

DBT Report chronological events (2019-22)

Kirori Mal College

1. Hands-on-Workshop on “Basic Laboratory Techniques” was organized on 3rd June, 2019 for the Laboratory Staff of Department of Zoology.

Under the aegis of DBT-Star College Scheme for presentation cum demonstration of various techniques were done. The workshop had three components. In the first component, Dr Sanjukta Das apprised the laboratory staff about the importance of preparing accurate buffer solutions of different molarity and how to measure their pH using the pH meter. The second component was organized by Dr Haren Ram Chiary, whereby, study of life tables and plotting of survivorship curves of different types from the Hypothetical/ Real data were explained. The third component was to understand the ‘setting-up’ and maintenance of an aquarium. Study of ornamental fishes and aquarium management has gain lot of importance as skill enhancement course. The development of proper skill and knowledge regarding aquarium management to the lab technicians will help the students to gain better knowledge regarding the maintenance. This technical knowledge will be helpful in proper maintenance of aquarium in the lab. Apart of academic interest, lab technicians can start their own business gaining the knowledge of aquarium management through this workshop.

2. Two- day Workshop on “MS Office” for Lab Staff of Department of Botany, Chemistry, Physics and Zoology was organised in Computer Lab 3 on 18th and 19th June 2019.

The workshop was well represented by 40 staff members and began with a basic introduction about the DBT Star College Scheme by the Co-ordinators. The first day Lectures *cum* demonstrations were on MS Word were conducted by Dr. Vibha, Department of Botany, Dr. Raksha, Department of Physics. The second day Ms. Pushkala and Dr. Shikha, Department of Computer Science and Dr. Upasana, Department of Chemistry gave Hands-on training to the staff on MS Excel worksheet.

Detail Report

Under the aegis of DBT-Star College Scheme a Workshop for Lab staff on various Instrumentation techniques for UG Chemistry Lab was done. Lectures and Practical demonstration on UV Visible Spectrophotometer, pH meter, Colorimeter and Conductometer were given by teachers of Department of Chemistry. Dr. Shashwat, Dr. Bhagat & Dr. Seema demonstrated UV-Vis spectrophotometer in which they explained how to find λ_{\max} for Acetone solution, drawing of spectrum and to evaluate the concentration of unknown solution. The working instructions of pH-meter and calibration by measuring pH of different buffer solutions were demonstrated. The cleaning, storage and maintenance of glass electrode were explained in detail by Dr. Pratik and Dr. Arun. Dr. Upasana & Dr. Hemlata explained how to calibrate conductometer by measuring conductance of 0.1N solution of KCl. Also, demonstrated variation of conductivity with concentration for given KCl solution. The cleaning, storage and maintenance of Conductivity cell was also explained. Dr.Gaijohn & Dr.Upasana demonstrated calibration colorimeter by determining λ_{\max} of potassium

permanganate (KMnO_4) solution. Also, Lambert Beer's law for aqueous solution of KMnO_4 was verified. Working Instruction Manual has been made for each lab in the Department for Lab staff, teachers and students.



The laboratory staff attending the MS Office workshop

3. Workshop on “Basic Lab Instrumentation for UG Chemistry Lab” for Lab Staff of Department of Chemistry was organised in Chemistry Lab 3 on 26th June 2019

On 26th June, 2019, under the aegis of DBT star, Lectures and Practical demonstration on UV Visible Spectrophotometer, pH meter, Colorimeter and Conductometer was organized by Department of Chemistry. Lectures were given by Dr.Shashwat, Dr.Bhagat, Dr.Pratik, Dr.Arun, Dr.Upasana, Dr.Hemlata, Dr.Gaijohn and Dr.Seema in Chemistry Lab 3. A working Instruction Manual has been made for each lab in the Department. The lectures included Different spectroscopic techniques, the concept of Electromagnetic spectrum, Absorption spectroscopy- its principle and working and finally the Instrumentation and Applications of UV-Visible absorption spectroscopy.

[Detail Report](#)

A Hands-on-Workshop on the Introduction and Applications of UV-Visible Absorption Spectroscopy was organized by the Department of Chemistry, Kirori Mal College, (University of Delhi) under the aegis of DBT Star College Scheme on June 26, 2019. It constituted a lecture on the topic “UV-Visible Absorption Spectroscopy” by Dr. Shashwat, was followed by a Hands-on-session.



Dr Shashwat explain the Basic Lab Instrumentation to the Lab staff

Lectures and Practical demonstration on UV Visible Spectrophotometer, pH meter, Colorimeter and Conductometer were given by teachers of Department of Chemistry. Dr. Shashwat, Dr. Bhagat & Dr. Seema demonstrated UV-Vis spectrophotometer in which they explained how to find λ_{\max} for Acetone solution, drawing of spectrum and to evaluate the concentration of unknown solution. The working instructions of pH-meter and calibration by measuring pH of different buffer solutions were demonstrated. The cleaning, storage and maintenance of glass electrode were explained in detail by Dr. Pratik and Dr. Arun. Dr. Upasana and Dr Hemlata explained how to calibrate conductometer by measuring conductance of 0.1N solution of KCl. Also, demonstrated variation of conductivity with concentration for given KCl solution. The cleaning, storage and maintenance of Conductivity cell was also explained. Dr Gaijohn & Dr Upasana demonstrated calibration of colorimeter by determining λ_{\max} of potassium permanganate (KMnO_4) solution. Also, Lambert Beer’s law for aqueous solution of KMnO_4 was verified. Working Instruction Manual has been made for each lab in the Department for Lab staff, teachers and students.

4. A Two- week Summer Training on Basic Biochemical and Microbial techniques for Students was organized by Department of Botany from 24th June -5th July 2019

A Two- week Summer Training, under the aegis of DBT Star college scheme was organized by Department of Botany from 24th June -5th July 2019, on ‘**Basic Biochemical and Microbial techniques**’ wherein, eleven students were selected from different colleges on the basis of their interests and given hands-on training on the basic biochemical and microbial techniques. Four students from Kalindi and Maitreyi college also attended the workshop.



**Kirori Mal College
(University of Delhi)**
Accredited by NAAC with ‘A’ Grade
CGPA 3.54
DBT Star Scheme



**Summer Training
on
Microbial and Biochemical Techniques
(June 24 to July 07, 2019)**



**Organized
by
Department of Botany
Kirori Mal College**

Subject Coordinator
Dr. Renu Kathpalia
Convenor
Dr. Rajni Gupta

Principal
Dr. Vibha Singh Chauhan
Coordinator
DBT Star College Scheme
Dr. Anita K. Verma

Detail Report

The program was designed to include lectures and practical demonstration for clarity of concepts followed by performing the related experiment. Students were trained to perform 12 experiments keeping in mind the protocol to be followed. Each student was given personal attention and their training concluded after submission a report of the workshop.

Dr. Rajni Gupta was the convener of the summer training and trained the students on microbial techniques. Dr. Rajni Gupta, Dr. Saloni, Dr. Leena and Dr. Yamal Gupta designed six experiments which included preparation of media, culturing and isolation of microbes. VAM (Vesicular arbuscular mycorrhiza) were isolated from soil samples. Students also learnt the method of formation of silver nanoparticle. During workshop a special lecture on **“Biochemistry: it’s relevance to life sciences”** by Dr. Manju A. Lal was organized. Dr. Renu Kathpalia, Dr. Vibha G. Checker and Dr. Yamal Gupta gave hands on to the students on chlorophyll pigment separation by paper, column and thin layer chromatography.



2-week summer Training on “Microbial and Biochemical techniques” for students organized by Department of Botany

Demonstration of enzymatic reaction and the effect of various factors on enzyme activity were studied. In addition, students were also trained in making different concentration of solutions. The following students attended the workshop, namely Abhishek Kumar Bharti, Rishabh Chaubey, Aditya Kiran, Abhishek Chaudhary, Mansivi, Sachin, Lalit Kishor, Prial Taneja, Sheetal, Ritika, Nitika.. All the students individually submitted workshop report. The students were given participation certificates on the last day of the summer training.

5. One day workshop for non-teaching staff on Basic lab techniques on 12th July, 2019

The Laboratory staff were trained to make solutions of different concentration, basic principle of microscopy, dry and wet fixation of plant material and Laboratory safety rules.

Detail Report



Dr. Sunil Dhiman gave presentation on the Laboratory safety rules. Dr. Vibha G.Checker, Dr. Archana Singh and Dr. Saloni gave presentation and hands on solution making, dry and wet fixation of plant material and handling of the microscope, respectively.



One day workshop for technical staff on Basic laboratory techniques

6. DBT-BIRAC Leadership Dialogue Series in partnership with AIIMS - 29th July 2019"

Around 45 students along with 4 Faculty members attended the " DBT-BIRAC Leadership Dialogue Series in partnership with AIIMS held on 29th July 2019"; as per the enclosed programme details.

Dr. Renu Swarup
Secretary to the Government of India, Department of Biotechnology, Ministry of Science & Technology & Chairperson BIRAC

and

Dr. Randeep Guleria
Director, All India Institute of Medical Sciences, New Delhi

Cordially invite you for the

DBT - BIRAC
Leadership
DIALOGUE
SERIES

In partnership with All India Institute of Medical Sciences, New Delhi

Lecture by Dr. Trevor Mundel
President of Global Health
Bill & Melinda Gates Foundation

Title
“Innovating for Impact: *How India can lead in helping solve some of the world’s toughest health challenges*”

on
29th July 2019, Time: 4:30 pm - 6:00 pm
Venue: Jawaharlal Nehru Auditorium, All India Institute of Medical Sciences, New Delhi

RSVP

Dr. Meenakshi Munshi, Scientist ‘G’, Department of Biotechnology
Tel no: 011- 24361035, E-mail: meenakshi29.dbt@nic.in

Dr. (Prof.) Aarti Vij, Chairperson Protocol Division, AIIMS
Tel no: 011-26593500, E-mail: mediaprotocolaiims@gmail.com

[Detail Report](#)

The Department of Biotechnology (DBT), Government of India and the Biotechnology Industry Research Assistance Council (BIRAC), in partnership with the All India Institute of Medical Sciences (AIIMS), organised a lecture at AIIMS by Dr Trevor Mundel, President, Global Health, Bill & Melinda Gates Foundation (BMGF) on “**Innovating for Impact: How India can lead in helping solve some of the world’s toughest health challenges**”. The second lecture in the newly launched DBT-BIRAC Leadership Dialogue Series-a platform where global leaders from various domains can share their experiences and interact with the scientific community. The lecture titled “Innovating for Impact: How India can lead in helping solve some of the world’s toughest health challenges” focused on India’s potential in addressing global health issues, and challenges and opportunities that lie ahead. Dr Mundel emphasised the crucial role India’s rapidly emerging leadership in biotechnology and artificial intelligence can play in creating newer tools and technologies, which can help India achieve health equity and take leadership in addressing global health challenges. He added that the ongoing Grand Challenges India (GCI), a joint initiative of the Department of Biotechnology, Government of India and the Bill & Melinda Gates Foundation housed at BIRAC, is aimed at catalysing innovative health and development research within India.

The event was presided over by Dr Renu Swarup, Secretary, DBT, Government of India and Chairperson, BIRAC; and Prof Randeep Guleria, Director, AIIMS. Other participants included Dr Chitra Sarkar, Dean (Research), AIIMS; Dr Mohd Aslam, Advisor, DBT and Managing Director, BIRAC; senior officials of DBT, ICMR and AIIMS; and researchers, faculty and students from institutes, universities and medical institutes.



Dr Trevor Mundel, Global Health, Bill & Melinda Gates foundation, Dr Renu Swaroop, DBT Secretary, Dr Randeep Gulleria, Director, AIIMS at the second chapter of DBT-BIRAC Leadership Dialogue Series.

Around 45 students and Faculty members attended the event from K.M College. Eight students from 2nd and 3rd Year of Physics department namely Amaan Pervez, Mridul Kandpal, Palak Kapoor, Ananya Gupta, Arpit Kumar Awasthi, Arushi Rana, Jitendra Singh, Kuldeep Singh, Around 35 from Zoology Department namely Soumya, Preeti, Manali, Nisha, Zoya, Shreya, Geetanjali, Komal, Perna, Mehdi, Yash, Shalini, Vikas, Tanisha, Ravi, Kusum, Shahla, Ananya, Riya Rani Sah, Chinglemba, Nandini Grover, Kirti Jain, Zoya Masood, Esha Sharma, Rishabh Sharma, Reetika, Priya, Yukta, Histesh, Refaquat, Vanshika, Parul, Swadha, and 16 students from Botany department namely Rawat, Sachit, Shubham Madankar, Amolak, Nisha, Kirti, Faizan, Umesh, Mohit Sharma, Shailvi, Kritvika, Kashish, Manasvi Aman, Prateek Rishabh, Niharika, attended the event. Dr Sangeeta, Dr Reena, Dr Anjali and Dr Lukram accompanied the students and participated in the event. The lecture was followed by a Q&A session with active participation from an enthusiastic audience who appreciated the main challenges of health in India. The session ended with a vote of thanks given by Dr Sarkar, Dean AIIMS. The students were extremely happy and thankful for the exposure at an undergraduate level. They found the talk to be very relevant and interesting.

7. Field visit and presentation on Mushroom Cultivation on 30th August, 2019

Students of Botany (H) were taken to the back yard of college where mushrooms were growing profusely. Different stages of growth were explained at the site and then there was presentation on Mushroom was shown to more than 40 students.

[Detail Report](#)

Under the leadership of Dr Rajni, importance of understanding the different stages of growth of mushrooms, selection and differentiating edible and poisonous were practically demonstrated to students and faculty. She further explained that wild mushrooms can be found

everywhere, and they are important as food and for trade as well as representing an essential part of forest ecosystems since they form ectomycorrhizal associations with tree roots, it is an important resource to be harnessed. Some species are specific to a particular host, but others can form associations with a number of different kinds of trees. For the improvement of forest health, scientists can identify the species of fungi involved and use the mycelium to inoculate seedling trees in a nursery and enhance tree growth in a plantation. There is a need to establish a “mushroom germplasm bank” to conserve this wild natural food and medicine resource, which also can serve as a source of nutraceutical. There is a need to grow live tissues in the laboratory, maintain these tissues in the laboratory, and develop the techniques required to domesticate these mushrooms.



Field visit by students and teachers of Botany department to see the luxurious mushroom growth. Dr. Rajni Gupta showed ring formation by spores of mushrooms to the students

8. Outreach Activity by Department of Zoology at Institute of Home Economics on 13th September 2019

A lecture on “**Nano-biotechnology: Drug delivery for cancer**” was delivered by Dr. Anita Kamra Verma, DBT Coordinator, KM College, on 13th September, 2019 at Institute of Home Economics as part of their Scientific activity.

9. Workshop on “DNA Barcoding and Metagenomics” on 19th -20thSeptember, 2019

Department of Botany organized a **Two-Day Workshop on “DNA Barcoding and Metagenomics”** on 19th -20thSeptember, 2019, where 26 teachers from various colleges attended the workshop. On day first in the morning session two lectures were organized and in the afternoon the teachers were provided with software to have hands on DNA Barcoding. On second day in the morning session lectures were delivered by eminent scientists and that was followed by hands on Metagenomics techniques.

Detail Report

A total of twenty six teachers from different colleges attended the workshop. On day first in the morning session DBT star college coordinator Dr. Anita K. Verma gave welcome address. Dr. Sunil Dhiman welcome the participants and guest which was followed by a lecture by **Prof. S.B. Babbar** on “DNA barcoding for in absentia identification and detection of species” and an another lecture by **Dr. Hemant Rituraj Kushwaha** on “Recent trends in Bioinformatics” were organized. In the afternoon the teachers were provided with software to have hands on DNA Barcoding.



Day-1 of faculty workshop on DNA barcoding and metagenomics

On second day in the morning session lectures were delivered by **Dr. Geetanjali Yadav** on “Complex networks in genomics” and **Prof. Sudeshna Mazumadar Leighton** delivered on “Introduction Metagenomics and applications in restoration ecology” and that was followed by hands on “DNA isolation from complex environmental samples and associated techniques”. Our Principal, Dr. Vibha Chauhan, gave valedictory speech followed by vote of thanks by Dr. Renu Kathpalia. The participants and organisers were given certificates.



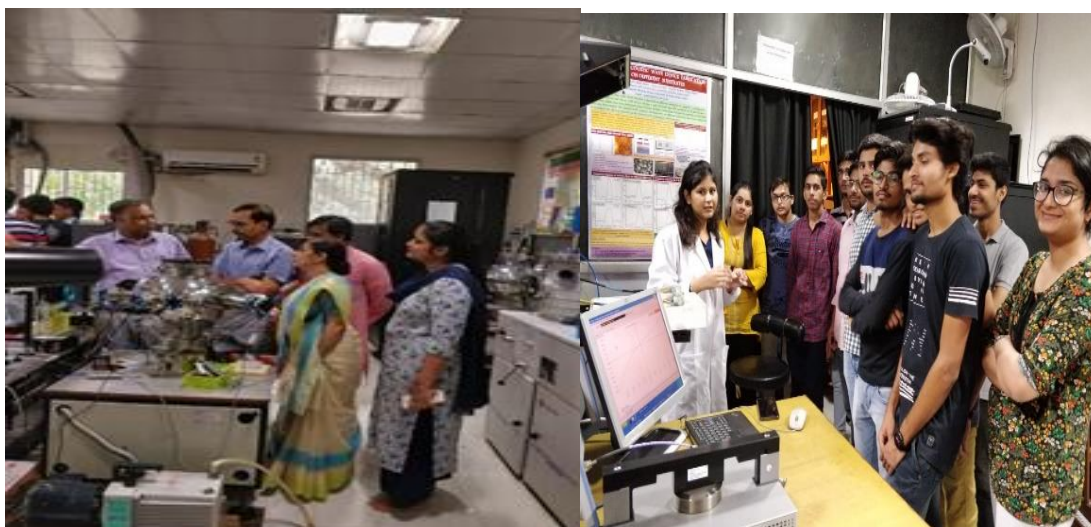
Day -2 of Faculty workshop on DNA barcoding and genomics

10. Visit to EMDL, Department of Physics & Astrophysics, University of Delhi, 24th September 2019

Around 75 Students (list of students will be enclosed) along with the faculty members of Physics Department of Kirori Mal College got an opportunity to visit materials research laboratory of Prof Vinay Gupta in Department of Physics and Astrophysics, University of Delhi on 24th September 2019.

Detail Report

A visit to **EMDL, Department of Physics & Astrophysics, University of Delhi on 24th Sept. 2019**, wherein 75 students got the opportunity to see an advanced material research laboratory. The research Lab, Electronic Material and Device Laboratory (EMDL) is a platform where students conduct research in both experimental and theoretical fields. Students were subdivided into six groups for learning various materials research techniques namely: processing, characterization, theoretical simulations, sensing, optics and device fabrication unit. During the visit, the students have learned different ways of depositing a thin film on a substrate including physical and chemical deposition techniques. Students were also illustrated with various experiments starting from the growth of film using sol gel to live demonstrations of microheaters and gas sensors. Various techniques used during the fabrication of integrated devices (IC) like photolithography, dicing, thermal oxidation and so on have also been elaborated to the students during the visit. It was a great experience for the students to get a flavour of research at undergraduate level.



Dr. Sangeeta and Dr Kajal visiting the centre with the students

11. Outreach Activity of Botany Coordinator on 24thSeptember, 2019

Dr Renu Kathpalia, the subject coordinator, Department of Botany was invited as Resource Person to give hands-on training in a workshop on Plant physiology by Shivaji College,

University of Delhi. On the occasion she delivered a lecture on “**Plant water relations**” and then demonstrated the simple to understand experiments on plant water relations to students.



One day workshop for students of Department of Botany, Shivaji college

12. The Inaugural Lecture series was organised by Department of Chemistry on **September 30th, 2019**

Under DBT Star college Scheme an Inaugural Lecture series was organised for students of B.Sc (Hons) Chemistry and B.Sc (Prog) Analytical Sciences. Around 150 students and teachers attended these lectures given by eminent scientists. **The Inaugural Lecture series** was organised by Department of Chemistry on **September 30th, 2019** for students of B.Sc (Hons) Chemistry and B.Sc (Prog) Analytical Sciences. The following Lectures were organised:

Safe disposal of Laboratory chemical waste for Undergraduate Labs by Dr. Lakshmi Raghupathy, Former Director, Ministry of Environment and Forest, Government of India and Dr. P K Rai, Scientist F, DRDO.

Nano-transporters for Biomedical Applications by Prof. Sunil kumar Sharma, Department of Chemistry, University of Delhi

Analytical Techniques Interfacing Chemistry and Biology by Dr. N. K. Chaudhary, Scientist G, DRDO.

Lab Chemical Safety- Handling and Disposal Techniques by Dr. P. K. Rai, Scientist F, DRDO.

Department of Chemistry
DBT Star College Scheme
Kirori Mal College
University of Delhi
Presents

"Inaugural Lecture Series"

SEPTEMBER 30, 2019 | 10 AM ONWARDS
VENUE: ACADEMIC AUDITORIUM

Lecture I:
10:00 AM to 10:50 AM
Dr. Sunil K. Sharma
(Department of Chemistry)
On
"Chemo enzymatic Synthesis of
Nano-transporters
for Biomedical Applications"

Lecture II
10:50 AM to 11:40 AM
Dr. Naba K. Chaudhary
(Scientist-G, DRDO)
On
"Analytical Techniques Interfacing
Chemistry and Biology"

Tea Break
11:40 AM to 12:00 PM

Lecture III
12:00 PM to 1:00 PM
Dr. Lakshmi Raghupathy
(Former Director, Ministry of Environment & Forests,
Government of India)
On "Safe Disposal of Laboratory Chemical Waste"

LUNCH BREAK
1:15 PM ONWARDS

Lecture IV
2:30 PM to 3:15 PM
Dr. P.K. Rai
(Scientist F, DRDO)
On "Lab Chemical Safety- Handling
and Disposal Techniques"

QUIZ COMPETITION
3:15 PM TO 4:15 PM

PRIZE DISTRIBUTION CEREMONY
4:15 PM ONWARDS

DR. RAMANANDA SINGH
(CONVENER)
9871130247

DR. REENA SAXENA
(COORDINATOR-CHEMISTRY
DBT STAR COLLEGE SCHEME)
9810241580

ABHISHEK MAKOL
(PRESIDENT)
9974439537

[Detail Report](#)

Under DBT Star College Scheme an Inaugural Lecture series was organised for students of B.Sc (Hons) Chemistry and B.Sc (Prog) Analytical Sciences. Around 150 students and teachers attended these lectures given by eminent scientists. The first Lecture was on **Nano-transporters for Biomedical Applications** by Prof. Sunil Kumar Sharma, Department of Chemistry, University of Delhi. He explained the applications of nanoscience in various biomedical applications which attracted undergraduate chemistry students towards biomedical research and related career opportunities. Second lecture on **Analytical Techniques Interfacing Chemistry and Biology** by Dr. N. K. Chaudhary, Scientist G, DRDO was very informative. He discussed on latest analytical techniques which is the urgent need of research now a days for Chemistry and Biology. **In the last session of Lecture series two lectures were arranged on Lab Safety. The first lecture was given** by Dr. Lakshmi Raghupathy, Former Director, Ministry of Environment and Forest, Government of India on **Safe disposal of Laboratory chemical waste** for Undergraduate Labs. The last lecture was on **Lab Chemical Safety- Handling and Disposal Techniques** by Dr. P K Rai, Scientist F, DRDO. Both the lectures were quite informative, useful and interactive for students. They were explained Lab Chemical safety, Handling and Disposal of chemical waste through various real life examples. The students asked many questions from speakers regarding various problems they are facing during their Lab class while dealing with chemicals. The students and faculties had gained a lot from this lecture series and proposed to have such type of informative and motivational lecture series regularly in the Department. Another lecture on **Lab Chemical Safety- Handling and Disposal Techniques** was given by Dr. P K Rai, Scientist F, DRDO.



Eminent Speakers at the Inaugural Lecture series

13. Mushroom cultivation Facility

The Botany Department has established a cost-efficient Mushroom cultivation facility to provide skills to interested students and faculty. The essence is to grow white button mushrooms on a substrate of agriculture waste materials such as paddy straw, husk, sorghum, maize culms, castor stalks, and groundnut shells. On terrace above the department, a shed fenced by bamboo sticks was raised for mushroom cultivation. All the accessories required to initiate mushroom had been acquired and the students are encouraged to develop skills and get hands-on training to instil entrepreneurship in them.



14. Workshop on “Use of Animals in Research & Education-a necessity?” organized by Department of Zoology, 4th October 2019.

On 4th Oct 2019, under the aegis of DBT star college scheme, one-day workshop was organized by Department of Zoology on “Use of Animals in Research & Education-a necessity?” The

inaugural lecture was given by Dr Anita K. Verma, who apprised the children about the significance of CPCSEA, and the IAEC, the importance and hurdles of using animals for education and research in the undergraduate program.



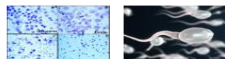
KIRORI MAL COLLEGE
(UNIVERSITY OF DELHI)
DBT STAR College Scheme



One Day Workshop
on

**“Use of Animals in Research and
Education: a necessity??”**

Organized by:
Department of Zoology
(Under the Aegis of DBT Star College Scheme)



Dr. Anjali Priyadarshani
“Colpocytological
Examination In Balb-c mice”

Dr. Anita K.Verma:
Using Animals in research and Education

4th October 2019
Time: 9:30 a.m.

Venue:
ZL-1, Zoology Department
Kirori Mal College (University of Delhi),
Delhi-110007

Co-Ordinator,
DBT STAR Scheme
Dr. Anita Kamra Verma

Workshop Organizer
& Teacher-in Charge
Dr. Anjali Priyadarshani

Detail Report

A lecture cum demonstration of the “Colpocytological Examination in Balb-c mice” was conducted by Dr. Anjali Priyadarshani, the organizer of the workshop. It was attended by 90 students of B.Sc (H) Zoology and B.Sc. (P) Life Sciences. Two practical sessions were simultaneously conducted in three different labs. The first session was in ZL-1 where the students were made to understand the importance of Colpocytological Examination in Balb-c mice. The characterization of each phase is based on the proportion among three types of cells observed in the vaginal smear: epithelial cells, cornified cells and leukocytes. The collection of vaginal secretion and the use of stained material generally takes 1-2 hours or more. Thus, the aim of this workshop was to provide the students few helpful considerations about the determination of the rat estrous cycle phases in a fast and practical way. The successful use of rodents for the above study is due to their short length of reproductive cycle length makes rodents an ideal animal model for investigating changes occurring during the reproductive cycle and historically mice have been the chosen model. The important factors being mice display, most of time, regular cycles; ease of manipulation; and the fact that the cycle is not disrupted easily even with the routine stresses in the animal facility.



The other session on “Sperm Motility” was conducted by Dr Anita K Verma, Largee, Monika, and Priyanka in ZL 4. The students were trained to observe pattern of sperm motility in different region of epididymis of adult mice and to observe the effect of ion on sperm motility. Sperm motility is a measure to evaluate fertilization capacity of sperm. The normal degree and pattern of motility and metabolic rate are not evident in sperm recovered from testicular tubules. Sperm present in proximal region of caput epididymis are relatively immotile. As they are transported towards more distal part of epididymis sperm acquire capacity to move progressively which causes forward motility essential for fertilization capacity. After the experiment was done the students were able to deduce that sperm maturation was a stepwise process that occurred in different regions of epididymis. Cauda region of epididymis was the final store house of mature sperms. The degree of sperm motility to attain fertilizing capacity could be visualized in form of varied sperm movements. Different ions have a significant effect on the motility pattern of the sperm and could be recorded in the form of % motility index which refer to number of motile sperm / total number of sperms. Dr Lukram, Dr Cherita, Dr Nidhi along with Imran and Kapil introduced the students to the preparation of histological sections with the help of microtome in ZI3. The students were very excited about the use of animals and the hands-on experience was very informative as mouse sperm morphology test can help evaluate chemically induced spermatogenic dysfunction, germ-cell mutagenicity, and carcinogenicity, and also to make an interspecies comparison of responses to chemicals.

15. Lecture Series on Quantum Mechanics on 19th, 21 and 22nd October 2019

Under the DBT Star College Scheme, the Department of Physics organized a three-day Lecture series on “**Quantum mechanics: Young at 94**” on 19th, 21 and 22nd October 2019 by Retired Professor Kamal Datta, from Department of Physics and Astrophysics, University of Delhi.

DEPARTMENT OF PHYSICS
DET STAR SCHEME
KIRORI MAL COLLEGE
UNIVERSITY OF DELHI

**Quantum Mechanics:
Young at 94**

October 19, 21, 22, 2019

Venue: PIT-2

PROGRAMME DETAILS:-

DATES	TIMINGS
19-10-19 .	11:00AM
21-10-19 .	2:00PM
22-10-19 .	11:00AM

LECTURE DETAILS:-

LECTURE #1. THE 2-SLIT REVISITED
LECTURE #2. THE COLLAPSE POSTULATE
LECTURE #3. ENTANGLEMENT AND IMPLICATIONS

All are welcome!

Professor Kamal Datta,
Former Faculty, Department of
Physics and Astrophysics,
University of Delhi

Detail Report

The first lecture on 19th Oct 2019 was on the heart and soul of quantum mechanics: “The 2-Slit experiment. He explained the simple terms of quantum mechanics, that deals with the behaviour of matter and light on the atomic and subatomic. Prof Datta revisited the 2-slit experiment in today’s context. He highlighted on how the topic has evolved over time from thought experiment to a practically realisable experiment.

The second lecture on 21st October 2019 was on an equally interesting topic: "The Collapse Postulate: DIRAC FORMULATION". He discussed Dirac's approach of quantum mechanics - the way it was introduced and also the Erwin Schrodinger's approach of the subject - mostly studied at undergraduate and postgraduate levels.

The concluding lecture was on “Entanglement and Implications: EPR Paradox" He discussed the thought experiment which involves a pair of particles prepared in an entangled state and also the successful practical testing of the entanglement.

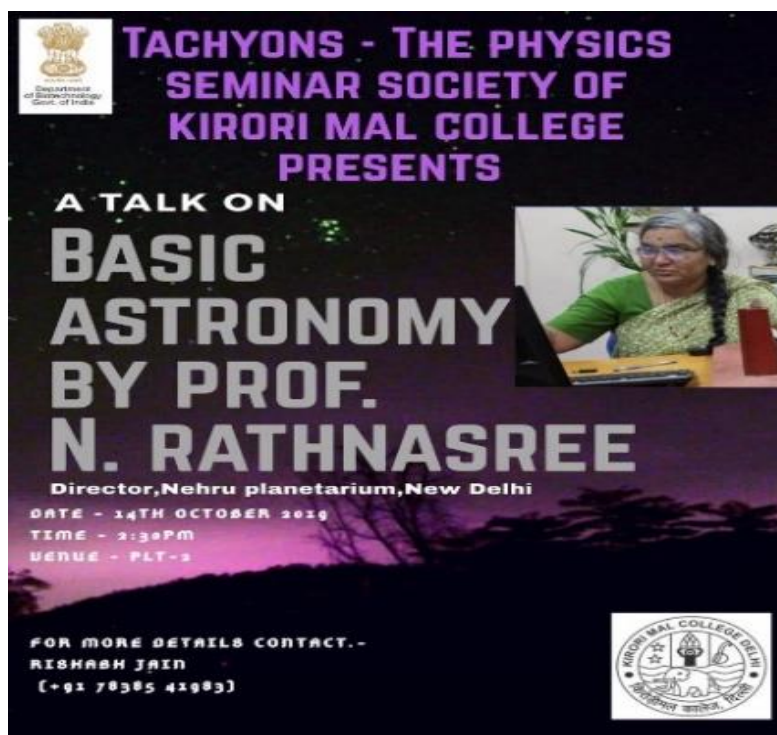


Interactive session with Prof. Kamal Datta

Prof Datta is well-known for his ‘gift of gab’ and kept the audience enthralled by his mesmerising ways of illustrating the other wise esoteric topic of quantum mechanics in a plain language. His photographic memory on facts and figures about the historical development of quantum mechanics. All the students and faculty members have gained immensely from this lecture series on quantum Mechanics.

16. Talk on Basic Astronomy, 14th October 2019

The Physics society ‘**Tachyons**’ under the aegis of Physics DBT Star college scheme organized a talk by Prof. N. Rathnasree, Director Nehru Planetarium, New Delhi, on “**Basic Astronomy**” on 14thOctober, 2019. Various open software tools for beginners related to astronomy were introduced. Some basic features of the tools were also demonstrated. Information on upcoming astronomical events were also shared. She motivated the students to pursue astronomy as a hobby/profession. Students were also invited to participate in various activities which will be held in Nehru Planetarium.



Students attending the talk by Prof N.Rathnashree

Skywatch Event, 14th October 2019

A skywatch event was held on 14th, October, 2019 from 6 pm- 8 pm. A six-inch equatorial based telescope was installed in the college sports ground for the event. More than 70 students of Department of Physics, Kirori Mal College had an opportunity to observe Jupiter and its four moons, Saturn with its rings and moon with craters. Subsequently, an Astronomy Club is formed in the Physics Department after this magnificent experience of watching heavenly bodies with the telescope.



Department of Physics, Kirori Mal College
Tachyons: The Physics Society
Presents

SKYWATCH!!

Opportunity to witness planets and moon using telescopes !!!

Date:- 14th September 2019
Timings:- 6 to 8 pm
Venue:- College Ground

For any details, Contact:-
Rishabh
7838541983

The poster features a dark space background with a galaxy, a planet, and the moon. It includes the Kirori Mal College logo and the Department of Biotechnology, Government of India logo.



Students participating in Skywatch!!

17. Road Show at NII, on 11th Nov 2019

National Institute of Immunology (NII) which is engaged in the research activities on the immunological defence mechanisms of the body to facilitate the development of innovative prophylactic, diagnostic and therapeutic measures for the health industry. NII is an autonomous institute which comes under the Department of Biotechnology, Government of India. Like most national laboratories, NII is intended to help create the scientific base for innovations of relevance to development in India, so that India can participate with dignity and profit in this technological revolution.

National Institute of Immunology (NII)
(An Autonomous Institute Under Department of Biotechnology, Govt. of India)

ROAD SHOW
for
Global Bio-India 2019
Power to Transform Lives
Participate, Innovate, Discover, Grow

on
Monday, November 11, 2019
Venue: G.P. Talwar Auditorium, NII, New Delhi

Time	Program
10:00 a.m.	Inauguration
10:15 a.m.	1 st Lecture by NII Scientist
11:00 a.m.	Tea
11:30 a.m.	2 nd Lecture by NII Scientist
12:15 p.m.	3 rd Lecture by NII Scientist
1:00 p.m.	Lunch

This Road show is a pre-event of Global Bio-India 2019 which will be held on 21 - 23 November 2019 in Aerocity, New Delhi. Global Bio India 2019 is going to deliberate on the opportunities and key challenges in the areas of bio-manufacturing, clinical trials & drug discovery, capacity-building, creating global supply chains for achieving a growth-oriented road-map for biotechnology sector in the country. Visit <https://www.globalbioindia.com/index.php> for registration and more information.

Participants at NII roadshow

The Institute is conducting a Road Show on **November 11, 2019 (10.00 AM to 2.00 PM)** at its premises (**NII, Aruna Asaf Ali Marg, New Delhi**) for apprising the society about our research activities and R&D outcomes. Around 15 students to participate in the NII ROAD SHOW. Lunch and refreshments were given to the students. The Road show is a pre-event of Global Bio-India 2019.

18. Global Bio-India Summit 2019, 21-23rd, November, 2019 at Aerocity, New Delhi.

It was indeed a mega international congregation of biotechnology stakeholders, including international bodies, regulatory bodies, Central and State Ministries, SMEs, large industries, bio-clusters, research institutes, investors, and the startup ecosystem. Global Bio-India, a Government of India initiative, was an Interactive platform to congregate, confer and converse on the current and future trends, growth drivers and challenges with dozens of biotech industry, senior policy makers and government dignitaries. The platform brought multi-faceted benefits for all stakeholder in Life Sciences, Healthcare, Industrial Biotech, Agri-Tech, Med-Tech, Clean Energy industry offered bigger opportunities by having open dialogue with key policy makers. Thanks to DBT Star College Scheme, 20 members including students and Faculty attended and benefitted from the three days event.



Global Biosubmit-2019: A total of 22 people participated in the event from K.M. College

[Detail Report](#)

The Department of Biotechnology (DBT), Ministry of Science and Technology, Government of India, organized the three-day event **Global Bio-India Summit, 2019** in collaboration with its Public Sector Undertaking, Biotechnology Industry Research Assistance Council (BIRAC) from 21st to 23rd November 2019 at Aerocity, New Delhi. The event was attended by a team of 20 delegates including faculty, students and research scholars from **Kirori Mal College, University of Delhi**. The Summit provided a platform to witness the potential of India's biotech sector to the international community. The event had three super sessions on three respective days along with a total of 38 technical sessions based on the current status, future prospective and key challenges in the areas of Bio-pharma, Bio-Agri, Bio-Industrial and Bio-Energy sectors. Apart from these sessions, two separate conferences viz. NANBIOTECK-2019, 4th Annual Conference of Indian Society of Nanomedicine and NANOFORAGRI 2019, 3rd International Conference on Nanobiotechnology for Agriculture, were also being organized within the purview of this mega event. This Global Bio-Summit witnessed participation from more than 25 Countries, 15 States, 200 Exhibitors, 3500 Delegates, 275 Startups, 100 Biotechnology incubators. It also provided a stage for Bio-Partnering, State Pavilions, Policy Dialogues and Start-up Awards. The major highlights of the event are as follows:

- Union Minister for Science & Technology, Earth Sciences and Health & Family Welfare, Dr. Harsh Vardhan, along with the Guest of Honour, Minister for Petroleum & Natural Gas and

Steel, Shri Dharmendra Pradhan inaugurated the Global Bio-India Summit, 2019. Dr. Harsh Vardhan emphasised the potential of India emerging as the world's top industry destination in biotechnology sector. Speaking on the occasion, Shri Dharmendra Pradhan said the Government has set a target to achieve 20% ethanol blending of automotive fuels.

