HINDUSTHAN COLLEGE OF ARTS AND SCIENCE
Behind NavaIndia, Coimbatore- 641028.

PG & RESEARCH DEPARTMENT OF MICROBIOLOGY

SCIENCE ACADEMIES LECTURE WORKSHOP
ON
“EMERGING TRENDS IN BIOPROSPECTING”

Sponsored by

Indian Academy of Sciences, Bangalore

Indian National Science Academy, New Delhi

The National Academy of Sciences, Allahabad, India.
Objective of the Lecture Workshop

The major objective of this workshop is to create awareness among the undergraduate and postgraduate students of science branches (primarily Life sciences) about the recent developments in the field of commercializing bio-products and their future prospects. The workshop was planned to provide an exposure to the students on the various developments in plant genetic engineering and farming, microbial therapeutics as well as insecticides. We strongly believe that the workshop provided enough information on aquacultural practices for mass production of edible fishes for marketing, identification and commercialization of living insects as well as their products for various applications, had provided a platform for the budding scientists to interact with the leading experts in the above mentioned and motivate them to take up science research as the carrier prospect.

Workshop Deliberations

DAY- I

The Workshop was opened by Dr. N. Baluswami, Principal, Hindusthan College of Arts and Science, Coimbatore and conducted by Dr. Lali Growther, Coordinator of the Workshop and Head, Department of Microbiology, in the presence of Convener of the Workshop Dr. Aparna Dutta Gupta, Head, Professor, Department of Animal Biology, University of Hyderabad. A brief introduction of the Workshop was provided by Dr. J. Vimalin Hena, Assistant Professor, Department of Microbiology. Dr. Aparna Dutta Gupta, Convener of the Workshop elaborated the birth of the Indian National Science Academy, the Objective, the Science education panel that organizes the Programmes of the Academy, the fundings, Summer Research Fellowships for staffs and students, Refresher courses for teachers, Lecture workshops, list of Journals and other training programmes offered by the Academy. Mrs. D. Kanchana Devi, Assistant Professor, Department of Microbiology proposed vote of thanks.

This workshop featured presentations on the possibilities and challenges in Bioprospecting in various natural products, of Plants, Animal and Microbial origin. It also brought together scientists addressing issues of how to translate basic research into applied research and commercialization.

TECHNICAL SESSIONS

In the first session Dr. Sathish Kumar, Professor, Plant Genetic Engineering Laboratory, Bharathiar University, Coimbatore, elaborated on Plant Transgenic Technology required for Plant Molecular Pharming. An overview of the transgenesis, the different methods, pros and cons of each method was clearly explained to the students. He explained the strategies for Molecular farming, the host systems, advantages of each system and the recombinant proteins produced in plants. Comparison of plant and animal based products also were a part of it.
In the second session Dr. SenthilKumaran, Professor, Department of Biology, University of Hyderabad. His topic was on Improving Fish seed productions: Aquaculture perspective. The different techniques like hypophysiation, *LinPe* method and Osmotic pump discussed with the virtual movie display. This was really a hand on training like experience for our student to increase the production of ornamental fish. Seed production, developmental steps and the difficulties observed in different framings like carp farming, Zebrafish development, shrimp farming and crab farming were elaborated. He concluded with the economic impacts of Aquaculture in India.

After the Lunch Break, Dr. SathishKumar continued his session on “Molecular Pharming- A case study”, discussed in detail, Development of Plant Based Vaccine for Chikungunya Viral Infection. It was a thought provoking lecture discussion for all postgraduate students. He also discussed the outcome of his project with Prof. Julian Ma, UK since 2008 under UKIERI Program. He explained the Genome organization of the virus and the conventional and recombinant vaccines. He also explained about plantigen, plantibodies which are produced by using Agro filtration method. Finally he provided information about the potential of commercialization of plant based pharmaceutical products.

The days last Lecture was delivered by Dr. Aparna Dutta Gupta on “Bioprospecting of pharmaceutical & nutraceutical biomolecules and products of insect origin”. Her lecture was about different types of insects and their various applications and commercialization as human food component, animal feed, colouring agent (for food etc..), bio indicators (termites), bio control agent, pollinators and medicinal value of honey and bee venom. She also included economic impacts of Sericulture in India. An interesting information of Tofu, which was recently developed by Cornell researchers from meal worm, was pretty exciting. Finally she explained how insects/insect cells are exploited as research models for developing various disease models, as well as bioreactors for production of recombinant product.

DAY-2

In the morning session students had a wonderful speech about “Genomic research methodologies and applications by Dr. B. Senthil Kumaran. He explained various types of PCR like RT-PCR, Real time PCR, Differential Display PCR and its specificities. He also explained about how genes were cloned, expressed and regulated. An overview of the production of interference RNA and recombinant proteins was clearly explained to the students.

