

**DST-STUTI Sponsored Training Program Organized by  
Department of Zoology, IGNTU Amarkantak (MP) in  
Collaboration with Jamia Hamdard, New Delhi  
February 6-12, 2023**

**The day 1: Feb 6, 2023**

A seven day long DST-STUTI sponsored training program was started on 6<sup>th</sup> Feb 2023 in the smart class of Dean, faculty of Sciences, IGNTU Amarkantak. The program was started with the introduction of the program by Dr Vijay Paramanik (Convener). Dr Paramanik has welcome the participants and introduced about the training program. In addition, he introduced Department of Zoology and Indira Gandhi National Tribal University, Amarkantak (MP), India. Also he briefed about IGNTU, its moto and other activities in brief. Thereafter, all the participants introduced themselves.

In the morning session, first lecture was delivered by Prof MK Thakur, a prominent scientist in the field of neurobiology of aging in India. Prof Thakur discussed about molecular techniques to study gene expression in the brain and involved in various neurodegenerative diseases. Prof Thakur started with the basics of gene expression and end up with the cutting edge methods to study gene expression and its applications in the therapeutics, especially in the context of brain disorders and diseases like, AD, PD and others.

In the second lecture, Dr Vijay Paramanik and convener of the program has introduced about the essentials of good laboratory practices as in the seven days of events there were 10 laboratory modules in addition to the expert lectures. Dr Paramanik explained do's and don'ts while working in the laboratory. Further, he explained about the data maintenance, acquisition and basics to deliver repeatable results.

Thereafter, Dr Raj Kamal Srivastava, a RLS fellow working in the Department of Zoology, IGNTU, Amarkantak explained about biomedical applications of real time PCR. This lecture was followed by **laboratory module 1**. Dr Srivastava explained the basics of RT PCR, applications, and presentation of real time data and its analysis. After the lecture, RT PCR was performed in the lab starting from RNA isolation to data analysis.

Post lunch, a University tour was arranged for the participants. In this they visited several laboratory of faculty of science, library and other facility. Briefly, participants visited central library of IGNTU, Central instrumentation facility of sciences, individual labs of the faculty members of Department of Zoology. Further, the participants enjoyed walking and witnessed the landscape and lush green and plastic and tobacco free campus of IGNTU.

### **The opening ceremony**

In the leadership of Hon'ble Vice Chancellor, IGNTU Amarkantak Prof Shri Prakash Mani Tripathi, a seven day DST-STUTI Sponsored Training Program was organized from Feb 6-12, 2023 in the collaboration with DST STUTI, PMU Jamia Hamdard, New Delhi after communication with Prof Suhel Parvez and support from Hon'ble VC of Jamia Hamdard Prof (Dr) Afshar Alam. The program was inaugurated on 6<sup>th</sup> Feb 2023. In the inauguration, Prof (Dr) Mohd. Akram, Chairman of the Managing Committee of DST STUTI PMU Jamia Hamdard, New Delhi was present as chief guest. Prof AK Shukla, the senior most faculty of the university, Head, Department of Botany and Dean, faculty of Earth science was the guest of honor whereas Prof Tanmay Kumar Ghorai, Dean faculty of Science was presided over the function. A number of faculty members of the university were present in the occasion Prof Poonam Sharma, Dr Rekha Rani, Head Department of Zoology, Dr Vijay Paramanik, convener of the program was present in the meeting.

In the opening ceremony, Dr Vijay Paramanik explained the scheme of the training program. Dr Vijay Paramanik informed that, thirty participants from PAN India shall participated and learn different biomedical research tools and techniques. He informed that, during seven days' workshop, 20 technical lecture, 10 laboratory modules, 3 popular lectures, 30 oral presentations by participants and four dream project were supposed to be presented by the participants. Amarkantak darshan and university tour are also planned during the training.

The chief guest on this occasion, Prof (Dr) Mohd Akram advocated the importance of DST STUTI program and emphasized importance of collaborative research for the betterment of mankind. Prof AK Shukla, guest of honor thanked Jamia Hamdard, New Delhi and Department of Science and Technology and others for choosing IGNTU for such activity. He ignited participants for high end research which has potential translations aspect.

Dr Rekha Rani, Head Department of Zoology presented a sketch of the department and welcome the participants. Prof Tanmay K Ghorai, Dean, Faculty of Science, presented a sketch of the faculty and welcome the participants.

Dr Vijay Paramanik, Convener of the program proposed vote of thanks.

In the evening, a cultural program was organized after the opening ceremony. Students of IGNTU performed in the cultural program. They presented classical dances, folk dance and folk song of the MP. Further, few participants also performed during the program. This cultural program was followed by inaugural dinner.

