Report on Science Academies' Lecture Workshop on Biodiversity and Biotechnology
06th & 07th October 2016

Jointly organized by

Srimad Andavan Arts and Science College (Autonomous)
(Affiliated to Bharathidasan University)
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ISO 9001:2008 Certified Institution
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The National Academy of Sciences India, Allahabad – 211 002
Indian Academy of Sciences, Bengaluru – 560 080
Indian National Science Academy, New Delhi – 110 002
Report of Science Academies’ Lecture Workshop on “Biodiversity and Biotechnology”

Two day Science Academies’ Lecture workshop on “Biodiversity and Biotechnology” was jointly organized by Department of Biotechnology, Srimad Andavan Arts and Science College (Autonomous), (SAASC), Trichy and Indian Academy of Sciences, Bangalore, Indian National Science Academy, New Delhi and The National Academy of Sciences India, Allahabad on 06th and 07th of October 2016.

The Department requested Dr. R. Raghavendra Rao, INSA Honorary Scientist, to be the Convener of the workshop and Dr. P. Thirumalai Vasan, The Head, PG & Research Department of Biotechnology to be the Coordinator of the workshop. The arrangements such as invitation with the necessary details, brochures were done by Dr. S. A. Kirubakaran Assistant Professor, Dept. of Biotechnology, SAASC and posted to various Arts and Science colleges in and around Trichy. The travel arrangements for resource persons were done by Mr. D. Naveenraj Assistant Professor, Dept. of Biotechnology, SAASC.

Dr. R. Raghavendra Rao, guided and helped the organizing team members of the Biotechnology Department at every step and suggested a panel of resource persons. All the resource persons have readily accepted to give lectures during the technical sessions of the workshop. The lectures were scheduled based on the travel plan and availability of the resource persons. All the participants were requested to register by sending the respective registration forms through e-mail and regular mail. The selected participants were informed through their mail.

On day 1 of the workshop (06/10/16), registration was started at 8.30 A.M in the reception desk of the host institution. The selected participants signed the attendance form and collected their workshop kit. Inauguration was started at 09.30 A.M with the prayer song.

Dr. P. Thirumalai Vasan, The Head, PG & Research Department of Biotechnology delivered the welcome address to the gathering and the members on the dice Dr. R. Raghavendra Rao, The Convener of the workshop, Dr. Palpu Push pangadan, Director General, AIHBPD & Senior Vice President, RBEF, Trivandrum, Dr. D. Joseph Bagyaraj,
NASI Senior Scientist & Chairman CNBRCID, Bengaluru, Dr. N. Ramanujam, Director (Academic affairs), Srimad Andavan Arts and Science College, Trichy and Dr. J. Radhika, The Principal, Srimad Andavan Arts and Science College, Trichy. The Director of the college delivered the presidential address and the Principal gave the inaugural address and also highlighted the importance of the workshop and about the invited speakers. Total of 136 participants from other colleges and the host institution actively participated in the workshop. All the student participants are from other colleges and gained knowledge through the series of lectures. The participants were from 1) Srimad Andavan Arts and Science College, Trichy 2) Bharathidasan University, Trichy 3) Dr. Umayal Ramanathan College of Arts and Science, Karaikudi 4) Nehru Memorial College, Puthanampatti, 5) EVR College of Arts and Science, Trichy, 6) Thanthai Hans Roever College, Perambalur 7) Raja Sarfiji College of Arts and Science, Tanjore, 8) AVVM Sri Pushpam College of Arts & Science, Poondi 9) Bharath College of Arts & Science, Tanjore 10) Govt. Arts College, Thiruvannamalai 11) Nirmala College for Women, Coimbatore. Dr. R. Raghavendra Rao addressed about the objective and significance of the workshop and also about the three academies and their services and fellowships towards the benefit of students. He also motivated the students to pursue research in science.

10.15 A.M – Session 1

After the inauguration, first lecture was started at 10.15 A.M by Dr. R. Raghavendra Rao who had delivered the lecture on “Biological diversity & Bio-prospection: A priority agenda for sustainable utilization of Bio-resources of India”. The lecture gave information about the rich biodiversity present in the various parts of our country. He also added several herbal medicinal plants in interior regions of our country, which remains unexplored, inspite of its usefulness in specific ailment that are used traditionally. He also motivated the budding scientists to utilize those resources for developing novel therapeutics against various devastating diseases and disorders. Most importantly, he elaborated on biopiracy, where our traditional knowledge is being constantly exploited by the developed nations, without giving any credits to our mother nation. At the end of the session, the participants actively took part in the discussion with the speaker and cleared their clarifications.

11.30 A.M – Tea break

The first session was followed by refreshment.
11.45 P.M – Session 2

The next lecture was delivered by Dr. Palpu Pushpangadan entitled “Conservation and sustainable utilization of medicinal & aromatic plants in India”. He elaborated on the potential biodiversity resources present in our country. He explained the importance of conservation of biodiversity. He also discussed various strategies for the conservation of our biodiversity excellently. The information about the training programmes offered by our government was really useful for the effective conservation of biodiversity. In his later presentations, he explained the importance of conserving the medicinal and aromatic plants of our country. He also insisted the role of various medicinal plants in the treatment of several diseases, which are otherwise non-curable by the conventional therapeutics. More importantly, he mentioned that protecting our intellectual properties through various national intellectual property protection methods. During question session, lots of questions were raised by faculty and participants and satisfactory explanations were given by Dr. Palpu Pushpangadan.

1.00 P.M – Lunch break

Lunch break was given for about 60 minutes from 1.00 P.M to 2.00 P.M.