In the second session Dr. K. Natarajaseenivasan Professor, Department of Microbiology, Bharathidasan University, delivered his talk on “Recent Transformation on Leptospiral Research”. He explained about *Leptospira interrogans*, their serovars and epidemiological studies on the disease globally.

After the Lunch Break, Dr. K. Natarajaseenivasan continued his presentation on “Laboratory diagnosis of Leptospirosis”. He explained about *Liga* expression in hamsters of
Leptospira, studies on Uveitis complications and reactions of lru ABC proteins. He also discussed various Bioinformatic tools used in structural and sequencial analysis.

In the last session, Dr. Aparna Dutta Gupta gave her speech on Eco-friendly pest management using Bacillus thuringiensis and bioprocessing. In her speech, she explained the toxicity of chemical pesticides and the alternate biocontrol agents. The different Cry genes, their characterization, field applications and commercialization were discussed.

The two day Academy Lecture Workshop on “Emerging trends in Bioprospecting” successfully concluded at the Seminar Hall, Hindusthan College of Arts and Science, Coimbatore, here on Friday. More than 130 participants from in and around Coimbatore including young faculty members from various colleges took active part in the workshop deliberations. The various journals published by the Academy were displayed at the workshop venue for the participants.

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HINDUSTHAN COLLEGE OF ARTS AND SCIENCE  
PG & RESEARCH DEPARTMENT OF MICROBIOLOGY  

SCIENCE ACADEMIES LECTURE WORKSHOP  
ON  
“EMERGING TRENDS IN BIOPROSPECTING”  

**TIME TABLE**

**Day 1**

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<th>Time</th>
<th>Event</th>
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<tr>
<td>9.00- 9.30 AM</td>
<td>Registration</td>
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<tr>
<td>9.30- 10.10 AM</td>
<td>Inauguration</td>
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Invocation- Aathira I.M.Sc Microbiology

Welcome Address: Dr. Lali Growther, Head, Dept. of Microbiology  
(Coordinator)

Lightening of Kuthuvilakku: **Dr. Aparna Dutta Gupta**  
Professor, Department of Animal Biology,  
School of Life Sciences, University of Hyderabad.

About the workshop: Dr. J. Vimalin Hena, Assistant Professor, Dept. of Microbiology.

Inaugural Address: Dr. N. Baluswami, Principal, HICAS.

Invitee Introduction: Dr. N. Hemashenpagam, Assistant Professor, Dept. of Microbiology.

Conveners Academy Lecture  
**Dr. Aparna Dutta Gupta**

Vote of Thanks: Mrs. D. Kanchana Devi, Assistant Professor, Dept. of Microbiology.

**I Session**  
10.15- 11.30 AM  
Talk 1: Overview of Plant Molecular Pharming  
**Dr. R. Sathishkumar,**  
Assistant Professor,  
Plant Genetic Engineering Laboratory, Bharathiar University, CBE.

11.30 -11.45 AM  
TEA BREAK

11.45- 1.00 PM  
Talk 2: Improving fish seed production: Aquaculture perspective  
**Dr. B. Senthilkumaran**  
Professor & Head Department of Biology, School of Life Sciences University of Hyderabad.

1.00- 2.00 PM  
Lunch Break

**II Session**  
2.00-3.15 PM  
Talk 3: Plant Molecular Pharming- A case study  
**Dr. R. Sathishkumar**.
3.15-4.30 PM  Talk 4: Bioprospecting of Pharmaceutical & Nutraceutical biomolecules and products of insect origin

**Dr. Aparna Dutta Gupta**

4.30-5.00 PM  Tea and interaction session

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**Day 2**

**III Session**

9.30 - 10.15 AM  Conveners Interaction Session with Participants

10.15 - 11.30 AM  Talk 5: Genomic Research Methodologies and Applications

**Dr. B. Senthilkumaran**

11.30 - 11.45 AM  TEA BREAK

11.30 - 12.45 PM  Talk 6: Laboratory diagnosis of Leptospirosis

**Dr. K. Natarajaseenivasan**

Professor, Department of Microbiology, Bharathidasan University Tiruchirappalli.

1.00 - 2.00 PM  Lunch Break

**IV Session**

2.00 - 3.15 PM  Talk 7: Recent transformations on Leptospiral Research

**Dr. K. Natarajaseenivasan**

3.15 - 4.30 PM  Talk 8: An overview of *Bacillus thuringiensis* biopesticides and their commercialization

**Dr. Aparna Dutta Gupta**

4.30 - 5.00 PM  FEEDBACK

VOTE OF THANKS- Ms. K.Sukirtha, Assistant Professor, Dept. of Microbiology.
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WORKSHOP INAUGURAL

From left: Dr. SathishKumar, Dr. B.Senthilkumaran, Dr. Aparna Dutta Gupta, Dr. N. Baluswami(Principal, HICAS) & Dr. R.Gurusamy(Dean of Biosciences)