- On the first day, there was a super session on '**Biosciences to Bio-Economy: A Conversation with the Policy Leaders**' with Dr Renu Swarup, Secretary, Department of Biotechnology, Dr Vinod K. Paul, Member, NITI Aayog, Dr Naresh Trehan, Chairman, CII, National Council on Healthcare & Chairman and Managing Director, Medanta-Medicity, Ms. Kiran Mazumdar-Shaw, Chairperson and MD, Biocon, Mr. Chandrajit Banerjee, Director General, CII as the key speakers. The experts unanimously concluded that there is a need for India to use bio-fuels more effectively. They emphasized that Bio-fuel synergy is the solution to cut down the use of fossil fuels.
- Other parallel running events such as "NANBIOTECK-2019" and "NANOFORAGRI -2019" covered most recent research and developments in their respective fields.
Dr Anita K Verma was an invited speaker at Nanobiotek-2019.
- Super Session 2 on Day 2 was on "**Vaccinating India and the World**". The panellists included Richard Dick Wilder, General Counsel & Head of Business Development, CEPI, Dr. Pradeep Haldar, Deputy Commissioner (Immunization), National Technical Advisory Group on Immunization, Dr. Suresh Jadhav, Executive Director, Serum Institute of India Ltd., Mr Lakshminarayana Neti, Chief Operating Officer, Biological E. Ltd., Dr. G. V. J. A. Harshvardhan Director for the Viral Vaccines and International Affairs Bharat Biotech International Limited, Dr Pankaj Bhatnagar, National Professional Officer(Immunization), WHO Country Office for India, Dr Bhriugu Kapuria Immunization Specialist, UNICEF. The session highlighted the policy makers' perspective, philanthropic organizations' efforts steering the mass movement and manufactures' preparedness to produce and supply the required number of doses consistently.
- The Global Bio-India award ceremony was held on Day 2, and was graced by Mr. Piyush Goyal, Minister of Commerce and Industry, GOI. Other dignitaries included Dr Vinod Paul and Dr Renu Swarup. The session saw the announcement of several DBT and BIRAC awards.

In the parallel session of Nanobiotek-2019, Vikas was selected for a poster presentation.



The 3-day mega gala event Gobal-Biosummit-2019

- Super Session 3 on Day 3 was on “**Academia Startup Policies**”. The session focused on policies, programs, interventions that are needed to boost Academia Start-ups innovation network. The eminent panelists were Prof. Ashok Jhunjunwala Professor IIT Madras & Hon. Board Member of BIRAC, Dr. Harkesh Mittal, Head, Science & Engineering Research Council, DST, Prof. P. Reddanna, School of Life Sciences, University of Hyderabad, Dr. A.K Panda, Director NII, Dr. Rakesh K Mishra, Director, CCMB. The session highlighted the successful Incubator models. In the closing ceremony on Day 3, Dr. Renu Swarup, congratulated everyone on the tremendous success of the mega event and said that the Department plans to turn this Global Bio-India summit into an annual event with support from all stakeholders. This is due to the fact that Biotechnology is recognized as the sunrise sector. In all, the event was a huge learning experience. Students appreciated the kind of exposure that they have got and wishfully expressed their gratitude to Dr Garima Gupta, DBT Star College Scheme, for providing this great learning opportunity to them.

19. “National Conference on Nano/Bio-Technology(NCNB-2019)”, 19th-21st December 2019 at JNU Convention Centre

Special Center for Nanoscience, Jawaharlal Nehru University (New Delhi) organized a “National Conference on Nano/Bio-Technology (NCNB-2019)” in collaboration with National Institute of Immunology, New Delhi from 19th -21st December 2019 at JNU, New Delhi.

Detail Report

As a DBT Star College we were invited to participate in the event. Dr Renu Kathpalia accompanied the following students Tanisha Bhimwal and Kusum Solanki. Ravi Prasad, Zoya, Lakhvinder Singh, Manali Jaiswal, Shahla, Esha Sharma, Nandini Grover, Zoya Masood, Anurag Thapliyal, Umang Bhatia, Swadha Srivastava, Prem Roy, Varun Chandolia Saksham, and Amisha Gupta had registered for the conference. Dr Sangeeta and Dr Reena registered for the event. Dr. Anita K. Verma, Co-ordinator gave an Invited lecture on “Crosstalk of ER stress, Mitochondrial Membrane potential and ROS determines cell death mechanisms induced by Etoposide loaded Gelatin nanoparticles in MCF-7 breast cancer cells”. Dr Reena Saxena, had a talk on “Functionalized multiwalled carbon nanotubes for efficient removal of cationic dyes from waste-water”.



Dr Renu, Dr Anita, Dr Sangeeta and Dr Reena at the Nanobiotech 2019 conference at JNU. Dr Anita with Director, NII, Dr Amulya Panda after the talk at JNU

A few students presented their work, Kapil had a poster on “Characterization, Antibacterial and Antioxidant activities of Bioinspired and chemically synthesized gold nanoparticles”,

Monika had a poster on “Reactive oxygen species-mediated mitochondrial pathway is involved in core shell quantum dots induced apoptosis in hepatocellular carcinoma cells” and Disha had a poster on “Overcoming drug resistance in ovarian cancer via modulating Pgp”. Amit Lochab from Chemistry Department also presented the poster on “Thiol Functionalised MWCNTs as Electrochemical Sensor for Determination of Thallium in Real Water Samples”.

20. National Seminar on 'Protecting & Assessing the Innovative Ecosystem' on 6th-7th January 2020 at the Academic Auditorium, K.M. College

Kirori Mal College organized a National Seminar on 06 and 07 January 2020 on '**Protecting & Assessing the Innovative Ecosystem**' jointly under the aegis of DBT Star College Scheme & IQAC in the Academic Auditorium of the college.

Kirori Mal College

National Seminar
on
“Protecting & Assessing the Innovative Ecosystem”
under the aegis of *DBT Star College Scheme & IQAC*
6th - 7th January, 2020
Venue: Academic Auditorium, Kirori Mal College

SPEAKERS

6th January, 2020 Session: 9.30am-2.00pm	7th January, 2020 Session: 10.00am-1.00pm
➤ Dr. Parul Varshney 'Patents'	➤ Dr. Pratibha Singh Dy Advisor NAAC, Delhi 'NAAC- The New System'
➤ Mr. Raghav Sharda 'Designs'	➤ Dr. Kumar Kartikeya Yadav 'Plagiarism'
➤ Mr. Pulkit Doger 'Trademarks'	➤ Mr. Mahesh Yadav 'Intellectual Property Rights: What it means?'
➤ Dr. Prosenjit Chattopadhyay 'Patent prosecution'	

Coordinators
DBT Star: Dr. Anita K. Verma
IQAC : Dr. Anshu

Tea and Lunch will be provided in the Canteen lawn

Detail Report

Dr Sangeeta introduced the two-day seminar on 6th Jan 2020. Being the Co-ordinator of the DBT star College scheme, Dr Anita K. Verma presented the scheme to the audience and briefly explained that the scheme offers support to colleges to improve the values of academic and intellectual freedom, creativity and innovation, cooperation and Communication and accountability. For both innovation and accountability, the seminar had immense significance for the participants.

The Convenor, IQAC, Dr Anshu apprised the participants of the importance of innovation and IPR with context to the new NAAC scheme. Our Principal, Dr. Vibha S. Chauhan, welcomed Dr. Prasenjit and his entire team by gifting them planters. She stressed on the fact that the maintenance of proper balance and fine tuning of academic excellence with academic integrity, protection and exploitation of intellectual property rights is becoming extremely important for the universities. She said it would be good to propagate innovative culture and focused on the fact that creation of intellectual property is the need of the hour in colleges.



Eminent speakers at the conference

The programme included talks on importance of IPRs and their protection, Patenting procedures and patent informatics, patent searches, role of innovation and invention in the academia-industry collaborations, trademark and copyright protection, issues of do's and don'ts for a researcher in the context of publishing and patenting. The resource persons included IPR experts from Indian Patent Office and Dr. Prosenjit Chattopadhyay, a joint partner in intellectual property rights team of Lakshmi Kumaran & Sridharan and his team.

His expertise was in pharmaceuticals, polymers, petrochemicals, protein conjugates, nanomaterial and intellectual property right. He explained filing and drafting patent portfolios for chemical compounds. Being a chemist, he clearly explained the difference between processing and product of a chemical compound and the difference between new discovery and right to claim patent by the discoverer. Elucidating the concept of novelty, he gave examples of haldi and neem, both of which are already being patented but if mixture of two is used as a remedial compound then the person has right to get his work patented. The highlight of the talk was that any patent should be registered before publishing it on any open forum like publishing research paper or thesis.

The seminar showcased how Intellectual property rights (IPR) have become imperative in the aspect of everchanging trade environment that is characterized by global competition, short

product cycle, high innovation risks, requirement for swift changes in technology, high investments in research and development (R&D), and necessity for highly skilled human resources. With the opening-up of technology development and services intellectual property rights (IPR) have become more vulnerable to infringement causing inadequate return to the knowledge creators. It was attended by enthusiastic participants including faculty and students. The vote of thanks was given by Dr Reena.

22. DBT-BIRAC Leadership Dialogue at NII on 8th January,2020

Under **DBT-BIRAC Leadership Dialogue Series** initiated by DBT, a lecture was delivered by **Dr. Eric Green**, Director, National Human Genome Research Institute. Around 17 students from Department of Zoology attended the lecture at National Institute of Immunology, New Delhi on 8th January, 2020, that was held at the NII Auditorium

List of students: Prem, Jatin, Dev, Anupriya, Varun, Sneha, Amrita, Abhey, Rizwana, Jessica, Kaustubhi, Amisha, Arti, Sapna, Saksham, Nancy, Vishnupriy

23. National Conference on Emerging Trends and Future Challenges in Chemical Sciences (ETFC-2020) on 10th-11thJanuary 2020.

A National Conference on **Emerging Trends and Future Challenges in Chemical Sciences (ETFC-2020)**, scheduled on 10-11thJanuary, 2020, was organized by **Department of Chemistry** under the aegis of DBT Star College Scheme at the Conference Centre, University of Delhi. The brochure was uploaded in the month of December for inviting participation. The conference brought scientists, researchers and students from various parts of India and provided a platform to exchange ideas and to address various challenges for sustainable development of our country.

The conference provided a great learning opportunity for students and will help in understanding the challenges and emerging areas in field of chemistry.

The conference was a grand success.



Inaugural Session of ETFC-2020



Eminent Speakers at the conference on Day 1.



Plenary Speaker: Prof V S Chauhan, Poster session in progress and the entire team of ETFC-2020 on Day 2

24. Hands on training on Oyster Mushroom cultivation on 10th Jan 2020.

Department of Botany, Kirori Mal College organised a hands-on workshop on Oyster Mushroom Cultivation” under the aegis of DBT Star College Scheme, on 10th Jan 2020. The workshop was attended by 40 students from B.Sc. (H) Botany and B.Sc. (Program) Life science and held in BL-3 and the mushrooms were kept in the mushroom cultivation shed of bamboo sticks was constructed on the terrace above the Botany Department supported by DBT star college scheme.

[Detail Report](#)

Dr. Rajni Gupta and Dr. Yamal Gupta explained the characteristic features and taxonomy of mushrooms. The term mushroom is used for edible sporophore (fruiting body), which is usually umbrella shaped and bear thin blade-like gills on the under surface of the cap from which the spores are shed. Also, since mushrooms lack chlorophyll and cannot produce their own food, they can grow saprophytically or sometimes symbiotically, they can even be cultured upon

organic matter as food. Since mushrooms are variable in size and shape, some varieties may produce fruit bodies below the ground and a large number of species growing wild in nature, and many are edible, some are highly poisonous, hence, it was important to make the students understand the difference between poisonous and edible mushrooms. Oyster mushroom cultivation was chosen because of the ease of cultivation method and can be grown on large scale using minimum resources.

Oyster mushroom can be grown on a large number of bio-wastes mainly having cellulose and lignin. Oysters are commonly known as 'Dhingri', belong to the genus *Pleurotus* and family Basidiomycetes. The fruiting body of this mushroom is shell, fan or spatula shaped, maybe of different shades of white, pink, cream or light brown depending on the species. Mushroom cultivation is beneficial, as it directly provides bio-conservation of solid waste into edible mushrooms. Since these mushrooms contain cellulolytic enzyme, they can easily grow on such type of substrate *viz.* straw of paddy, wheat and ragi, stalk and leaves of maize, millets and cotton, used citronella leaf, sugarcane bagasse, saw dust, jute and cotton waste, dehulled corncobs, pea nut shells, dried grasses, sunflower stalks, used tea leaf waste, discarded waste paper and synthetic compost of button mushrooms etc. The choice of growth medium selected was wheat husk as it is easily available at low cost. Further, Dr Rajni demonstrated different steps involved in raising the cultures. Oyster mushroom spawn was mixed in the sterile husk and then filled in PP bags of 33X18 cm size with small holes in them for air exchange. The bags were placed in a dark room at a temperature of 20-24°C for about 20-25 days for the running of hyphae onto the husk. Within 30 days, the students harvested approximately six kilograms of mushroom.



Pictures of Mushroom cultivation shed showing Oyster mushroom of different varieties grown in bags containing wheat husk and spawn. Different sizes and colour of fruiting body of Oyster mushroom is clearly visible.

The workshop concluded with increasing awareness of nutritive and medicinal value of mushrooms, that can help to convert agro-wastes into human food. Their cultivation can provide labour employment as they are fast growing and are responsible for production of quality food. Mushrooms represent untapped source of nutraceuticals and valuable palatable food.



- A. The fruit body of oyster mushroom growing profusely. B. Pink oyster fruiting body. C. Fully mature oyster mushroom**

25. Seminar-Cum-Workshop was organized by Department of Physics under the aegis of DBT Star College Scheme on “How To Use Digital Storage Oscilloscope?” on 24th Jan 2020

A seminar-cum-workshop was organised by Department of Physics under the aegis of DBT Star college scheme on 24th January, 2020 at in PL2E. Mr. Gaurav Piplani was invited to deliver a lecture on “**Digital Storage Oscilloscope**” for Faculty members and the non-teaching staff the Physics Department.



Mr. Gaurav Piplani’s lecture attended by Faculty and technical staff

The Physics Department has bought eight DSOs from the Non-recurring grant provided under DBT Star College Scheme. In order to have an optimal utilization and good maintenance of them, this event was organised for both teaching and non-teaching staff of the Physics department. Mr. Gaurav, a technical expert dealing with DSOs, conducted the presentation. All the knobs in the front panel of a DSO were introduced with their proper functioning. All the advanced features related to measurement techniques, synchronization of data speed and simultaneous measurements in different channels of DSO were elaborated. Also, the analysis of the data obtained by using in-built numerical techniques like FFT was explained. The USB port in DSO was made to read already prepared data file and plot it along with showing

numerical calculations. This was accompanied by hands-on training for teaching and non-teaching faculty of the Physics Department which was a great fun and learn experience for all. The session concluded with vote of thanks by Dr. O.P. Sharma (TIC, Physics) over high tea.

**26. “Opportunities in ornamental fish culture; aquarium set-up & feed preparation”
On 30th Jan 2020, in Department of Zoology.**

The Department of Zoology, Kirori Mal College organised a hands-on workshop on “*Opportunities in Ornamental Fish Culture: Aquarium set-up & feed preparation*” under the aegis of DBT Star College Scheme, on 30th Jan 2020. The workshop was especially designed to enhance awareness on the advantages of studying Aquarium Fish Keeping and develop skill among the students. The workshop was attended by 99 participants from five different colleges, SGBT Khalsa, Shivaji college, Kalindi College, Swami Shradhanand College and Ramjas College accompanied by three faculty members from other Colleges. Ph.D scholars from the Department of Zoology, University of Delhi also attended the workshop.



 **Kirori Mal College**
University of Delhi 

**“Opportunities in Ornamental Fish Culture
Aquarium set-up & feed preparation”**

**One day hands-on workshop on nurturing
entrepreneurship opportunities among students**

**30th January, 2020
Time-10.00 a.m.**

**Organised by
Department of Zoology
(under the aegis of DBT Star College Scheme)**

Invited Speaker: Dr Sushma
Topic : Ornamental Fish Nutrition

**Venue: ZL1
Department of Zoology,
Kirori Mal College,
University of Delhi,
Delhi 110007**

**Organized by
Dr. Lukram Ingochouba Meetei
Dr. Khangembam Cherita Devi**

**Co-Ordinator
DBT Star College Scheme
Dr. Anita K. Verma**

**Teacher-in-charge
Dr. Anjali Priyadarshani**

[Detail Report](#)

The programme was initiated by a welcome note on the significance of the workshop on Skill Enhancement Course by co-ordinator of DBT Star College Scheme, Dr. Anita K. Verma, followed by the introduction of invited resource person Sushma Kumari from RDS College, Muzaffarpur, by Teacher-in- Charge, Department of Zoology, Dr Anjali Priyadarshani. The inaugural lecture was on “**Ornamental Fish nutrition**” that introduced the students to the various aspects on nutrition focusing on source of rich colour pigment food for fish. As the ornamental properties of fish are very much influenced by the feed that enhances develops and maintains the colour of the fish. The inclusion of different plant extracts in the feed to enhance the colour were also discussed.

The introductions were followed by hands-on practice on Aquarium set up and feed preparation. The session on feed formulation and preparation was conducted by Dr. Lukram I. Meetei who spoke on “**Feed Formulation and Preparation of Artificial diets using Pearson Square Method for Ornamental Fishes**” followed by demonstration of feed formulation exercise and preparation using different ingredients. All the participants were given hands-on-training.

The other session on **Aquarium set-up** was carried out by Dr. K. Cherita Devi simultaneously in ZL1, where the participants were divided into four groups and each group was given an aquarium along with the accessories, like filter, aeration pump, diffuser stones, heater etc. Every group was allowed to creatively setup their aquarium. The participants were taught the different methods for fabricating aquarium with advantages and disadvantages of each method. The importance of selecting right material with proper dimensions were explained. Apart from the material, the information on the right choice of the position was illustrated. The essential components required in a closed aquatic system was explained. The importance of maintaining optimum temperature, dissolved oxygen and other parameters of water were explained. The role of each components was dealt with the functional correlation to maintain the aquarium. In the other session, the participants were introduced to Pearson’s square method and taught to prepare the fish feed using the above protocol. The participants were allowed to mix different compositions of fish meal powder and wheat flour to make feed formulations. They were made to understand the importance of adding multivitamins, minerals along with plant extracts to enhance colour of the fish.

At the end of the session, participants and organizers were distributed with certificates and the workshop was successfully concluded after collecting the feed-back forms from the participants. The feedback on various aspects of the workshop was taken from the participants. The Faculty and students were satisfied with its usefulness and were overwhelmed by the information provided during workshop.



Collage of the inaugural lecture, as well as the various activities of the workshop

27. Two-day Annual Festival *BIOGALA*'2020 of B.Sc. (Life Sciences) on 24th-25th Feb 2020.

BIOGALA'2020, an annual 2-day festival of the Life sciences society, under the aegis of DBT star college scheme organized a variety of academic events on 24th and 25thFebruary, 2020.

Detail Report

The main highlight was lecture on "**Anecdotes in Biological Science**" and a workshop on "**Gene Synthesis**" by Dr S. Lakshmi Devi, Founder Principal, Shaheed Rajguru College of Applied Sciences for Women and Honorary Director, Centre for Entrepreneurship and Career Oriented Programs, University of Delhi. A lecture on "**Bioremediation and detoxification**" by Prof. I.S. Thakur, School of Environmental Sciences, JNU, aware students with different remediation technologies for treating both soil and groundwater using microorganisms. An online photography competition "**Quick Pic**" on the topic "**Biodiversity and Emotions**", "**La Painture**"- the painting competition on the topic "**Wings of Fire**" depicted students

astonishing thoughts. The other events included **DIY (Do It Yourself)**, **Just-A-Minute session** and **Quiz Competition**.



Lecture and workshop during the Biogala'20



Various inter-college competition organized during Biogala'20

28. The Department of Zoology held a One-day workshop on “Basic Techniques in Animal Cell Culture” on 27th Feb 2020

The workshop was especially designed to apprise the students about the advantages of studying Animal cell culture and develop skill among the students as it plays a prominent role in the research on various human diseases such as diabetes, cancer, atherosclerosis and neurodegenerative diseases.

Kirori Mal College
University of Delhi

One Day Workshop
on
“Basic Techniques in Animal Cell Culture”
under the aegis of DBT Star College Scheme

Organized by
Department of Zoology

27th Feb, 2020
Venue : ZL-4
Time: 10am-4pm

CELL CULTURE TECHNIQUES
Learn about the principle, concept and application of cell culture techniques. A platform to understand the handling of cells in vitro

CYTOTOXICITY ASSAY
Hands on training on performing cytotoxicity assay (MTT Assay) as well as the data analysis

Demonstration of Fluorescent Inverted Microscope by Voxlab

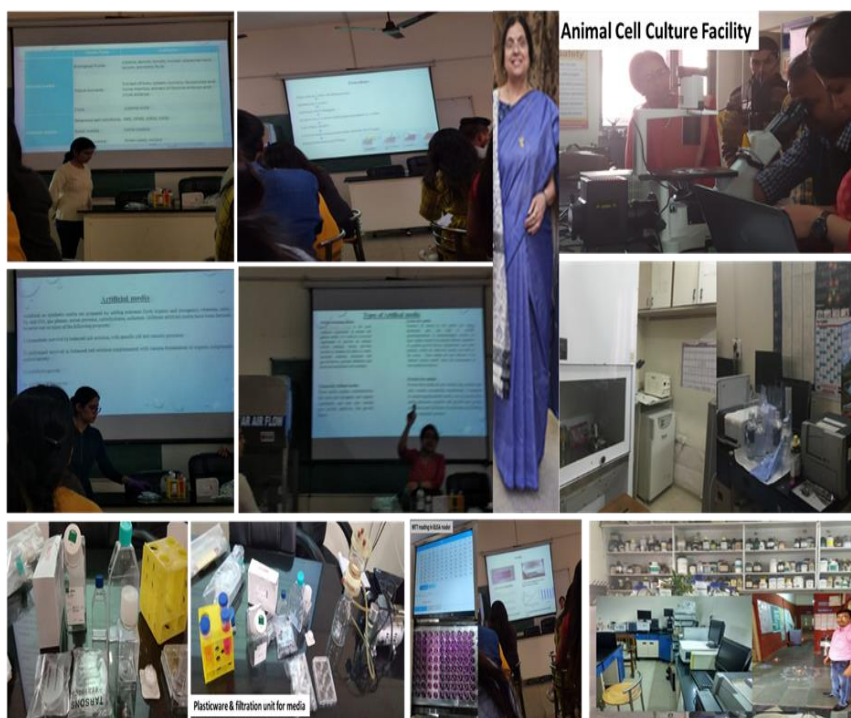
Workshop Organizer
Dr. Amod Kumar

Coordinator
DBT Star College Scheme
Dr. Anita K. Verma

Detail Report

The workshop was part of the Curriculum of B.Sc. (H) students and has helped students in their project. Around 60 students participated from shradhanand and Hansraj College, a few research scholars and faculty members from different colleges were present too. Dr Anita K. Verma, DBT Star Co-ordinator introduced and apprised the participants about the necessity of cell culture and its applications. Dr Amod, the organizer of the workshop gave a lecture on the Basic layout of an animal cell culture lab and emphasized on the specialized equipment required for cell culture. Zafar gave a virtual tour of the existing Animal Tissue culture Lab to each participant.

The workshop consisted of a brief theory session followed by hands-on experiments of essential techniques in animal cell culture including preparation of media and sterilization test, revival of cells from Liquid nitrogen (cell bank); sub-culturing and passaging; freezing of cells- Cryopreservation; Cell counting; Trypan Blue Cell Viability Assay and MTT Assay for proliferation/cytotoxicity that has become indispensable for most of the application areas of cell culture including drug development and cytotoxicity testing.

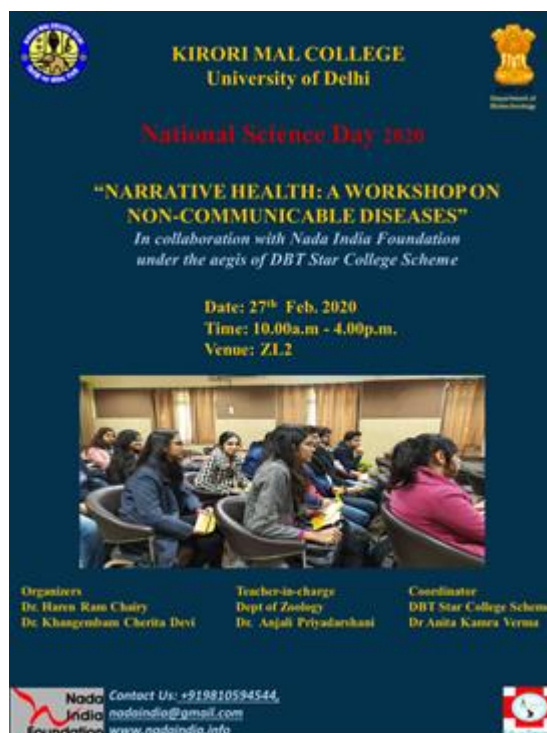


Collage of the various lectures given at the workshop.

Cell culture is also used to produce a significant proportion of biopharmaceuticals as well as monoclonal antibodies for diagnostic use. In addition, the use of animal cells is expanding in a wide range of other applications such as drug screening, tissue engineering, gene therapy, toxicology and traditional applications such as immunology, cell and molecular biology. Disha, Largee, Monika, Priyanka and Karishma assisted the participants and made it a highly interactive session with discussions on facilities, precautions, safety measures and ethical considerations that are critical for working in Animal Cell Culture laboratory. The participants were extremely happy and satisfied as per their feedback.

29. National Science Day Celebrations at Department of Zoology, K.M. College

On the occasion of “*National Science Day*”, Nada India Foundation organized a workshop on “Narrative Health” in collaboration with The Society of Biomedical Laboratory Scientists (SBMLS) India at Kirori Mal College, University of Delhi on February 27th,2020 for the students of B.Sc. (H) Zoology.



About 42 students participated in the six hour session that was conducted by Development professional & Nada India Focal Point Capacity Building, Ms. Jyotsna Roy and facilitated by Mr. Suneel Vatsyayan (Chairperson, Nada India), Ms. Pallavi V. (Project Director, Nada India) and Ms. Riya Thapliyal (Youth Catalyst cum Peer Counsellor, Nada India). The session was also briefly attended by Dr. S.D Mehta (President, SBMLS) and Dr. Sanjai Bhatt (Professor, Delhi School of Social Work DU)



The Guests being welcomed by Dr Sanjukta and Dr Anita K.Verma

[Detail Report](#)

The workshop commenced with the introduction of the guests by Dr Rana Samad welcoming team Nada. Dr Anita K. Verma, Coordinator, DBT Star and Dr Sanjukta presented the team with a token of appreciation. After Dr Verma had addressed the gathering, Ms. Thapliyal introduced the organisation and the cause they work for, i.e., prevention and/or early detection of non-communicable diseases as well as the purpose that brought them to Kirori Mal college

which is to train the students as health advocates and offer them a platform to take their health initiatives forward after which she invited Ms. Roy to commence the training. Through the next hour, Ms. Roy began a dialogue with the students, establishing the link between science and good health, inviting the students to share what “Good Health” meant to them. Responses from students covered the physical, mental, social as well as reproductive aspects of health highlighting healthy diet, appropriate water intake, physical activity, meditation as factors leading to Good Health.



Active participation of the students in the workshop on Good Health

“Good Health is attained when we stay away from diseases”, reflected one of the participants. Taking from this definition, for the purpose of this workshop, Ms. Roy divided “Diseases” into “Communicable Diseases” and “Non-Communicable Diseases (NCDs)” and spent the next hour discussing NCDs and their risk factors. She shared her journey as a person living with an NCD and invited the participants to share their journey either as a person living with an NCD or a person acting as a caregiver for someone living with an NCD through the activity “River of Life” wherein all the participants drew their respective timelines in the form of a river and later in groups discussed the similarities and differences in their stories. While the differences were subjective, similarities included failure in early detection of the diseases that led to worsening of the scenario, the burden of caregiving, etc. “We learnt what the similarities in our experiences were”, observed Umang, one of the student participants.

The students next moved on to create their own newspapers using articles that they found relevant in the discourse of “Good Health” in groups of 4, discussing among each other why an article should be placed at a specific spot and how it is adding value to the narrative on good health. While the students participated in the session, Mr. Vatsyayan conducted a focus group discussion with the faculty members in another room. Some of the points highlighted in that discussion by Dr. Rana Samad, Dr. Cherita, Dr. Haren Ram Chiary were regarding the Social immersion Programme/Opportunities that should be included for the students in the curriculum. Easy and affordable access to junk food around the college like at the cafes of the popular Hudson lane leads to unhealthy consumption and should be looked into by authorities.

To enhance employability, co-curricular activities like engagement with civil societies should be encouraged.



Good Health Narrative

While the faculty members discussed this, the students, after identifying the risk factors and establishing a relationship with NCDs, were shown a video of Malala Yousafzai as an advocate to transit into the session on advocacy.



Students watching video of Malala Yousafzai

Grand Finale

The participants identified traits and skills associated with advocacy from the video and were further provided with more knowledge and skills around the same. Upon being asked what they noticed in the video, one of the participants mentioned, “you shouldn’t be afraid to speak for your rights”.

In order to help them convert their learning into practice, they were asked to advocate for incorporating healthy food in the college canteen menu to a Minister (Mr. Sisodiya) in the form of an elevator pitch. Some of the points that the participants raised were: Unhealthy food items are cheaper than healthier food items, Hygiene in college canteens are considered secondary and Oil that is used was not clean.

Some of the suggestions that students offered to make their college canteen a healthy space were: Items like chhole-bhature should be replaced with healthier options like poha, Subsidize healthy food items, Organize seminars and health meetups to promote good health.

To conclude, the students were taught how to convert their ideas into initiatives and an internship was offered as a platform to run the initiatives.

Finally, Team Nada thanked all the faculty members, students and the staff at Kirori Mal College for their enthusiasm and participation and hopes to take the issues raised by the

students and teachers forward in the form of initiatives under their project *“My Community and I”* in an attempt to make our society a healthy space to live in.

30. Industrial Visit to Sun Pharma, Research and Development Centre, Gurgaon by students of Department of Chemistry on 28th Feb 2020

The Department of Chemistry, Kirori Mal College under the aegis of DBT Star college scheme organized an industrial visit to Sun Pharma, Research and Development Centre, Gurgaon on 28th February, 2020. Sun pharma which is one of the top world pharma companies in generic drugs production gave exposure to the students Around 50 students of B.Sc. (Hons) Chemistry participated. Students were introduced to various instrumentation techniques which play a significant role in examining the drug molecules.

Detail Report

Sun Pharma, a pioneer among Indian pharmaceutical companies, invests in research & development (R&D). Their core strength lies in our ability to excel in developing generics and technologically complex products through focused teams in formulations, process chemistry and analytical development.



Collage of students and teachers visit to Sun Pharma

Their scientists have expertise in developing generics, difficult to make technology intensive products, New Chemical Entities (NCEs), Active Pharmaceutical Ingredients (APIs), and Novel Drug Delivery Systems (NDDS). Their formulation expertise lies in the areas of taste masking, spray-drying, drug-layering, nano-milling, lyophilisation and other pharmaceutical unit operations that enable us to cater to various formulation design needs and concepts. The

ability to develop difficult-to-make, complex APIs by using the latest technologies is the key differentiating factor of our research.

The students were given a Lab-wise tour of the R& D centre. The working of all the instrumentation involved in drugs analysis, viz HPLC, GCMS, NMR, Mass spectrometry, TGA, SEM, UV, IR, ICP-MS etc. were demonstrated to students. The Students’ interaction session with the Scientists and staff working in industry provided them indepth knowledge about the significance of industry in nation development. The students were fascinated, had a great learning experience of both knowledge and technical skills in the area of analytical research and development. Further, they had a great exposure of quality and compliance systems.

31. Visit to National Science Centre by students of Department of Physics on 28th February, 2020

Undergraduate students of Physics Department along with three faculty members of Physics Department paid a visit to National Science Centre, New Delhi, on 28th February, 2020 to celebrate the National Science Day. Students had the golden opportunity to attend “Vigyan Samagam- Pushing the Frontiers of Science” the first Mega Science on-going Exhibition in India (21st January to 20th March, 2020). Participants attended a motivating lecture by Dr. Ananda Hota, a renowned Astrophysicist on “Interplay between star formation and active black holes”. The day was full of wonderful activities. The lecture was followed by “Science show” where many basic concepts of science were demonstrated, 3D show on the formation of Solar system and finally a Fantasy Ride- a virtual ride on the Great Wall of China. All in all, students had a fruitful day, exploring and widening their horizons beyond their classroom learning.





Visit of the Students and Faculty to the National Science Centre

32. आरोहण Regional Centre for Biotechnology Open Day: Outreach Program on National Science Day 28th Feb 2020.

The Regional Centre for Biotechnology organized an Outreach Program to celebrate the National science Day on 28th February, 2020. Four students from Department of Zoology, Kirori Mal College participated in the program.

UNESCO United Nations Educational, Scientific and Cultural Organization

RCB क्षेत्रीय जैवप्रौद्योगिकी केंद्र
Regional Centre for Biotechnology

आरोहण: RCB OPEN DAY
Outreach Program on National Science Day
28th February 2020

अभिव्यक्ति RCB SciComm: Science Narratives

अभिव्यंजना Debate Competition
"Is innovation in biotechnology hampered by over-regulation?"

आविष्कार Sketching & Skit Competitions
"Biotechnological innovations"

अनुसंधान RCB Research Displays & Facility Visits

Regional Centre for Biotechnology, NCR-Biotech Science Cluster,
3rd Milestone, Faridabad-Gurugram Expressway, Faridabad-121001
Contact us: rcb_openday@rcb.res.in; 0129-2848800

[Detail Report](#)

The students registered themselves for the program upon reporting to the venue and then attended a Lecture on the topic “Cancer – Is India ready to face the challenge?” by Dr Avinash Bajaj. The lecture enlightened the audience about how research can help us win the battle against Cancer, by introduction of various biotechnological innovations like Immunotherapy & CAR-T cell technology to name a few. The students then attended science narratives by the PhD scholars working in various research laboratories at RCB. The audience then dispersed for a short tea break. After the break students from different educational institutions attended a presentation on Cellular Dynamics by Dr. Sivaram VS Mylavarapu and also watched a movie on Cell Division & Inter-Cellular communication. Professor also enlightened the students about various academic programmes at RCB.

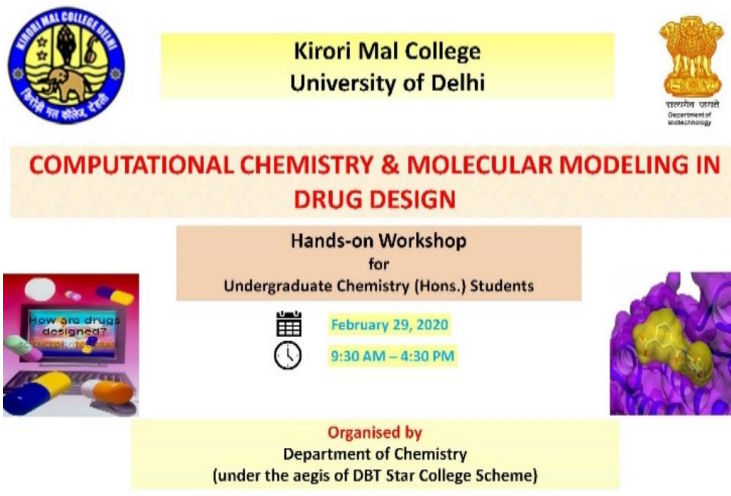


Various events at the Regional Centre for Biotechnology on National Science Day

The audience was dispersed for Lunch Break shortly after. RCB organised various competitions for students like Debate & Skit competition. The debate competition—अभिव्यंजन witnessed students debating whether Biotechnological Process is hindered by over regulation

or not. आविष्कार – the skit competition was based on Biotechnological Innovations and how they contribute to betterment of the society. The audience also visited various galleries by the research laboratories where models and exhibitions of the research work being undertaken were placed. The programme was indeed very enlightening for the students wherein they were acquainted with scope of research. The students were motivated to pursue Science in future and contribute to the well-being of the mankind.

33. Workshop On “Computational Chemistry & Molecular Modelling in Drug Design” on 29th Feb 2020



Kirori Mal College
University of Delhi

COMPUTATIONAL CHEMISTRY & MOLECULAR MODELING IN DRUG DESIGN

Hands-on Workshop
for
Undergraduate Chemistry (Hons.) Students

February 29, 2020
9:30 AM – 4:30 PM

Organised by
Department of Chemistry
(under the aegis of DBT Star College Scheme)

SESSION ONE Academic Auditorium

LECTURE 1 9:30 AM
A Beginner's Guide to Molecular Modeling
Prof. Rita Kakkar
(Department of Chemistry, University of Delhi)

LECTURE 2 10:30 AM
Molecular Modeling of Drug Molecules
Dr. Hemant K. Kashyap
(Department of Chemistry, IIT, Delhi)

SESSION TWO 12:30 PM – 4:30 PM Computer Lab 1 & 2

HANDS-ON TRAINING (Software: AVOGADRO)

Dr. Rakhi Thareja, St. Stephen's College
Dr. Shashwat Malhotra
Dr. Ruchi S. Pandey
Dr. Md. Mirajul Islam

Dr. Reena Saxena Co-ordinator Chemistry, DBT Star College Scheme
Dr. Sunil K. Singh Teacher In-charge
Dr. M. Ramananda Singh Convenor, Seminar Committee
Dr. Vibha S. Chauhan Principal

The Department of Chemistry, Kirori Mal College, under the aegis of the DBT Star College Scheme, recently organised a one-day Hands-on Workshop on “Computational Chemistry and Molecular Modelling in Drug Design” on **29th Feb 2020**. In today’s world, the applications of computers in chemistry are revolutionising the drug discovery and life sciences in a huge way, and it is important for students to be well versed with the molecular modelling techniques. The workshop was conducted in two sessions. Session I was a two-lecture series, while Session II was a hands-on session for the B.Sc. Chemistry (Hons) students conducted in the Computer labs.

