K.L.E. Society’s
S. Nijalingappa College
Rajajinagar, Bengaluru-560 010.

Science Academies’ Two Days Lecture workshop
On
ADVENCES IN BIOTECHNOLOGY
On
29th and 30th July 2016

Convener: Prof. M.R.N. Murthy, Ph.D., F.A.Sc., F.N.ASc., F.N.A.
Molecular Biophysics Unit, Faculty Dean,
Indian Institute of Science, Bengaluru - 560 012

Organized by
Dr. Prathibha K.S., M.Sc., Ph.D., Asst. Prof.
Co-Ordinator: Science Academies’ Two Days Lecture workshop
H.O.D. Biotechnology
K L E Society’s S. Nijalingappa college,
Bengaluru-10
K.L.E. Society’s S. Nijalingappa College

DEPARTMENT OF BIOTECHNOLOGY

Science Academies’ Lecture workshop on ADVENCES IN BIOTECHNOLOGY

DATE: 29th and 30th July 2016 Venue: Sharada Sabhangana

Target Group: Students and Faculty from departments of Life sciences (Biotechnology) from host and other colleges

Report

With the approval of the dates of workshop in coordination with Science Academies Education programme and the convener professor Prof. M.R.N.Murthy Molecular Bio Physics unit ,Dean Faculty of Science ,Indian Institute of Science, Bangalore the dates were fixed as 29th and 31st July 2016. The deliberations by experts from Joint Science Education Panel were arranged through convener Prof. M.R.N. Murthy and Dr. Prathibha.K.S. Coordinator,H.O.D Biotechnology of the host institution.

The basic objective of this workshop was to bring together academicians and experts from relevant fields to enhance knowledge of the delegate participants and students in particular from academic and research institutions. The workshop aimed to create awareness and promote research attitude in the field of Biotechnology particularly on “Advances in Biotechnology”.

The workshop started with inauguration by Prof. M.R.N.Murthy, coupled with invocation by our biotechnology students. The other dignitaries on the dias that graced the occasion were as Prof. M.R.N.Murthy convener, Dr.Sadananda.S.Halageri , Principal , K.L.E’s. S. Nijalingappa College, Prof.V.Y.Vasnad ,H.O.D Chemistry ,Science Dean ,Dr.Prathibha.K.S, Coordinator, H.O.D Biotechnology from Host institution.

This 2 day lecture workshop has enlightened all the participants about Biotechnology not only as a subject that deals with but also about the various new avenues that have opened up in the field Advances in Biotechnology.

The workshop began with the introduction to the various science academies, various programmes, projects available for students and faculty delegates . Prof. M.R.N.Murthy gave an in-depth insight into the various programmes, projects available for the students and teachers.

The eminent speaker spoke on the Advances in Biotechnology that are gaining a lot of momentum in recent years. The first sessions started with Prof. M.R.N.Murthy, giving an introduction to "Impact of
crystallography on molecular and structural biology”. Prof. M. R. N. Murthy, who is basically from the Molecular Biophysics Unit, IISc, and Bengaluru. The presentation was about Impact of Crystallography on Molecular and Structural biology. He plunged us with knowledge regarding X-ray crystallography, Platonic solids, crystal patterns and their symmetry, importance of X-ray diffraction in the field of molecular biology, Miller’s indices, Bragg’s law etc. He dazed us by the fact that chemical molecules from tissues can be extracted and made into crystals that scatter the X-rays with ample variations in their intensity which can help us calculate the electron density of Bio molecules, and by doing so we can trace the functions of various proteins, sugars or any bio molecule. Sir explained how efficiently we can merge technology with biology and improve our living. He also proved to us that crystallography can be used as one of the best methods to discover more about the molecular world and to solve the hidden mysteries that our genes display. Altogether, the impact of Prof. M. R. N. MURTHY’S talk on Crystallography in Molecular and Structural biology, produced a gliding impact onto our brain.

This was followed by second session Dr. S. Ramaswamy who is the Senior professor in the institute for Stem Cell Biology and Regenerative Medicine. The lecture topic was about ‘Observing, studying and understanding nature to advance biotech’, which was basically about ‘WHAT COCKROACHES AND FISH CAN TEACH US’. Dr. Ramaswamy along with his colleagues made an untoward discovery of a protein crystal located in the mid gut of cockroaches. Although most cockroaches dont actually produce milk, Diplotera Punctate, which is the only known cockroach to give birth to live young, has been shown to pump out a type of ‘milk’, containing protein crystals to feed its babies. Not only is the milk a dense source of calories and nutrients, it is also time released. As the protein in the milk is digested, the crystal releases more protein at equivalent rate to continue the digestion. The crystals make up a complete food. They have proteins, fats and sugars. The researchers have the sequence of that protein and they are hoping to get yeast to produce the crystal in much larger quantities to alleviate the food shortages we'll have to deal with this generation. Thanks to his wonderful discovery. Dr. Ramaswamy also educated us about a fish named Blue Walleye, also called the Blue Pike, which is a subspecies of the Walleye, that has been critically endangered in the Great Lakes of North America, since the 1980’s. the most astonishing, aspect is that these 4 fishes, utilize the UV light and convert them into Infrared rays. Photo protection and counter shading are consistent with the available data, which means that these fishes are extremely smart enough to shield themselves for the impact of UV light entering their body with the help of the fluorescent protein sandercyanin that fluoresces th UV light at 375 nm into infrared wavelength at 675 nm. This is a means of adaptation by the Walleye fish and this clearly proves that every new generation is smarter than their ancestors. Applications for recombinant sandercyanin include genetic tagging, tracking of protein or macromolecule movements in living cells, and studying protein-protein interactions. Further
it can be employed for cancer detection, immunological studies, whole-body imaging and stem cell research.