### **The day 2: Feb 7, 2023**

The day two was started with the lecture given by Prof (Dr) Mohd Akram on an overview of India system of medicine and potential in translational research. Prof Akram highlighted the importance of traditional medical system and their translational aspects. He explained about the potential of ayurvedic, unani and homeopathic medicine system. He emphasized significant contribution of these traditional medicine system specially during the COVID19. Prof Akram suggested to develop the Ayurvedic, Unani and others as alternative medicine system parallel with allopathy medicines.

In the second lecture, Prof Poonam Sharma of Department of Zoology, IGNTU Amarkantak discussed about antibiotics resistance and their application in biomedical research. Prof Sharma explained about different diseases and problems with antibiotics resistance in various diseases including urinary tract infection. She beautifully explained about the identification of antibiotics resistance and collaborative research with medicos in the tribal population in Anuppur region of MP. **In the laboratory module 2**, Prof Sharma has shown the experiments to find out the antibiotics resistance from urine samples suspected to be affected with urinary tract infection.

After this lecture, oral presentation from the participants were conducted. The participants were given option to present their research and/or any topic of their interest.

Thereafter, lecture on applications of proteomics and metabolomics in biomedical research was delivered by Dr Prashant Kumar Modi. He explained importance of proteomics research and explained its applications in translational aspects. He allocated the lecture in two parts; in one-

part instrumentation specially MALDI was explained and later on in the second part he explained about the applications and process for doing the proteomics and metabolomics research. The lecture was followed by **laboratory module 4**.

In the evening session, ethics of biomedical research was delivered by Prof Naveen K Sharma, Department of Botany, IGNTU Amarkantak. He beautifully explained ethics specially work ethics, publications ethics, PhD thesis writing and presented the lecture in a very interesting and interactive manner. He explained about ethics in basic research and translational aspects. Also, he encouraged student to follow ethics in work and life both. This was followed by a round table discussion arranged for clarifications of doubts. In this meeting Prof Naveen K Sharma, Dr Vijay Paramanik and Dr Raj Kamal Srivastava were present. They answered multiple queries from the participants in research career and related aspects.

### **The day 3: Feb 8, 2023**

In the morning session, a lecture on synthesis and characterization of metal oxide nanoparticles and biological study was delivered by Prof Tanmay K Ghorai of Department of Chemistry, IGNTU. He explained introduced nanoparticles and explained different methods for the synthesis of nanoparticles. He explained the potential of metal oxide nanoparticles and their uses for treatment of cancer and other diseases.

This was followed by a lecture entitled green synthesis of nanoparticles and their applications delivered by Dr Ravindra Shukla of Department of Botany IGNTU. Dr Shukla explained about the green base, especially the plant derivatives for synthesis of nanoparticles. He explained about application of nanoparticles for translation research.

Thereafter, a lecture entitled 'Zeta analyzer: applications in biomedical research was delivered by Dr Rishi Paliwal of Department of Pharmacy, IGNTU Amarkantak. He explained about nanoparticles and its characterization by Zeta analyzer for various application including drug delivery. Later on, he demonstrated the Zeta analyzer instrument for characterization of nanoparticles which may be ready for delivery of various drugs as laboratory module 5. Thereafter, oral presentations were done by the participants.

The lecture entitled 'Principles and applications of HPLC and IR spectroscopy in biomedical research by Dr Biswajit Maji of Department of Chemistry, IGNTU. He explained from basic to

the higher end applications of HPLC and IR. Also, he explained about the functioning and applications of these instruments in **laboratory module 6**.

In the evening session, a lecture entitled Art of writing research papers, scientific communication and grants was presented by Prof BN Tripathi, Department of Biotechnology, IGNTU. He explained process of writing the research papers, scientific communications and projects. He emphasized the process of synthesizing the writing process and encouraged students not to copy stuff from other sources. Further he highlighted problems of plagiarism and non-inherent writing while copying.

#### **The day 4: Feb 9, 2023**

In the morning session, a lecture on Principle and applications of X Ray Diffraction in biomedical research by Dr Khemchand Dewangan of Department of Chemistry, IGNTU Amarkantak. He explained about the application of XRD in cancer and neurodegenerative diseases. Dr Dewangan demonstrated XRD to all the participants and explained preparation of sample as well as applications of the XRD as **laboratory module 7**.

Then, Prof Sabyasachi Maiti of Department of Pharmacy, IGNTU Amarkantak delivered a talk entitled Modified polysaccharide nanocarriers: A promising vehicle for drug delivery. He mostly focused on making the drug delivery method using polysaccharide nano carriers. He explained the usefulness of polysaccharide nanocarriers in diabetes and neurological disorders.

The convener of the program has planned for Amarkantak tour. So, all the participants went to Amarkantak. All the participant has lunch in the jungle. Dr Vijay Paramanik, Dr Kunjbihari Sulakhiya and Dr Raj Kamal Srivastava also accompanied the participants. Participants visited Narmada Kund from where the river Narmada originated. Further, participants visited water fall Kapil Dhara named after Saint Kapil Muni. In the last the participants visited Prachin Mandir (Gupteshwar Mahadev), an ASI property. After that all returned to have workshop dinner in Midway Treat a MP Govt Hotel.