[Detail Report](#)

Session 1 started with a note by Dr. Reena Saxena, Coordinator-Chemistry, DBT Star College Scheme, where she enlightened the participants about the need for understanding molecular modelling for drug designing, especially in the wake of worldwide scare by Corona Virus. This was followed by a very informative talk by Prof. Rita Kakkar from the Department of Chemistry, University of Delhi, on the topic “A Beginner’s Guide to Molecular Modeling”. The second lecture in the series was another very interesting session by Prof. Hemant Kashyap from the Department of Chemistry, IIT, Delhi, on “Applications of Computational Chemistry to Drug Design”. Both the sessions were compendious and introduced our students to the world of Molecular Mechanics and Computational Chemistry with special attention on its applications in the field of pharmaceutical design. This was followed by a brief introduction to the hands-on session by Dr. Rakhi Thareja, Assistant Professor, Department of Chemistry, St. Stephens College.



Eminent Speakers for the first session

Session 2 started in Computer labs and students were introduced to the magical world of molecular modelling using the freeware software Avogadro by Dr Ruchi S Pandey, Dr Shashwat Malhotra and Dr Md. Mirajul Islam, Assistant Professors, Department of Chemistry. PhD Research scholars, Aditya and Monika from IIT, Delhi helped students to run exercises on Molecular Modelling using Avogadro’s software. The students were taught how to build several drug molecules, learnt about various force fields and understood how to arrive at geometry and energy minimised structure of drugs. They also acquired the skill to build DNA and RNA fragments and double-walled carbon nanotubes as carriers for drugs.



Collage of the various speakers and Hands-on practice for Session 2

34. Microbial Culture Room

A separate microbial culture room was partitioned in the room adjacent to the Biotechnology lab in the Department of Botany. Biosafety cabinet purchased from DBT star college scheme account is installed.

35. DBT Sponsored Two-Day Conference on “Nanobiotechnology: Human Health and Environment -(NHHE-2020): Small molecule-Big Opportunities!! On 27-28th March, 2020, was organized by Department of Botany & Zoology

Postponed due to Coronavirus!!

About the college

Kirori Mal College is an institution of academic excellence, established in 1954, provides our students an environment rich in knowledge and supportive of their extracurricular interests. The college encourages a quest for knowledge that is rooted in an ethical understanding of the world that we inhabit. College takes pride in its past achievements and looks to the future with great hope and determination.

About the Conference

We are very pleased to announce that Department of Botany and Zoology of Kirori Mal College, are organizing a **DBT Star College Scheme Sponsored Two-day National Conference on "Nanobiotechnology-Human Health and Environment (NHHE-2020)"** on **26th-27th March 2020** at VPCI Auditorium, University of Delhi, Delhi.

The conference aims to identify the paths between fundamental research and potential applications of nanotechnology in health care and environment. The conference has an innovative program amalgamating scientific sessions and a capacity building program for students to aid them in undertaking translational research.

This two-day national conference will consist of stimulating program of plenary sessions, Oral and poster presentations and interactive sessions for students. This conference will bring together leading researchers, from both academia and industry, to share their recent findings on a range of topics.

Scope and theme

The ultimate goal of any scientific development is to increase well-being and human health. This conference will provide opportunities for exchange of ideas, scientific knowledge and experience among researchers, academicians, scientists and students from Biology, Chemistry, Medical and Computational field. Updating the community on the most recent works and building new links between disciplines enables discussion and new collaborations. This conference will provide a platform to undergraduates, post graduates, Ph.D scholars to interact with researchers and eminent scientists working in the field of Nanobiotechnology.

Broad Areas to be covered but not restricted to

- 1. Nanomedicine in Drug Delivery System**
 - Health Care & diseases
 - Biomaterials and Medical devices
 - Molecular & Pharmaceutical Nanobiotechnology
- 2. Nano-biosensors and Tissue Engineering**
 - Diagnostics for health monitoring
 - Enzyme-based biosensors & Immuno-sensors
 - Sensors for environment monitoring
- 3. Environmental Nanobiotechnology**
 - Phyto-formulations; Biosynthesis & characterization
 - Nanoscale nutrients for agricultural applications
 - Nanoscale materials in food packaging
 - Bioremediation
- 4. Regulatory Nanobiotechnology**
 - Nano-Informatics: computational approaches to enhance nanosafety and advance nanomedicine
 - Nano-Toxicology
 - Nanobiotechnology - Regulatory Issues
- 5. Health hazards and Environmental containment**



DBT Sponsored Two-Day Conference on "Nanobiotechnology: Human Health and Environment -(NHHE-2020)"
Small molecules-Big Opportunities!!

26th -27th March, 2020

Organized by
Department of Botany & Zoology



Kirori Mal College
University Of Delhi
NAAC Accredited A+ College

VENUE
Vallabhbai Patel Chest Institute
Auditorium (VPCI)
University of Delhi, Delhi-110007

Important Dates
Registration: 15th March-25th March, 2020
Abstract submission: 15th March, 2020
Abstract Acceptance: 20th March, 2020

DBT Sponsored Two-Day Conference on "Nanobiotechnology: Human Health and Environment -(NHHE-2020)"
Small molecules-Big Opportunities!!
Organized by
Department of Botany and Zoology
Kirori Mal College
University of Delhi

Registration form

Name of the participant
Designation.....
Occupation.....
Age.....
Address.....
Postal zip..... Mobile no.....
Email.....

Registration	Early Bird 20-03-2020	On Desk 26-03-2020
Faculty/ Scientists	Rs 1000	Rs 1200
Students/Research Scholar	Rs 500	Rs 750
Industries/R. & D	Rs 5000	Rs 6000
Foreign Delegates	\$ 75	\$ 100

Acceptance Notification :20th March 2020
Please mail registration form to
Email: nhhe-2020@gmail.com

Important Dates
Registration: 15th March-25th March, 2020
Abstract submission: 15th March, 2020
Abstract Acceptance: 20th March, 2020

Invited Speakers:

Dr. Amulya Panda (Director, NII)
Prof. V. S. Chauhan (Chairman, NAAC)
Prof. Y. K. Gupta, Pharmacology, AIIMS
Prof. Amit Dinda, Medicine AIIMS
Dr. Rajni Rani (Consultant, DBT)
Dr. Alok Adhuleya, Director, TERI
Dr. R. S. Jayasree, (Sree Chitra Tirunal IMS&T)
Dr. Anu T Singh (Dabur)
Dr. Sushma Talegoankar (DIPSURU)
Dr. Neetu Singh IITD

Conference Highlights
AWARDS for Best Poster
Best Oral Presentation

Patron

Dr. Vibha S. Chauhan

Convener

Dr. Anita K. Verma
Dr. Renu Kathpalia

Organizing Coordinators

Administrative: Dr. Anjali Priyadarshani
Dr. Ram Babu

Scientific: Dr. Sanjukta Das
Dr. Sunil K. Dhiman

Program: Dr. Gauri Garg
Dr. Rajni Gupta

Executive Committee

Dr. I.M. Lukram
Dr. Amod Kumar
Dr. Haren R. Chauriy
Dr. Nidhi Paliwal
Dr. K. H. Cherita
Dr. Rana Samad

Dr. Vibha G. Checker
Dr. Archana Singh
Dr. Maya
Dr. Leena Shakya
Dr. Saloni
Dr. Yamal Gupta

National Advisory Committee

Prof. K. N. Ganesh (Director, IISER Tirupati)
Prof. Vinay Gupta (University of Delhi)
Dr. Alok Adhuleya, Director, TERI
Prof. K.S. Rao (University of Delhi)
Prof. Savita Yadav (AIIMS, New Delhi)
Prof. P.K. Khanna (DIAT-Pune)
Prof. Divya Vohora (Jamia Hamdard University)
Prof. Rupinder Singh (Punjab University)
Prof. Umesh Rai (University of Delhi)
Prof. M.M. Chaturvedi (University of Delhi)
Dr. Lily Ganju (DIPAS)
Dr. Anil K. Mishra (INMAS)
Dr. Durba Pal (IIT Ropar)
Dr. Kapinder Kumar (Gorakhpur University)

Call for papers/poster

Abstracts of review/original research work are invited from interested Researchers/Research Scholars/Students for poster/oral presentation that are based on the theme of conference and allied areas latest by **15th March 2020**. Abstract of about 300 words in MS Word format (Times New Roman, Font size 12 and 1.15 line spacing) stating the name of presenting author (mark with asterisk) and affiliations of all authors, and should be submitted to the **Scientific Coordinators** by email at nhhe2020@gmail.com

Payment can be made online through NET Banking, NEFT, or Demand Draft drawn in favor of **Principal, Kirori Mal College, University of Delhi, Delhi**
Account Number: 51522010003240
Name of Bank: Oriental Bank of Commerce
IFSC code: ORBC 0105152

Receipt of payment can be emailed at the above address

36. Two-day Online Hands-on Workshop on "Computational Chemistry and Molecular Modeling in Drug Design", held on 19th-20th May, 2020 organised by Department of Chemistry

A two-day Online Hands-on Workshop on "Computational Chemistry and Molecular Modeling in Drug Design", on 19th-20th May, 2020 via the zoom platform. The two-day workshop familiarized the B.Sc. Program students with basic concepts of molecular modeling and hands-on experience on using a molecular modeling mobile App, Mo3.

Detail Report

Day 1 started with a note by Dr. Reena Saxena, Coordinator-Chemistry, DBT Star College Scheme, where she enlightened the audience about the need for understanding molecular modelling for drug designing, especially in the wake of worldwide scare by Corona Virus. This was followed by a very encouraging note by our respected Principal, Dr. Vibha S. Chauhan, who graced the event with her benign presence. Dr. Anita Kamra Verma, Program

Coordinator, DBT Star College Scheme, also motivated the students and told them about the importance of such workshops. In today’s world, the applications of computers in chemistry are revolutionizing the drug discovery and life sciences in a huge way, and it is important for students to be well versed with the molecular modelling techniques.

This was followed by a lecture by **Dr. Rakhi Thareja**, Assistant Professor, St. Stephen’s College, University of Delhi, on the topic “**A Review on Molecular Modeling**”. The second lecture in the series was by **Dr. Reena Saxena**, where she introduced the mobile app ‘**Mo-cubed**’ to the students and guided them on how to download and install it on their smart phones. Both the lectures were very informative and introduced our students to the world of Molecular Mechanics and Computational Chemistry with special attention on its applications in the field of pharmaceutical design.

On Day 2, **Dr. Ruchi S. Pandey**, Assistant Professor, Chemistry, Kirori Mal College, gave a detailed demonstration on how to use the Mo3 mobile app for molecular modelling and computations and also correlated these exercises with the academic concepts. Students not only made models of simple drug molecules but also calculated various geometrical and energetic parameters of the same and also computed the IR spectra of the molecules. **Dr. Shashwat Malhotra**, Assistant Professor, Chemistry, Kirori Mal College, then helped the students understand the IR spectrum in details vis-à-vis concepts from organic chemistry. Post the demonstration, the students shared their views and feedback on the workshop and appreciated the multi-disciplinary nature of the field.

Kirori Mal College
University of Delhi

COMPUTATIONAL CHEMISTRY & MOLECULAR MODELING IN DRUG DESIGN

Online Hands-on Workshop
for
B.Sc. (Programme), Semester VI Students

May 19-20, 2020
3 pm – 4 pm

Organised by
Department of Chemistry
(under the aegis of DBT Star College Scheme)

May 19th, 2020
3:00 pm – 3:30 pm
LECTURE: Introduction to Molecular Modeling
Dr. RAKHI THAREJA
Department of Chemistry,
St. Stephens College, University of Delhi

3:30 pm – 4:00 pm
Download and Demonstration of Mobile App
for Molecular Modeling
Dr. REENA SAXENA
Department of Chemistry,
Kirori Mal College, University of Delhi

May 20th, 2020
3:00 pm – 4:00 pm
Hands-on Training for Drug Designing
•Dr. SHALINI BAKI
•Dr. SHASHWAT MALHOTRA
•Dr. RUCHI S. PANDEY
Department of Chemistry,
Kirori Mal College, University of Delhi

Register before 17th May 2020 at <https://forms.gle/2UODMtoztaJ8y5zo0>

System Requirements: Mobile Device with Android 5.0+ or iOS 9.0+ with Internet Connectivity

Teacher in charge
Dr. Akhilesh Bharti

Co-ordinator-Chemistry
DBT Star College Scheme
Dr. Reena Saxena

Patron
Dr. Vibha Singh Chauhan
Principal
Kirori Mal College

Convener, Seminar Committee
Dr. M. Ramananda Singh

Glimpses of Two-day Online Hands-on Workshop on “Computational Chemistry and Molecular Modelling in Drug Design”, held on 19th-20th May, 2020

37. Webinar on “Colors of Nature” on 22nd August, 2020, organised by Department of Botany

A webinar on “Colors of Nature” was organised by Department of Botany, Kirori Mal College on 22nd August, 2020 under the aegis of DBT Star College Scheme. The speaker of the lecture was **Dr. Gita Mathur**, Retired Associate Professor, Gargi College, University of Delhi. It was attended by more than 100 participants including students and faculty.


Detail Report

The session began with encouraging words of Principal, Dr. Vibha Singh Chauhan and introductory remarks of project coordinator Dr. Anita Kamra Verma. The speaker was introduced by Dr. Rajni Gupta. The lecture provided visual virtual treat and detailed many aspects of the intricacies of colours. Plants and animals acquired variable colors for a purpose. The talk began with basic concepts related to colours including merging of colours, viewing colours by human eye, the concept of photoreceptors. Insights about human vision spectra and insect vision spectra were also shared. The speaker enriched our knowledge about various biochromes and color psychology. Chlorophylls, carotenoids, flavonoids and anthocyanins were discussed in detail. The speaker made the talk interesting for students by suggesting simple experiment for making indicator from red cabbage. The session was appreciated by all the attendees and ignited queries in enthusiastic minds. All the queries were answered by Dr. Gita Mathur. The session concluded with vote of thanks by Dr. Renu Kathpalia.

DEPARTMENT OF BOTANY
KIRORIMAL COLLEGE
NAAC ACCREDITED GRADE 'A'
UNIVERSITY OF DELHI

UNDER THE AEGIS OF DBT STAR COLLEGE SCHEME
ORGANISES
WEBINAR ON
COLORS IN NATURE

SPEAKER

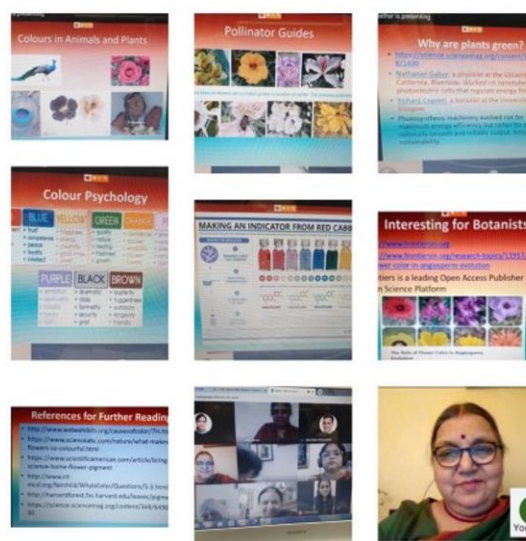


DR. GITA MATHUR
ASSOCIATE PROFESSOR (RETD)
GARGI COLLEGE
UNIVERSITY OF DELHI

JOIN VIA GOGLE MEET APP

DATE : 22 AUGUST 2020 **TIME: 3-4:30 PM**

Dr.Vibha S.Chauhan Principal
Dr.Anita K.Verma Coordinator
DBT star college scheme
Dr. Renu Kathpalia Botany Coordinator
DBT star college scheme
Dr.Rajni Gupta Convener



Glimpses of lecture and presentation by Dr. Gita Mathur

38. Webinar on “Diagnostic & Therapeutic Approaches to Covid-19” on 3rd September, 2020, organized by Department of Zoology



Kirori Mal College
NAAC Accredited A+ grade
Department of Zoology
under the aegis of DBT Star College Scheme

Presents Webinar on

“Diagnostic & Therapeutic Approaches to Covid-19”
by
Dr. Imtaiyaz Hassan,
Center for Interdisciplinary Research in Basic Sciences,
Jamia Millia Islamia,

Organized by
Department of Zoology

3rd September, 2020
Venue : Google meet
<https://meet.google.com/qrn-xtbd-bjs?authuser=0&hl=en>
Time: 11am-12.30pm

Dr. Sanjukta Das
Teacher-in-charge
Dr. Kh. Cherita Devi
Webinar Organizer

Prof. Vibha Singh Chauhan
Principal

Dr. Anita K. Verma
Program Coordinator

The Department of Zoology organized a webinar entitled “Diagnostic & Therapeutic Approaches to Covid-19” on 3rd September, 2020, under the aegis of DBT star College Scheme. Dr Imtaiyaz Hussan from Centre for Interdisciplinary Research in Basic Science, Jamia Milia Islamia gave a lucid talk on the diagnostic aspects of Covid-19. About 100 students attended from all over India.

39. Webinar entitled “Machine Learning and Data Science for Biologist” on 4th September, 2020

The Department of Botany organized a webinar entitled “**Machine Learning and Data Science for Biologist**” on September 4th, 2020 under the aegis of DBT Star College Scheme. The very passionate and talented Dr. Gitanjali Yadav, scientist NIPGR, and lecturer at the University of Cambridge was the speaker for the day. More than 900 participants registered for the webinar. Microsoft Teams platform was used wherein live streaming of the event was arranged to give access to all the participants.

Detail Report

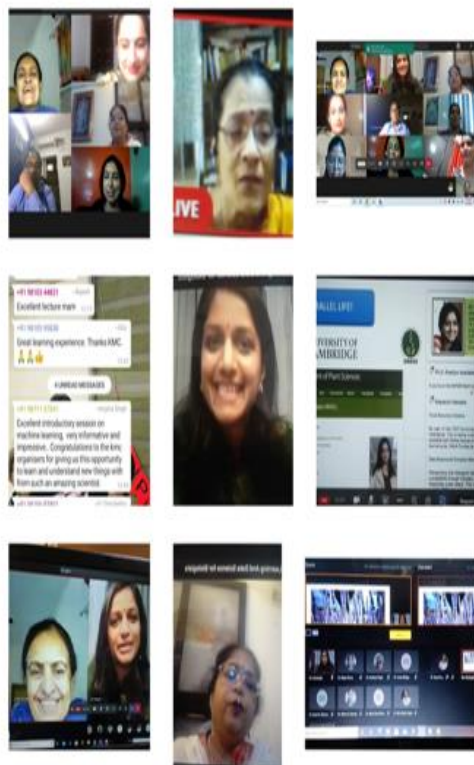
The webinar commenced at 11:30 am by the welcoming words of Dr. Renu Kathpalia, Botany Coordinator, DBT Star College Scheme, which was followed by a formal welcome of all the participants by Dr. Rajni Gupta. Thereafter, our principal ma’am, Dr. Vibha Singh Chauhan addressed the participants with her encouraging words. The program proceeded with the briefing about the DBT program by Dr. Anita Kamra Verma, Program Coordinator, DBT Star College Scheme. After the formal introduction of the speaker for the day Dr. Gitanjali Yadav

by Dr. Renu Kathpalia, the lecture began with the basic concepts of machine learning. Dr. Yadav talked about how we are connected to **Machine Learning (ML) and Artificial Intelligence** in our daily lives by giving realistic examples such as weather predictions, amazon customer service, GPS application, and many more. She also explained how machine learning can be used for converting text descriptions of plants into images. She then talked about The Indian Agritech Sector, digital agriculture and the importance of data science in the agriculture sector. She also described the four types of machine learning systems available which can be used for biological data analysis. The application of ML analysis to find out the influence of different environmental conditions on the biochemical compounds in the plants was explained by citing case studies from her own research work. She informed the students about various hands-on courses on ML and data sciences available online. Indeed, the talk was very informative and engaging; it also kindled many queries in young minds. The program culminated with a questionnaire session conducted by Dr. Sunil K. Dhiman. All the questions were amply answered by Dr. Gitanjali. The program was highly appreciated by all the participants. The program concluded by formal vote of thanks by Dr. Renu Kathpalia. E-Certificates were provided to all the participants for attending the webinar.

Kirori Mal College
Department of Botany
University of Delhi
(under the aegis of DBT Star College Scheme)
Presents
Webinar
On
Machine Learning and Data Science for Biologists
Dr. Gitanjali Yadav, Scientist, NIPGR
Lecturer University of Cambridge

Date: 4th September 2020
Time: 11:30 am
Venue: Google meet

Dr. Vibha S. Chauhan, Principal
Dr. Anita K. Verma, Program Coordinator
DBT Star College Scheme
Dr. Renu Kathpalia, Coordinator Botany
Dr. Ram Babu, Teacher-in charge, Department of Botany



Glimpses of the webinar on “Machine learning and data science for biologist”

40. Webinar on “Multifunctional Nanomaterials for Advanced Applications in

Healthcare” held on 16th September, 2020

A webinar on “**Multifunctional Nanomaterials for advanced application in health care**” under the aegis of DBT star college scheme on 16th September 2020. The guest speaker, **Prof. Indrajit Roy** from the Department of Chemistry, University of Delhi gave a very stimulating and compendious lecture on this very relevant topic in the recent times when the world is living through a pandemic. There were around 120 audiences comprised of undergraduate students from our college and from other colleges along with several faculty members.

Detail Report

Principal, Dr. Vibha Singh Chauhan welcomed the guest speaker, **Prof. Indrajit Roy** from the Department of Chemistry, University of Delhi along with the DBT Star Scheme Coordinator Dr. Anita Kamra Verma. Prof. Roy familiarized the students with the various aspects of quantum confinement in understanding the structure and properties of nanoparticles and then went on to explain their relevance in targeted drug delivery in cancer treatments and respiratory disorders. The students were enthralled and asked several interesting questions. The webinar ended with a formal vote of thanks.

Kirori Mal College
NAAC ACCREDITED GRADE 'A+'
University of Delhi

DEPARTMENT OF CHEMISTRY
UNDER THE AEGIS OF DBT STAR COLLEGE SCHEME

PRESENTS WEBINAR
on
**MULTIFUNCTIONAL NANOMATERIALS FOR
ADVANCED APPLICATIONS IN HEALTHCARE**

Speaker: **Dr. INDRAJIT ROY**
ASSOCIATE PROFESSOR
DEPARTMENT OF CHEMISTRY, UNIVERSITY OF DELHI

16th September, 2020
12.30 – 1.30 PM

Join via: meet.google.com/ue-huwm-fad
Register via: <https://forms.gle/YGCMHQFL1Tj5TVR5S>

Dr. Akhilesh Bharti
Teacher In-charge
Dr. M. Ramananda Singh
Convener, Seminar Committee

Dr. Reena Saxena
Co-ordinator-Chemistry,
DBT Star College Scheme

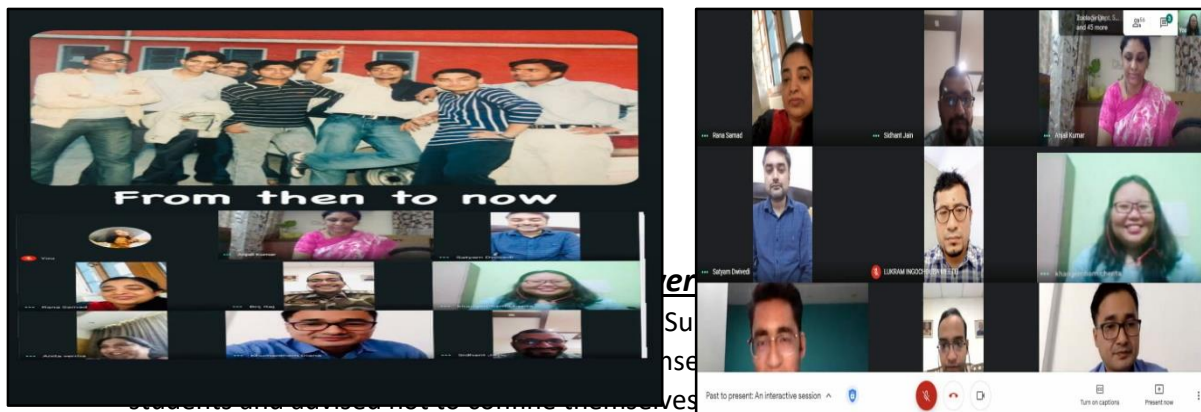
Dr. Anita K. Verma
Program Coordinator
DBT Star College Scheme

Dr. Vibha S. Chauhan
Principal
Kirori Mal college

Glimpses of the webinar “Multifunctional Nanomaterials for Advanced Applications in Healthcare”

41. Alumni meet “Past to Present: An Interactive Session with Departments’ alumni from different walks of life” organized by Department of Zoology on 26th September, 2020

On 26th September 2020, Biocenoze and DBT Star College scheme conducted an online webinar on Career Guidance for the students, **Past to Present**. They got the opportunity to interact with distinguished alumni of the department from different walks of life. The online session was carried out successfully under the guidance of the coordinators **Dr. Anjali Priyadarshini** and **Dr. Khangebam Cherita Devi**.



2) Mr. Saurabh Srivastava [Canara Bank, Branch Manager]

The knowledgeable speaker provided the students a better understanding about the career prospects in Business & Management and required qualifications for the same.

3) Mr. Brij Raj [Assistant Commandant, CASO CISF, Kanpur airport]

The students were enlightened by Brij Raj sir about career options in the Armed Forces.

4) Dr. Satyam Dwivedi [Assistant professor, DU]

Students learned about the various options available in Academic career.

5) Mr. Sidhant Jain [Entrepreneur & Scientific author]

Speaker shared information about higher academic qualifications in science and how one can balance passion & profession while choosing a career.

6) Mr. Neeraj Dev [Assistant Commissioner & Registrar] Sir emphasized on the relevance of focusing on the present & giving your best in anything you do, excellence in future will follow.

The session was not just about various career prospects, rather discussed a holistic approach while deciding on a profession. A personal touch on the journey of the speakers since under graduation helped students relate to them and allowed them to imbibe the words more efficiently. The session was immensely successful in bringing together alumni of the department & enlightening students through their experiences.

51. An Online Faculty Development Programme on “Innovation in Scientific Research Methods” was organised by Kirori Mal College from 14th -18th October, 2020 under the aegis of DBT Star College scheme.

A five-day online faculty development programme was organized by department of botany, chemistry, physics and zoology was organized on “Innovation in Scientific Research

Methods". The objective of this FDP was to enable the participants to define, design the research problem and to identify suitable approach to solve the problem. Around 130 Faculty members from different university of all science disciplines participated in the FDP on . The participants were given assignment based on the lecture of day and e-certificate of participation was given to all the participants.

Detail Report

DAY 1 (14th October, 2020)

Google meet: <https://meet.google.com/rkw-sobh-opa>

Session 1

Dr. Balram Pani (Dean of Colleges, Principal, BCAS, University of Delhi) discussed about the Innovative research at college level. He mentioned that 99% ideas are old and emphasised the need for innovative ideas and research in India. He inspired the participants by giving examples of innovative DNA test kit and Air pollution kit developed by scientists. He advised the participants to work on aim, objectives, interest and methodology of the project. He further suggested that methodology used should not be more than 10 years old. The speaker was thanked for the insightful lecture by Dr Reena Saxena (Chemistry Coordinator, DBT Star College Scheme).

Session 2

The next enriching lecture for the day was by **Dr. Paramjit Khurana** (Department of Plant Molecular Biology and Biotechnology, South Campus, Delhi University) on '**The art of scientific writing and presentation**'. Dr Anita Kamra Verma introduced the speaker to the participants. Dr. Khurana highlighted the role of good work (without compromise, shortcut, magic or luck) and emphasized on passion and commitment for work. She indicated the paramount role of planning/assembling the data before starting writing the paper. Dr. Paramjit Khurana provided valuable insights on how to write a research paper mentioning about the details of writing style and content to be included in title. abstract, introduction, materials and methods, results and discussion. She further highlighted ethical issues involved in paper writing. The speaker also guided the participants on the art of oral communications, highlighting the role of voice modulation, body language, appearance, and communication with the audience. She told the participants about her work on mulberry, engineered to use less water; and wheat, engineered to be temperature tolerant. Dr. Khurana was thanked for her enlightening lecture by Dr. Renu Kathpalia (Botany Coordinator, DBT Star College Scheme).

Day 2 (15th October, 2020)

Google meet: <https://meet.google.com/rkw-sobh-opa>

Session 1

Prof. Shashank Deep, Department of Chemistry, IIT, New Delhi spoke on **Instrumentation, Data Analysis & Interpretation**. He briefly mentioned about the different types of techniques used for surface analysis (such as STM, AFM, AES, XPS), nuclear analysis (Liquid Scintillation Counting, Neutron Activation Analysis) and separation techniques (such as GC, HPLC, Ion Chromatography) and the type of information that can be obtained by using these techniques. He also discussed about the different types of atomic spectroscopies, their uses, limitations, strengths, and applications.

Prof. Deep discussed about the difference between terminologies such as sensitivity, specificity and selectivity, between accuracy and precision, which are very often used interchangeably by the researchers. He talked about the width of the peak and how it effects the resolution of the techniques, and gave example of UV-Vis spectroscopy and NMR. He also emphasized that while using/buying an instrument it's important to know the make as the different makes have different sensitivities and different application, sensitivity and accuracy. Not only the instruments are important but the data that is provided by the instruments should be handled and reported properly, and importance of statistical analysis as true value is rarely available and confidence limit associated with the limit.

Prof. Deep illustrated variation in large data sets and distribution of random errors and what is the importance of confidence limit in small data sets. He also explained various Error Analysis related to experimental methods. The things were explained simply, nicely and in a very lucid manner. Towards the end speaker comprehended all methods discussed in the talk by comparing same results with different methods and made them interesting by taking examples from daily life.

Session 2

Dr. Charu Lata, Assistant Professor, National Institute of Science Communication and Information Resources (CSIR), New Delhi, gave lecture on **“Science Communication for Academicians-the Way Forward”**. Dr. Charu discussed about the importance of good communication ability in science for not only good publications, but also for writing research proposals, and for effective teaching and mentorship. Then she discussed the effective ways of Science Communication and various platforms other than journals where researchers can present their ideas and report findings. She even presented the data about the major modes of communication used by scientific community, which included Journals (73%), Conference Proceedings (6%), Patents and Specifications (16%), Dissertations (2%), Technical Reports (2%) and Books (1%).

Dr. Charu in her enlightening talk discussed ‘What is not a research Paper?’ and what does the referees look in a paper so that the paper qualifies as a research paper. She emphasized that Novelty, Positioning, Soundness of Procedure, Evidence to support claim and overall coherence are the essential components of a research paper. Other than this it is important for the researcher to maintain certain attributes such as urge and commitment to do good work with sincerity and patience; and that too ethically with honesty.

Dr. Charu educated the audience about the editorial process that is followed in publication of research articles. She again reiterated the importance of communicating in a language that is understood by the target audience and gave certain tips for the same. She underlined the importance of narrating the scientific communication as a story with use of anecdotes at required places, to keep the interest of the readers/target audience alive. Towards the end of the lecture, mentioned about the various published by CSIR-NISCAIR, and how researchers can publish in their findings in these journals through the online portal.

Day 3 (16th October, 2020)

Google meet link: <https://meet.google.com/rkw-sobh-opa>

Session 1

Prof. Suman Lakhanpaul, Department of Botany, University of Delhi, spoke on the topic **“Science and Research-A Philosophical Perspective. Why Philosophy?”** The speaker started with the etymology of the word Philosophy meaning “love of Wisdom” and discussed how ‘knowledge’ is a complex cognitive process and how can it be acquired. She also mentioned the levels of knowledge and how one moves from ‘unknowns unknowns’ to ‘known unknowns’ to ‘known knowns’ during the course of research.

Prof. Lakhanpaul also underlined the difference between data and information and how the data can be made to useful information by a cognitive observer/researcher and they become the creators of knowledge. But the role of the role of a teacher is beyond that and they are the communicators of knowledge. Subsequently the speaker discussed about “What is a good research question?” and what are the key points that should be kept in mind while framing the research problem. Prof. Lakhanpaul talked about the ‘honest mistake’ by some most prominent scientists. And how even though the observations are correct but the inferences are incorrect and discussed the Pauling’s Triple helix model. She also discussed the dilemmas and conflicts at organizational level, people in power, peer pressure, publication race that confront the researchers. Prof. Lakhanpal discussed the importance of open-mindedness and the quest for truth and knowledge, which are the basic rules for scientific work.

Session 2

Prof. T.R. Seshadari, Department of Physics and Astrophysics, University of Delhi, gave lecture on the topic **“Role of Serendipity in Research”**. Prof. Seshadari in a very interesting and enthusiastic manner discussed the various discoveries that happened by serendipity. He started with the discussion on the ‘Strange behaviour of the orbit of Uranus’ and how Neptune was discovered confirming this. Next he mentioned the ‘Story of the δ -Cephe and similar stars’ which don’t have constant brightness. Prof. Seshadari mentioned the role of Henrietta Swan Leavitt in making mathematical calculations noticed a pattern and provided a yardstick to measure the distance to objects in the cosmos and it is on this cosmology rests. This set the stage for ‘Hubbles’s Curiosity and distance to Nebula’ and led to the realization that Universe is much more than milky way, leading to the birth of Extragalactic Astronomy.

Among the other discoveries the speaker discussed the Consequences of Hubble’s Law. He also discussed about Precise Astronomical Clocks and how Hewish got the Noble Prize for the same but not his student Jocelyn Bell who provided the data and observations for them. Prof. Seshadari concluded his talk highlighting some of the most famous “accidental” discoveries were made by the scientists who had been working to solve problems for a long time. Therefore, luck favors those who are ready to respond to it and all the hard work one does is the preparation for receiving that luck.

Day 4 (17th October, 2020)

Google meet <https://meet.google.com/rkw-sobh-opa>

Session 1

Dr. Anil K. Mishra, Institute of Nuclear Medicine and Allied Sciences, DRDO presented his talk on the topic “**Chemistry Clinicians and Cure through Innovative Research**”. When chemistry and clinicians work together it will bridge the gap between researchers at Kirori Mal college and the scientists working in organization to work for humanity. It is important that basic scientists, clinician scientists innovate something that can save human lives. Then he discussed about the cancer as a cellular, molecular, genetic and developmental disease and the importance of specific markers that help in early diagnosis. Copper has isotopes starting from 52 to 83 with half-life from one hour to one year and determines the usage for various applications. Prof. Mishra with the help of structures explained how Copper can bind to albumin with a stability constant of 16.2, and therefore, it is important to select the correct isotope viz. Cu-62, Cu-64, Cu-67 for imaging and therapy, where copper does not bind to albumin under physiological structure. With the help of visuals, he also demonstrated the markers modulated with Antibodies, peptides or proteins with heavy molecular weight to enhance the retention time. He showed that use of certain antibodies with Cu 64 makes it specific for tumors and does not bind non-specifically.

Second case study presented by Prof. Mishra was that of Cholecystokinin (CCK). CCK exert digestive and CNS related physiological signaling via CCK receptors (CCKR) in brain and guts and binds to number of tumors. He narrated that while looking for the natural sources of CCKR it was found that Asperlicin and Indolylcarboxamide isolated from *Aspergillus* mimics Tryptophan and find clinical applications. Speaker also mentioned the animal sources of CCKR coming from Cod backbones, North Atlantic lean fish skin and Sardine heads. Prof. Mishra talked about how the different pharma companies try to make system that can mimic nature and can find clinical applications. Audience was also introduced with the latest i.e., the Cocktail Probes. The maintain the binding constant to be same in ex vivo as well as in vivo condition is the biggest challenge.

Session 2

Prof. Kirti Ranjan, Department of Physics and Astrophysics, University of Delhi, spoke on “**Role of Mentor in Research**” Dr. Ranjan emphasised the role of mentor and kicked off the lecture by stating that mentor involves more than personal and pastoral relations. It is beside interaction relevant to the student’s professional development and looks into student as complex human being, and is aware of his hopes, dreams and inspirations. And thus, the role of a mentor is larger than that of a supervisor. Prof. Ranjan highlighted that it is important to realize that the supervisor’s role need to be that of a mentor also, as a Nature’s 2019 graduate survey revealed that 36% of the respondents sought help for anxiety or depression caused by Ph.D. studies.

Prof. Ranjan mentioned about the Nature’s award for mentorship which can bridge the gap between the mentor and mentee and helps mentor to reflect on what comprises good mentoring. Speaker re-emphasized that the role of a mentor is to help mentee build his/her career. He discussed few attributes from the Nature’s surveys and reiterated that the majority of mentees

believed that advice of mentors continued to be valued for life, friendship grew and the links were maintained even after supervision.

The speaker also discussed certain attributes that are essential to be a good mentor, which included passion, enthusiasm and positivity for student's research. Prof. Ranjan said that the mentors need to be sensitive to mentees and to find the reasons for their unusual behaviour, unachievable targets, slow progress of work. The mentors should look at the student with respect and appreciate the individual differences. Unselfish attitude of the mentors is one of the most appreciated attributes, where the mentors let the students take the limelight.

Prof. Ranjan believed that many of the exemplary mentors were exemplary teachers and there is a co-relation between teaching and communication. The availability of the mentors was one of the attributes that was appreciated the most by a mentee and regular meetings is considered as an important strategy. The speaker underlined that answering a students' question with a more fundamental question will lead the student towards both an answer and a better understanding of what they are learning. Prof. Ranjan highlighted that it is important for a teacher to read and share the latest researches and also accept that they might be wrong and can be challenged by students and colleagues.

Day 5 (18th October, 2020)

Google meet: <https://meet.google.com/rkw-sobh-opa>

Session 1

Prof. Diwan S. Rawat, Department of Chemistry, University of Delhi, talked on **“Ethics and Scientific Paper writing in Research”**. Prof. Rawat initiated the talk by discussing a Paper of Nature titled ‘How to write a first-class paper?’ and emphasized on the writing to be simple to be communicated to the readers. Then the speaker discussed about the historical discoveries from Chemistry. The first discovery discussed by him was that of Palladium by William Hyde Wollaston in 1802 and how this discovery of Pd after 150 led to the birth of organometallic chemistry. He spoke about the relation between the use of Pd by Heck and how he won Nobel prize in 2010, highlighting the importance of literature. On the same line about the importance of review of literature he mentioned the example of discovery of artemisinin and the role of ancient literature. Prof. Tu Youyou realized that the extraction method mentioned in the Ge Hong's A Handbook of Prescriptions for Emergencies led to reproducible results and eventually got her the Noble Prize in 2015.