In the third session by Dr. Kshitish Acharya, Faculty Scientist at IBAB and Founder Director of Shodhaka Life Sciences Pvt. Ltd, Bengaluru on the topic ‘Regulatory network analysis and system biology approaches for studying human diseases.’ Dr. Kshitish Acharya, logged into the basics of BIOTECHNOLOGY by probing into the world of Genomics, Proteomics and Transcriptomics. He also broached an idea about ‘OMICS’ which refers to the collective technologies used to explore the roles, relationships, and actions of the various types of molecules that make up the cells of an organism. He also threw light upon the importance of studying the existing databases and basic concepts of Biology. The next talk was by Prof. Shashidhar on ‘Breeding Intelligent Plants.’ He termed Plant Breeding as a combination of Science and Arts. His views about plants were unusual. He mentioned that we need to use our heart and have much more intelligence than plants to understand its complex behaviour. He spoke mainly about plant interactions, on how plants communicate with each other, on how they respond to their external environment and how their roots have got brains to detect the presence of food.

Following this we had a mesmerizing talk in fourth session by Prof. Shashidhar. H.E, Genetics and Plant Breeding, Gandhi KrishiVignana, Kendra, Bangalore. Lecture topic - Breeding Intelligent Plants. Sir has enlightened about breeding plants, techniques and medicinal plants and how its conservation has become a matter of priority in the 21st century. Sir also discussed the role and also enriched our knowledge about the richness of medicinal plants and their breeding techniques.

The day was concluded by a mind boggling talk on Breeding Intelligent Plants.

Second day The workshop began with the introduction to the various science academies, various programmes, projects available for the students and teachers, for students and faculty delegates.

First session speaker Dr. Anujith Kumar K. V. Associate Professor, School of Regenerative Medicine, Manipal Institute gave an - Induced Pluripotent Stem cells : Turning back the Molecular Clock. We were bombarded with information regarding the tremendous Embryonic Stem Cells and their applications in the field of several neural diseases like Parkinson’s disease, Alzheimer’s, Bipolar disorder, Down syndrome etc. it is so amazing to know that fibroblasts are isolated from various tissues and are used to produce different cell types or their progenitors. The gravity of the tremendous advancement in stem cell technology is truly a blessing. And lets hope that these immortal stem cells magnify and is available as organs in markets like how Dr. Anujith kumar said.

In second session the most complicated yet significant topic of the workshop presented by Dr. Jyothi Prasanna on getting the fictitious action of allogenic MSC’s into reality. The MSC’s have the ability to detect inflammation and arrest the immune cells activity and thus facilitate transplantation.
On Day 2, the third session of the workshop concluded with a lecture by Prof. M.R.N. Murthy where he discussed about the problems faced in the field of Biotechnology. He discussed the different fields of lifesciences and scopes.

The concluding session of the workshop was graced by Dr. Sadananda S. Halageri, principal, K.L.E. Society’s S Nijalingappa College as guest of honour, Prof. M.R.N. Murthy, the convenor of the workshop. Dr. Prathibha K.S, CO-ORDINATOR, Biotechnology.

The faculty and delegates and students expressed satisfaction about the knowledge they gained during the workshop. We are indeed thankful to Dr. T.D. Mahabaleshvara, Co-ordinator, Indian Academy of Sciences and other members of Joint science education panel for granting financial assistance to conduct this workshop and enriching our knowledge about Advances in Biotechnology. This workshop was quite successful and eye opening. We are looking forward to conduct more such workshops in future in association with science academies.
K.LE Society’s
S. Nijalingappa College, Bangalore-10
Science Academies’ Lecture Workshop on “Advances in Biotechnology”
On
29th and 30th July 2016.
Organised by: Dept. of Biotechnology

Venue: Sharada Sabhagana

**Inauguration, Time: 9:45 a.m. to 10:20 a.m.**

1. Invocation: Ashwini, Divya and Vaishnavi
2. Welcome speech: Dr. Prathibha K. S., HOD of Biotechnology
   Co-ordinator of Science Academies’ Lecture Workshop
3. Inauguration: Lighting the lamp
4. Introduction of guest: Swathi.III BT
5. Presentation of memento
   And bouquet:
6. Address by the chief guest:
   Prof. M. R. N. Murthy
   Biochemistry & Biophysics Unit, I.I.Sc, Bangalore
7. Address by **Indian Academy of Sciences**
   : Dr. T. D. Mahabaleshwara
   Co-ordinator, **Indian Academy of Sciences**
8. Presidential remarks: Dr. Sadananda S. Halageri, Principal
9. Vote of thanks: Madan III Year CZBt

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Master of Ceremony: Urmila, III BT and Ashwini II BT
Valedictory Agenda, Time 3:00 p.m. to 4:00 p.m.

1. Welcome and introduction of guest: Dr. Prathibha K. S., HOD Biotechnology

2. Presentation of momento and bouquet:

3. Moderation of the conference: Amrutha.III BT

4. Feedback from delegates:
   Address by the chief guest: Prof. M.R.N. Murthy
   Biochemistry & Biophysics
   Unit.I.I.Sc, Bangalore

5. Presidential remarks: Dr. Sadanand S. Halageri, Principal

6. Vote of thanks: Dr. Prathibha K. S., HOD Biotechnology

Master of Ceremony: Urmila, III BT and Ashwini II BT
K.L.E Society’s
S. Nijalingappa College, Bangalore-10
Dept. of Biotechnology
Inauguration by chief guest

Session 1:

Session 2:

Session 3:

Science Academies’ Lecture Workshop on Advances in Biotechnology - 2016