

IPM in partnership with nature for cleaner and healthier food was put forward by U. Bhat (Koppert Biological Systems). He opined that biocontrol agents have good market in India. The participation by private players in popularizing the technologies can be enhanced by streamlining the procedures involved in regulatory mechanisms.

Over 30 posters were displayed by research scholars and scientists from various research institutes across the country on topics ranging from new and safer insecticide molecules, biocontrol technologies, botanical insecticides and ecological approaches for green pest management.

The wrap-up and way forward session was chaired by Verghese. He lauded the interest shown by industry and academia

in trying to blend the chemical insecticides and bioagents for effective management of insect pests of crops and animals. The efforts of this attempt will be fruitful, if the concept of IPM turns to green IPM and this can be achieved by removing the barriers that stand against the simultaneous use of chemical insecticides and bioagents. He expressed concern on the policy issues related to import of bioagents, but emphasized that it was essential to safeguard the interest of the farmers. He informed that ICAR-NBAIR is in touch with NBA to address the policy issues of export of insect specimens or parts thereof for identification. Another issue that needs attention is the strict adherence to the IOBC standards with regard to chemicals and their safety to natural enemies.

This session was followed by the General Body meeting of the Society for Biocontrol Advancement. The Dr B. S. Bhumannavar Team Award was given to S. K. Jalali (ICAR-NBAIR) and his team for achievements in the area of biological control.

Mention of any products or opinions by the participants here does not imply endorsement by ICAR-NBAIR or SBA, Bengaluru.

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MEETING REPORT

Inspiring young minds to think out of the box*

At the recently held Annual Meeting of TRendys in Biochemistry at Annamalai University, A. J. Rao (Indian Institute of Science (IISc), Bengaluru) described its genesis and evolution over the years to a national informal forum to inspire young minds to think 'out of the box'. T. Ramasarma (IISc) talked about the concept of TRendys and its role in promoting innovative thinking by open discussion on emerging concepts and breakaway ideas.

S. P. Modak (Open Vision, Pune) received the Oration Award from the University and delivered a talk on the co-evolution of chaperons and target proteins. He explained how co-evolution of chaperons and target proteins from comparable taxa can be examined on the basis of sequence similarity, secondary structure conformation and physical properties of the amino acid sequences. He showed that analysis of the phylogenetic tree indicates that the random coil and hydrophobic residues in the binding site play an important role in the inter-

actions between chaperones and their corresponding target polypeptide.

Ramasarma emphasized that locally beneficial 'small' research was no less important than making a major discovery. He illustrated this with the gripping episode that occurred in Muzaffarpur, Bihar, where undernourished children developed seizures, mental confusion and memory loss leading to coma and death. This was traced to consumption of litchi fruit that contained a toxin which caused hypoglycaemia by blocking gluconeogenesis. This finding is path-breaking, novel and beneficial for disease control and prevention.

The key roles played by mitogen-activated protein kinase in the replication of human immunodeficiency virus and simian immunodeficiency virus were elucidated by S. Mahalingam (IIT-Madras). He suggested with experimental data that the interaction of MAPK/ERK-2 with Gag polyprotein results in its incorporation into virus particles and may be essential for retroviral replication.

The use of naturally occurring bio-nanomaterials as potential tools for targeted delivery of drugs with special reference to lysosomal storage diseases was elaborated by N. Sivakumar (Univer-

sity of Hyderabad). He pointed out that new biomaterials from various sources, including the yeast O-phosphomannan and its hydrolysed products, plant homo- and heteropolysaccharides, protein-based purified plant/animal lectins, purified lysosomal enzymes as nanomaterials or synthetic dendrimers containing mannose 6-phosphate groups may be explored for targeted drug delivery to treat lysosomal storage disorders.

A. K. Dasgupta (University of Calcutta, Kolkata) spoke on the unreal Schrödinger's cat in real biology. He cited examples to demonstrate creation of a new space for quantum mechanics in functional biology in the last few years. He explained spin magnets in the brains of migrating birds, the coherent rhythms operative in the photoreception machinery in plants and photosynthetic bacteria, the phonons dictating odour perception in the quantum biology concept as well as the quantum mechanical principles that operate in the response of photosynthetic complexes PSI and PSII to perturbation in spin and selective effects of spin perturbation in normal and cancer cells. M. Bramanandam (University of Hyderabad) discussed the 'concept of estrogen receptor (ER) negativity' in breast cancer. He described how loss of ER

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expression rendered hormone therapy ineffective in ER-negative subtypes leading to endocrine resistance and increased mortality. He mooted re-expression of ER α as a valuable concept in the treatment of ER-negative breast cancers and stressed the importance of decoding the origin of ER negativity to provide new therapeutic options for treating this aggressive subtype of breast cancers.

A. J. Rao discussed the significance of impaired expression of DNA double-strand break repair genes in oocyte ageing. He provided compelling evidence for declining expression of DNA repair genes in oocytes with age in rodents and women that led to DNA breaks and enhanced oocyte death rates. He showed that proteomic analysis revealed a significant decrease in FIGNL1 (Fidg-etin-like protein 1) and increase in BOK (Bcl-2-related ovarian killer protein), suggesting that impaired DNA repair can be considered as a mechanism of oocyte ageing. Madhulika Dixit (IIT-Madras) emphasized the importance of mammalian cell culture as an indispensable tool for drug discovery. She mentioned that primary culture provides a great window

of opportunity to understand cell physiology and onset of metabolic diseases. She summarized the methodology and approaches to culture endothelial and smooth muscle cells as a means to understand mechanisms leading to cardiovascular complications, as well as to screen anti-cancer and anti-atherosclerotic drugs.

In the presentation entitled 'Bugs, drugs, and cancer', P. Kondaiah (IISc) gave details of the involvement of the host microbiota in cancer susceptibility, development and progression. He unravelled the causal roles for microbes in cancer, the mechanism of host-microbiota interactions with environmental factors in carcinogenesis and the value-addition of this knowledge for cancer diagnosis and treatment. Sridhar Rao (CCMB, Hyderabad) discussed photo-acoustic-thermal therapy (PACT-therapy), a new concept in cancer control. He pointed out how energies from light and sound can activate free radicals and reactive intermediates within the cancer cells causing them to be killed. He explained that dual-purpose particles that can kill cancer cells by light and heat while minimizing drug resistance are also be-

ing developed. V. Elangovan (University of Madras, Chennai) spoke about RNA interference-mediated gene silencing to dissect a drug target and discussed the issues currently confronting clinical development of RNAi therapeutics.

During the meeting, research scholars and M Sc students presented 25 posters. There was a cultural performance by students which included a well-choreographed number on the electron transport chain. In the concluding session, Ramasarma expressed his views on the role of TRendys meetings in inculcating scientific temper among students of biology besides providing a platform for free exchange of ideas and thought-provoking discussions on emerging concepts in biochemistry, molecular biology and medicine.

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