Prof. Rawat also gave example of Penicillin and how only people discuss only about Alexander Fleming and forget many others like Chain, Florey and Heatley who actually contributed towards the commercial production of Penicillin. The Nobel Prize was awarded to Fleming, Chain and Florey 1945 but Heatley's contribution was not recognized. He also discussed about the unintentional tragedy caused by drug Thalidomide the use of which caused permanent disabilities among the new born and child death. Thus, while doing research one has to be careful about human objects. He emphasizes that good science without good ethics will never be appreciated. The other important trait that was stressed by the speaker was academic

integrity encompassing honesty, trust, fairness, respect and responsibility. Towards the end of talk he elaborated upon the forms of academic misconduct and ethical issues and cited examples of retracted papers.

Session 2

Dr. Nipun Arora, Department of Mechanical Engineering, IIT, Jodhpur spoke on “**AI Revolution in Scientific Research**”. Dr. Nipun introduced a new and upcoming field artificial intelligence (AI) to the audience. AI is the simulation of human intelligence by machine and let the machine do the job of thinking also. Various branches of AI such as Machine Learning (ML), Natural Language Processing (NLP), speech to text and text to speech, vision recognition etc. were discussed and examples from the daily life were given which helped the audience to relate to the topic.

The speaker stated that the amount of data plays a crucial role in deep learning and how deep learning is different from older learning algorithms. He stated the importance of deep learning and its scientific application. Dr. Nipun detailed about application of AI in protein synthesis, prediction of protein structures, and involvement in diagnostics and therapeutics, Satellite imaging and in Archiving societal and cultural changes. The other examples of applications discussed included that in high resolution imaging, astronomy, aviation, drones for spying, cyber security, automobile, finance, education and modelling of biosynthesis in plants.

The speaker discussed about Data Science and what can be done with AI and deep learning tools. He also mentioned the various approaches of AI i.e. statistical approach, cybernetics and brain simulation, symbolic approach and cognitive simulation. Dr. Nipun highlighted the Pros and Cons of AI.

At the end of the lecture Dr. Nipun discussed and analysed the answers of the questionnaire provided by the organizers to the participants giving examples from AI.

Kirori Mal College
University of Delhi
NAAC-ACCREDITED (under the aegis of DIT Star College Scheme)

**ONLINE FACULTY DEVELOPMENT PROGRAMME
INNOVATION IN SCIENTIFIC RESEARCH METHODS**
14th -18th OCTOBER, 2020

Patron: Professor Vibha S Chaudhri, Principal
Program Coordinator: Dr. Anil K Verma
Subject Coordinators: Dr. Deepa Kapilashri, Dr. Sneha Saxena, Chemistry; Dr. Anurag Gupta, Physics; Dr. Anil K Verma, Biology

OBJECTIVES

- To enable the participants to define, design the research problem and to identify suitable approach to solve the problem.
- To impart capabilities for formulation and setting of hypothesis based on the nature of research.
- To comprehend appropriateness of statistical software packages for statistical research data.
- To enable the participants to understand report writing and writing research proposals.
- To impart confidence of decision development in connection to research related activity of FDP.

Registration Link:
* Faculty members, Researchers, Post doctoral fellows and Ph.D. students can apply

Last Date of Registration: 13th October, 2020
* Attendance will be marked in each session.
* Certificates will be awarded after successful completion, registrations, queries and final bank fees.
Contact: 011-2610010000, 011-2610010001
* For further correspondence use this mail id.
Online meeting platform: <https://www.zoom.us/j/9201111111>
* The link will be sent to registered participants via mail.

About the College:
Kirori Mal College is an institution of scientific excellence, established in 1966, provides our students an environment rich in knowledge and exposure of their extracurricular activities. The college nurtures a quest for knowledge that is rooted in an ethical understanding of the world that is characterised and characterised by learning along with a desire to enrich one's intellectual horizons. Change takes place in its past, its present and its future in the future with great hope and determination.

About the FDP:
The faculty development program is an effort to enrich the research activities and faculty on research methodologies that foster quality design, research, leads on teaching and report writing with their specific focus on the nature of the research problem, research hypothesis and setting of objectives. It also provides the knowledge for writing manuscripts, maintaining literature sources, the online process, data reduction methods, selection of appropriate parameters or non-parametric statistical methods for analyzing data. Faculty members of all disciplines who are interested in Research and Development can apply for FDP.

Program

14 th October, 2020	15 th October, 2020	16 th October, 2020	17 th October, 2020	18 th October, 2020
Session I (9:00-9:30 pm) Innovation Research at College Level Dr. Balram Pani, Dean of Colleges Bhaskaracharya College of Applied Sciences, University of Delhi	Instrumentation in Data Analysis and Interpretation Prof. Shashank Deep Department of Chemistry Indian Institute of Technology New Delhi	Philosophy in Science Research Prof. Suman Lakanpalli Department of Botany University of Delhi	Ethics and scientific Paper Writing in Research Prof. Diwan S. Rawat Department of Chemistry University of Delhi	Chemistry Clinicians and Cure in Innovative Research Dr. Anil K. Mishra Assistant Professor Institute of Nuclear Medicine and Allied Sciences, IITD
Session II (5:00-6:00 pm) Scientific Writing and Presentation Prof. Paramjit Khurana Department of Plant Molecular Biology University of Delhi	Science Communication for Academicians-the Way Forward Dr. Charulata National Institute of Science communication and Information Resources	Role of Serendipity in Research Prof. T.R. Sekhadari Department of Physics and Astrophysics University of Delhi	Role of Mentor in Research Prof. Kirti Ranjan Department of Physics and Astrophysics University of Delhi	Activity on Research Methodology Dr. Nipun Arora Assistant Professor Department of Mechanical Engineering IIT Jodhpur

52. A webinar on “Adaptive Optics and Exoplanet Imaging” organized by Department of Physics on 20th Oct, 2020.

Physics department, Kirori Mal College organised a webinar on 'Adaptive Optics and Exoplanet Imaging' on 20th October 2020. The invited speaker of the event was Dr. Garima Singh, who is currently a Marie Curie Postdoctoral fellow at Observatoire de Paris. The session was extremely informative regarding various adaptive optics techniques and analysing techniques through very large telescopes.

53. 2-days Workshop for students on “Carbon Sequestration & Solid Waste Management-A Perspective” on 5-6th November, 2020.

The Department of Botany organized a workshop entitled “**Carbon Sequestration & Solid Waste Management-A Perspective**” under the aegis of DBT Star College Scheme. Dr. Lata, Principal scientist, Division of Microbiology NIPGR, ICAR and IARI gave lecture on “**Solid Waste Management**”. Dr. Ratul Baishya, Department of Botany, University of Delhi, spoke on “**Technological Interventions in Carbon and Solid Waste Management**”. More than 100 students participated for the workshop. Microsoft Teams platform was used wherein live streaming of the event was arranged to give access to all the participants.

https://teams.microsoft.com/l/meetup-join/19%3ameeting_NWNiOWVjYTctNzRiNS00MjA3LWJjYWMTNTdlYzcwMWU5NDRi%40thread.v2/0?context=%7b%22Tid%22%3a%22d0979a3b-4d5e-4e71-a6d0-74fb571587a%22%2c%22Oid%22%3a%223d4e2c3b-57d3-4a4a-822b-7e8284e83401%22%7d

Detail Report

Day 1

On the first day a lecture was delivered on ‘**Solid Waste Management Through Composting**’ by Dr. Lata, Principal Scientist, Division of Microbiology, Indian Agricultural Institute, New Delhi. The speaker emphasized on recycling of solid waste through composting, use of green manure and biofertilizers. She also enlightened students about the various wastes that can be used in composting, which includes leaves, grass clippings and food scraps. The advantages of composting which includes volume reduction up to 50% and destruction of pathogens and weed seeds were discussed among the talk. The talk also highlighted the types of waste that need to be avoided for the better and efficient functioning of the composting beds. The material to be avoided included oil, fat, grease, fish or dairy products, unwashed egg shells (which tend to attract pests), citrus peels etc.

The basic standard methods and the factors affecting composting were demonstrated to enhance the inquisitive skills of students so that they can also plan and do small experiments to standardize the protocols as per their composition of waste. A detailed discussion was done to show the effect of various factors viz. air (oxygen), water, food, temperature, particle size of substrate, and C:N ratio of the substrate.

In addition to this the lecture engrossed the audience with the discussion on development of formulation of effective microorganisms for production of enriched compost for peri-urban

agriculture. In the end the speaker informed the audience that the compost also has to undergo strict quality controls before it is used commercially. The various parameters such as moisture percent by weight, colour, odour, particle size, bulk density, Total organic carbon, Total Nitrogen, total phosphates, potash etc. are to be maintained as per the Indian Standards, The Fertilizer (Control) Order, 1985, issued by the Fertilizer Association of India. The scope of the compost production, its details and logistics were taken up the speaker elaboratively. She concluded her talk by reiterating that an integrated approach may result in higher use efficiency of inputs for sustainable crop yields. Dr. Lata addressed all the queries raised by the students. The students were asked to submit feedback form. The talk was highly appreciated and inspired many to start their own composting at home. There are many students who already treating their waste and commented that they will improvise method of composting as suggested by the speaker. At the end students were given an assignment in the form quiz.

Day 2

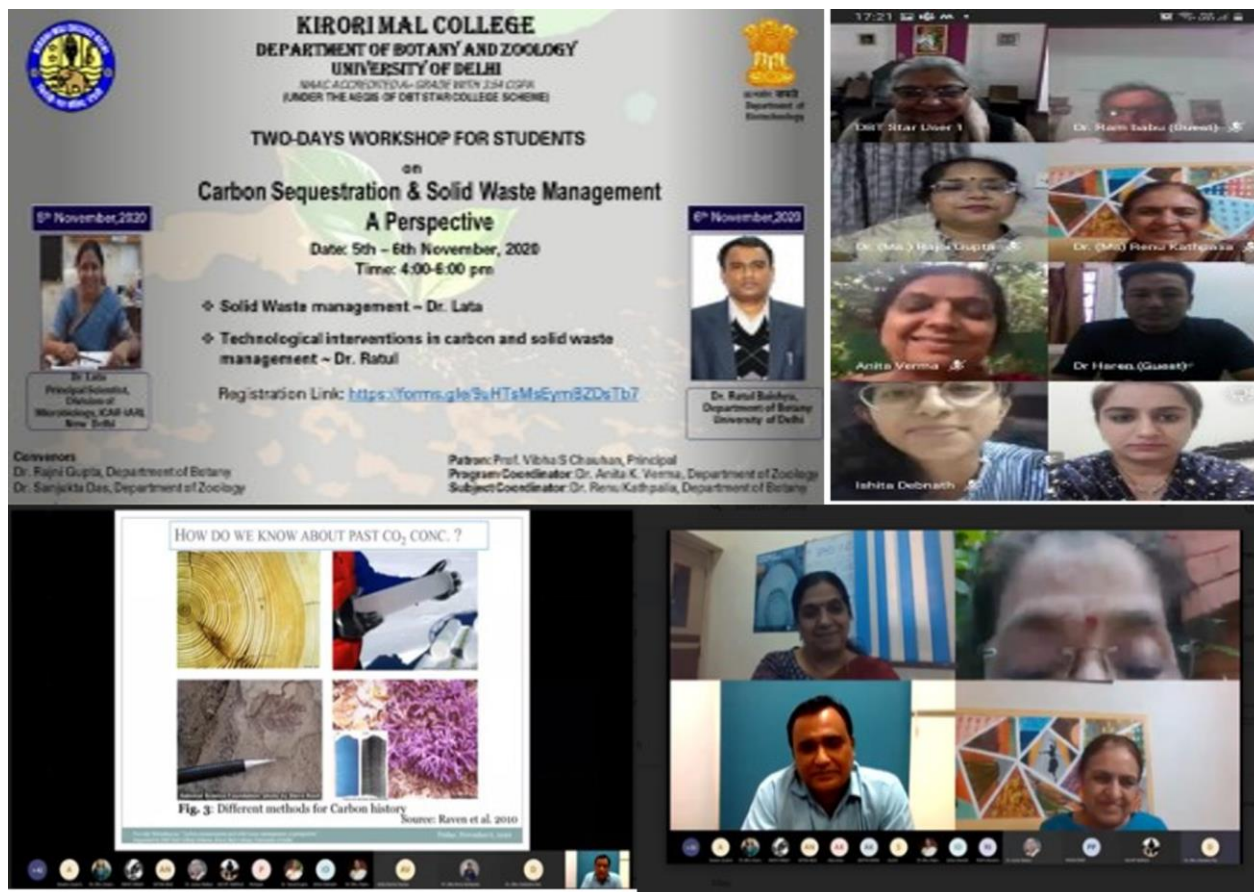
On the second day Dr. Ratul Baishya gave talk on “**Technological interventions in carbon and solid waste management**”. He started his lecture by discussing Carbon cycle, carbon pool and emission of carbon in the atmosphere. He further discussed Carbon sequestration, climate change and global warming, He talked in detail about Kyoto protocol and its implication and the conventions to decrease carbon dioxide emission as well bringing down the level of carbon dioxide in the atmosphere. He analysed different methods of measurement of carbon dioxide and compared it with the method used by NOAA laboratory where average of carbon dioxide is measured. According to NOAA the rate of carbon dioxide is increasing at an alarming rate of approximately adding 2ppm carbon dioxide every year. Burning of arctic and wild fire are the major source of carbon dioxide emission. The accelerating emission of carbon dioxide leads to release of methane which is difficult to be trapped and is more dangerous in regulation of climate change mechanism. To avoid carbon emission, technological interventions has led to development of Carbon capture and storage technology (CCS). The CCS technologies not only capture carbon but also covert it into solid gel type and finally transfer this fixed carbon to desert for geological storage. In comparison to photosynthesis which fix carbon dioxide, CCS technology capture carbon released by industry and convert to different form and transfer to ocean, desert or blended with fly ash for building roads, houses and used in agriculture practises.

He talked in detail about Carbon footprint and method to study it. The mechanism of carbon balance sheet devised by REDD+, which measure how much is carbon fixed and emitted by a country. The quantitative values are converted into certificate and these certificates are sold or bought in huge carbon market. He talked about Global REDD project site in India, different companies and NGOs which determine carbon footprint. The student was appraised of the status carbon dioxide sequestration in Delhi ridge area. At the end he explained Solid waste management in Delhi by different model and practises. He concluded his talk by citing example of best practises used in north campus to reduce municipal solid waste. The talk ignited many students minds and there was a very questionnaire session.

The workshop was concluded by vote of thanks and concluding remarks by Dr. Anita Kamra Verma. On 11th November Dr. Ratul Bashiya shared link of a work sheet to all the participants. The link for quiz

https://docs.google.com/forms/d/e/1FAIpQLSckOiUjRoBozV3CPAXLdS9VwJgQVWolpGfugfdHuamPK0MMMw/viewform?usp=sf_link

The quiz was attempted by 55 students all the participants were given e-certificate of participation. Mahima of Miranda house stood first and Aditya Kiran of Kirori Mal college won second prize.



Glimpses of workshop on Carbon Sequestration and solid waste management-a perspective

54. Seven-day workshop for students on “Scientific and physical computing of the experiments with Python” organised by Department of Physics on 5th -7th 13th, 19th & 23rd Nov, 2020

A seven days’ workshop on “Scientific and physical computing of the experiments with PYTHON” has been conducted on above dates in virtual (Online) mode at Physics Department, Kirori Mal College. The aim of the workshop was to impart basics of python programming language and its commonly used libraries like SciPy, NumPy, Pandas, etc. This workshop was

initiated/organised by Dr. Sangeeta D Gadre, Associate professor in Physics Department and DBT Physics Coordinator, under the aegis of DBT star scheme of the college.

Detail Report

On inaugural of workshop, Dr. Anita K. Verma, DBT Star College Scheme, Programme coordinator, briefly introduced about the DBT star scheme. The session then was addressed by our Principal, Dr. V.S.Chauhan, Senior Professor Physics Department Dr. O.P. Sharma and Teacher-in-Charge of Physics Department Dr. R. K. Pandey. They emphasised the usefulness of Python programming language, their plan to introduce this language in Physics(H) course and elaborated on their association with the key speaker. A detail introduction of main speaker of the workshop, Prof. Dhananjay V. Gadre was presented by organising member and our student Mr. Vijay and invited prof. Gadre to deliver the inaugural lecture.

Prof. Dhananjay V. Gadre, with 31 years of research and teaching experience, author of several professional articles and books, directs two open access laboratories at NSUT, namely Centre for Electronics Design and Technology (CEDT) and Texas-Instrument Centre for Embedded Product Design (TI-CEPD). Since past several years he has been interested in microcontroller based embedded system design. His lecture was upon review of Physical and Scientific Computing using Python. He described about the physical computing devices which takes input samples and based on the program that has been written, the program processes this information and gives output. The output needs to be analysed with some other scientific method. He talks about the association of scientific computing with physical computing and their features. He emphasised on main aim of this workshop: introduction of python, its usefulness in scientific computing. He also talked about efficiency of Python in combination with its modules NumPy, SciPy, Matplotlib and Pandas.

After the inaugural lecture the technical sessions of workshop was conducted by the two instructors Mr. Harsh Sharma and Mr. Divanshu Dodeja. Mr. Harsh talked about course objective, its prerequisite, Introduction to python language and how to install the compiler. Starting with how to install and use Jupyter notebook for python programming, the lecture covered features and very basic introduction of some python syntax, various libraries and modules. He also mentioned the areas of scientific computing where python is used. He also demonstrated that how python is more efficient than other similar programming languages like C++.

On second day Mr. Divanshu Dodeja started session with taking problems faced by participants in installation of python shell or Jupyter. Thereupon he introduced how Python variables are defined and mentioned various data types (list, tuples, Dictionaries etc.) available in the programming language.

On Day 3 Mr. Dodeja described in detail about the data type “list, sets and dictionary” and their various modules and operations. He also explained how to define and use conditional statement, Looping statement, various operators and functions in Python programming. At the end of the session two assignments were posted in the Google Classroom.


On fourth day Mr. Harsh introduced the two of the most commonly used libraries in python like NumPy- Numerical python, Pandas- for python data analysis tool. At the end of the session questions and problems faced with the participants were resolved.


On fifth day Mr. Harsh continued the session with elaborate discussion of two other commonly used libraries: a) Matplotlib- plotting and visual analysis. In matplotlib various plotting functions like: stems, Curve plots, Histograms, Bar Graph, Pie-charts, Scatter plot and bubble plots were discussed. However, the library is not limited to only these modules. b) SciPy- Scientific Python, a tool with functions like- interpolation, integration, Fourier Transform, Differentiation and many more. The session ended with basic exercises based on above modules.


Day six started with taking problems from previous sessions and a brief overview of Numpy, Pandas, SciPy and matplotlib libraries. On the end of day 6 and day 7 various assignments problems like behaviour of Electric field of two charges, population dynamics problem, etc. were discussed in detail. On the end of day 7 we motivated participants to work on a project of their interest i.e., to write a program for any scientific problem which would require most of the python syntax and its modules discussed during the entire workshop. We agreed to meet one more day to take the queries and doubts from participants.


Hence the last day of the workshop was conducted on Dec 4 where the participants were given time to present their projects. So, it was mostly a discussion-cum question answer session.

All the sessions were very interactive adopting do it yourself (DIY) approach. The duration of the sessions was between 1:30Hrs to 2:00Hrs. Participants were very enthusiastic during the entire workshop as they were kept involved through assignments plus quizzes and to work on a problem of their choice. This was initially a seven days' workshop however it went up to eight days. The whole workshop was spread over a month. The flexibility in dates were decided in order to accommodate students' regular classes and also giving them time to solve workshop assignments and work on project of their interest.

 **Kirori Mal College**
Department of Physics
University of Delhi
(under the aegis of DBT STAR College Scheme)



WORKSHOP
"Scientific and Physical Computing of the experiments with Python"
(For 7 days)
Date: 5th November, 2020 onwards
Time: 4-6 PM (IST)
For Schedule, Visit: shorturl.at/suvwR
Or Scan: 


Inaugural Lecture:
Topic: Review of Physical and Scientific computing using Python.

Speaker: Prof. Dhananjay V. Gadre
Netaji Subhash University of Technology (NSUT), Delhi

Instructors:
1) Divanshu Dodeja (LAMBDAV LLP)
2) Harsh Sharma (NSUT)

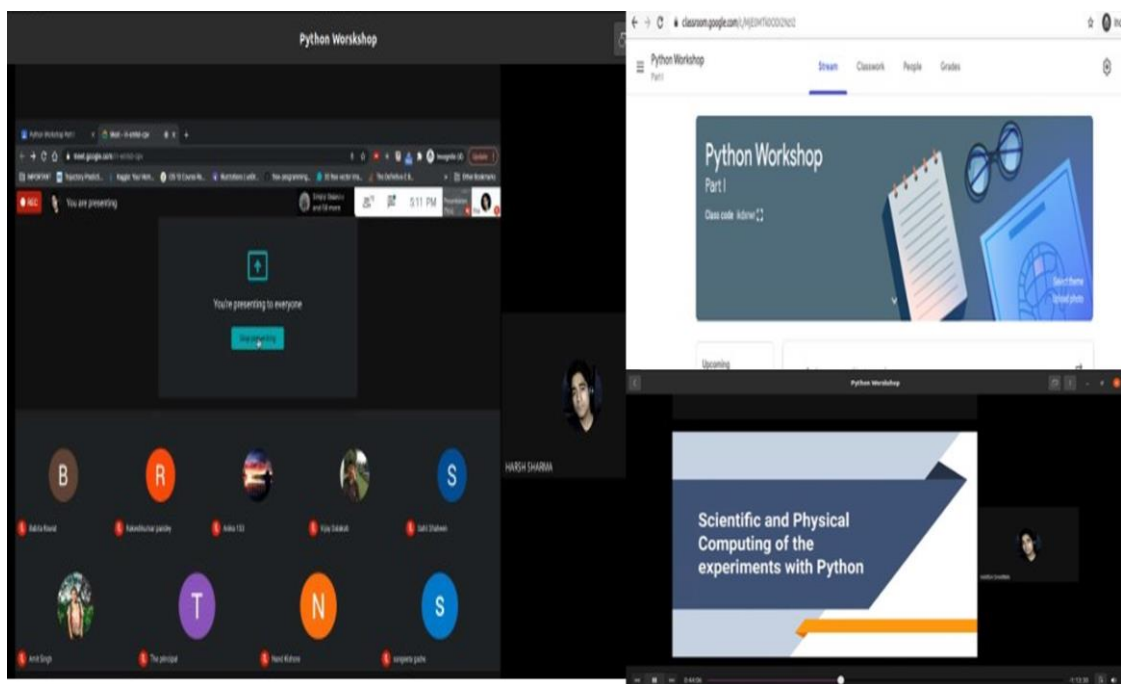
For Queries, Contact:
● Kaushkee: 9818413713

Prof. Vibha Singh Chauthan
Principal

Dr. Rakesh Kumar Pandey
Teacher-in-charge

Dr. Sangeeta Gadre
DBT Physics Coordinator

Dr. Anita K. Verma
DBT Programme Coordinator



Poster and glimpses of the workshop Python

55. A 3-Day Science Webinar was jointly organized by Kirori Mal College, The Academy Trust and Indian Academy under the aegis of DBT Star College Scheme of Kirori Mal College on 9th -11th November, 2020.

3-day Science Webinar witnessed the deliberations by the most eminent scientists in the area of human health and diseases. The webinar was jointly organized by Kirori Mal College, The Academy Trust and Indian Academy of Sciences. The best of brains under one platform gave valuable insights and guided all of us a new perspective that we should adopt. The lecture was to spread message to budding scientist the recent advancement and technologies available to tackle human health and diseases.

[Detail Report](#)

Day 1: 9th November, 2020

The program started with welcome address by our Principal, Dr. Vibha S. Chauhan and introductory comments by our Program coordinator Dr. Anita K. Verma. The speaker was formerly welcome and after brief introduction the Eminent Scientist Prof Saumitra Das, Director, National Institute of Biomedical Genomics, delivered the lecture on the topic **“Hepatitis C Virus: Life in Liver”**. The virus cycle, historical studies, pathological and clinical symptoms were explained meticulously to the young audience. The details of genomics of virus having large number of proteases genes and its functional genes. He talked about three groups of researcher who received noble prize and elaborated their work on the Hepatitis C virus which took 30 years to develop the vaccine. Prof Das showed the research being done in his lab which is mainly focussed to understand the basics of the various biological processes of the virus and implementation of the knowledge for the development of effective and suitable antivirals targeting those processes by use of different high-end technologies. He answered all

the queries raised by the students and research scholars on the Hepatitis C as well as covid virus.

Lecture link <https://www.youtube.com/watch?v=CDHCPctNzyg>

Day 2: 10th November, 2020

Prof V. Nagaraja, Professor, Indian Institute of Science, delivered lecture on “**Gene-Editing Technologies: Fall Out on Arms Race in the Bacterial World**”. He highlighted the mechanism of bacterial multiplication in the host and diverse form of bacteria. The arms race between bacteria and bacteriophage, the mechanism of bacteriophage resistance and co-evolution of defence and counter defence was explained. Prof. Nagaraja talked in detail about the latest technique of CRISPR/cas and its role in gene editing. He concluded his lecture with note that is co-evolutionary arms race between bacteria and their viruses and the parallel emergence of revolutionary technologies.

Lecture link: <https://www.youtube.com/watch?v=6E8az6SHonM>

Day 3: 11th November, 2020

Prof. Partha P. Majumder, National Science Chair, Govt. of India and President, Indian Academy of Sciences. A statistician turned into “gene guru” came quite naturally and after teaching many years at Indian Statistical Institute he shifted to genetics. He spoke on the topic “**Data Science in Understanding Human Health and Disease**”. World over in various domain of science large data are being generated and a newer kind of thinking is required in order to analyse those data set. Computer science and statistical science integrated approach has made it possible analysis such large data being generated everyday. He talked genomics and genetics of cancer of various science. He started his talk with two stories of patients affected with cancer and explained that without artificial intelligence it was not possible to provide right diagnostic method and treatment. His talk also include reverse genetics and mentioned that the turning point in treatment of cancer was sequence of human genome which is solely due to advancement in computer and statistical analysis. The need of the hour is efficiently managing the data, visualize the data and analyse the data for drawing useful inferences and providing personalized health care to affected individual.

Lecture Link: <https://www.youtube.com/watch?v=h2yzjpQSpDo>

Kirori Mal College, Delhi | **The Academy Trust** | **Indian Academy of Sciences**

present a 3-Day Science Webinar

Date: 9 – 11 November 2020 Time: 4 PM – 5.30 PM

Date	Time	Speaker	Title
9 November 2020	4:00 PM – 5:30 PM	Saumitra Das <i>(Director, National Institute of Biomedical Genomics)</i>	Hepatitis C Virus: Life in Liver
10 November 2020	4:00 PM – 5:30 PM	V. Nagaraja <i>(Professor, Indian Institute of Science)</i>	Gene-Editing Technologies: Fallout of an Arms Race in the Bacterial World
11 November 2020	4:00 PM – 5:30 PM	Partha P. Majumder <i>(National Science Chair, Govt. of India and President, Indian Academy of Sciences)</i>	Data Science in Understanding Human Health and Disease

ALL ARE WELCOME

For queries email: trust@ias.ac.in

56. Webinar cum workshop on “Development and use of molecular markers for crop improvement” organised by Department of Zoology, on 26th November, 2020

A webinar cum workshop on “Development and use of molecular markers of crop improvement” was organized by Department of Zoology, Kirori Mal College on 26th November, 2020 under the aegis of DBT Star College Scheme. The guest speaker on the occasion was Dr. Swarup K. Parida, Senior Scientist, NIPGR. It was attended by more than 100 participants including students and faculty.

Google Meet: <https://meet.google.com/bia-tudc-ivh>

Detail Report

The session began with encouraging words of Principal, Prof. Vibha Singh Chauhan and introductory remarks of project coordinator Prof. Anita Kamra Verma. The guest speaker Dr. Swarup K. Parida, Senior Scientist, NIPGR was introduced by Prof. Anita. The topic of his talk was “**Theoretical prospects and concepts on Genetic Markers for Food Sufficient future**”. He introduced the genetic markers, DNA fingerprinting and the origin of these molecular markers concepts. The timeline of green revolution and first-generation genomic era were highlighted and it was only after DNA sequencing designing of molecular markers started. He also explained advances in sequencing method and different crops which have been sequenced. He highlighted the work being done by NIPGR scientists, who have decoded the sequence of Chick pea and studied the genomic expression. His presentation included the different steps

involved in marker assisted crop improvement and using these markers how the different species of rice has originated. Using SNPs and molecular markers, QTL mapping has also been achieved in different crop species. He also highlighted the different approaches used for crop improvement like creating mutation and allelic variation, marker assisted selection. The session concluded with vote of thanks by Prof. Anita Kamra Verma.

The next session begin with Demonstration of Computational Genomic Tools on the topic “*In silico* Mining and Development of Microsatellite Markers in Crop Plants” by Ms. Udit Basu, Ph.D. Student (NIPGR). She explained the basic features of biomolecular markers, basic principle of microsatellite markers using Simple Sequence Repeats (SSR) and Single Nucleotide Polymorphism (SNP). She demonstrated different steps involved in making microsatellite markers using different genomic resources. The session was appreciated by all the attendees and ignited queries in enthusiastic minds. All the queries were answered by Ms. Udit Basu. The session concluded with vote of thanks by Dr. Sanjukta Das.

Webinar
26-11-2020

KIRORI MAL COLLEGE
NAAC accredited A+ grade with 3.54 CGPA
DEPARTMENT OF ZOOLOGY
(under the aegis of DBT Star College Scheme)

Organizes **Webinar cum Workshop** On
“Development and Use of Molecular Markers for Crop Improvement”

Hosted By: Genomics-assisted Breeding Laboratory,
National Institute of Plant Genome Research (NIPGR),
New Delhi

Date: 26th November 2020 (Thursday)
Time: 10 am – 1.15 pm
Registration Link: <https://forms.gle/Lx1bxa5gMYC1F5727>
Meeting Platform: Googlemeet
Mail id: dbtstar_och@kmc.du.ac.in

Program Coordinator:
DBT Star College Scheme
Dr. Anita K. Verma

Organizers
Dr. Sanjukta Das, Teacher-in Charge
Dr. K. Cherita Devi

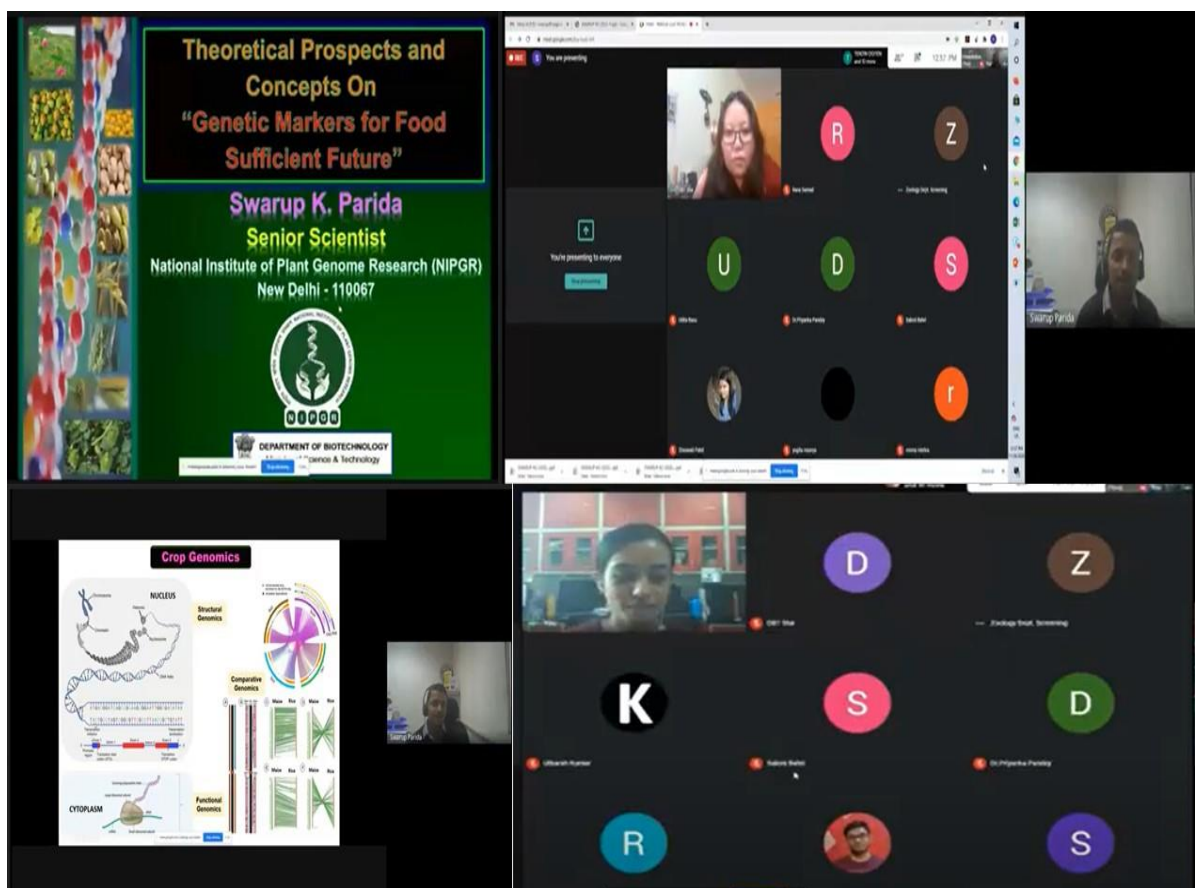
Patron:
Prof. Vibha S Chauhan
Principal
Kirori Mal College

Webinar
26-11-2020

DEPARTMENT OF ZOOLOGY
(under the aegis of DBT Star College Scheme)

Program
Thursday, 26th Nov 2020

- 10.00 AM – 11.30 PM:
- Theoretical Prospects and Concepts on
“Genetic Markers for Food Sufficient Future” -by Swarup K. Parida, Scientist, NIPGR
- 11.30 AM – 11.45 AM:
- Group Discussion among Participants (Questions & Answers Session)
- 12.00 AM – 12.30 PM:
- Practical and Demonstration of Computational Genomics Tools on
“*In Silico* Mining and Development of Microsatellite Markers in Crop Plants”
- by Ms. Udit Basu, Ph.D. Student, NIPGR)
- 12.00 AM – 12.30 PM:
- Practical and Demonstration of Computational Genomics Tools on
“*In Silico* Mining and Development of Single Nucleotide Polymorphism (SNP) Markers in Crop Plants”
- by Ms. Udit Basu, Ph.D. Student, NIPGR)
- 1.00 PM – 1.10 PM:
- Conclusion and Discussion



Poster and Glimpses of the workshop

57. Online Interactive Session with Mr. Ankit Kumar, Indian Forest Officer on 30th November, 2020

The Department of Botany, under the aegis of DBT Star College Scheme organized an interactive session with an alumnus, Mr. Ankit Kumar. He is an Indian Forest Officer, who has volunteered to talk and guide his juniors on the topic "**Career as an Indian Forest Service Officer**" on Monday, 30th November, 2020.

Google meet: <https://meet.google.com/kfz-hjsd-nwu>

Detail Report

The meet started with the brief introduction of Mr. Ankit Kumar. The meet was organized at google link with had full strength of 100 participants. Mr. Ankit informed students about Forest Research Institute and the details of entrance exam for IFS and the responsibilities of an IFS officer. He interacted with students and gave his opinion on the choice of subject, pattern of examination and books to be referred. After an hour interaction the meet was concluded with vote of thanks.



Mr. Ankit Kumar with participants on online session on career counselling session

58. Oral presentation by faculty member of the Department of Botany on two days national e-conference on “Plant Science Research: Relevance, funding, challenges and opportunities” on 16th -17th January 2021

Dr. Rajni Gupta presented paper on Mushroom cultivation on national e-conference organised by Department of Botany, Hans Raj College in collaboration with Mahatma Hansraj Faculty Development Center, Hansraj College, University of Delhi



Certificate awarded to Dr. Rajni Gupta on oral presentation at the conference

59. On the occasion of Founder’s Day of Kirori Mal College, Department of Botany organized inter-college event comprising of two competitions- “Poetic Botanica” and “Nobel Laureate Life Sketch”, on 1st Feb, 2021.