### **The day 5: Feb 10, 2023**

In the morning session, a lecture on Nano-conjugated chaperones: a critical study on protein aggregation was delivered by Dr Nitesh K Poddar. He explained about the nanoconjugated chaperons in neurodegenerative disease.

Thereafter, a lecture on Principles and application of behavioral research was delivered by Dr Kunjbihari Sulakhiya, Department of Pharmacy, IGNTU. He explained about the different behavioral tool namely OFT, NOR, Rota rod, WMT, light dark and socio behavioral box. He explained and demonstrated all the techniques and their application in behavioral research as **laboratory module 8**. This was followed by oral presentations by participants.

Later on, a lecture on Biostatistics with R (creating databases, appropriate techniques for its analysis) was delivered by Dr Sanjeev Bakshi of Department of Statistics, IGNTU. He explained the application of R. He also solved some of the case study during the lecture.

### **The day 6: Feb 11, 2023**

In the morning session, a lecture on Protein-protein interaction and biomedical research was delivered by Dr Vijay Paramanik, Department of Zoology, IGNTU. Dr Paramanik has explained importance of protein-protein interaction. He explained various methods for studying proteins protein interaction, which includes bioinformatics, pull down assay, IP, Far western blotting. He explained his research in which these techniques were used. Also he explained the drawbacks and benefits of these techniques in translational research. Dr Paramanik also presented about the bioinformatics tools to predict various putative protein interactions.

In continuation, Dr Vijay Paramanik, Department of Zoology, IGNTU delivered a lecture on Microscopy: a fashion world in Biomedical research. Dr Paramanik explained about different types of microscopes and emphasized the applications of confocal microscopes. Also, he explained the trouble shooting while performing these experiments.

**Later on Immunoblotting was demonstrated as Laboratory module 9, whereas microscopy was demonstrated as laboratory module 10.**

### **The day 7: Feb 12, 2023**

In the morning session, a lecture entitled Assessing mitochondrial bioenergetics in neurological disorders: From oxytherm to high resolution respirometer was delivered by Dr Debapriya Garabadu. He explained about basics of different respirometer and other instruments to measure ATP and metabolic activity of cells in context of neurodegenerative diseases.

Further, Dr Girish Gangadharan delivered a lecture on Animal model of neurological disorder and behavioral analysis. He explained about various animal models required for the study of neurological diseases namely, AD, PD, stress and others.

The convener has placed participants in four groups. Each group was given task to prepare a dream project and present by the group leader of each group. The dream project proposal was presented by each group leader. The prize for the best presentation was announced in the valedictory program.

### **Valedictory function**

In the guidance of Hon'ble Vice Chancellor, IGNTU Amarkantak Prof Shri Prakash Mani Tripathi, a seven day DST-STUTI Sponsored Training Program from Feb 6-12, 2023 in the collaboration with DST STUTI PMU Jamia Hamdard, New Delhi. The program was inaugurated on 6<sup>th</sup> Feb 2023. In the valedictory function, Prof Naveen K Sharma of Department of Botany, IGNTU Amarkantak. Prof Bhumi Nath Tripathi, Head, Department of Biotechnology and Dean Students Welfare was guest of honor. Dr Vijay Paramanik, convener of the program was also present in the meeting.

The chief guest on this occasion Prof Naveen K Sharma explained that India is one of the top three country in the world on the basis of published papers and no of PhD produced per year. He emphasized importance of ethics and research ecology for quality and translational research. Also he explained that hard and continuous work without limelight is the mantra for successful and translational research.

The guest of the honor on this occasion, Prof Bhuminath Tripathi explained about quality research and importance of biostatistics in biomedical research. He advised student to be away from predatory journals and focused for the long term goal.

Dr Vijay Paramanik presented summary of the meeting. Dr Vijay Paramanik informed that, thirty participants from PAN India participated and learn different biomedical research tools and techniques. In this meeting 20 technical lecture, 10 laboratory modules, 3 popular lectures, 30 oral presentations by participants were done. Four dream project was presented by the participants. Amarkantak darshan and university tour were also done. All four dream projects were applauded by the organizer. Dr Vijay Paramanik thanked DST-STUTI and Jamia Hamdard PMU. He thanked Prof Shri Prakash Mani Tripathi, Hon'ble Vice Chancellor of IGNTU, Prof Tanmay K Ghorai, Dean faculty of Science, Dr Rekha Rani, Head, Department of Zoology, all the faculty members of Department of Zoology, all speakers, all participants, non-teaching staffs and media persons including PRO Dr Vijay Dixit. Dr Paramanik especially thanked his PhD students Sneha Tiwari and Nisha for untiring work for management of lecture, laboratory modules, travel, accommodation, food *etc* for making DST-STUTI program successful.