

The first Andhra Bio-Summit Symposium and workshops cluster, 2024.

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In brief: The first Andhra Bio-Summit student symposium and workshops cluster 2024 (ABS2024) was jointly organized by the Center for Advanced-Applied Biological Sciences & Entrepreneurship (TCABS-E) and the department of Biotechnology, Andhra University. ABS2024 started on February 5th 2024 and concluded on February 7th, 2024 in the department of Zoology, Andhra University seminar hall. More than 300 students attended this symposium and workshop cluster. Posters were on display all three days. Day1 included the inaugural ceremony followed by the Bioinformatics workshop. Day2 started with a seminar on cell culture techniques followed by handson workshops in computer aided drug design and PCR-Agarose gel electrophoresis. Day3 started with demonstrations on how to analyze spectra from NMR and MS including affinity chromatography demonstration. Day3 concluded with prize distributions to the winners of poster presentations, debates, elocutions and closing ceremony.



The ABS2024 organizing committee along with symposium volunteers.

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The inaugural:

The first Andhra Bio-Summit 2024 (ABS2024) was inaugurated on Feb. 5th, 2024 by the chief guest of ABS2024, Hon'ble Vice Chancellor of Andhra University (AU), Prof. P. V. G. D. Prasad Reddy along with the organizing team members of ABS2024. The inaugural took place in the seminar hall of the Zoology department, AU. The inaugural function was chaired by the Founder and Principal Scientist of The Center for Advanced-Applied Biological Sciences & Entrepreneurship (TCABS-E), Dr. Ravikiran S. Yedidi, the principal for AU College of Science and Technology, Prof. K. Srinivasa Rao, Head of the Department for the AU department of Biotechnology, Prof. V. Lakshmi, Honorary professor Prof. G. Paddaiah from the AU department of Human Genetics and faculty from the department of Biotechnology, Profs. P. S. P. Dhanunjay (IOCL Chair professor), P. V. Kiruthiga, P. Sudhakar Rao and P. Bindiya.

Followed by the lamp lighting ceremony and prayer song, Prof. P. V. G. D. Prasad Reddy appreciated both TCABS-E and the department of Biotechnology, AU for such a collaborative event containing hands-on workshops that are very important for the current students and job market. He insisted that the hands on workshop experience is very important for the current job market especially in Life Sciences. Dr. Ravikiran S. Yedidi highlighted that TCABS-E (in collaboration with the department of Biotechnology, AU) was able to design the hands-on workshops for bare minimum prices to the students/participants in spite of the fact that the chemicals and reagents were expensive. Prof. K. Srinivasa Rao appreciated the collaboration between TCABS-E and the department of Biotechnology, AU. Prof. V. Lakshmi commented on the great response and turnout of the participants for the hands-on workshops and congratulated both TCABS-E and the department of Biotechnology, AU. Faculty of the department of Biotechnology, AU expressed their joyful willingness to participate and support in the ABS2024.

Day1:

Followed by the inauguration ceremony and lunch, the first hands-on workshop in Bioinformatics started in the afternoon. Dr. Ravikiran S. Yedidi led the Bioinformatics workshop with help of TCABS-E team members, Mr. Manikanta Sodasani, Ms. Sravyasree Gubbala and Ms. Mahalakshmi Voleti. This workshop included:

- Various search tools available from the NCBI website (maintained by the U.S. Federal Government) that are useful in searching for various genes, proteins, literature, inheritance patterns, clinical variants, etc. that are needed for various research purposes.

- Pairwise DNA/RNA/Protein sequences alignment using the Needleman-Wunsch algorithm followed by multiple sequence alignment (MSA) using CLUSTAL Omega server from the EMBL website (maintained by the European Molecular Biology Laboratory, U.K.).
- Splice variant analysis and sequence polymorphisms within these variants and protein isoforms.
- FASTA sequence formats and their implications in Bioinformatics.
- Literature search using PubMed and PMC databases from the NCBI.
- Search tools for 3-D macromolecular structures in the protein data bank (PDB) website (maintained by the Research Collaboratory for Structural Bioinformatics, the U.S. data center for global PDB).

This workshop was attended by almost 100 participants from various universities and colleges. All the participants performed the above mentioned list of tasks live on laptops provided/shared in the workshop. The workshop was followed by a Q & A session and concluding remarks for the day 1 of ABS2024.

Day2:

Starting with the breakfast session, day 2 hosted a seminar on "Cell Culture Techniques" delivered by Prof. Sujatha Peela from the department of Biotechnology, Dr. B. R. Ambedkar University. The seminar was followed by a mini workshop on resume/C.V. writing led by Prof. P. S. P. Dhanunjay and Dr. Ravikiran S. Yedidi. After lunch break, the afternoon session included 2 parallel hands-on workshops, Computer-Aided Drug Design (CADD) and PCR-Agarose gel electrophoresis (PCR-AGE). The CADD workshop included:

- Introduction to CADD, advantages of CADD over the classical drug discovery and high throughput screening.
- AutoDock-Vina docking protocol using receptor and ligand models.
- Analysis of binding affinity values for different poses of ligand binding.
- Molecular visualization of docked compounds using PyMol software.
- Hydrogen bonds and van der Waals interaction analysis.

CADD workshop was led by Dr. Ravikiran S. Yedidi with the help of TCABS-E team members. The PCR-AGE workshop included:

- Introduction to PCR and AGE.
- Advantages of PCR master mix preparation in the context of human error.
- Brief introduction to primer design.
- Preparation of 1% agarose gel with SYBR safe dye.

- PCR product sample preparation, loading and running the agarose gel.
- Visualization of DNA bands under UV light.

This workshop was led by the TCAB-E team members, Mr. Manikanta Sodasani and Ms. Mahalakshmi Voleti. These two workshops were attended by more than 100 participants. Both workshops were repeated to meet the needs of the participants. Day 2 concluded with agarose gel electrophoresis performed by the participants.

Day3:

Day 3 started with breakfast followed by 3 demonstrations in the morning:

1. Analysis of ^1H (1D), ^1H - ^{15}N (2D) and ^1H - ^{15}N - ^{13}C (3D) NMR spectra for small molecules and proteins.
2. Analysis of metabolite LC-MS profiles in human microbiome studies.
3. Protein purification technique using affinity column chromatography.

Demonstrations 1 and 2 were led by Dr. Ravikiran S. Yedidi and the third demonstration was led by TCABSE-E team member, Mr. Manikanta Sodasani. Almost 100 participants attended these demonstrations. Day 3 concluded with the closing ceremony that included prize distribution for winners in the poster presentations, elocution and debates.

Posters:

Almost 90 participants from different institutions presented close to 50 posters in the ABS2024. The posters were divided into three sessions and were displayed on all three days of ABS2024. Posters were judged by Dr. Ravikiran S. Yedidi and Prof. Sudhakar Rao Pola. The details of poster abstracts are published separately as symposium proceedings in this issue of TCABSE-J.

Elocution & Debate competitions:

On days 2 and 3 there were split sessions hosting elocution and debate competitions led by Profs. P. Bindhya and P. V. Kiruthiga.

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We thank Prof. Janakiram Pasupuleti, Head of the Department of Zoology for giving us permission to conduct the ABS2024 in their departmental seminar hall.