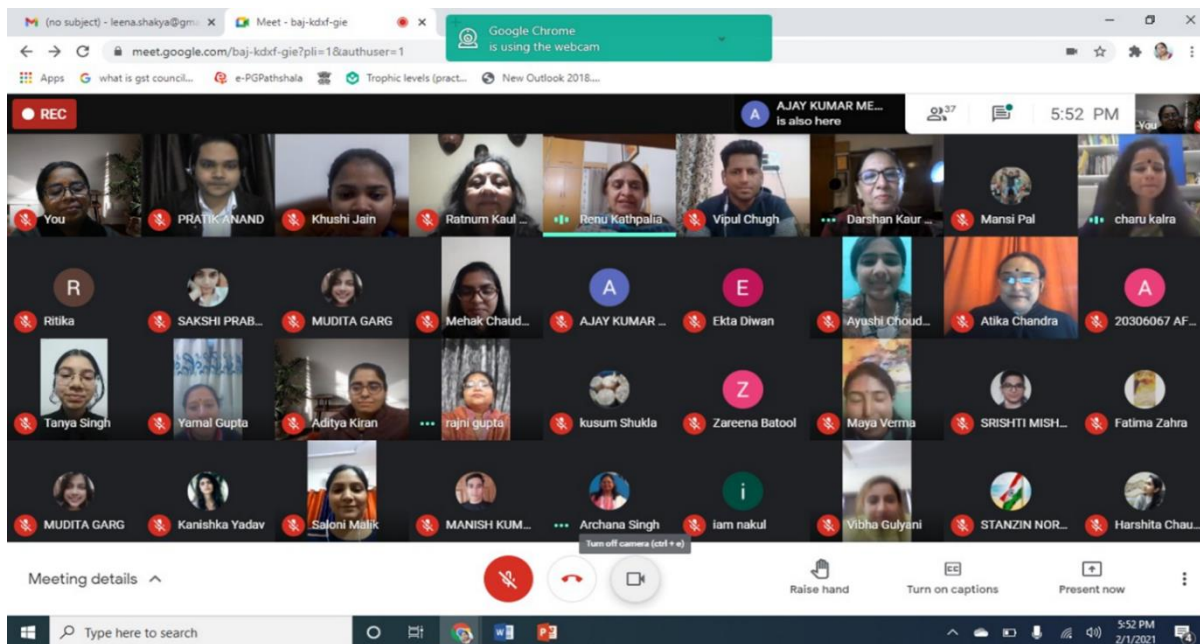
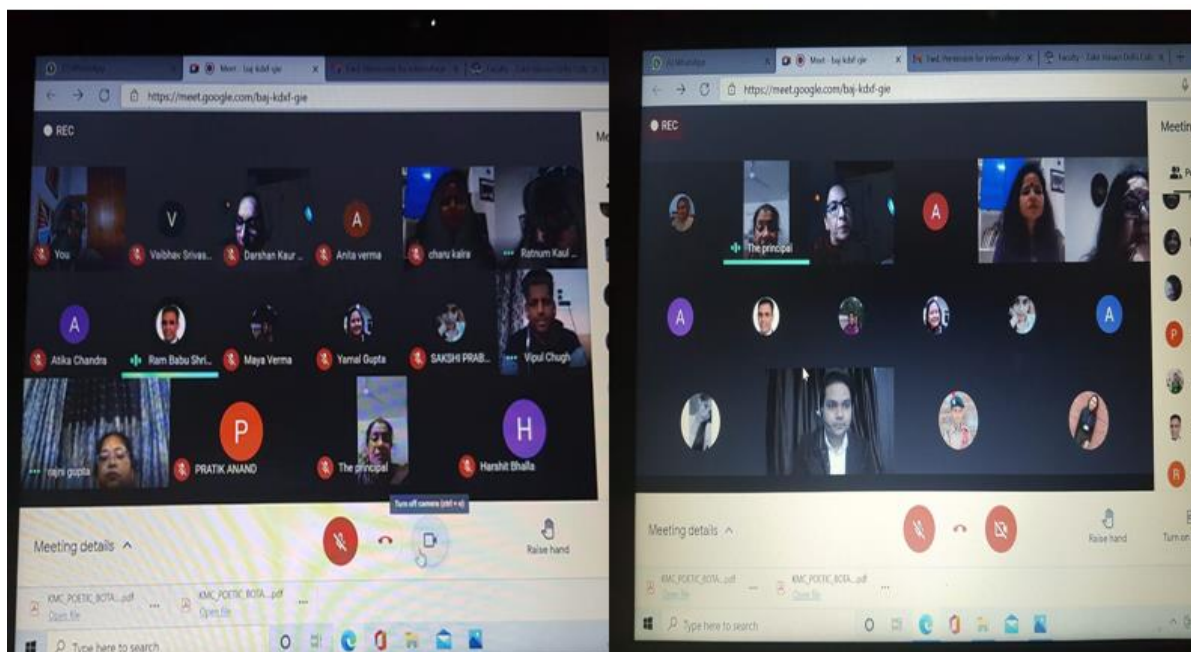
Two intercollege competitions were held on the Founder’s Day in which students from other college participated and were judged by the invited judges. The students were given e-certificate of participation.

Google meet: <https://meet.google.com/baj-kdx-f-gie>

Detail Report

The event started at 4 pm with remarks of Principal, Prof. Vibha Chauhan, who lauded the initiative to conduct the event and emphasized on the importance of science and poetry. Dr. Anita Kamra Verma, program-coordinator of DBT star college scheme, talked about the role of innovative learning and significance of co-curricular activities. Dr. Ram Babu, Teacher in-charge, welcomed the participants and praised them for their spirit to participate. Dr. Rajni Gupta, introduced the audience to our esteemed Judges- Dr. Ratnum Kaul Wattal, from Zakir Hussain college, Dr. Atika Chandra, from Maitreyi college, Dr. Darshan Kaur Cheema, Retired Associate Professor from SGTB Khalsa college and Dr. Charu Kalra from Deen Dayal Upadhyay College.

The competitions started with poster presentation on “**Nobel Laureate Life Sketch**”. Participants highlighted the inspiring journey of various nobel Laureates, ranging from Har Gobind Khorana to Herman Joseph Muller. “**Poetic Botanica**” saw various participants who recited their scientific oratory, ranging from “Botany Grows on you” to “Life without Bacteria”. The participants were awarded with e-certificates. The winner for Nobel Laureate Life sketch is Aditya Kiran (second prize) and Tanya Singh (first prize) both from B.Sc. (H) Botany, IIIrd year, Kirori Mal College. In Poetic Botanica competition Ayushi Choudhary (III prize) of Kirori Mal College, Mehak Choudhary (II prize) of Daulat Ram College and Vipul Chugh (I prize) of Kirori Mal College



On line Founder’s Day celebration with participants, judges, principal, DBT program coordinator and teachers

60. Webinar on “Innovative Solutions of Chemistry for Better Health Care” organised by Department of Chemistry held on 8th February, 2021

A webinar was conducted by the Department of Chemistry, Kirori Mal College under the aegis of DBT Star College Scheme on the topic “**Innovative Solutions of Chemistry for Better Health Care**” on the 8th February, 2021.

Detail Report

The speaker **Dr. Anupama Dutta**, Scientist at Institute of Nuclear Medicine and Allied

Sciences (INMAS), DRDO, gave an interesting lecture on the necessity of early diagnosis of diseases and how the recent innovations in chemistry are contributing to that cause.

In the field of oncology, certain situations arise wherein diagnosis using conventional imaging techniques do not suffice. This is where the role of nuclear medicine techniques come into play, like F(18)-FES PET, which is most extensively characterized and frequently used in clinical studies. F-FES PET is also used in conjunction with other nuclear medicine like F(18)-FDG PET, or other radiological techniques like CT, MRI, Ultrasound, whenever applicable. In the end, she answered all the questions put forth to her by the students. All and all, the webinar turned out to be a huge success.

KIRORI MAL COLLEGE
NAAC ACCREDITED GRADE 'A+'
University of Delhi

DEPARTMENT OF CHEMISTRY
UNDER THE AEGIS OF DBT STAR COLLEGE SCHEME

PROMOTING BETTER HEALTH BEYOND HEALTH CARE

PRESENTS WEBINAR ON
Innovative Solutions of Chemistry for Better Health Care
BY

8th February, 2021
1:30 – 2:30 pm

Speaker: **Dr. Anupama Datta**
Scientist
Institute of Nuclear Medicines and Allied Sciences (INMAS), DRDO

Join via: Google Meet
Register via : <https://bit.ly/3cnonEN>

Dr. Akhilesh Bharti
Teacher In-charge
Dr. M. Ramananda Singh
Convener, Seminar Committee

Dr. Reena Saxena
Co-ordinator-Chemistry,
DBT Star College Scheme

Dr. Anita K. Verma
Program Coordinator
DBT Star College Scheme

Prof. Vibha S. Chauhan
Principal
Kirori Mal college

Glimpses of the webinar on “Innovative solutions for better health care”

61. Paper presentation by Department of Botany on 61st Annual International Conference on “Microbial World: Recent Development in health, Agriculture and Environment Sciences” on 3rd -5th February, 2020.

Dr. Rajni Gupta, Dr. Yamal Gupta and Ms. Aditya Kiran from Department on Botany presented paper on “Synthesis of silver nanoparticle from fresh oyster mushroom” in 61st Annual International Conference of the Association of Microbiologists of India (AMI) and Indian Network for Soil Contamination Research (INSCR) in association with The Energy and Research Institute (TERI), University of Delhi and Indian Agricultural Research Institute (IARI).

62. Outreach program by Department of Botany at Shaheed Raj guru college of applied science for women. 15th -16thFeb, 2021

Dr. Rajni Gupta, Department of Botany was invited as resource person for the Entrepreneurship and Faculty Development Program on **“Edible mushroom- from Lab to Farm”**. She delivered lecture on **“Edible Mushroom Pleurotus”**.



Certificate of participation awarded to Dr. Rajni Gupta

63. Biogala-21, Annual festival, The Life Sciences Society on 25th and 26th February, 2021 was celebrated under DBT Star College Scheme

EPISTEME - The Life Sciences Society, KMC, DU organized its annual festival on 25th and 26th February, 2021 on an online platform, Google meet under the aegis of DBT star college scheme.

Detail Report

The two-day program began with an inaugural lecture which was delivered by **Dr. SHASHANK DEEP**, IIT Delhi on the topic “**DRUG DESIGNING**”. The program began with Zahid Mohammed and Ameha Sharma, 1st year students, they talked about how unfortunate the situations were and that we had to adopt an online medium for the very first time for our fest, but this too shall pass. Ms. Anshika Sharma, president of the society delivered the annual report of the department. The guest speaker was welcomed by Dr. Reena Saxena, Coordinator- Chemistry, DBT Star college scheme. Dr. Anita Kamra Verma, Program coordinator, DBT star college scheme talked about the scheme and how it supports colleges and universities offering undergraduate education to improve science teaching across the country. DBT launched a scheme for improving critical thinking and 'hands on' experimental work at undergraduate (college) level in sciences. Thereafter, Dr. Shashank talked about drug designing taking example of covid-19 while everyone posted their queries in the chat box. At the end of the very insightful lecture there was a Q&A session where Dr Shashank answered everybody's queries and Dr. Reena Saxena presented the vote of thanks.

Events like Bio Rattle - The Biological Riddle competition, Brain Over Binge - The OTT Quiz and COD Mobile League were held on day 1 as well through google forms where Simran Preet Kaur, Sahil Raina, and the duo of Jai Nagra and Ashish were the winners respectively.

Day -2 began with another lecture on "**FROM INVENTER TO ENTREPRENEUR**" by **Dr. HEMANT RITTURAJ KUSHWAHA**, JNU, New Delhi. Ameha and Zahid opened the day with yet more enthusiasm. Guest speaker was welcomed by Dr. Sarika Tejasvi, convenor, Life Sci Dept. Dr. Kushwaha talked about how one can relate science with entrepreneurship and at the end of his lecture there was a delightful and informative discussion with the students. Dr. Sarika delivered the vote of thanks and the day continued further with events like Bio Moji - The Emoji Event and Alfaaz - The Open Mic Event with Simran Preet Kaur as the winner of Bio Moji. The two-day fest was very successful and filled the students with joy and gave a much-needed break from their hectic schedule of online classes

64. Outreach program “Interdisciplinary Science Workshop” for Maharaja Agarsen Public School, New Delhi on 19th March, 2021

One day Interdisciplinary workshop was jointly conducted by the department of botany, chemistry, physics and zoology under the aegis of DBT Star College Scheme on 19th march 2021. More than hundred students got registered for the workshop. The students were given soft copy of manual of the workshop and e-certificates were mailed to the participants.

Google Meet: <https://meet.google.com/gio-xvqb-ced>

Detail Report

The program began with the brief introduction by program coordinator Dr. Anita K. Verma. She highlighted objectives of DBT Star College Scheme outreach program to inculcate the scientific enquires methodologies in the minds of budding scientist. Each department demonstrated one experiment and discussed principle, procedure and precautions related to the experiment. The students were provided soft copy of the manual of the experiments performed. Students were given e-certificate of participation.

The list of experiment demonstrated is as follows

Botany (Dr. Renu Kathpalia)

Experiment 1: To study the effect of organic solvent on the semi-permeable nature of membrane.

Physics (Dr. Sangeeta Gadre)

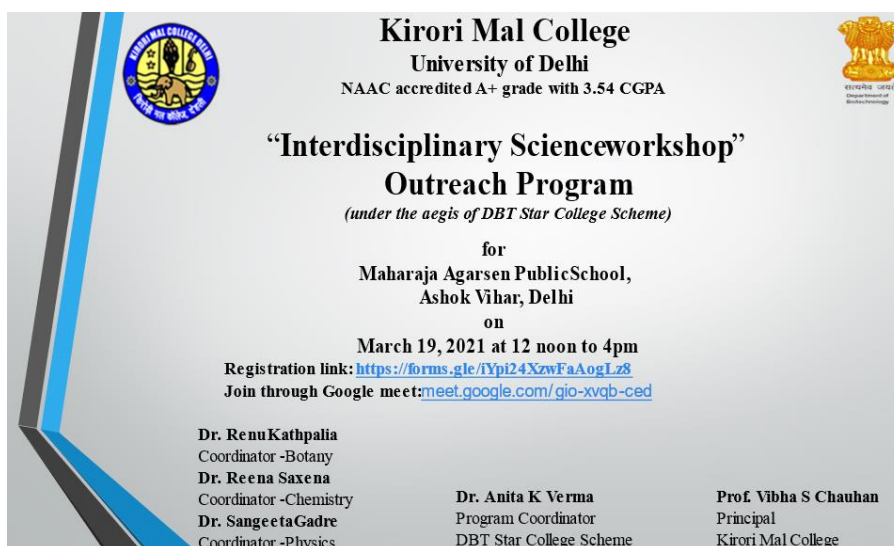
Experiment 2: To determine the value of acceleration due to gravity 'g' using bar pendulum

Zoology (Dr. Disha Mittal and Dr. Anita Kamra Verma)

Experiment 3: To understand differential staining to identify bacteria

Chemistry (Dr. Reena Saxena and Dr. Hemlata Vashisht)

Experiment 4: To determine the total hardness of tap water in term of CaCO_3 complex metrically (EDTA METHOD) using Eriochrome Black-T as an indicator



Kirori Mal College
University of Delhi
NAAC accredited A+ grade with 3.54 CGPA

**“Interdisciplinary Scienceworkshop”
Outreach Program**
(under the aegis of DBT Star College Scheme)

for
Maharaja Agarsen PublicSchool,
Ashok Vihar, Delhi
on
March 19, 2021 at 12 noon to 4pm

Registration link: <https://forms.gle/iYpi24XzwFaAogLz8>
Join through Google meet: meet.google.com/gio-xvqb-ced

Dr. Renu Kathpalia
Coordinator - Botany
Dr. Reena Saxena
Coordinator - Chemistry
Dr. Sangeeta Gadre
Coordinator - Physics

Dr. Anita K Verma
Program Coordinator
DBT Star College Scheme

Prof. Vibha S Chauhan
Principal
Kirori Mal College

Poster of the “Interdisciplinary Science Workshop”

65. A webinar on “Employment and Entrepreneurship in Field of Mushroom” was organised by Department of Botany, Kirori Mal College on 16th April 2021 under the aegis of DBT Star College Scheme.

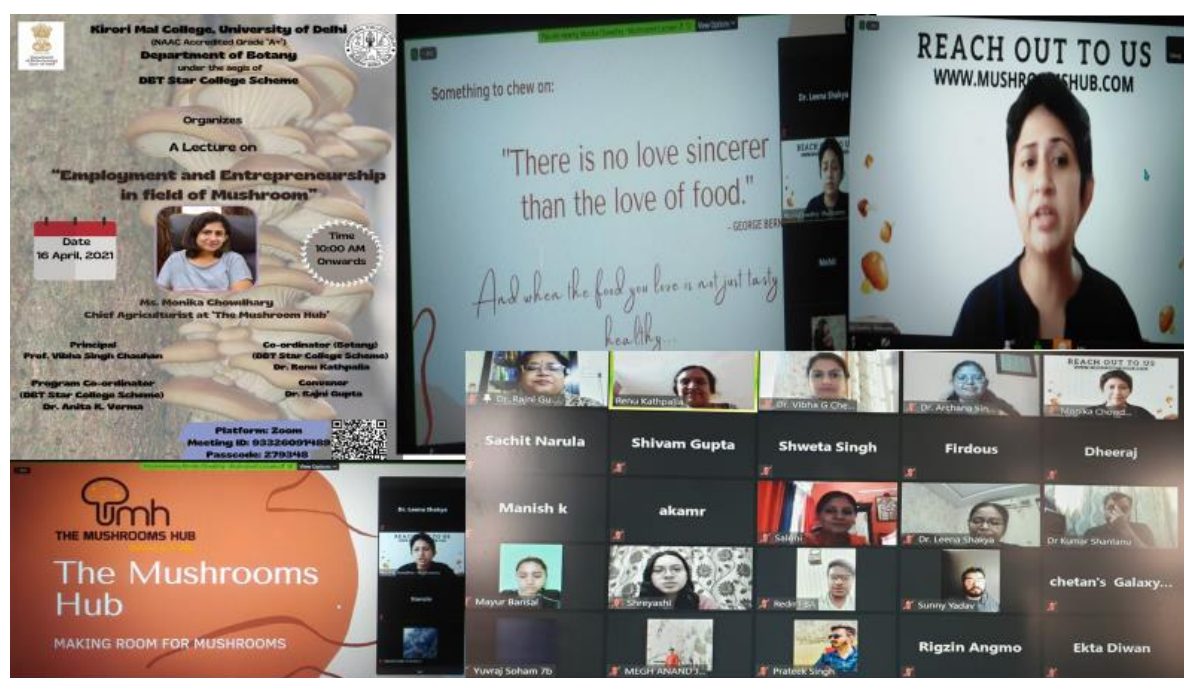
Ms. Monika Chowdhary, Chief Agriculturist at ‘The Mushroom Hub’ gave lecture on “Employment and Entrepreneurship in the Field of Mushroom”. The lecture was organised on Zoom platform

<https://zoom.us/j/93326091489?pwd=VS8ycDhMM3RNdDFLVGRtMGNpeGk1UT09>

(Meeting Id: 93326091489; Passcode: 279348). It was attended by more than 85 participants including students and faculty.

Detail Report

The session began with encouraging words of Dr. Anita Kamra Verma, Program Coordinator, DBT Star College Scheme, Kirori Mal College. The speaker was formally introduced by Dr. Rajni Gupta convenor of the event. The lecture provided visual virtual treat and detailed many aspects of the mushroom cultivation, healing capacities and properties in traditional medicine. The speaker enriched our knowledge about Entrepreneurship in field of mushroom and discussed about marketing management and strategies. The session was appreciated by all the attendees and ignited queries in enthusiastic minds. All the queries were answered by Ms. Monika Chowdhary. The session ended with vote of thanks by Dr. Renu Kathpalia, Botany Coordinator.



Glimpses of Lecture by Ms. Monika Chaudhary on “Employment and Entrepreneurship in field of mushroom”

66. “Save Earth Day”, was celebrated by Department of Botany & Zoology on 22nd April, 2021.

The department of Botany and Zoology organized a Poster making Competition and Minute Mania – a showcase of talent! and Quiz competition to mark the earth day celebrations on 22nd April, 2021. The events were organized by the faculty of botany and zoology department and more than 40 students participated in the intercollege competition. The event was attended by 92 students.

<https://www.google.com/url?q=https://zoom.us/j/98823729535?pwd%3DITIZoNHd1RG1NNmZ4aFFjOEhJZEhJQT09&sa=D&source=calendar&ust=1643649722637708&usg=AOvVaw3bLTpREtipf6FQxb46ut5S>

Detail Report

Earth Day is an annual event, celebrated on April 22nd, to commemorate this day the department organized various intercollege competitions for undergraduate students of all the streams. Dr. Anita Kamra Verma appraised all the participants about the DBT program as well the earth day celebrations. Session I started with poster competition on the topic **“Impact of lockdown due to covid-19 on Environment”** The event was organised by Dr. Gauri Garg and Dr. Haren Ram Chairy. 14 students submitted their poster and defended it. Bhavya Gupta of B.A. (H) Economics, Harshita Joshi B. Sc. (H) Zoology and Srishti Mishra B.Sc.(H) Botany won first second and third prize respectively. In session II Dr. Archana Singh and Dr. Saloni organised **“Minute Mania – A show case of Talent”** on the topic **“My earth My responsibility”** where student submitted 2 minutes video to show their work to save the earth. Akshara Akshay of B.Sc.(H) Botany, Kriti Ruhella, B.Sc.(H) Botany and Harshita Joshi, B.Sc. (H) Zoology won first, second and third prize, respectively. An interesting quiz was organised by Dr. Archana Singh and Dr. Saloni on the questions related to environment. Kajal Thakur, Ekta and Vaishanvi won first, second and third prize respectively in Quiz competition. Dr. Pawan and Dr. Saurabh our alumni were invited to judge the events. The program ended with happy note and vote of thanks by Dr. Renu Kathpalia, Botany coordinator. The students were given e-certificates of participation.

Earth Day Celebration
22nd April 2021
Rules & Regulations

- All Participants has to be present 15 minutes before the commencement of activity on Earth Day.
- The participant must be an undergraduate student.
- The competition is open to all streams of undergraduate courses.
- The participant has to unmute and switch on camera to present their work.

Session I
Poster Making Competition

Topic: **"Impact of Lock down due to Covid-19 on Environment"**

- All posters to be hand drawn or colored (Any color).
- No digital entries allowed.
- Submit posters in pdf format at act@kmc.ac.in
- A4 size submissions will be accepted.
- Selected Candidates have to present poster on Earth Day.
- Time limit for presenting poster is 5 minutes.
- Last day of submission is 7 pm on 21st April 2021.

Decision of judges will be final. Only **Original** entries will be accepted.

Earth Day Celebration
22nd April 2021
Rules & Regulations
Session II

Minute Mania – a showcase of talent!

Topic: **"My Earth My Responsibility"**

- Participant can choose an option given below to showcase his/her talent.
- Create a Narrative with Photos.
- Show Your Skills with Icons.
- Share Information with Charts or Infographics.
- Create a Skit.
- Perform a Dance.
- Paint a picture.
- Any other
- Participant must submit a small video of 2min by 7 pm on 21st April, 2021 to the following mail id act@kmc.ac.in
- Participant has to present his/her talent with the help of video (time limit: 2 min) on 22 April 2021 at the time of event.

Quiz

- Individual participation.
- Participants must switch on their camera and mic while answering.
- Depending on the number of participants there would be a screening round done through google form if required.
- Decision of the judges will be final.
- Use of unfair means or surfing net is prohibited and may lead to disqualification.
- Registrations are open till 21st April, 2021.

Kirori Mal College
University of Delhi
NAAC accredited A+ grade with 3.54 CGPA
Department of Botany And Zoology
under the aegis of DBT Star College Scheme

Cordially invites to celebrate

Session I: 12 noon
i) Poster Competition
Topic: **Impact of lockdown due to Covid-19 on Environment**

Save Earth

Session II: 1.00 pm
ii) Minute Mania
Topic: **My Earth my Responsibility**
A Showcase of Talent
iii) Quiz

Last Date for Registration: 21st April, 2021
Registration Link: <https://forms.gle/ZwvQh8xXDVDYwQT29>
Platform: Zoom Meeting
Link will be shared with all registered participants

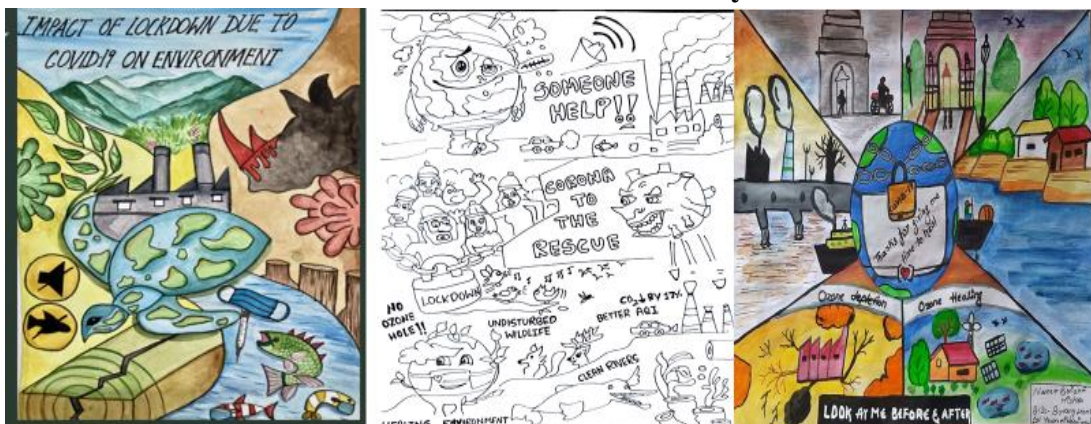
Organizing Team

Zoology: Dr. Gauri Garg
 Dr. Haren Ram Chiary

Botany: Dr. Archana Singh
 Dr. Saloni Malik

Principal
Prof. Vibha Singh Chauhan
Program Coordinator
Dr. Anita Kamra Verma
Subject Coordinator
Dr. Renu Kathalia

Poster of the Save Earth day



Winning entries of poster competition, extreme left is poster by Bhava Gupta (Ist Prize), in the centre is the poster by Harshita Joshi (IInd Prize) and on right is the poster by Srishti Mishra (III prize)

67. Immunology Day Celebrations by Department of Zoology on 29th April, 2021

To celebrate Immunology Day a lecture on the topic **“Understanding Immunology to Combat Covid-19: Myths and Facts Regarding Evolution, Spread and Vaccines”** was organized by Department of Zoology, Kirori Mal College on 29th April, 2021 under the aegis of DBT Star College Scheme. To grace the occasion Prof. V.S. Chauhan, Padam Shri and Emeritus Professor, Former director ICGEB, New Delhi and Former Acting Chairman UGC was invited. It was attended by more than 100 participants including students and faculty. The meet was organized on google platform

<https://meet.google.com/nmv-djmb-bfc?hs=224>

Detail Report

The session began with encouraging words of Prof. Vibha Singh Chauhan, Principal, Kirori Mal College. Prof. Anita Kamra Verma, Project Coordinator, DBT Star College Scheme introduced the guest speaker Prof. V.S. Chauhan. The lecture covered all the aspects about covid -19, starting with introduction of characteristics of viruses which attack not only human, bacteria and other flora and fauna. His deliberation included details of covid-19 genome, which has been sequenced and lot of research has been started resulting in use of RT-PCR to find infected host. The molecular studies on the virus, the process of infection and the development of vaccine were also highlighted. Detailed Genomic studies showed that RNA of virus has nearly 3000 nucleotides. The S-protein of covid-19, which is a large protein and has 1237 aa residues having a large receptor binding domain (RBD). Prof. Chauhan reiterated that vaccine is remedy for this virus thus for the first time mRNA derived vaccine has been developed. The vaccine has been stabilized by addition of other chemicals and doses were standardize for different age group in trials. Since the virus has mutated very fast leading to binding more to the receptor so there are chances that even after vaccination the infection may take place, but if vaccinated the severity of the virus will be less.

The lecture was very informative and the students were very eager to know more about the virus. The event was a huge learning experience. Students appreciated the kind of exposure that they have got and wishfully expressed their gratitude to Prof. V.S. Chauhan for providing this great learning opportunity to them. The session concluded with vote of thanks by Dr. Amod and concluding remarks by Prof. Anita Kamra Verma.

Kirori Mal College
University of Delhi
 NAAC accredited A+ grade with 3.54 CGPA
 Department Zoology
 under the aegis of DBT Star College Scheme

International Immunology Day-2021
29th April 2021
 Time : 4pm-5 pm

"Understanding Immunology to combat Covid -19: Myths & Facts regarding Evolution, Spread and Vaccines"

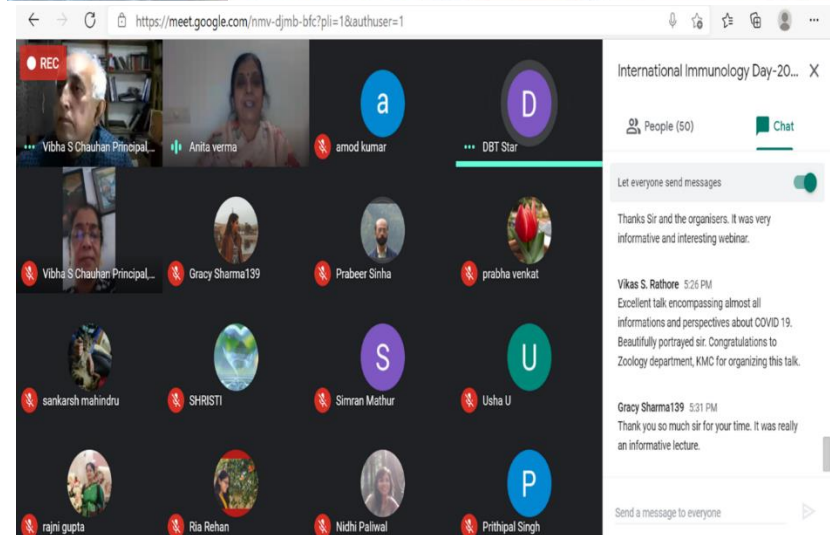
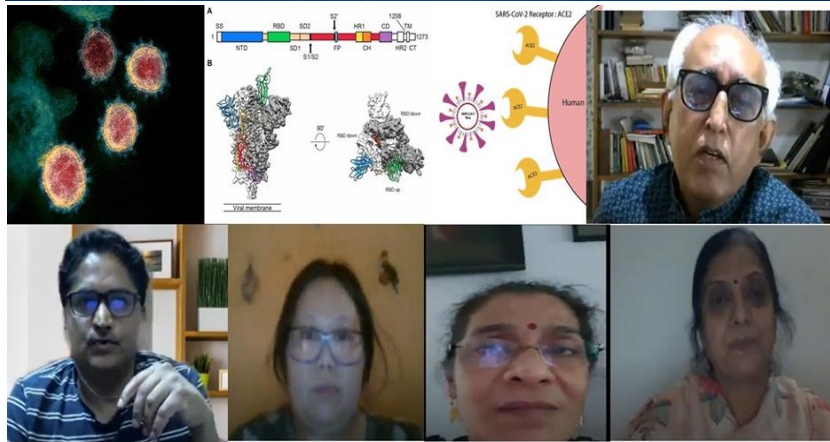
Prof. V S Chauhan
 Padma Shri & Emeritus Professor,
 Former Director ICGEB, New Delhi
 Former Acting Chairman, UGC

Registration link: <https://bit.ly/3tNfhH5>
 Platform Google Meet: <https://bit.ly/32Jpoky>

Program Coordinator
 DBT Star College Scheme
Dr. Anita K. Verma

Organizers
 Dept of Zoology
Dr. K. Cherita Devi
Dr. Amod Kumar

Principal
 Kirori Mal College
Prof. Vibha S. Chauhan



Glimpses of "International Immunology Day"

68. "World Environment Day" was celebrated by Department of Botany and Zoology on 5th June, 2021

To mark the occasion Botany and Zoology department organized intercollege Slogan Writing and T-Shirt Designing Competition and Environment Quiz. The students enthusiastically participated in various events.

<https://us02web.zoom.us/j/83947054692?pwd=YjhoTTFTdURWWGFPMGpOb0hoOUJhQT09>

Detail Report

The event started with introductory and welcome remarks by DBT Star College Scheme, program coordinator, Dr. Anita Kamra Verma. Dr. Anjali Kumari and Dr. Rana Samad started with slogan writing competition, where 16 students submitted slogans and 7 submitted T-Shirt design on the “**Ecosystem Restoration**”. Rajasvi of Gargi College got first prize, Ganesh Dubey of Kirori Mal College got second prize and third prize was shared by Himanshu of Swami Shraddhanand college and Kajal Thakur of Daulat Ram College. Yashika Koranga, Dayal Singh College, won first prize, Swati Singh of Kirori Mal college won second prize and Parmashi Yadav of Swami Sharddhanand College won third prize in T-Shirt painting competition. An interesting quiz on the environment was organised by Dr. Vibha G. Checker and Dr. Yamal Gupta. Dr. Anita Kamra Verma announced the results of all the events. The program ended with the vote of thanks by Subject coordinator Dr. Renu Kathpalia. The students were given e-certificates for participation.



Kirori Mal College
University of Delhi
NAAC accredited A+ grade with 3.54 CGPA
Department of Botany & Zoology
(under the aegis of DBT Star College Scheme)

World Environment Day

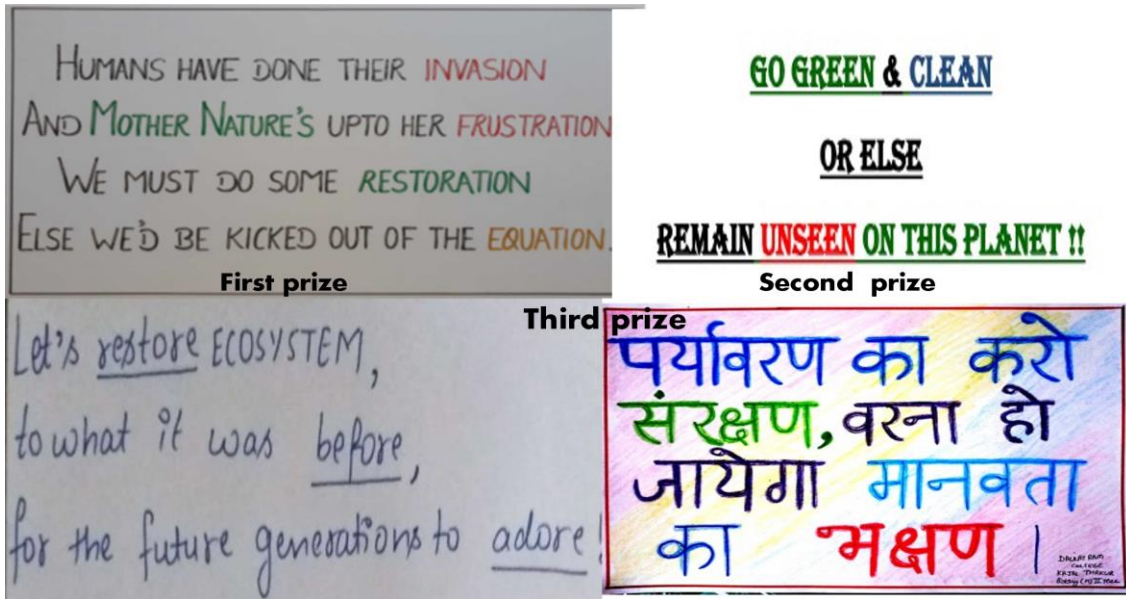
Celebrations
Date: 5th June, 2021
Timing: 11:00 am onwards

- ❖ Slogan Writing Competition
- ❖ T-Shirt Designing Competition
- ❖ Environment Quiz

Last Date for Registration: 4th June, 2021
Registration Link: <https://forms.gle/pufuBHAZ2hGDdABl9>
Meeting link: <http://meet.google.com/zer-vnxy-dfv>

Principal
Prof. Vibha Singh Chauhan
Program Coordinator
Dr. Anita Kamra Verma
Subject Coordinator
Dr. Renu Kathpalia

Organizing Team
Department of Botany
Dr. Vibha G. Checker
Dr. Yamal Gupta
Department of Zoology
Dr. Anjali Kumar
Dr. Rana Samad



Winning entries of slogan writing competition



Prize winning entries of T-Shirt Designing Competition

69. Kirori Mal College in collaboration with Dharamshila Cancer foundation organized a webinar on “Cancer Prevention and Palliative Care” on 9th June, 2021

The webinar was jointly organized by Kirori Mal College and Dharamshila Cancer Foundation. Dr. Suversha Khanna, a paediatrician and the president and founder of Dharamshila Cancer Foundation and Dr. Pragya Singh (Sr. Manager- projects Dharamshila cancer foundation and research centre) addressed around 80 participants on the topic “Cancer prevention and Palliative Care”.

Detail Report

The program started with welcome address by our Principal, Prof. Vibha S. Chauhan and introductory comments by our Program coordinator Dr. Anita K. Verma followed by introduction and welcome of Dr. Pragya Singh by Dr. Sangeeta Gadre, Physics Coordinator. Dr. Pragya Singh informed the participants the primary reasons that cause cancer in males and females and some common types of cancer. Symptoms and the seven warning signs of cancer were also discussed. She also threw light on some primary and secondary preventive factors we should keep in mind to protect ourselves. Dr. Pragya Singh talked on the role nutrition in prevention of cancer and highlighted basic principles to follow while undergoing cancer treatment viz.,

- Eat small frequent meals -- six to eight times per day.
- Make every bite and sip count by eating calorie-dense foods and add calories to foods.
- Limit foods and beverages low in calories.
- Eat a variety of foods -- include various colors, textures and flavors. You need high calories and high protein diet but you still need a balanced diet with foods from all food groups. Continue to include fruits and vegetables in addition to high calorie foods.
- Carry food with you at all times to enjoy while waiting for treatment, in the car, waiting to see the doctor, etc.
- As side effects become worse, most patients must focus on liquids and soft foods to obtain adequate calories. Often liquids can provide more calories than solids. As you move through treatment, you may find that you are having side effects that make it difficult to chew and swallow. All the more reason to use liquids to get the majority of your calories.

This was followed by introduction of Dr. Suversha Khanna by Dr. Reena Saxena, Chemistry coordinator. Dr. Khanna introduced palliative care and its role during cancer treatment and shared a touching story about when her father got diagnosed with cancer and her own personal struggle to ensure his health. She appraised all about Palliative care which is specialized medical care for people with serious illness such as cancer. The goal is to improve quality of life for both patient and his/her family. Palliative care is provided by a team of doctors, nurses, social workers and other specialists who work alongside with other doctors to give an extra support. It is appropriate at any age and at any stage of illness. Palliative care addresses the psychological, spiritual and economic issues of every patient and this care can be given everywhere and can be given with curative treatment. Palliative care control pain and other symptoms at the same time help to cope with the aggressive treatment and fight the disease.

Overall, both the sessions were very informative, heartening and encouraging. A number of questions were addressed by both the speakers. The webinar concluded with the final vote of thanks by Dr. Renu Kathpalia and concluding remarks by Dr. Anita K. Verma.