2.00 P.M – Session 3

First talk of the afternoon session was given by Dr. D. J. Bagyaraj. He covered the session with the topic “Soil Biodiversity”. The speaker elaborated on the biodiversity present in the soil environment. He also lucidly elaborated how these diverse organisms present in the soil are working co-ordinately and thereby they get benefits for its own development and for the soil richness as a whole. He also illustrated various organisms belongs to various phyla and how they plays crucial role in the enrichment of soil and its living beings. The speaker explains about the microflora and microfauna present in the soil that are the key players in the species richness of soil biodiversity. The information he disseminated about the nitrogen fixation by various plants through the potential microbiota present in the soil. The session ends with the discussion and all the participants actively involved in the discussion.

3.15 P.M – Tea break

3.30 P.M – Session 4

Dr. R. Raghavendra Rao gave his second lecture on “Conserving the biological diversity in India: Concept of smaller hot spot pockets of Biodiversity in different eco-
geographic zones” after the break at 3.30 P.M. The speaker elaborated on major centers of Endemic and Genetic Diversity of plants in India. He also clearly explained about the various biodiversity hotspots of our country. He also explained the global Hotspots and Number of endemic species present in our hotspots. He also clearly explained about the various threats to the biodiversity, in particular about the anthropogenic threats. The speaker also elucidated the species richness of the Himalayas and Eastern India, which are unexplored for its therapeutic potentials. He also insisted that rich biodiversity is also present in Western Ghats and Andaman and Nicobar Islands. The questions rose by the students and faculty were clarified in detail by Dr. Raghavendra Rao. The session came to an end after the interactions between the speaker and the participants.

07th October, 2016: Second day of the lecture workshop
9.00 A.M - Session 5

Dr. Palpu Pushpangadan started the session on the second day of the workshop with the topic “Medicinal Plants – A Source of Economic Wealth for the Rural poor of India”. He explained about the growing opportunities in Ayurvedic medicine of India and also about the botanical medicines used for various ailments. He also mentioned that the herbal medicines are affordable, available and accessible to all sorts of people in the society. The speaker also insisted the users of the herbal medicines need not worry about the safety aspects of it, since these herbal medicines are traditionally being used for the past 4000 years. The concept of reverse pharmacology was lucidly explained by him, where he mentioned the screening based on ethnomedical and ethnobotanical lead a chances of hitting the target is more. The standardization of herbal medicines and strategies for developing new and upgraded herbal drugs was also clearly explained by the speaker.

10.15 A.M – Session 6

The second session of the day was started by Dr. D.J. Bagyaraj with the topic of “Arbuscular Mycorrhizal Fungi”. He elaborated on the various types of Mycorrhiza fungi and also its various applications in improving the plant growth and development. He listed the applications of Mycorrhiza through the original research projects, which carried out in his research centre. He also emphasized the importance of the these fungi in sustainable development of plants. The applications of the fungi includes, increased nutrient uptake, Synergistic beneficial interaction with other soil micro-organisms, Resistance to plant pathogens, Better drought tolerance and Production of growth promoting substances. Overall,
the scientist motivated the students in the subject of the lecture by his passionate delivery and by beautiful presentations.

11.30 A.M – Tea break

11.45 A.M – Session 7

Dr. P. Rajaguru, Professor and Head, Department of Biotechnology, Anna University of Technology, Trichy delivered the lecture in this session on “miRNAs and Environmental Health”. The speaker started with the basic concepts of epigenetics and its role in alteration of gene expression. Later the speaker explained the concept of miRNAs and its role in cellular gene expression. He also clearly explained the various response exhibited by the miRNAs upon exposure to the several environmental pollutants. Although the students in the beginning felt difficult to understand these concepts, later through his explanations made the students, especially postgraduate students, to clearly understand the details of his lecture.

1.00 P.M – Session 8

The final lecture was given by Dr. P. Rajaguru on the topic “Nrf2 Activators for preventing Beta-cell apoptosis”. He discussed about the Diabetes, current strategies in diabetes treatment and role of free radicals in diabetes. The speaker elaborated on the β-cell apoptosis in diabetes. He also added that activation of Nrf2 is a promising approach in the prevention of the hyperglycaemia induced oxidative stress involved in the pathogenesis of diabetes and its associated complications. He also added that pterostilbene plays a major role on nuclear translocation of Nrf2. It also controls cholesterol and reduces blood pressure in adults as well as improving the markers for oxidative stress in patients with dyslipidaemia. He explained all these concepts with the research work done in his lab.

2.00 P.M – Lunch break

2.45 P.M – Feed back session

In this session, the participants from other colleges gave their feedback about the Lecture workshop. They expressed a deep sense of gratitude for giving them the opportunity to attend the lectures of eminent scientists and they also thanked all the resource persons for their wonderful speech about the scientific concepts. The participants felt motivated to do higher education and pursue research. The students were very thankful also for the
information provided by resource persons regarding the projects and funds given by the central institutions such as IISc, IIT, IASc, UGC, DBT etc., for pursuing research in their interesting fields of science. The participants were very much thankful for the organizers for the punctuality and hospitality rendered to them. Overall, they said that they have gained knowledge on the topics delivered by the speakers.

3.30 P.M – Valedictory function

Valedictory function was started at 3.30 P.M after the feedback session. Dr. S. Thenmozhi, Assistant Professor, Department of Biotechnology, SAASC gave the welcome address, Shri. V. Balaji, Secretary of the college and Dr. J. Radhika, Principal of the college, distributed the attendance certificate to the participants. The valedictory function came to an end with the vote of thanks given by Dr. S. Arif Nisha, Assistant Professor, SAASC, who thanked all the members actively involved for successful completion of the workshop.