit is about ONE DNA MANY BLUEPRINTS where they placed a selfie spot which is most awaited thing for the students to enjoy.

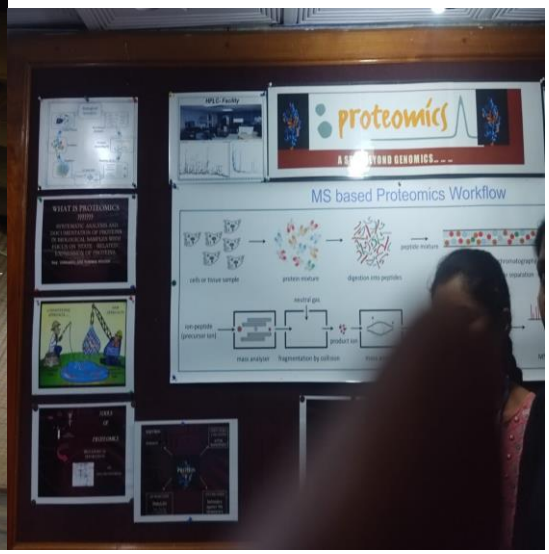
Exhibit-9 is Application of Liquid nitrogen in various places of research to fix the sample to identify the protein in a given model its applications were explained in Ex-10 &11 how they are using the liquid nitrogen in fixing the sample to know the protein from the sample .Next exhibit their we saw the various working models of DNA Synthase and sequencing model of ATGC bonds with different lights to know the sequence in given DNA.

Next exhibit is a **NEUROCHAMP** this is one of most joyful exhibit for the students here they played the games related to brain and they explained the students about how to train our minds to memorize the thing and how to concentrate on studies. Next exhibit is about the history of X-ray crystallography Next and last exhibits they explain principles of spectroscopy and how to convert the poly beam into single beam light by using the prism practically .

Finally we moved to Bug station to see the different organism and submitted our feedback about the exhibits what we learned. We reached back college at 5 pm with hyper note of enthuse students in science subject. Thank you for management, Principal, Vice Principal and Dr. Dinesh sir who gave the right path for students to motivate to do research in life sciences.


CCMB



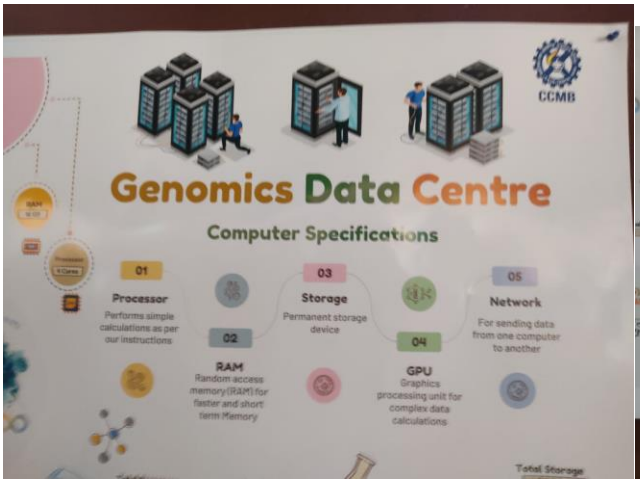

proteomics
MS based Proteomics Workflow

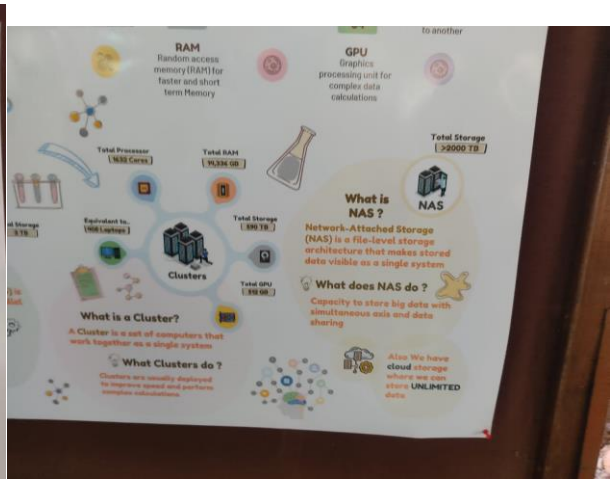

LaCONES


ISM


Wildlife Forensics
Wildlife DNA Forensics
Ajay Gaur, P. Anuradha Reddy, O. V. Padmalatha & Raghavendra Babu
CSIR-Centre for Cellular & Molecular Biology, Hyderabad
CSIR-CCMB plays a significant role in DNA-based forensic investigation by identifying species, involved in illegal wildlife trade and providing evidence reports to law enforcement agencies.
What is it? Species ID
Who is it? Individual ID, Relatedness, Sex
Where's it from? Geographic Origin ID
Total cases registered- 2929
Methodology
DNA Isolation
Polymerase Chain Reaction (PCR)
Poaching of Major Wild Animals
Sequencing


E6
ONE DNA,
MANY BLUEPRINTS..


CCMB
Genomics Data Centre
Computer Specifications
01
Processor
Performs simple calculations as per our instructions
02
RAM
Random access memory (RAM) for faster and short term Memory
03
Storage
Permanent storage device
04
GPU
Graphics processing unit for complex data calculations
05
Network
For sending data from one computer to another
Total Storage


RAM
Random access memory (RAM) for faster and short term Memory
GPU
Graphics processing unit for complex data calculations
Total Storage
>2000 TB
Total Processor
Total RAM
Clusters
Total GPU
What is NAS ?
NAS
Network-Attached Storage (NAS) is a file-level storage architecture that makes stored data visible as a single system
What does NAS do ?
Capacity to store big data with simultaneous axis and data sharing
What is a Cluster?
A Cluster is a set of computers that work together as a single system
What Clusters do ?
Also We have cloud storage where we can store UNLIMITED data.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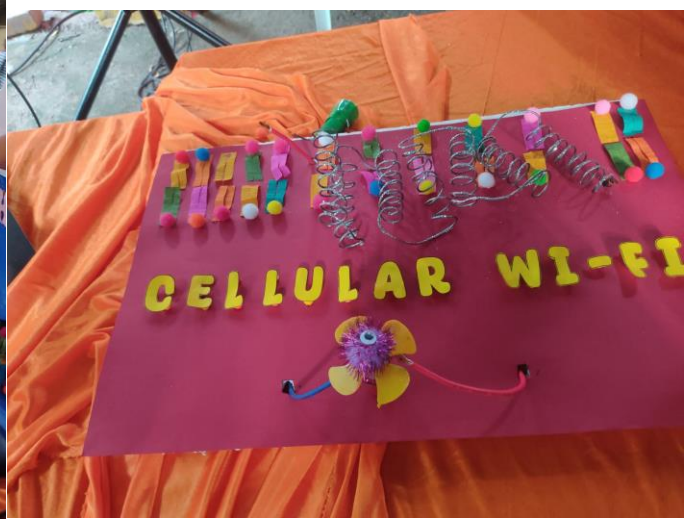
CCMB
HUMAN GENOME
THE BLUEPRINT OF HUMAN LIFE
CCMB Contribution
TRACING VIRUS FOOTSTEPS
illumina
TRACE
TRACE


CCMB
START
PROTEIN PURIFICATION
PROTEIN EXPRESSION
DECODING 3D-STRUCTURE BY ELECTRON MICROSCOPY
SAMPLE ENCAPSULATION & VITRIFICATION


TERTIARY STRUCTURE
PRIMARY STRUCTURE
B- SHEET


CELLULAR WI-FI