**Dharamshila Cancer Foundation
And Research Centre**
in collaboration with
Kirori Mal College, Delhi
under the aegis of DBT star college scheme

is organizing
WEBINAR ON
**Cancer Prevention &
Palliative Care**

Speakers


Dr. S. Khanna
Founder cum President, DCFRC

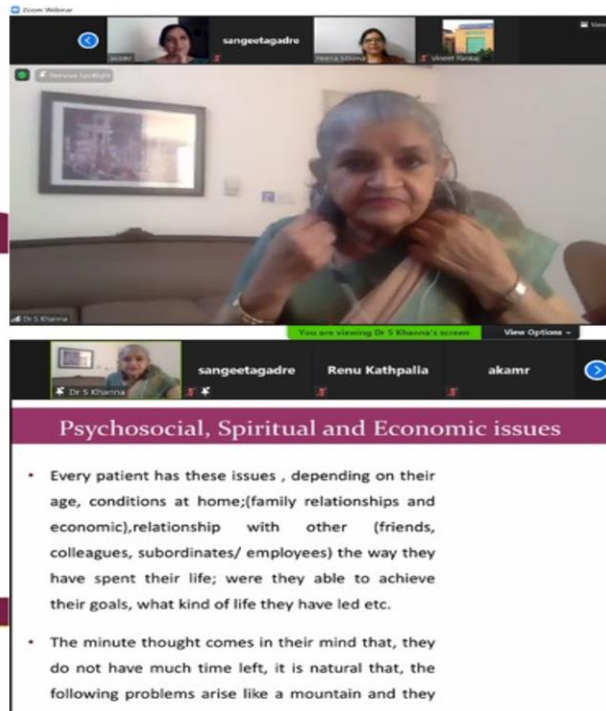

Dr. Pragya Singh
Sr. Manager - Projects, DCFRC

9 June 2021, Wednesday | 11:30 AM Onwards

ZOOM WEBINAR ID: 872 2161 5582 | PASSWORD: Prevention

For any query or assistance please reach us at:
+91 9999957572 | vineet.pankaj@narayanahealth.org

[LINK TO JOIN WEBINAR](#)



Zoom Webinar

sangeetagadre Renu Kathpalla akamr

Psychosocial, Spiritual and Economic issues

- Every patient has these issues , depending on their age, conditions at home;(family relationships and economic),relationship with other (friends, colleagues, subordinates/ employees) the way they have spent their life; were they able to achieve their goals, what kind of life they have led etc.
- The minute thought comes in their mind that, they do not have much time left, it is natural that, the following problems arise like a mountain and they

70. One Week Online Faculty Development Program on “Environmental Audit” 28th June- 2nd July, 2021

One Week Online faculty development programme on “Environmental Audit” was organised by Kirori Mal College from 28th June 2021 to 2nd July, 2021 under the aegis of DBT Star College scheme in collaboration with Pandit Madan Mohan Malviya National Mission on Teachers and Training. Each day comprised of two sessions and in each session, there were lectures followed by assignments and quiz. Twenty-three speakers, academicians, scientists and people from industry, were invited who appraised all the participants with different aspects on environmental audit. The department of Botany and Zoology organized the program where 71 participants from different universities participated.



Detail Report

Day 1, 28th June, 2021

<https://meet.google.com/vfe-xejt-xuj?hs=224>

Inaugural session

The program was inaugurated by Principal, Kirori Mal College, Prof. Vibha Singh Chauhan and Prof. Samabasiv Rao, Vice-Chancellor, Mizoram University. The inaugural lecture was addressed by Prof. Vibha Dhawan, DG, TERI. The Programme Coordinator Dr. Anita K. Verma introduced the speaker to the participants. Prof. Vibha Dhawan delivered a talk on **“Air Pollution: Causes, Prevention and Way Forward”**. She started with the discussion on Primary and secondary pollutants accumulating in air. The sources and effects of these pollutants were also discussed. She mentioned about air pollution in India and trends of annual average PM₁₀ concentrations (2001-2019). She also discussed air pollution episodes and its correlation with agricultural burning. Apart from local, the effects of urban and regional pollution were also discussed. Dr. Dhawan mentioned the fact that air pollution can aggravate covid related impacts in patients. The speaker enriched our knowledge about sources of pollution in India, natural causes of pollution, the share of different sources contributing to pollution in India and also the impact of pollution. She also explained about key measures taken to control air pollution in India and key solutions to solve the problem of air pollution. The speaker also suggested individual responsibilities to solve the problem. The session was appreciated by all the participants and ignited queries in enthusiastic minds. All the queries were answered by Prof. Vibha Dhawan. The session ended with vote of thanks by Botany coordinator, Dr. Renu Kathpalia.

Prof. Mohanraj Rangaswamy, Head, Department of Environmental Management, Bharathidasan University gave an elaborative and informative lecture on **“Life Cycle Assessment and Environmental Audit”**. The lecture emphasized the need for assessment of environment, life cycle analysis, its procedure, importance, limitation and the need for environment audit. The lecture elaborated on our responses to environmental issues, series of paradigms related to environment starting from no concern to pollution prevention to reuse and recycling of material to design of environment and sustainability. Talk also mentioned ecological footprint which is not limited to particular country, smart cities which can give input to better management of environment, impact of major industrial sectors. Besides habitat loss, pharmaceutical drugs, increase in particulate matter, microplastics is one of the major environmental concerns. He also elaborated technologies in which waste from one industry becomes input for other industry. Life cycle analysis attempts to measure cradle to grave impact on ecosystem. Important aspect of life cycle approach was briefed. Procedure of doing life cycle analysis, current uses, its importance and limitations were discussed. He emphasized environmental audit improves LCA. The lecture concluded with the change in transformation of personal mobility by 2040 which would include battery electric vehicle, range extender, hybrid electric vehicle. It was an interesting lecture and speaker answered the queries of the participants.

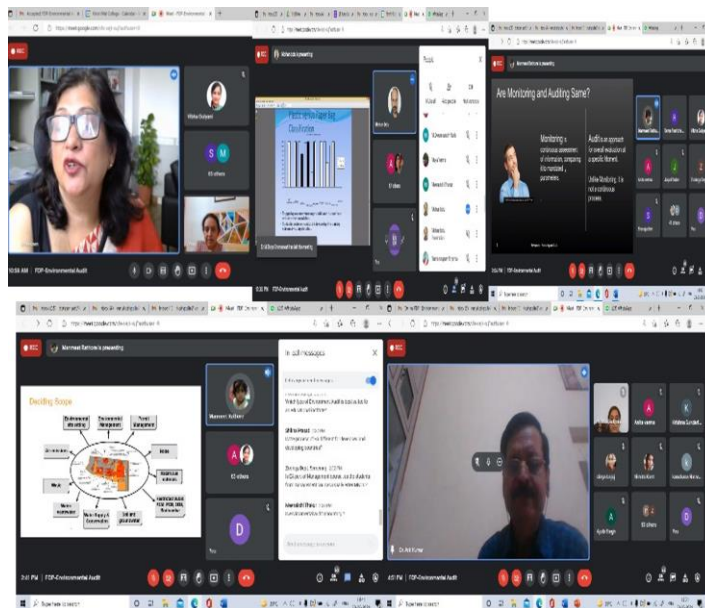
Session II

A lecture was delivered on **“Environmental monitoring and Audit”** by Mr. Manmeet Rathore (ESG, Impact Investment). Dr. Vibha G. Checker welcomes and introduced Mr. Rathore. He described the types of Environmental monitoring and Environmental audit, need of audit, scope and its process. He greatly emphasized on that Environmental audit is needed to ensure the ecological impacts from the construction and operation of the project is kept within acceptable levels and the application and mitigation measures are practical and effective. The difference between environmental audit and environment impact assessment, types of environmental audits were also highlighted. Speaker mentioned that baseline monitoring is required to record baseline conditions of the site, it should be conducted as a one – off site survey prior to commencement of any construction work. He stressed that these databases provide an early indication of any of the environmental control measures or practices fail to achieve the acceptable standards. The different steps involved in environmental audit by taking case studies were also mentioned. The lecture was very elaborative and included all the aspects involved in environment audit. The session ended with the questions taken by Dr. Maya, which were well answered by Mr. Manmeet Rathore. The vote of thanks was presented to him for sparing his valuable time to appraise all the participants with methods involved in environment auditing.

An **Environmental Quiz** was hosted by Dr. Vibha G. Checker and Dr. Yamal Gupta after the lecture in which around 50 participants took part. The questions were related the environmental issues and all the participants participated with full zeal.

The last lecture of the second session on 28th June was by Dr. Anil Kumar, Ex-Director, Department of Environment, Govt. of Delhi. Dr. Vibha G. Checker introduced the speaker to the participants. The topic of the talk was **“Environmental Legislations”** and it began with

discussion on constitution provisions related to environment. The Government of India contains several environmental prescriptions. The speaker enriched our knowledge about various environmental pollution control laws, viz., The Water Act (1974), The Water (Prevention and Control of Pollution) Act (1974), The Air Act (1981), Environment Protection Act (1986) were discussed in detail. Major highlights of Noise pollution (Regulation and Control) Rules (2000) and Environmental Legislations applicable to Environmental Audit were also shared. The session was appreciated by all the attendees and ignited queries in enthusiastic minds. All the queries were answered by Dr. Anil Kumar. The session ended with vote of thanks by Programme coordinator Dr. Anita K Verma.



Glimpses of Day 1

Day 2, 29th June 2021

Session I

<https://meet.google.com/iru-nshz-ifh?hs=224>

The second day began with talk on “**Economic Evaluation of Ecosystem Services: A Case Study**” Dr. D.R. Ravi, Environment officer, KSPCB. Dr. Yamal Gupta introduced the speaker to the participants. The lecture highlighted the renewable and non-renewable resources, services provided by the ecosystem and ecosystem and economics. The natural resources are available free and creates free rider problems and thus natural resources are misused and exploited. His talk also highlighted environment vs development, scarcity and economics, valuing natural resources and need to evaluate the environmental services. His lecture concluded with the techniques involved in environmental evaluation categorised into revealed preference approaches, stated preference approaches and combined approaches using example of calculation of total economic value of lakes. All the queries raised by the participants were clarified by Dr. Ravi.

The second lecture was on “**Pollution Control**” by **Dr. Anil Kumar**, Ex-Director Environment, GNCTD. After the brief introduction of the speaker by Dr. Sanjukta Das the speaker presented his talk highlighting different types of pollution. He elaborated air pollution by presenting the data of ambient air quality, different types of air pollutants, monitoring and action against violators of dust control measures, He informed the audiences about the comprehensive action plan (CAP), national clean air program (NCAP) and implementation of action plan finalized by high level task force (HLTF) being implemented as per the direction of supreme court. This was followed by details of water pollution and various agencies and department involved in implemented for controlling water pollution. The various steps implemented to control pollution of river Yamuna. Dr. Anil Kumar also presented the details of noise pollution and methods to measure noise level. The noise pollution is categorised on the basis of noise being created at community level as well as occupational noises. Next, he talked about soil pollution and its impact on environment and mitigation measures for soil pollution. This was followed by the question session and formal vote of thanks by Dr. Anita Kamra Verma where she profusely thanked him for the support.

Dr. Gauri Garg introduced **Ms. Karishma Bist**, Additional Director, FICCI, Delhi. The topic of the talk was “**Water Auditing- A Tool for Water Conservation**”. Ms. Karishma started her talk with the introduction of FICCI involvement in water audit studies and 10-15% reduction in water consumption has been achieved. She mentioned the details of water audit in which qualitative and quantitative analysis of water consumption is done. Why the water audit is conducted and the scope of work, water audit methodology was explained with elaborative data presentation. FICCI have procured all the latest equipment to collect the data and to verify the data submitted by the clients. Based on water audit studies water audit report is prepared and after discussion with the client the report is finalized. Most of the industry are advised to follow water conservation techniques and methods. She showed different method used to minimize the water use at home as well in industry, hotels and multi-storeyed apartments. The efficient taps, shower system and flash tank were displayed. Wastewater segregation and treatment for recycle and reuse is also being checked by auditing team. Rain Water harvesting techniques are advised to the clients. She also highlighted the case study of Paper and pulp industry where water auditing has reduced water usage in the processing of paper. There was also reduction in the effluent generation and specific water use has been reduced as well the production increased because of using efficient techniques. Another case study of dairy unit was also shared by the speaker. The lecture was very informative and role water audit and FICCI actively preparing water audit report were informed to the participants. Dr. Cherita presented vote of thanks to Ms. Karishma Bist after the interjection session.

Session II

Dr. Anil P. Joshi, Founder, Himalayan Environmental studies Conservation Organization (HESCO). “**Environmental Product**”. An ecologist and botanist by training working on nature and natural resources was introduced by Dr. Amod. An excellent orator and dedicated environmentalist enlightened the audience with his vast experience. He mentioned the GDP of

various countries and only 1-2% is contributed by agriculture. The agriculture the source of life and has been forgotten in the rat race of development. The industrial contribution has gone up in the past years all over world and the contribution of agriculture in India has also reduced from 40-60% to 16-20% recently. There is economic disparity and in every five year plans the difference is increasing. He started his organization in Uttarakhand where the industrial growth is tremendous and insisted that at the cost of GDP the ecosystems has been degraded and not been taken care. Human beings are dependent on the nature products and still we ignored the ecosystem growth. In the journey of hundred years, we have lost 60% of forest cover that ultimately goes to industrial growth. Talking about Amazon Forest fire and if it goes on the effect will be disastrous such as temperature rise, global warming due to development and so on so forth. The economic fight has taken front seat and ecology and environment has taken back seat. Water is nowhere contributing in the GDP of a nation. Water bodies in the country has reduced dramatically and most of the river are in crisis. Himalayan glacier has also reduced and glaciers are melting fast. The water is reducing at very fast pace and we are not concerned about it. He highlighted that environment and ecosystem growth have been ignored in the GDP of the nation. He and his team raised the voice for ecosystem growth including water, air and soil quality. The state agreed to give equal status to environment growth and environment product with GDP. After every economic development we are losing environment and once the laws will be implemented the environment will also include in the growth of the nation. There is large gap between GDP and environment and if GEP is included the compensation will be given for loss of ecosystems. Prof Vibha Singh Chauhan joined to present vote of thanks to Dr. Anil P. Joshi and appreciated his initiatives of bringing indigenous methods in practise and protecting environment. Prof. Anita K. Verma thanked Dr. Anil P. Joshi for enlightening all of us and are very grateful for sharing his valuable time.

Dr. Anjali Prabhakar introduced **Mr. Sanjay Kumar Jha**, IA&AS, DG, Audit (Environment & Scientific Department), CAG office gave a very lucid talk on **“Environmental Audit: CAG's Perspective”**. Comptroller & Auditor General (CAG) of India is the head of the Supreme Audit Institution (SAI) of India and is known as the Indian Audit and Accounts Department (IA&AD) Mandated by the Constitution of India as Auditors to the nation Articles 149-151 of the Constitution prescribe the unique role of the CAG. Designing an audit exercise, setting the audit objectives, scope, choosing the right audit approach and establishing suitable audit criteria, developing audit questions, determining the auditing skill levels and executing the audit. The objectives of the performance audit of renewable energy sector in India were to examine the progress made in increasing the contribution of RE resources in India's energy mix/electricity mix; increasing access to electricity/ lighting needs in remote and rural areas and promoting research, design, development and demonstration. Adequate knowledge in all aspects of auditing and capability to carry out financial, compliance the team should have a mix of different professional expertise viz., Comprehensive and adequate knowledge of environmental and climate change issues acquired through training followed by practical experience and an independent and unbiased approach, with aptitude for research. The major audit reports prepared for Conservation and Protection of Tigers in Tiger Reserves, Management of waste in India, Water Pollution in India, Compensatory Afforestation in India, Renewable Energy Sector in India, Environmental Clearance and Post Clearance Monitoring,

Rejuvenation of River Ganga were also highlighted. He mentioned that in India, environmental accounting is still in nascent stage. Ministry of Statistics and Programme Implementation, has consolidated the data on physical stock and quality of major natural resources in their publications titled Envi Stats 2018 and 2019. The participants were delighted with the expertise and knowledge of Mr. Jha and presentation of the auditing reports directly related to Union Environmental Ministries. He was given a hearty vote of thanks by Prof. Anita K. Verma.



Glimpses of Day 2

Third Day, 30th June 2021

Session 1

<https://meet.google.com/kpe-fpvt-fna>

In continuation of online lecture series of FDP an elaborative and informative lecture was delivered by **Mr. Puneet Kaushik**, the Founder Director, EHS Alliance Services on the topic “**Environmental Audit for the Educational Institutions**”. Dr. Leena welcomed and introduced the speaker to the participants. Mr. Kaushik emphasized on the proactive approach rather than reactive approach towards the environment. He described very well about the various services, the environmental compliance and management system implementation gaps, along with related corrective action, the environmental auditing and its origin. He elaborated the relationship between educational institutions and environment. He described the various stages of environment audit, the benefits of environmental auditing and how it fits with the environmental management responsibilities of an institution and elaborated the various activity of environment audit stages from the pre audit data collection till the submission of draft report. He explained about the environment audit considerations, the waste management system and the various methods making greening institutions like replantation, hedge plants and grasses along with that he emphasized strongly on the crucial role of institutions in biodiversity conservation. He strongly recommended the green consumerism and elaborated

wisely usage of the energy by adopting innovation and some parameters like use of electrical appliances based on star rating. In his concluding remarks he explained the various case study that highlighted the various practices regarding consciousness towards environment conservation like tree plantation, world nature conservation day. Dr. Renu Kathpalia presented formal vote of thanks to Mr. Puneet Kaushik for delivering a very informative talk.

The second lecture on the day was on “**Environment Impact Assessment**” by **Ms. Shweta Chahar**, Project Consultant, AECOM. She was introduced by Dr. Rana Samad. Ms. Shweta talked on the Environment impact assessment (EIA) history and its evolution, EIA core values, EIA mechanism, different Types of EIA and opportunities in EIA field. Talking on the protocols she mentioned that impact predications are done for air, noise, water and land pollution. The impact predication also includes Biological and socio-economic level. The environment management plan is done at three different phases, viz. pre-construction, construction and operation and maintenance phase. She also discussed plan implemented in different phases and gave their detailed account like different parameters to be monitored, location of the construction work, frequency of measurements at the site. At the end she discussed the opportunities in EIA field viz. freelancing and environment consultant in specific sectors, environment consultant in MNCs, setting up of testing laboratories and EIA research and education. It was indeed a very lucid and interesting talk and raised many questions which were answered back by Ms. Shweta Chahar. She was profusely thanked and appreciated by the organizers and the participants.

The next lecture was on “**Ecosystem Restoration**” by **Mr. Sushil Kumar Sharma**, Former General Manager, Corporate Sustainable Development, NTPC Limited. Dr. Amod introduced the speaker. With plethora of colorful slides Mr. Sharma in very simple elaborative ways explained the different types of ecosystems, the causes of ecosystem degradation its causes effects and social impact. He discussed initiatives taken by UN decade on ecosystem restoration:2021-30. The different steps taken in the past are; UN General Assembly designated 5 June as World Environment Day (WED) in 1972. The first such day had the slogan “Only One Earth” and took place in 1974. World Environment Day was conceived to raise awareness on the problems facing our environment such as air pollution, plastic pollution, illegal wildlife trade, sustainable consumption, sea-level increase, and food security, among others. The purpose of WED is to spread awareness about the threat to the environment due to rising pollution levels and climate change. The theme for World Environment Day 2021 is “Ecosystem Restoration”. UN Decade on Ecosystem Restoration is launched on WED 2021. He cited examples where initiative have been taken to restore the ecosystem. The Badarpur eco park developed by NTPC being built by fly ash and will be one of the largest man-made parks in India. Discussing the recent success stories, he further cited the example of Dharmraj Village Anand, Narmada Landscape restoration project. His talk also included the different innovative and creative ideas given by different people all over the country. Vertical forest in cities, roof top solar PV systems, solar PV water Pumps, solar PV cold storage, drip irrigation, organic balcony garden and adopting organic products are some of the ways by which ecosystem can be restored. It was a visual feast full of information and very interesting talk. He was profusely thanked by the organizers and appreciated by all the participants.

Session II

Dr. Cherita introduce and welcome **Prof. Vandana Mishra**, Environmental Studies, DU. gave an enlightening talk “**Industry Sustainability**”. She talked about the growing industry i.e., Fast Fashion Industry available to all classes of consumers resulting in grave human and environmental health risks associated with inexpensive clothing. The environmental cost of the industry is on water quality and quantity, carbon foot print, chemical use and textile waste. The primary concern of this industry is to reduced the cost and increased speed of delivery to the market and is not at all concerned for environmental pollution and volumes of waste being generated. She also highlighted the ways to sustain this industry by policy makers, retailers and the consumers. The common effluents treatment at Bhuj is taking care of pollutants however, many of the dyes used in the industry are untreated or partially treated creating socio-economic and environmental challenges. These azo dyes used in the fashion industry are microbially degraded under saline condition of the effluents resulting in toxic and carcinogenic products which are affecting at the cellular level to plants as well as animals. Taking plant as bioassay system these products were tested and found to cause chromosomal abnormalities. The need of the hour is to develop cost-effective, environmentally safe and industrially acceptable biotechnologies methods. She reiterated that characterization and toxicity assessment of dye waste water before after the single stage treatment is must. It was an eye-opener for one and all. The interjection session was very long as her talked raised many queries, which were well answered by Prof. Mishra. Prof. Anita Kamra Verma praised her talk and gracious acceptance of the invitation.

“**Environmental Audit and Life Cycle Assessment –A Case Study of Coffee Processing Industry**” is topic of talk by Prof. A.K. Nema, IIT, New Delhi. Dr. Anjali introduced and welcome Prof. Nema. He started his lecture by showing two major types beans viz. arabica and indica, field of coffee with wonderful colors photos of the coffee plantation. Addition of chicory root is used as an adulterant where 3 parts of chicory are mixed with 1 part of coffee. The pure coffee is not commercially used as it is very difficult to keep in powder form as well as the cost will become too high therefore large amount of chicory root is added. While elaborating the processing of coffee the amount waste being generated was also presented. The processing involves many steps firstly, the pulp of coffee is isolated after drying the bean under sun. The ways by which drying of coffee cherry is done the fetch the price. He shared the details of coffee industry auditing done by his group. The auditor team included by team leader, key team members which are chemical or environmental engineers, operational personnel, budgeting personnel, manager all are well acquainted with the regulations. He highlighted the coffee processing in detail and the effluents released during the processing. The auditors carefully analyzed the water consumption at different stages of coffee processing and auditing has reduced the water consumption in the processing unit. Dr. Rana Samad conducted the interjection session. The formal vote of thanks was given by Dr. Renu Kathpalia.

At the end of the day 3, Dr. Bhuvan Chopra, Environmental studies, University of Delhi, conducted an environmental quiz on climate change which enthralled all the participants.



Glimpses of Day-3

Day 4, 1st July, 2021

Session I

<https://meet.google.com/ktw-hjtf-stf>

The day started with the lecture on “**Benefits of Environmental Audit**” by **Dr. M. Dwarakanath**, Ex Director, Department of Science Technology and Environment, Govt. of Puducherry. Dr. Sanjukta Das Introduced Dr. M. Dwaraknath to the participants. Giving the background of environmental audit he described EA is a systematic, documented, periodic and objective review by a regulated entity of facility operations practices related to meeting environmental requirements. In India it was introduced in March 1992 and it is the first country in the world to make environmental audits compulsory. Environment audit cover waste management, waste minimization, emission to air, ground water protection, surface water management, energy and utility consumption, protecting of environmentally sensitive areas, control of visitors and addressing the local issues. The EA helps to avoid accidents and reduce risks, meet clients’ requirements, green branding, helps to save the cost and resources. EA also helps to keep up better environment and lesser pollution, waste minimisation and cleaner technologies and protects occupational health as well as environmental health. It is management tools to mange environment and almost every detail of the EA using two case studies were clearly explained. He also highlighted the benefits of environment audit both in terms of cost reduction and predict future threats too. The interjection session was very interesting and very good learning experience of all the participants. Prof Anita Kamra Verma presented formal vote of thanks and appreciated all the guidance provided by Dr. M. Dwarakanath.

CA Amarjit Chopra, Ex-president, ICAI was introduced by Dr. Renu Kathpalia. The lecture was delivered on the topic "**Role of Chartered Accountants in Environmental Audit**". He has described the connections between chartered accounting and auditing in numerous businesses quite well. He focused on the numerous legislations governing environmental auditing. Because of the multidisciplinary nature of environmental science, the group must have a team well versed in the subject and know the concept of sustainability and the Institute of Chartered Accountants has set up the standard board of environment sustainability. He also informed that none of the agency is funding if the project is causing environmental damage and are not funded unless and until they submit the report of environmental audit report. The auditor has responsibility to see reports besides involving money and one of the most important information an auditor has to verify that project must ensure environment sustainability. The claims made by management are to be verified by an auditor. The Institute of chartered accountant has taken many initiatives to keep the standard of reporting and it has been greatly appreciated. He differentiated between Carbon neutral and carbon net zero on the basis of the carbon credits of the company. An auditor has to verify and ensure that the claim made by an organization regarding carbon credits are not fake. It is now business responsibility of an auditor not only to check financial matters but also controlling the damage of environment. During interjection he informed that as such there is no paper on environment in CA course but soon the CA will also be asked about the environment sustainability. Prof. Anita Kamra Verma conveyed her heartfelt gratitude to Mr. Chopra for enlightening everyone on various aspects of environmental audit and the responsibility of Chartered Accountant. The only country to have sustainability board and assurance certificate with different gradation means that chartered accountant is doing such a comprehensive job and for this she congratulated him and applauded for this initiative by the institute.

"Environment Audit of Air Pollution Control Systems" Mr. M.A Patil, Sr. Director, FICCI. Mr. Patil was introduced by Dr. Nidhi. Environment Audit for Performance Evaluation of APCD (Add-on Pollution Control Device)- A case study was presented by Mr. Patil. It was the auditing report of a steel factory presented with all technical details including plant description, field measurements to evaluate performance. The recommendation by the auditors were also discussed. The recommendation for APCD to industry were to provide new hood as per the design provided, Keep a stand-by (spare) hood arrangement to replace whenever one hood is damaged, Provide new smooth pivot arrangement, so that hood movement is smooth such that it can be pushed/pulled by one workman effortlessly, Increase filtration area, by adding one more module of bags by doubling the no of bags, Eliminate leakages in the bag filter by proper sealing of leakages, Ensure supply of compressed air at 4 kg/cm² for 24 X 7, whenever furnace is running and design the most suitable hood for satisfactory extraction of fumes. Mr. Patil also shared the designing, installation and performance of APCD with the participants. Following the interjection session, the speaker received a formal vote of gratitude for painstakingly explaining the report's details.

Session II

After the lecture Mr. Manish Raj organized a quiz on the Kohot app. Nearly all the participants participated in the quiz and the session was enjoyed by one and all.

Dr. Archana Singh introduced **Dr. Ratul Baishya**, Department of Botany, University of Delhi. Dr. Baishya gave an elaborative and informative lecture on “**Carbon Sequestration and Auditing: Method, Scope and Prospects**”. The lecture emphasized the need for carbon sequestration and explained the methodology of carbon audit by preparing carbon strategies. Carbon strategy is compulsory in certain designated industries like steel, car manufactures. As a corporate social responsibility, it is mandatory to reduce its carbon footprint. Carbon auditing for greenhouse gases became an important aspect due to the effect of CO₂ on climate change. The lecture highlighted Kyoto Protocol and its implications. CO₂ concentrations and its effect on net primary productivity, methodology for biomass and carbon audit. Mechanism of the REDD+ Programme for carbon auditing, its scope and prospects was also discussed along with four REDD+ projects in India with special mention of Khasi Hill REDD+ project. The lecture also highlighted carbon credit, Carbon Capture Storage (CCS) technology. Various CCS technology like coal to liquid plant in ERDOS (Magnolia), options for storing CO₂ in deep underground geological formations were discussed. Latest technology in CCS field like Direct Air Capture, Dastur International which is the only flagship project of Atma Nirbhar Bharat Initiative for CCS in India was also mentioned. The lecture concluded with the need for mechanism for long term storage of the carbon fixed through photosynthesis, proper channelling of the recalcitrant carbon, CO₂ mitigation strategies adopting CCS technology, exploring ways for implementation of REDD+ projects and reducing carbon footprint not only at individual but also at organizational, national and international level. Dr. Renu Kathpalia presented hearty vote of thanks for the time given by Dr. Ratul Baishya and enlightening the participants with every detail of carbon sequestration.



Glimpses of Day 4

5th Day, 2nd July 2021

Session I

<https://meet.google.com/gme-uonz-epb>

“Environmental Audit programme in India: Role of Educational Institutes” by **Dr. M. Dwarakanath**, Ex-Director, DST, Govt. of Puducherry. Dr. Cherita introduced the speaker to the participants. The presentation was divided into two parts- role of institutes in Eco-restoration and R&D. Ecosystem restoration relies on the concept of Reimagine, Recreate and Restore. The activities those can be conducted in the individual level as well as institutional level are growing trees, greening cities, recreating gardens, cleaning up rivers and coasts etc.

The speaker also spoke about relation between various religious writings about environment. In Christianity, many bible verses were written on protection of environment and prevention of pollution, care of animals etc. In Hinduism, worshiping natural resources, depicting animals in the form of God, were all related with the protection and conservation of environment. As a role of institutes, the proverb “If you are thinking a century ahead; Educate people” is very much applied.

Academic institutes have green visions, green purchase policies, adopt green roofs and helped in increasing the diversity via conservation of biodiversity. Institutes should follow eight concepts of resource conservation on Rethink, Refuse, Reduce, Reuse, Refurbish, Repair, Repurpose and Recycle. Institutes also can initiate the foundation of Eco-club, adoption of Renewable energy, Resource audit, Water treatment and Carbon Balance.

As an individual approach, one can stop using social media platforms unnecessarily, like stop sending unnecessary mails, usage of plastics etc. As a student, taking part in Eco-club, participating in various projects related to environmental conservation, and student must be aware of the chemical uses in daily commodities etc.

The second part of presentation described the role of institute in R&D. Research is basically carried out for various purposes: Survival, academic, basic, laboratory research, lab to land programmes and collaborative research with industries. R&D projects are taken up to satisfy various purposes like professional improvement, professional recognition, job satisfaction, career advancements, help institutes and needy students, find the solution for society and communities.

The presentation also described the protocols of funding agency and a guide for preparation of effective proposals. Generally, funding agency announced the policy, formulated the program, evolved the scheme, defined the thrust area and time bound proposal is invited. Preparation of logistic proposal with proposal time frames inclusion of expert co-PI, finding social relevance, proper accounting etc are needed. There are certain points to be kept in mind is that proposals are never to be irrelevant to the thrust area, repetitive proposals, analysis commercially available products etc

The speaker also guided the participants looking for funding agencies. He informed that funding may be available from state/ central/ autonomous bodies under specific schemes. It may be national or international. Some of the notational agencies are DBT, DST, MOEF&CC, ISRO, UGC, S&T Councils, Ministry of water resources and defence etc. Whereas important international agencies are JICA, UNDP, UNEP, British High Commission etc.

Dr. Leena Shakya introduced the next speaker **Mr. J. S. Kamyotra**, Member Secretary, CPCB, New Delhi who delivered a very useful and informative talk regarding environmental impact assessment entitled “*Environmental Clearances (EC) w.r.t. Megaprojects*”. He emphasized the proactive approach of environment impact assessment as it is the only right tool to cope up with the development with respect to the environment. He elaborated the importance of environment clearance for various industries. He briefly told the historical aspects of EC in India and explained the various stages, categorization of the industries based on the types of the activity, monitoring, validity and timeline of environmental clearance. He explained the role of Supreme Court and localized people in getting EC. He also talked about the post monitoring, conditions of EC, validity and the applicability of it. He discussed about the various types of certificates issued by the concerned authority. At the end he cleared the common misconception about the environmental clearance to the participant in a very elaborative manner.

Dr. Yamal Gupta introduced and welcome Dr. S. Krishna Bharathi, TUV Rheinland Middle East office, Dubai who enlightened on the topic “*Environmental management: A comprehensive study of Industrial sector*”

Session II

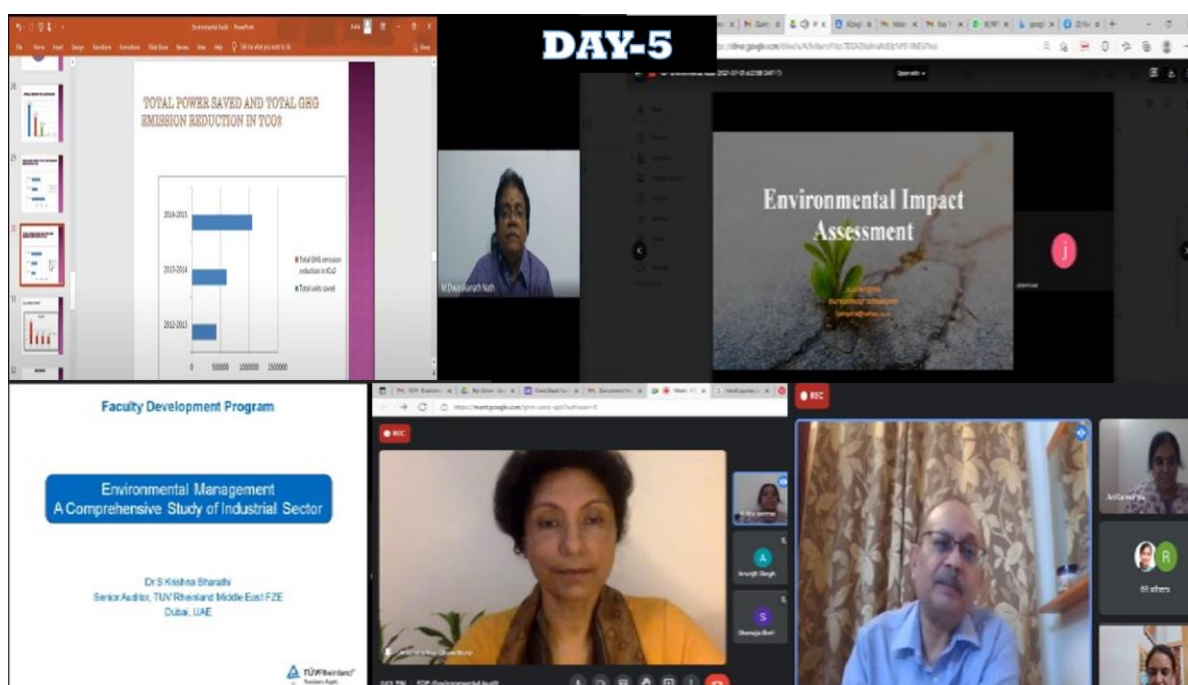
In session II on the last day Dr. Anumita Roy Choudhary, Executive Director, CSE, enlightened the participants on the topic “**Leveraging resource audits for sustainability and climate resilience in cities**”. She was welcome and introduced by Dr. Gauri Garg Dhingra. Dr. Choudhary began by recapitulating the environmental imperative of resource audit and talked about the risk associated with sea level rise, heat mortality rate in India, cities drowning in their own waste. She went on explaining the cost of global climate change on Indian GDP, she also explains how cities collectively consumes 75% of world natural resources, generates 50% of the waste and emits 70% of greenhouse gases. The solution or the control measures for all these problems can be the building of sustainable environment. Madam highlighted 7 goals of sustainable development which are- good health and well-being, affordable and clean energy, economic growth, industry, innovation and infrastructure, sustainable cities and communities, responsible consumption and production, and climate action. The speaker highlighted the holistic energy management approach for material, energy efficiency and thermal comfort. She also suggested various techniques for this, for example building orientation for maximum energy efficiency, emphasized the importance of star rating on electric appliances.

Following this the speaker discussed about the depleting natural resources (water table) and their impacts. Multiple resource saving techniques for climate resilience were also explained in detail by Dr. Choudhary. She explained the rain water harvesting techniques, decentralized wastewater treatment technique adopted by Delhi Jal Board, soil biotechnology for wastewater treatment, pit composting. She highlighted the need to develop Net Zero Energy Building (NZEB) by giving example of Indira Paryavaran Bhawan, Supreme Court Annexe Building, IIT Jodhpur and many more.

Finally, the speaker described the need of green audits and initiatives and also emphasize on the role of resource audit for sustainability. The session provided an in depth understanding of the resource audit management techniques. The speaker used numerous examples to clarify the concepts. The session ended with an enriching discussion where Dr. Anumita Roy Choudhary responded to questions posed by participants. She was presented with formal vote of thanks by Dr. Renu Kathpalia.

Mr. Rajiv Ranjan Mishra, DG, National Mission on Clean Ganga was welcome and introduced by Dr. Renu Kathpalia. Mr. Mishra enlightened the gathering with presenting wonderful slide and videos on “**Rejuvenation of Rivers and Related Ecosystems**”. The emphasis of the talk was on the status of major rivers of India, encroachment of waterbodies, several river rejuvenation projects undertaken, biodiversity conservation along with sustainable agriculture in Ganga Basin. At first Sir talked about the major threats to Rivers like solid waste, open defecation, sewage and industrial pollution, chemical fertilizers etc. The lecture detailed ten principles of River Ganga rejuvenation, protection and management. Mr. Mishra explained in detail four pillars for River rejuvenation which are Nirmal Dhara, Aviral Dhara, Jan Dhara and Gyan Dhara. The need for river centric planning was highlighted in the talk that included planning for river basin, river sensitive urban planning and projects for river management. Sir also mentioned about the Ganga River basin management plan which starts in 1985 as GAP 1 (Ganga Action Plan) upto Namami Gange Mission in 2014. A beautiful video of River Ganga

and its major Ghats was shown during the talk which was a visual feast and enthralled each one. The audience also got to know the four basic rights of a river (i) right to flow, (ii) right to its land (iii) right to maintain its ecosystem and, (iv) right to flow unpolluted. Several aspects related to Namami Gange mission project were discussed in the talk such as Ganga basin management plan, interventions under Namami Gange, Kanpur city integration model, management of urban river stretches, flood plain protection, wetland mapping and conservation and many more. Indeed, the talk was very thought provoking and informative. The session was appreciated by all the attendees and ignited queries in enthusiastic minds. All the queries were answered by Dr Mishra. Prof. Anita Kamra Verma presented vote of thanks to Mr. Rajiv Ranjan Mishra for giving his valuable time. Prof. Anita concluded five-day Faculty Development Program on Environment Audit a grand success where the speakers gave a holistic view to a field which most of the participants were naïve. Everyone appreciated the effort and thanked the organizers for organizing an enriching, informative and well-organized program. The participants were given e-certificates and study material of the lectures.



Glimpses of Day 5 and Valedictory session

71. “Hands-on Workshop on UV Visible Spectrophotometry and its Applications” held in Department of Chemistry, University of Delhi, under the aegis on DBT Star College Scheme on 19th July 2021.

Department of Chemistry, Kirori Mal College conducted an online workshop on “UV Visible Spectrophotometry and its Applications” under the aegis of DBT star college scheme on 19th July 2021. The audiences comprised of undergraduate students from our college along with several faculty members.

Detail Report

Principal, Dr. Vibha Singh Chauhan inaugurated the workshop with her words of wisdom. The workshop was divided in two sessions followed by a quiz based on questions from each session. Both the speakers, Dr. Kiran Arora and Dr. Ruchi Sharma Pandey were from the Department of Chemistry, Kirori Mal College University of Delhi and delivered a very stimulating and compendious lecture followed by a hands-on session based on computer simulations based virtual laboratory platforms. Dr. Kiran Arora familiarized the students with the various aspects of Ultraviolet-Visible spectroscopy and its application in understanding the structure and properties of chemical compounds. This was followed by a hands-on session by Dr. Ruchi Sharma Pandey, where she explained the various aspects of carrying out experiments on a UV-Vis Spectrophotometer as well as a demonstration of the UV-Vis Spectrophotometer that is present in the chemistry labs of the Department of Chemistry. She also introduced the students to online lab platforms where the students did two virtual experiments understanding the concept behind and the working principle of the instrument. The Seminar Committee of the Chemistry department held a quiz at the end for the student participants which was both the fun element as well as a window into their understanding. The students were enthralled and asked several interesting questions. The workshop ended with a formal vote of thanks.

Kirori Mal College
NAAC ACCREDITED GRADE 'A+'
University of Delhi

Hands-on Workshop on UV-Visible Spectrophotometry and its Applications

July 19, 2021
3 PM - 5 PM

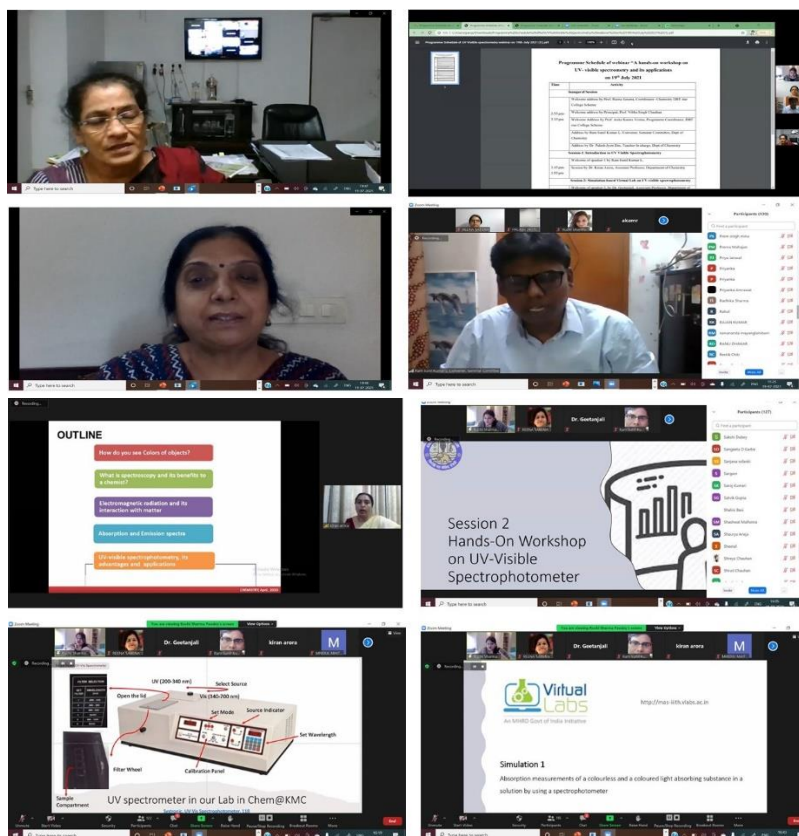
Organised by
Department of Chemistry
(under the aegis of DBT Star College Scheme)

SESSION ONE 3:00 PM - 4:00 PM Introduction to UV-Visible Spectrophotometry	Dr. KIRAN ARORA Assistant Professor Department of Chemistry, Kirori Mal College, University of Delhi
SESSION TWO 4:00 PM - 5:00 PM Simulation based Virtual Lab on UV-Visible Spectrophotometry	Dr. RUCHI S. PANDEY Assistant Professor Department of Chemistry, Kirori Mal College, University of Delhi

Register before 17th July 2021 on <https://forms.gle/ax88RarQAmCrXxtT9>

Zoom Call details will be mailed after registration

Dr. Palash Jyoti Das Teacher In-charge Ram Sunil Kumar Lalji Convener, Seminar Committee Department of Chemistry	Prof. Anita K. Verma Program Coordinator Prof. Reena Saxena Coordinator- Chemistry DBT Star College Scheme	Prof. Vibha S. Chauhan Principal
--	--	--



72. Nature Awareness Program was organised by Department of Botany and Zoology to celebrate “World Nature Conservation Day”. 28th July, 2021

The Department of Botany and Zoology celebrated “World Nature Conservation Day” on 28th July, 2021 by organizing photography competition and biodiversity Quiz on the google platform.

<https://meet.google.com/xbx-secg-eia?hs=224>

Detail Report

The event started with introductory and welcome remarks by DBT Star College Scheme, program coordinator, Prof. Anita Kamra Verma. Dr. Cherita conducted the first event on Photography competition on the theme “**Biodiversity**” where 18 students submitted Photographs with caption. Next event was Collage competition on the theme “**Conservation Hotspots**” where 15 students participated. The entries for both the competitions were excellent with wonderful caption. This was followed by Quiz organized by Dr. Cherita and Dr. Vibha Gulyani Checker on the topic using Kahoot app. The two events were judged by Dr. Deepak Bhardwaj, Assistant Professor, Central University of Jammu, Dr. Priyanka Khanduri, Department of Botany, Vidyasagar Metropolitan College, University of Calcutta and Mr. Abhishek Kanojia, Department of Botany, University of Delhi. Dr. Deepak Bhardwaj appreciated the effort of all the participants and announced the results of two competition. Dr. Deepak Bhardwaj said that it is very good initiative to spread awareness about conservation and conservation hotspots among students. We should all come forward for conservation of

nature and must contribute for this cause. The other two judges also appreciated students’ their effort and excellent work. The first prize for photography competition was give Nasra from Gargi college, second prize was shared by Vaishali Sharma and Kanishka Sharma both from Central University Jammu and Third prize was won by L. Elone form Gargi College. Tamana Sharma from Gargi College won the first prize for Collage competition second prize was given to Vaishali Sharma form Central University of Jammu and third prize was won by Jayati Pandey from Gargi College. Prof. Anita Kamra Verma concluded the session with happy note.



73. A webinar was organised by Department of Botany, Physics, Chemistry and Zoology to celebrate “World Ozone Day” 16th September, 2021

Prof. Balram Pani, Dean of colleges, University of Delhi, enlightened the students on the topic “Preservation of Ozone layer”. The session was attended by more than 100 participants on the google platform.



Kirori Mal College
University of Delhi
(under the aegis of DBT STAR College Scheme)
NAAC Accredited A+ College

Celebrates
International Day
for the
Preservation
of OZONE
LAYER

WEBINAR
SESSION

Date: 16th September, 2021
Time: 11 AM (IST)

Platform: meet.google.com/dwi-bsmb-cca
Time: 11 AM (IST)

Speaker: **Prof. Balaram Pani**
Dean of Colleges
University of Delhi

Prof. Reena Saxena
Subject Coordinator-Chemistry

Prof. Anita K. Verma
Program Coordinator
DBT Star College Scheme

Prof. Vibha Singh Chauhan
Principal
Kirori Mal College

Dr. Renu Kathpalia
Subject Coordinator-Botany

Dr. Sangeeta Gadre
Subject Coordinator-Physics

74. International Conference Nanomedicine “Biomolecules for Human Health (NBHH-2021): Small Molecules, Big Opportunities!!” (27th-28th September, 2021) organized by Department of Botany and Zoology

The conference registered as many as 225 participants and 130 abstracts have been received. This conference also witnessed the participation from 30 different Universities including 24 National Universities (11 private, 13 Government) and 6 International Universities. The conference had a list of distinguished speakers and panelists from across the world including the National (JNU, DU-South Campus, NII, ICGEB, INMAS, Jamia, AIIMS, ICMR) as well as eminent international institutes (Mayo Clinic-USA, Shenzhen University-China, Boston, UCLan-UK, University of Liverpool-UK and Deakin University-Australia among others). The conference was held on zoom platform

<https://www.google.com/url?q=https://us02web.zoom.us/j/87903709252?pwd%3DbENoemFuU09JVUZUUk81QUFDWlpRUT09&sa=D&source=calendar&ust=1643985440758043&usg=AOvVaw2oxODcO0Touixe7II0I1dR>

Day 1 (27th September, 2021)

Inaugural session

The two-Day (27th-28th September, 2021) International Conference Nanomedicine “Biomolecules for Human Health (NBHH-2021): Small Molecules, Big Opportunities!!” was organized by Kirori Mal college via virtual platform. The conference began at 8:30 am wherein the convenors of the conference Prof. Anita Kamra Verma and Dr. Renu Kathpalia joyfully welcomed the Principal Prof. Vibha S. Chauhan, and the delegates present in the conference. The convenor then enlightened the audience about the theme, objective and schedule of the conference organized by Kirori Mal College under the aegis of DBT Star

College Scheme. Participants were also informed about the post conference workshop where the students could learn more about characterization and synthesis of nanoparticles & applications along with synthesis of Biosensors all under the umbrella of this workshop. Prof. Kamra was happy to share that the idea of the conference was initially conceptualized way back in March 2019. However, due to the pandemic situation the idea got delayed, nevertheless the conveners took this as an opportunity to make the conference an International one.

Prof. Vibha S. Chauhan then formally introduced and welcomed the Chief Guest **Prof. P.C. Joshi, Vice Chancellor University of Delhi**. Prof. Joshi congratulated the organizing committee for fruitful translation of this international conference with such eminent National and International speakers. He congratulated Prof. Kamra for creating such a wonderful facility at the college and truly deserve the promotion as well as academic excellence award. He also congratulated the college for establishing itself as Star college and getting grade "A" NAAC Accreditation. He also acknowledged the fact that the organizing committee is making full advantages of the available resources by publishing the proceedings of the conference in a CSIR journal "Indian Journal of Biochemistry and Biophysics" with impact factor of 1.95. He also emphasized the concept of 'Nano' or 'Parmanu - a tiny molecule or building block' given by Maharshi Karnad.

Plenary Session I: Radiation Nanomedicine

The inaugural session was followed by the Plenary Session I on "**Radiation Nanomedicine**" where a wonderful lecture was delivered by **Prof. Sunil Krishnan**, Mayo Clinic, Florida, USA on the topic "**Radiation Therapy and Radio-diagnostics as Nanomedicine**". Prof. Krishnan exquisitely talked about radiation therapy and Radio-diagnostics as Nanomedicine. He elaborated that amalgamation of gold nanoparticles and irradiation therapy could be utilized to effectively treat pancreatic and hepatobiliary tumors. Talking about Gold nanoshells and its characteristic features Prof. Krishnan explained that these are very easily modulated, biocompatible with dielectric silica core robust structure of 150nm in size and form thiol bond resulting in delay of tumor regrowth. He also supported these findings with Monte-Carlo computational modelling and simulations. Prof. Krishnan appraised all about some of his ongoing work on photodynamic therapy, nanophosphor and molecular nanomachine. His talk gave insight to quality and in-depth work undergoing in his laboratory. His talk enlightened and raised many queries which was very well taken by the speaker. Prof. Inderjeet from Department of Chemistry, DU present formal vote of thanks to Prof. Sunil Krishnan.

Prof. V. S. Chauhan, Arturo Falaschi Emeritus Scientist, ICGEB was introduced by Dr. Sunil Dhiman. Prof. Chauhan delivered the talk on the topic "**Vaccine Platforms: Delivery and Role of Nanotechnology**". The talk started with the characteristics of the virus and a huge number of people suffering from covid is due to human interference. He explained that all viruses must enter the human cell and each virus has different mechanism of entering into the host cell and that is amazing. Covid virus is smart virus so there is need to have different process for making vaccines and covid vaccine making process is different and should be referred as new generation vaccine. RNA is used for the first time for making vaccination although RNA being unstable but it is mainly due to nano material progress. Nanotechnology has played fundamental role in developing, delivering and stabilizing the RNA vaccines. He discussed the composition of different vaccine and advantage of using lipid nanoparticles. Adenovirus vaccine are so friendly but still is not being used as vaccine though Russian have

used these adenoviruses as vector. Prof. Chauhan enriched the participants with the nitty gritty of vaccines mainly covid vaccine and emphasized that formulation of vaccine is possible only by understanding fundamental of nanotechnology. He concluded his talk by highlighting delivery of vaccine through 3-D nanoparticle and research on using hydrogel for delivering larger peptides. Talking about the failure of development of HIV vaccines is mainly as Coat of HIV changes very fast and major challenge is that all viruses mutate very rapidly. Malaria, TB, HIV vaccine have not been developed. Presently, 20 vaccines are now being used and given to healthy people so its efficacy and safety is very important. Dr. Cherita presented formal vote of thanks to Prof. Chauhan.

The next speaker **Prof. Anil K. Mishra**, DG, INMAS, Delhi, was introduced by Dr. Cherita Prof Mishra delivered his talk on the topic **“Radionuclides are Nano and Beyond: Application in Human Health”**. He started his talk by reiterating that we must learn from nature. At the onset he said that quantum theory is central to explain artificial intelligence, clinical diagnostic etc. In nature it is evident that minimum size has maximum energy which is being exploited by nano scientists. He emphasized that it is very important to first have clear cut objective for what purpose one is using these nanoparticles. Copper, silver and gold has stable isotope, select which one is best and exploit for clinical diagnostic purposes. He explained the designing of copper, Scandium and Silicon based nanoparticles and how these have been used for diagnostic purposes. Nanoparticles for diagnostic purposes should be not metabolized by the cell at the same time should be safely released. The metal selected should be protected with ligand and taken by the receptor of the cell. A very energetic talk on revolution in clinical diagnosis using nanoparticles and was brilliantly presented. He gave example of Scandium -44 radioisotope designed nanoparticles and Si NMR used for tumor diagnosis. At the end he said it is fundamental to know the chemistry and biology behind the particle which you have synthesized. During interjection he cleared that intake of these metal can be toxic if concentration goes beyond the optimal level. Dr. Renu Kathpalia presented formal vote of thanks to Prof. Anil K Mishra.

Plenary Session II: Nano vaccines

Dr. Amod introduced **Prof. Amulya Panda**, Former director of NII who delivered lecture on **“Vaccine Development using Polymeric Nanoparticles”**. He talked facts about vaccines, its formulation using biodegradable polymeric particles and development of novel polysaccharide-based vaccines using nanotechnology. He reiterated that vaccines are the second most important requirement after clean water, more than 300 vaccines for 80 human pathogens are already developed and vaccines are given to healthy people so it should two hundred percent safe for use. He showed major milestones in vaccines development and talked about new generation vaccines working principle. It is very important that vaccine must induce long lived plasma and memory cell ultimately leading to the formation of germinal center. The major bottleneck in vaccine development has been overcome by polymeric particulate delivery system as it enhances immunogenicity of the antigen. Nanoparticle entrapped PCP induces specific protective immunity by enhancing formation of germinal center and increasing frequency of T follicular helper cells. He categorically remarked that candidate for sixth revolution in vaccinology is immune-engineering and delivery systems and the development of covid vaccine substantiate that. In the interjection section he said that we need to develop vaccine which can boost the activity of germinal center. He also informed that immunity

develops up to 12 years and that is the reason all vaccines are given only during these formative years. It is for the first time that vaccine has been injected to adults. Dr. Sanjukta Das gave the formal vote of thanks to the speaker.

Oral Presentation Session

This was followed by the Oral paper presentation which was judged by Dr. Tinku Basu, Dr. Zeenat Iqbal, Dr. Durga Pal and Dr. Prasanna. After the oral presentations Dr. Amod presented vote of thanks to all the judges.

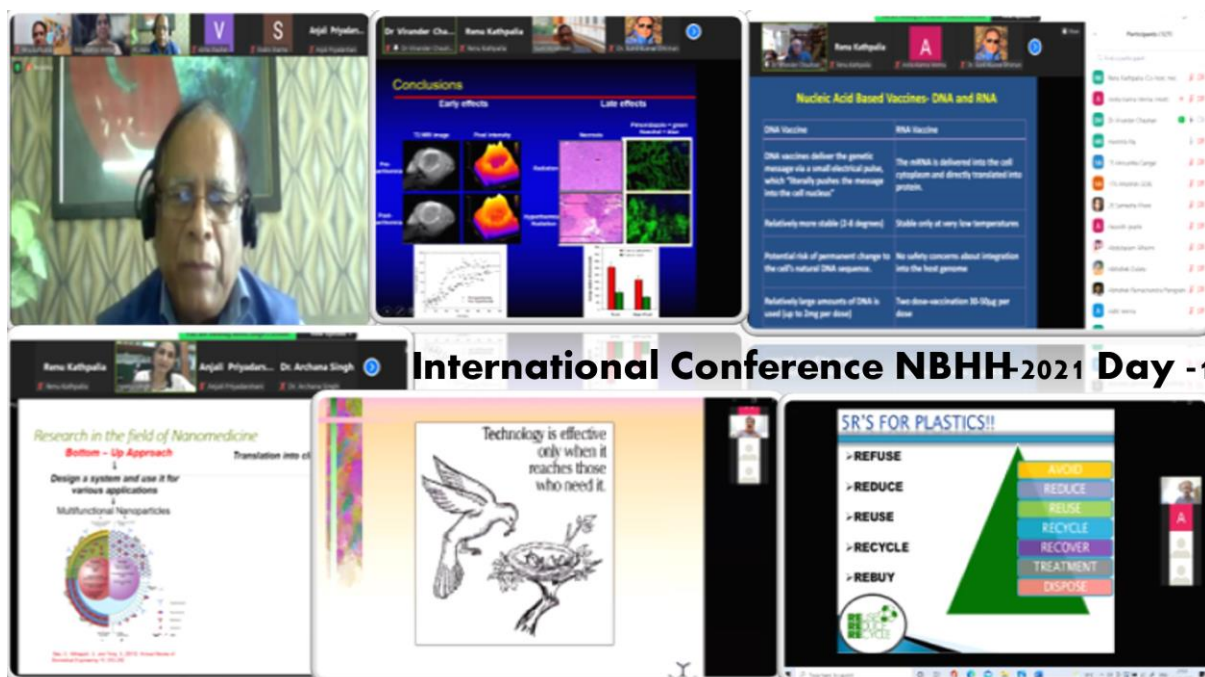
Plenary Session III: Environmental Nanotechnology/Engineered Nanomaterials

Prof. Nand Gopal Sahoo welcomed Dr. Sanjukta Das. Prof. Sahoo gave lecture on **“Waste to Wealth”: A Green and Sustainable Roadmap for conversion of Solid Waste to Value Added Products and their Applications”** and discussed the critical issues for disposal of plastic waste. Although 60% of plastic is recycled in India which is the highest in the world, but still there is no organization to dispose it and garbage is mixed with sub-standard plastic, even burning of plastic is also major problem in India. Plastic which is a polymer can be recycled by mechanical, chemical and thermal. In his lab the main objective is to convert plastic into graphene, which has high tensile strength rather than recycling plastic. In 2016 preliminary waste management set-up was installed in Nainital which convert waste plastic into graphene (15-20%), liquid fuel (25-30%) and gaseous fuel (35-45%). The cost of 1 gm of graphene is Rs 9,500/ and graphene made in his lab around Rs 800/-. He elaborated that graphene produced in his lab has all the properties like graphene available in market. They have used graphene for the energy and biomedical applications, for making carbon nanotubes, water filters, for removal of dyes and can also be mixed cement to concrete mixture. In his lab even paper, cotton and agricultural waste is also converted into graphene. He also showed graphene paper made in his lab which is used for testing iron which already being patented. It is greener technology and has multidisciplinary application. It was indeed putting theory into practise. During interjection he informed that the centre has been able to do pyrolysis of all kind of plastic and it the catalyst concentration and temperature which is optimized in his lab that always convert plastic into graphene. Dr. Archana Singh gave formal vote of thanks to the speaker for his marvellous contribution to the environment sustainability.

Dr. Archana introduced the speaker **Dr. Neetu Singh** from IIT, Delhi. The topic of the talk was **“Engineering New Materials for Drug Delivery: A Chemist’s Perspective”**. She appraised all about her work being carried out in her lab. The lecture also described toxicity of nanoparticles, mitigating the toxicity of nanoparticles which is the key for drug delivery. Key aspects for mitigating cytotoxicity through protein corona formation, intracellular interactions and ROS generation were discussed. The talk emphasized the use nanoparticles for drug delivery. Nanoparticle based drug delivery platform technologies offer several distinct advantages over free drug molecules. Nanoerythrocytes an alternative to pegylated liposomes were discussed. The protocol involves haemolysis of erythrocytes and ghost were prepared, incubated with nanoparticle, dye and drug. The dye is photostable and hydrophobic in nature and drug camptothecin (CPT) a potent anti-cancer drug was loaded. The size of nanoparticle was measured using DLS and zeta potential. It was observed that there was no protein adsorption and these were stable structures. The efficacy of drug delivery was checked *in vitro*

there was increase in circulation. The technologies developed possess the highly tuneable physicochemical properties of synthetic nanomaterials as well as the complex protein composition of the nature's own delivery vehicle, the red blood cells. The talk discussed RBCs derived vesicles, characterization of these nanovesicles, their efficacy *in vitro* and *in vivo*, chemo photothermal therapy using CPT-ICG loaded nanoerythrocytes, strategy for improving drug encapsulation. The lecture concluded with future perspective showing challenges in clinical translation of nano RBCs like inadequate pre-clinical studies, factors affecting nanoparticle accumulation in tumor, sterilization and challenges in commercialization. Prof. Anita K. Verma profusely thanked Dr. Neetu Singh for accepting the invitation and present her work to the participants.

Poster Presentation Session



Glimpses of Inaugural session and day 1 activities

Day 2: 28th September, 2021

Plenary Session-IV: Nanophotonics

Prof. Tymish Y. Ochulchanskyy from Shenzhen University, China was introduced by Prof. Rajni Gupta. Prof. Tymish enlightened the participants on the topic **“Merging Nanotechnology and Biophotonics for Imaging Guided Photoinduced Therapy or Cancer”**. The speaker started by discussing about the applications of nanotechnology in biomedicine and how the same can be used for addressing the challenges or lacunae that exist in diagnostics and therapy of various diseases. The audience were enlightened with the concept of multimodal nanoparticulate probes.

The advantages of nanocarriers for formulation and what makes nanomedicine better than the conventional drugs such as multimodality, controlled and targeted release. The use of nanoparticles in Oncotherapy was discussed as these are able to pass the endothelial barrier and reach the cancer cell. The advantage of addition of ligands to the surface of NPs in binding

and recognition of receptors in cancer cells was briefed. The speaker introduced a newly emerged term “Theranostics” for modern personalized medicine, where there is a nanotechnology enabled combination of diagnostics and therapeutics.

In a very candid manner Prof. Tymish mentioned Biophotonics as ‘marriage’ between photonics and biology and has immense scope for early detection and treatment of diseases with the help of nanoprobe for imaging and sensing, and also light activated and guided targeted Nanotherapy. Further with the help of covers of various journals he showed the evolution of terminologies such as ‘Theranotics’, ‘Nanotheranotics’ and ‘Photonanotheranotics’. The audience were told about concept and the principle behind Photodynamic therapy and interaction between light and tissue. With the help of diagrams, the penetration depth of various wavelengths of light were shown and discussed. The speaker tried to show how the different wavelengths of light such as Visible, NIR and SWIR effect the visibility and how SWIR because of low scattering useful for development of Nanoprobes. Then the speaker discussed the core-shell polymeric nanoparticles and nanoliposomes for NIR-SWIR and multimodal imaging guided photodynamic therapy of cancer. At the end, the absence of oxygen (hallmark of cancer cells) was discussed as a challenge for multimodal imaging and the ways to overcome it by generating oxygen for enhanced up conversion photodynamic therapy were discussed. It was a very enlightening and updated lecture. After interjection with participants Prof. Inderjit Roy from Department of Chemistry presented vote of thanks to Prof. Tymish for his presence in the conference.

The next speaker **Dr. Sushma Talegonkar**, DPSURU, was introduced by Dr. Ram Babu. Dr. The topic of the talk was “Functionalized dual loaded nanoliposomes effective Treatment of Resistant Metastatic Melanoma”. Dr. Sushma discussed different therapies in the cancer and factors in causing resistance in Melanoma. CD44 receptors are overexpressed in cancer and hyaluronic acid as substrate of CD44 Dacarbazine with eugenol is used in designing the drug. Optimization of the drug delivery were studied in her lab. The protocol followed involved software using which Lipid, water, ethanol and drug concentration was optimized. After optimization surface functionalization was achieved and different size of liposomes were formed which were entrapped with the drug and drug release at the target site was studied. Cell lines were studied by MTT assay and cytotoxicity with drug can be reduced by coated nanoliposomes. In vivo studies in mice confirm that nanoliposome coated with hyaluronic acid the tumour growth of mice.

Dr. Anjali introduced the next speaker of the day **Dr. Zeenat Iqbal** from Jamia Hamdard. The topic of her talk was “**Nanomedicine therapeutics as an approach to ameliorate women reproductive diseases**”. She enlightened the participants with the role of nanomedicines in women health which is ignored like cervix cancer, healthy vaginal ecosystem and bacterial vaginosis. She talked vulvovaginal candida for which lipid based nanotherapeutics was tried by her group. Solid lipid nanoparticles were tried for controlled drug release, drug targeting by formulation and design approach. Luliconazole, an antifungal drug was used for candida species to stabilize the drug lipids were screened and spherical shaped nanoparticles were designed and *in vitro* studies in release of the drug were analyzed. Luliconazole based lipid nanoformulations were devised and screened. Exploration of antibiofilm was also being

undertaken. She also talked about treating PCOD with coated nanoparticles. She acknowledged various nano scientist for being inspiration in exploring the nanoworld.

Plenary Session-V: Regenerative Nanomedicine

Dr. Rana Samad introduced **Prof. Sujata Mohanty** from Stem Cell Facility at DBT-centre of excellence for stem cell research at AIIMS, New Delhi. She talked on regenerative medicine and nanotechnology for advances in healthcare. Stem cell is always in limelight and she talked her journey in the world of stem cells. Regeneration is there in nature but in complex multicellular organisms' degree of regeneration decrease. She talked about three diseases Parkinson' disease, diabetes and cardiovascular diseases which need organ transplantation. Stem cells technology has been used in eye-ocular surface reconstruction transplantation from donor eye to the recipient eye. Tissue specific stem cell are used in vitiligo where skin does produce melanin. By using hair follicle transplantation melanocytes were synthesized. To overcome shortcomings in using stem cells nanotechnology is used for stem cell tracking. Magnetic nanoparticles were used along the stem cells. Nanographene is used stem cells which differentiated into neurons. The neurons formed in this manner were secreting nopolamines and interact with each other. Stem cell interaction with nano structure scaffolds leads to formation of aligned nanofibers a special coating is done which make the sheet transparent it can replace the cornea. In future they are trying stem cell movement like cardiac cells which can used in heart tissues or making artificial heart. Fabrication and characterization of these has been successfully done. Biomaterial scaffolds are also done for bone tissue engineering. Graphene incorporated 3D porous material has been tried. Natural nanoparticles which are synthesized in the form growth factors and magnetic nanoparticles and nanochips to make neurons and wound healing has been successfully done. She concluded her lecture by saying that if stem cells are shown to be safe, non-tumorigenic and efficiently differentiated then "Lead will be turned into gold" by next generation students. It was a phenomenal presentation where she discussed stem cell therapy and its vast application using nanotechnology for fast targeting the stem cell delivery where it is required. During the interjection she said that stem cell therapy can be used for genetic diseases. Because of ethical issues the stem cell therapy is not fully exploited to treat the patients. Prof. Anita K. Verma presented formal vote of thanks to the guest.

Dr. Gauri Garg Dhingra introduced the next speaker Dr. Sangram Keshari Samal, ICMR-Regional Medical Research Center Bhubaneswar, Odisha. He talked about nano-biomaterial like nanofibers, nanogels, micelles, dendrimers, liposome and nanoparticles accelerate their delivery and enhance cell migration, proliferation and differentiation for regenerative medicines. NPs are biocompatible biodegradable, easy to prepare while giving the overview of drug delivery system he informed that GO nanosheets were designed and irradiated with laser resulted in photoporation which was analysed by flow cytometry. It increased visibility of delivery of si-RNA in cell. Bacterial infection need urgently to be addressed and design alternative antibacterial drug as antibiotic resistance is now global threat. Biofilm formation result resistance to antibiotic. Different nanoparticles were to coculture with biofilms in his lab. Bacteriophage therapy is also a good alternative to treat bacterial infection. Bacteriophage is modified with gold and magnetic nanoparticles and it gave positive results Charge effect

biofilm formation effect of different size pegylated polystyrene particles, D-aspartic acid carbondots, #D graphene oxide, 3D chitosan sacaffold were used for treating bacterial infection. Chitosan beads hydrogels release antimicrobial drugs in slowly and prevent infection. He informed that next generation of medical implants and therapeutic modalities, interface of biotechnology and traditional engineering and nano-biomaterial market will be governed by nanobiotechnology and use of antibiotic is going to eliminated for treatment of microbial infection. Students were delighted to hear the lecture which in depth dealt with bionanomaterials. During interjection session he reiterated that the concept of bacterial film is picking up fast all over world and antibiotics are not able to target bacterial infection. A formal vote of thanks was given by Dr. Renu Kathpalia.

Oral presentation session.

Poster presentation session

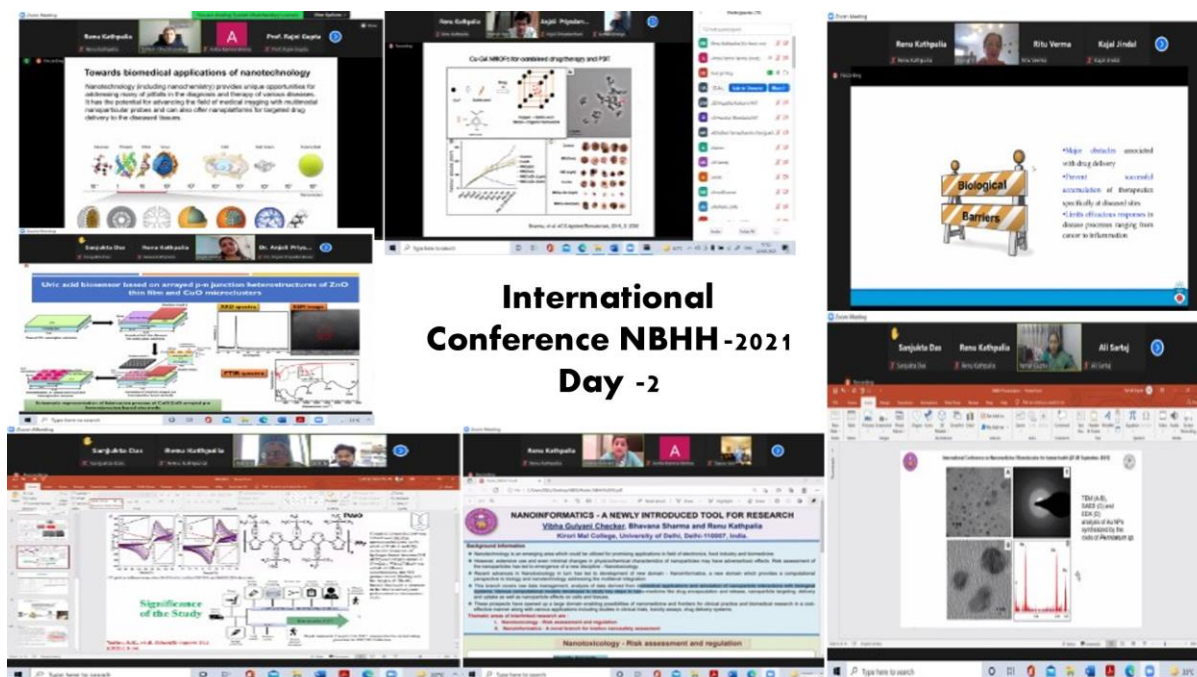
Plenary Session VI: Nanomedicines

Dr. Renu Kathpalia introduced **Prof. Kamalinder K. Singh** Prof. of pharmaceutical technology and drug delivery, University of Central Lancashire, Preston. Prof. Kamalinder gave lectre on the topic “**Designing Functional Nanomedicine for overcoming biological barriers**”. She started her lecture with introductory remarks on Nanomedicine which are very fast expanding and Asia has maximum growth in the field of Nanomedicines. Challenges in nanomedicine development are nanocarrier capability, stability shelf-life process scale-up ability, material excipient ability, regulatory concern and long-term safety measures. Covid - 19 mRNA vaccine is a big milestone for nanomedicine. Nano system can be used for functional nanomedicines. Talking about various physiological barriers, skin, air-lung barrier, reproductive, circulation barrier and Blood brain barrier she said of all these barriers blood brain barrier is very challenging and screening is done using in vitro -DBBB model using various lipids were tried in her lab. Cytotoxicity and cellular uptake of hybrid nanoparticles were studied using fluorescence microscopy. One of antifungal drug aspergillosis is prevalent and spreads to blood vessels and beyond. Covid-19 patients have also shown the effect on nebulization and unable to cross the barrier.

She concluded her talk with appraising all the emergence of nanomedicines brings hope for future drug therapies, understanding principles of biological barriers becomes critical knowledge to improve nano safety and efficacy for nanomedicines. Understanding the mechanisms that govern the fate of nanomedicines against these biological barriers including the strategies that can be used to shift their fate between access and blockage, has become key information for nanoparticle design. Safe -by-design technique to precisely manipulate nanomedicines through imposing biological barriers ultimately employing transformative nanotechnology and lifesaving medicines. Future challenges include more *in vitro* models for biological barriers, better pre-clinical models to mimic human environment as much as possible, scale up and manufacturing and regulatory hurdles. Nanomedicine is hope for target drug delivery. Participants asked their queries and appreciated the inspiring lecture. Prof. Anita

presented formal vote of thanks and appreciated her gracious presence and enlightening the participants.

Dr. Yamal Gupta introduced **Prof. Indrajit Roy**, Department of Chemistry, University of Delhi. Prof. Roy delivered lecture on the topic “**Nanotechnology for Biological Applications**”. He gave an overview of nanotechnology involved in health care for diagnosis, therapy both ex-vivo and in vivo. He mentioned different types of nanomaterial like liposomal or polymeric inorganic and inorganic and organic hybrid nanoparticles and their unique properties. NPs have high surface to volume ratio, porosity and biodegradability, unique optical and magnetic properties because of which there are used as drug carriers, tissue engineer, sensing, medical imaging super capacitors, and data storage. Quantum confinement effect has been used in semiconductors and nanoparticles known as quantum dots which give better insight into imaging the human body. Noble metal nanoparticles show surface plasmon resonance, magnetic properties and show phenomenon ferromagnetism. Nanomedicine is used for targeted delivery, controlled release, externally activated therapy and multimodality using multiple agents to perform multiple functions. He compared the conventional drug therapy with externally activated drug therapy. Photodynamic therapy involves activation by light leading to fluorescence and phosphorescence converting triplet oxygen to singlet oxygen which kills the tumour cells. Gold nanoparticle PDT in PS-doped nanoparticles resulted in singlet oxygen and killing cancer cells. Talking about Nanozymes he mentioned that these are nanoparticle acting as enzymes like catalase which converts hydrogen peroxide to water and oxygen by which hypoxia can be treated in tumour cells. It was a very lucid talk giving clear concepts about the role of nanoparticles in human health. Prof. Roy was profusely thanked by Prof. Anita.



Glimpses of day 2 of the international conference

Valedictory session

Prof Anita K. Verma appraised Prof Kundu about the conference involving different lectures and publishing 15 articles in Indian Journal of Biochemistry and biophysics. There are more 125 participants on both the days. We had galaxy of speakers, each and every one was par excellent and gave their valuable times. There were 85 abstract and faculty gave oral and poster presentation and there were 8 judges and the result has been complied.

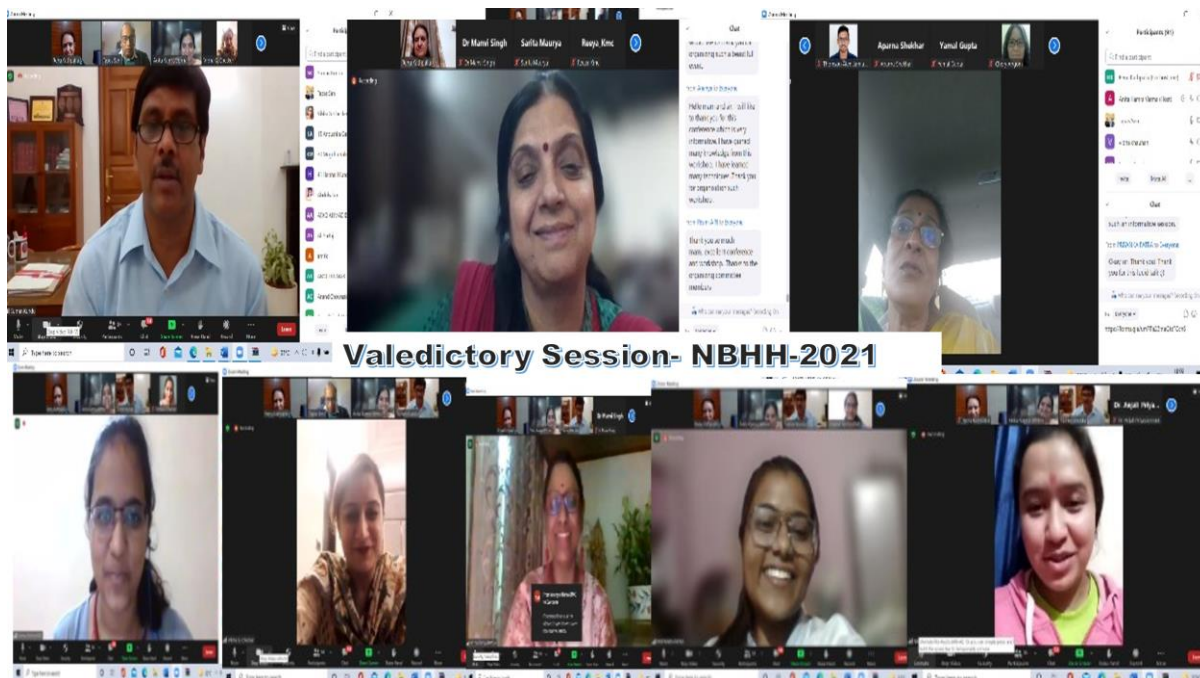
Prof Vibha Chauhan, principal thanked all the participants and congratulated the convenors and co-convenor of the conference. She welcomed Prof. Kundu and thanked him for joining and in the same vein she appreciated Dr. Tapas and Dr. Kamalinder for giving their support. It was meant to encourage students and the faculty member for giving the platform to learn nanomedicine. We are having high sense of elation and we will take to higher level. I am happy to inform all the Kirori Mal College got A+ from DBT star college scheme.

Prof. Tapas Sen appreciated the participation of research scholar and he advised the students three thing viz., talent, hard work and mindset to succeed in any field. The success of large event is success and hard work of everyone. The audience, students and researchers were very active and participated actively. A conference like this creates and gives platform to students and research scholars.

Dr. Sunil Dhiman introduced Prof. Suman Kundu to all. Prof. Kundu congratulated each and every one for wonderful scientific session. Nanomedicine and nanotechnology have elated everyone so we are nano-elated. The resource person holds the key to success of any conference. Mentioning the efforts of Prof. Anita Kamra Verma congratulated her on being awarded Academic Excellence Award from university. To have conference on nanotechnology is wonderful idea and even historian learn from this technology. Carbo nanotubes have been used in cosmetics in ancient India. Physicist and chemist are involved in this material science, metal nanoparticles, semiconductor, photodynamic, protein-based nanoparticles, food technology, manufacturing industry and has wide usage and is going to be used in space soon. Nanomedicine, biosensors, diagnostics, green synthesis are the areas where students must be motivated to do research. It is wonderful area I congratulate for picking this subject and I wish all the best for future endeavours. I am thankful for inviting me for this great event and then he announced the results of oral presentations Mr. Amit K Yadav from JNU, Ms. Kumari Bhavya and Ms. Lubna Siddiqui for Jamia Milia University won first second and third prize respectively. Dr. Manvi Singh from Dept of Pharmaceuticals won first prize, Dr. Kajal Jindal from Department of Physics, Kirori Mal College got second prize and Dr. Anjali Kumar Department of Zoology, Kirori Mal College. won third prize in oral presentation in the faculty category. In student category Ms. Monika Matiyani from Kumaon University, Ms. Rajashri from Bhuvneshwar won the prize in poster presentation. In faculty category Dr. Chansi Gupta from Amity University and Dr. Vibha Gulyani Checker from Department of Botany, Kirori Mal College, In the student category, Ms. Palak Chugh from Sri Venkateshwara college, Ms Anu from CSIR and Best interjector prize was given to Priyanka Patra, Anaya Mishra and Abhishek Dubey. Prof. Kundu said that you must keep up the spirit and be inquisitive.

The vote of thanks was given by Prof. Anita Kamra Verma. She congratulated all the participants and winners. Each and every student participated with keen interest and she is

excited to see participation from all over India and abroad. Some innovation has to come from the researchers and if we can catch the students at younger age and then they can come up with the innovative idea. Our university require mobilization of students and faculty at the college level. I profusely thank all my student, coordinator, Principal and galaxy of speakers for interacting with students. The need of the hour is collaboration among university.



Valedictory session guest Prof. Suman Kundu and winners of poster and oral presentation

Day 3, September 29th 2021

Workshop on Nanomedicine

Dr. Anand Tadas, Malvern, UK, delivered talk on the topic “**Drug Delivery: Characterization Perspective- DLS, Zeta & NTA**”. The research on drug delivery routes of delivery, delivery vehicles, cargo and targeting strategies is important for drug formulation. It is important that manufacturing process should consistently deliver the product, quality and critical process of materials. Drug product design, drug product control and patients need is required for drug product development. The physiochemical properties are first analysed for drug designing and these properties should be fit for biological process and price of drug need to be low. Then he showed the infrastructure required for setting up a company involved in manufacturing drug. The first thing is to find what is the routes of drug delivery; if it is oral, nanodrug delivery or oral solid dose products. Based upon ways of administration drug the drug is designed. Liposomes are good delivery system and different technologies are there to find the concentration, charge and size of liposome and the route of its delivery. The regulatory give the guidelines for designing the drugs. The different equipment used for checking, size, charge, excipient structure, bilayer phase transition, lamellarity and alkyl chain order to design liposomes. He informed about different equipment used viz., Nanotracking analyzer, Dynamic

and electrophoretic light scattering, Gel Permeation / size exclusion chromatography, differential scanning calorimetry and small and wide-angle X-ray scattering to analyse liposomes and then he explained their principle and methods to use these equipment. Prof. Anita appreciated and profusely thank Dr. Anand for sparing time and enlightening the participants.

This was followed by lecture on the “**Nano-bio-interaction: journey of nanoparticles inside the cell**” by **Prof. Anita K.Verma**. With wonderful illustrations she explained the cellular uptake and nanotoxicity it impacts on cellular structure, cell elasticity and the dynamic mechanism of the cell. It is of great significance to understand the microenvironment of NP simultaneously charge, size, elasticity and thickness is to be checked. She then explained cell membrane interactions and NP entry into cells. There are two pathways namely phagocytosis and pinocytosis and five different mechanisms of endocytosis leads to NP entry into the cell. There is recognition, processing before entry NP into the cell. If recognition is by the receptor it is known as receptor mediated entry. Based on the cell it may take 30-minutes to many hours to enter into the cell. The cell differentiates between different particles and can uptake NPs through Clathrin coated mediated endocytosis or caveolae mediated endocytosis. 15-18nm NP prefer caveolae mediated endocytosis. The cytoskeleton of the cell is also involved in uptake. There can be different pathways of entry of NP and the final fate of these NP in cell and cell signalling decide whether autophagy will take place. The presentation gave insight that biocompatibility of NPs in biological systems is the crucial step to decide the efficacy of Nanomedicines.

Mr. Jake Mazur-Deakin University, Australia delivered lecture on “**Nanoparticles-targeted therapy for the modern era**”. He explained targeted delivery by aptamers in the brain which has lots of receptors. Different types of NPs viz, coated NP with proteins, self-peptides coated, RBC membrane coated as well organic and inorganic NPs were tried for drug delivery. Sonication method was tried to prevent angulation of NPs and finally achieve entry in brain using different pathways via nasal.

Ms. Monika from nanobiotech lab, Department of Zoology, Kirori Mal College explained the fluorescence microscopy. She explained how the living cell, organic and inorganic specimens absorb and subsequently re-radiate light and exhibit the phenomenon of fluorescence and phosphorence. The comparison of fluorescence microscopy to ordinary light microscope was also explained. The principle, method of preparation of specimen by use of fluorescent dyes and targeting of proteins and immunofluorescent were explained clearly. The application of the microscope using different dyes used in the lab were also elaborated. She showed the video to explain the method to use fluorescence microscope.

Ms. Large Biswas gave hand on experience to perform “**Cytotoxicity assay by MTT**”. She explained the procedure of using haemocytometer and counted the number of cells. MTT assay was explained to test the cell viability and toxicity. MTT is a yellow water-soluble dye and reduced to purple. She talked about the principle, procedure of MTT assay through video prepared by her.

Dr. Amod, Department of Zoology, Kirori Mal College demonstrated the technique **“Genotoxicity Micronucleus assay- a gold standard for genotoxic hazard identification of Nanoparticles”**. The micronucleus assay: a toxic genetic approach for the risk assessment of NP. He talked the ames test and compared the other method to perform genotoxicity test. The multiple genotoxicity biomarkers used are chromosome aberration test, micronucleus induction assay, sister chromatid exchange analysis sperm toxicity test, rapid assay and comet assay. He explained in detail the micronucleus test which can be performed in bone marrow and circulating erythrocytes in fish which does not require ethical permission. The micronucleus can be identified by its size and the condensation is like nucleus.

Ms. Karishma from Nano biotech lab **“RT PCR - Gene Expression”**

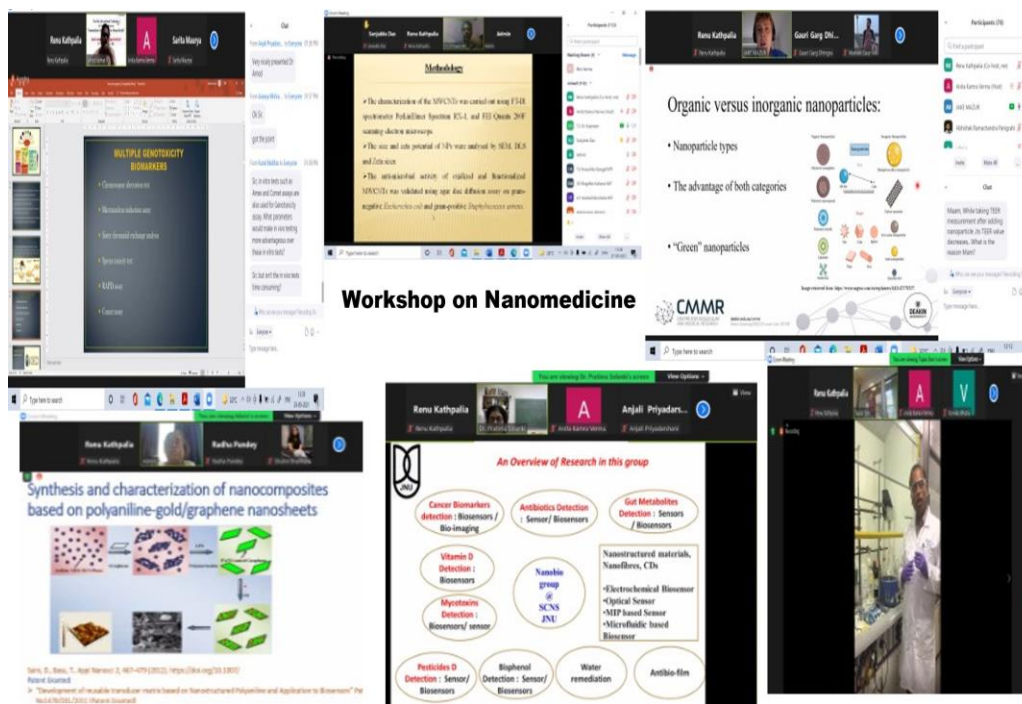
Dr. Pratima Solanki, JNU, New Delhi demonstrated **“Nanoparticle-Based Sensors for Pathogen Detection: From Bench-side to Field Ready Application”**. She introduced the biosensor which is an analytical device and converts a biological response into a measurable signal. Then she explained nanomaterial-based biosensors which can be easily fabricated. While preparing nanomaterial-based biosensors a self-assembled single layered molecules were used and functional group which interact were identified by the biochemical reactions that were visualized by immobilization. Discussing the protocol, she said that first biocompatible electrode is designed and is connected to amplifier where signals are amplified. These amplified signals are converted into digital value. Biosensor has three major components (i) A bio-recognition element such as DNA, enzyme (ii) antibody for recognition also called bioreceptor (iii) a transducer for conversion of a biochemical reaction product into a electrochemical signal. Leland C. Clarke in 1962 invented biosensor using enzyme. Biological recognition element like enzyme, antibody, DNA organelles, microbial cells and plant and animal tissue can be recognized by biosensor like, enzyme electrode, immunosensor, DNA sensor, organelle sensor, microbial sensor and tissue sensor respectively. Different biosensors which can be fabricated, electrochemical, calorimetric, piezoelectric and optical biosensor. These biosensors have immense application in industry, military, environment monitoring, agriculture and medical. Lateral flow immunoassay with low cost, reliable and easy to operate. Different biosensors for clinical diagnosis commonly used are glucose based on glucose oxidase, urea based urease nucleic acid, cancer biomarkers Vitamin D antibiotics detection. Nanomaterials are important for biosensors as they have high specific surface area, biocompatible, high chemical stability, electrochemical activity, high adsorption capability, high electron communication and negligible swelling in both aqueous and non-aqueous solution compared to organic polymers. She also mentioned the various biosensor being successfully used in diagnosis of various disease such as, Chitosan modified Nickel oxide immunosensor for vibrio cholera detection (made in her lab), Nano structural zirconium oxide based Geno sensor for *E.coli* detector, SARS-CoV-2 detection, zika virus detection, covid-19 biosensors. It was an excellent presentation with detailed information about biosensors and use of nanomaterials in disease diagnosis.

This was followed by demonstration of **“Electrochemical approach towards designing of nanoengineered materials”** by Prof Tinku Basu, Founder, Director, Amity University. Electrochemical approaches have been used to design nanomaterials and using this it possible

to enhance mechanical, optical, magnetic and biological properties of NPs. She cited various engineered nanoparticles synthesis; By using template-free nanoparticles and electrochemical method nanofibers were designed; microporous polyaniline films using foam templates were prepared by ultrasonication. Uniform porosity was an added advantage of these engineered nanoparticles. In her lab her group are able to synthesize nanostructured polyaniline, MOF steered electrosynthesis of anisotropic gold particles. Electrochemical reduced graphene oxide (ERGO) and electrochemical synthesized MOF has been synthesized and patent have been granted. She magnificently explained on a very crucial aspect of nanoparticles that how controlled engineering of NP can be used to increase the efficiency of NP and can be used for varied purposes. Challenges to nanoengineered materials the toxicity anisotropic material have less side affects the phagocytic effect of these is not much they can be used for drug delivery and cancer cell killing monoclonal antibody attached to it can delivered properly. What kind of material we should avoid during implementation? Silver nanoparticles ae the best for . The shape of NP affects their activity triangle, cubical or rod have different efficacy in using for their application. Why anisotropic NP has more application? Rod are aligned properly and stacked and then only they can be applied sjhape advantage can be only exploited if they are properly made.

Prof. Tapas Sen, Uclan, UK demonstrated **“Magnetic nanoparticles in bio separation: Application for the detection of food and waterborne microorganisms and potential for Covid-19 RNA”**. He elaborated application of magnetic NP in bio-separations, food and water borne microorganisms, diagnosis, therapeutic, controlling size, morphology and potential for covid-19 RNA. He discussed the synthesis and surface modification of nanomagnetic NP and nanocomposites. Surface area and pore size is measured by nitrogen gas adsorption and mercury porosimeter. NP tend to aggregate and to make them disperse is an art which was demonstrated by surface coating. He showed the video showing synthesis NP and positive charge NP attracting negative charged bacteria and for bio-separation. Using silica-magnetic nanocomposite separation of RNA from bacterial cell was also demonstrated and this was used for testing the contamination of frozen food without culturing the microbes. Magnetic NP have been used in diagnosis of Covid-19, By synthesizing NP and attaching some ligand which change the surface properties and that is used for separation of bioactive particles. Selective capturing with attaching genome sequence and that can be used for separation of complementary sequence genome. Then he showed the tri-phasic reverse emulsion which selectively make surface changes in NP and specificity to capture microbial genome without culturing. In his lab they have made commercial kit using superparamagnetic iron oxide nanoparticles for checking food contamination with covid-19.

The workshop concluded with the formal vote of thanks by Prof. Anita Kamra Verma to all the resource persons, Principal madam for her undaunting support and DBT star college scheme under the aegis this international conference was organized.



Glimpses of workshop

75. Certificate Course In Online Field Study Of Himalayan Terai Zoology from 6th Jan -12th Jan 2022

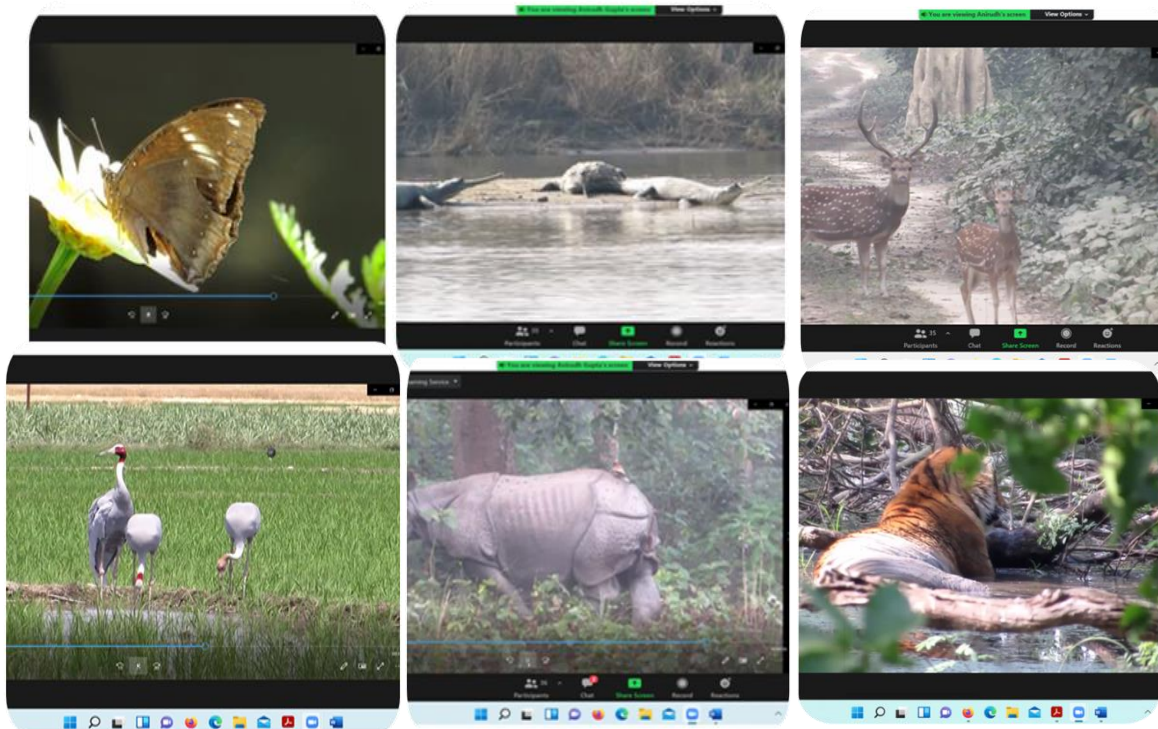
In times of Covid-19, when academics, especially field work is much circumscribed, Department of Zoology, Kirori Mal College, University of Delhi and Karavan Heritage and Nature Society organized an in depth online field study certificate course in the zoology of Himalayan Terai from 6th January 2022-12th January 2022. The underlying objective of this program was to enable participants appreciate the challenges of zoological studies *in situ* and understand the importance of management of natural habitats for conservation of bio-diversity.

A group of 32 students first year participated, including that of Zoology and Life Sciences. For this program, an informal and adventurous methodology was adopted to gain insight into zoological treasures of Himalayan Terai in the vast campus of Dudhwa Tiger Reserve that spreads far and wide across forests, farms, orchards and villages. It even extends into a neighboring country! Dudhwa located in District Kheri of Uttar Pradesh is one of the best preserved forest of the Terai Arc Landscape that spreads out on the southern edge of the Himalayas on the Indo-Nepal border.

This online field study was action packed. Through this, students gain the experience of a hardcore naturalist. In this weeklong program, we strived to explore the ecology of Himalayan Terai forest in totality. We shed light upon the habitats, flora and fauna (insects, reptiles, birds, mammals and endangered species). We delve upon forest management and man-animal conflict. The topic that interested participants the most was the green careers that aspiring zoologists can pursue.

The daily program incorporated: i) a synoptic briefing; ii) an extensive field exploration by way of adventurous nature walks, photography expeditions, bird watching, jungle

safari and boat cruises; iii) informed discussions with resource people having long field experience in this field. This was followed by question and answer session, stimulating brain teasers and recap. In conclusion, Online Field Study of Himalayan Terai Zoology was a unique program that blended fun, adventure and discovery.



Rich Biodiversity

76. “Student development programme” (SDP) on chemcollective VLABS” was organized by Department of Chemistry, Kirori Mal College, in collaboration with SPOKEN TUTORIALS, IIT BOMBAY under the aegis of DBT Star College Scheme from 10th -14th January 2022.

The Department of Chemistry has successfully organized a five day online “STUDENT DEVELOPMENT PROGRAMME” (SDP) on “CHEMCOLLECTIVE VLABS” from 10th January 2022 to 14th January 2022 via zoom platform. The programme witnessed participation of huge number of students, with more than 112 registrations. The five day event was scheduled with invited lectures from distinguished guests/speakers who are pioneer in this field. Also, we had organized a series of assignments and quiz sessions throughout the five day programme.

[Detailed Report](#)

In today’s world, owing to the prevailed ongoing pandemic crises due to Covid-19/corona infections, the restrictions imposed on the offline movement inside the educational institutes have opened new avenues for teaching and learning. Amongst many, virtual labs are considered as one of the most important applications of e-learning in educational and research institutions. Chemcollective virtual labs play important roles in understanding online simulation of chemistry lab. By use of Virtual Lab, students can link chemical computation with authentic

laboratory chemistry. Virtual Lab gives tremendous opportunities to remotely placed students to conduct experiments without exposure to any health risk.

Major highlights of this event were:

Day 1: 10th January 2022

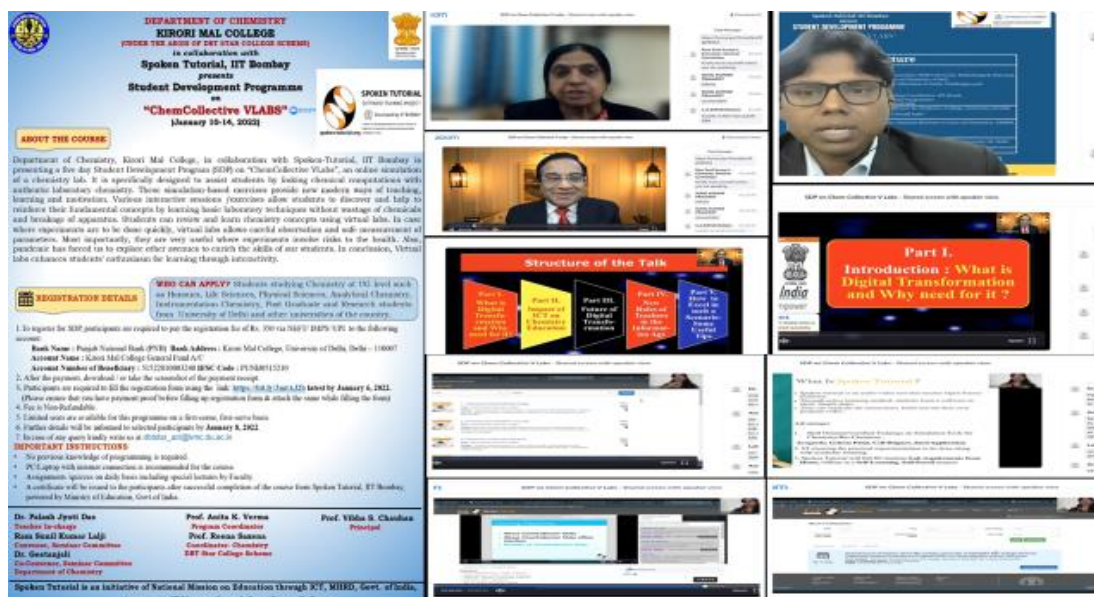
Mr. Ram Sunil Kumar Lalji (Convener, Seminar committee, Department of Chemistry, Kirori Mal College) welcome all the participant and enlightened the audience about the need for understanding virtual labs. This was followed by a very encouraging note by Prof. Anita Kamra Verma (Program Coordinator, DBT Star College Scheme) who motivated the students about the importance of such SDP programmes.

Dr. Geetanjali (Co-convener, Seminar committee, Department of Chemistry, Kirori Mal College) thereafter introduced our keynote speaker for the day Prof. A.K. Bakshi (Vice-Chancellor, PDM University, Bahadurgarh, Haryana and also the Chairman, National Resource Centre of Chemistry of MoE) to the audience. This was followed by a lecture of **Prof. A. K. Bakshi**, on the topic entitled as **“Digital Transformation in Chemistry Education in India: Challenges and Opportunities”**. The lecture given by Prof. Bakshi was very informative and introduced students to the world of digital transformation, its need and future perspectives. Dr. Geetanjali, thereafter undertook the question and answers session and also gave a vote of thanks to Prof. A.K. Bakshi.

The second lecture in the series for day-1 (10th January, 2022) was given by Ms. Chaitra Hitesh Gawade, Training Coordinator, IIT-Bombay on the topics entitled as under-

- (i) Introduction to Student Development Programme
- (ii) Download and Installation of Virtual Labs.

She was introduced by Dr. Kiran Arora to the audience. Ms. Chaitra Hitesh Gawade introduced students about the spoken tutorial, virtual labs with special attention on its applications in the field of Chemistry, its downloading and installation. After her lecture, the question and answers session with a vote of thanks to Ms. Gawade was done by Dr. Shashwat Malhotra.

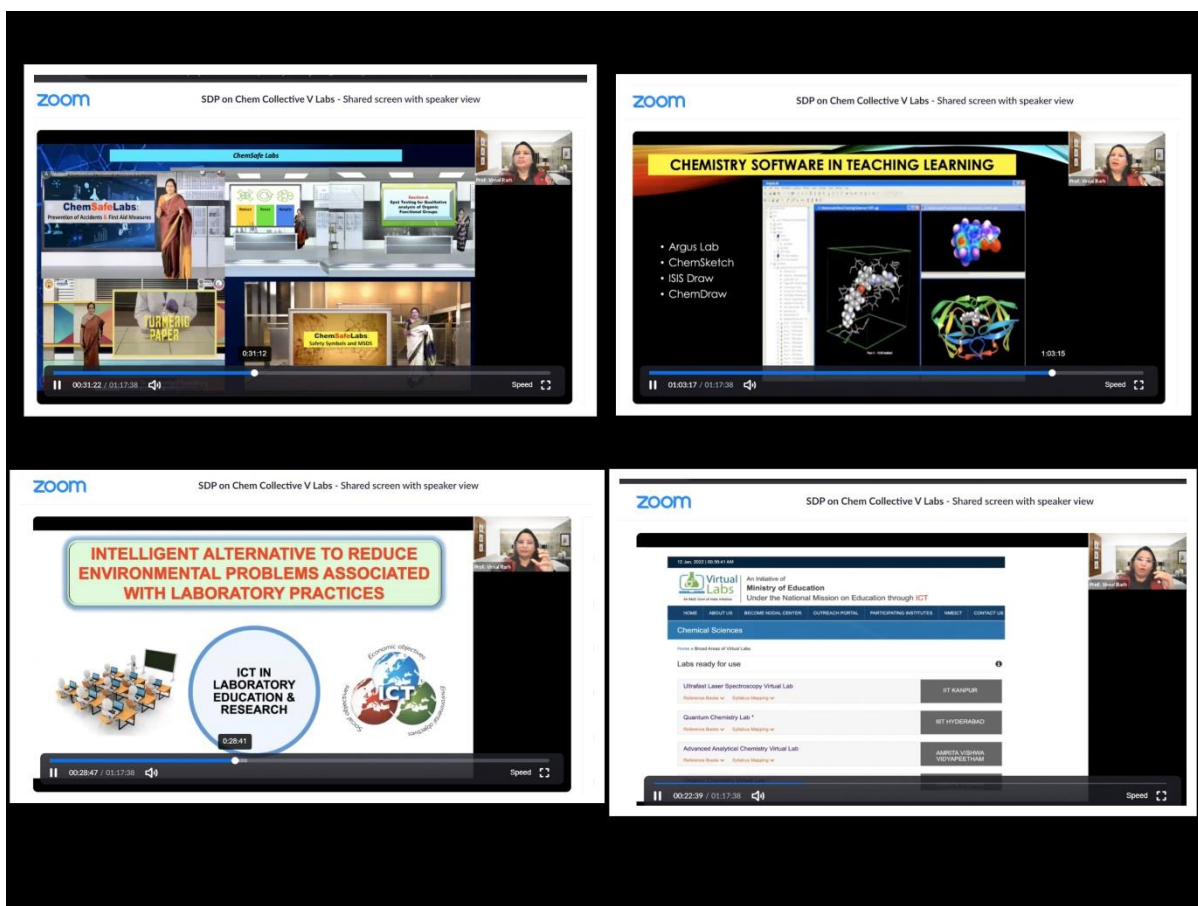


First day of Student Development Program (SDP)

Day 2: 11th January, 2022

It started with the welcome address and introduction of our keynote speaker **Dr. Rakhi Thareja** (Associate Professor, St. Stephen’s College, University of Delhi) by Dr. Kiran Arora. Dr. Thareja inculcated the lecture entitled as “Understanding Chemistry through Virtual Labs” to the students. Dr. Thareja introduced our students about Virtual lab and its applications and also how to use virtual lab to carry out certain experiments of chemistry offline. In the last, Dr. Kiran Arora undertook the questions/queries session with the audience and Dr. Thareja. The session ended with a vote of thanks to the speaker.

After the lecture from our keynote speaker, an assignment session for the audience was organized whereby, the students were asked to answer the given assignments. The assignments were based on the modules that they had learnt on day-2. The students successfully submitted the assignments with their answers to the google classroom portal that was provided by the organizing committee.



Glimpses of Day 3

Day 4: 13th January 2022

An assignment session for the audience was organized hereby, the students were asked to answer the given questions. The assignment was based on the modules that they had learned on day-3. The students successfully submitted the answers for the assignment to the google classroom portal that was provided by the organizing committee.

Day 5 : 14th January, 2022

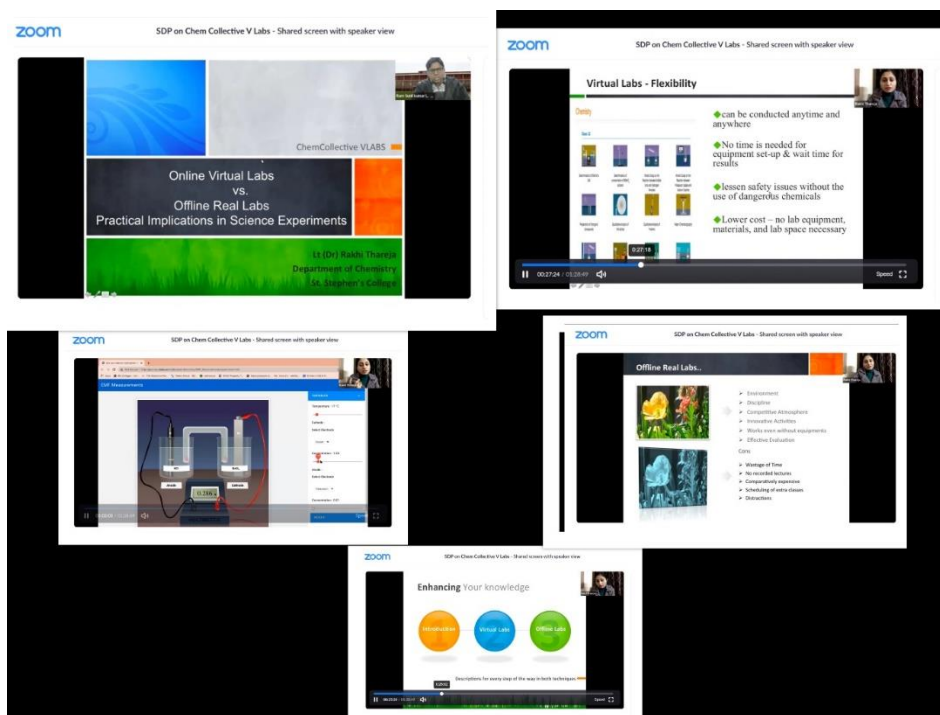
The day started by Dr. Vandana Meena by the introduction of keynote speaker Dr. Rakhi Thareja (Associate Professor, St. Stephen's College, University of Delhi). She delivered her lecture entitled on **“Online Virtual Labs vs. Offline Real Labs Practical Implications in Science Experiments”**.

Dr. Thareja enhanced our student's knowledge about virtual labs and offline labs also she explained how to use virtual lab to carry out certain experiments of chemistry offline.

In the last, Professor Geetanjali undertook the questions/queries session with the audience and Dr. Thareja. The session ended with a vote of thanks to the speaker.

After the vote of thanks to our keynote speaker, we had arranged a quiz session for the audience whereby, the students were asked to answer the given questions in the form of quiz. The quiz was based on the modules that they had learned on day 4-5. The students successfully submitted

the answers for the quiz to the google classroom portal that was provided by the organizing committee.



Glimpses of day 5

77. An online survey for gender sensitization was conducted on the occasion of International women day 8th March 2022

To sensitize the students an online survey was conducted where 65 students filled the google form link <https://forms.gle/hwR6NDtEkjP6Tvi88>

Thirty eight percent of students were not aware of the theme of this year International women day. Only 5% girls do not feel themselves to be privileged to be born as women

Supporting women education

Your idea or understanding of "Gender equality today for a sustainable tomorrow".

26 responses

under-represented.

Equal Education for woman and rights for choosing best for themselves-in a way of creating diversity- is right way to head towards a sustainable future

Empowering women and promoting gender equality is crucial to accelerating sustainable development.

The theme for International Women's Day, 8 March, 2022 (IWD 2022) is, "Gender equality today for a sustainable tomorrow", recognizing the contribution of women and girls around the world, who are leading the charge on climate change adaptation, mitigation, and response, to build a more sustainable future for all.

Like there are differences in both the genders which have been created by nature and we shouldn't keep this basis into gender equality. When we talk about gender equality, I think equal opportunities should be the criteria where men and women get equal chances to showcase their talent and potential. Also Women should be empowered by means of education because education is the key to unlocking doors of confidence and self actualization and also enable one to realise their dreams.

My idea for gender Equality is that it is necessary for a better tomorrow. By practising gender equality we can teach our women to be self independent and create a confidence in them

Suggestions for celebration of women beyond the International Women's Day

27 responses

Respect them

Women should be celebrated everyday

Organising talent contest

Women should be given respect each and every day in each and every context infact each and every gender should be respected and given a status .

Gender Equailty dayy

Respect your mother and all the females around you for the sacrifices they make

More inspiring and messages circulation on public platform about women empowerment and achievements. Make people more aware about female psychology during different situations and circumstances.

No idea

What aspects make you feel empowered as women?

33 responses

In respect of women education ,jobs

I am "woman" and i feel this word itself is a powerful depiction.I can be a birth giver with never ending love and care. A world without women is like a ship without a caption.

Being able to make my own choices, being independent, speaking up for myself

Access to opportunities

Financial, physical and emotional independence

Multitasker, better management ability, empathy and sensitive towards people

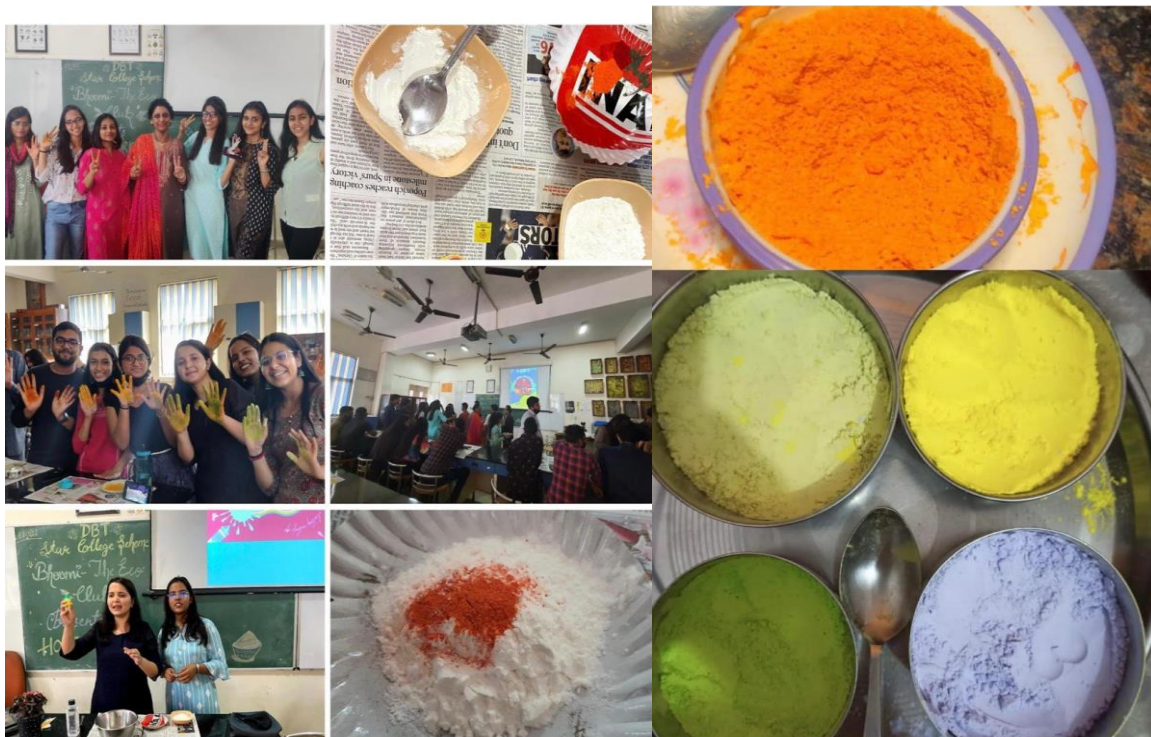
I feel empowered by the fact that I work hard to get shoulder to shoulder with a man. Being equal yet being bigger than a man because we have a lot to overcome in order to achieve what a man can easily do.

Being stronger than what boys think

Our nosition in the societv

78. Natural Holi colour making workshop was organized by ECO CLUB in collaboration with an NGO, Harela society and the DBT star college scheme on 10th March 2022.

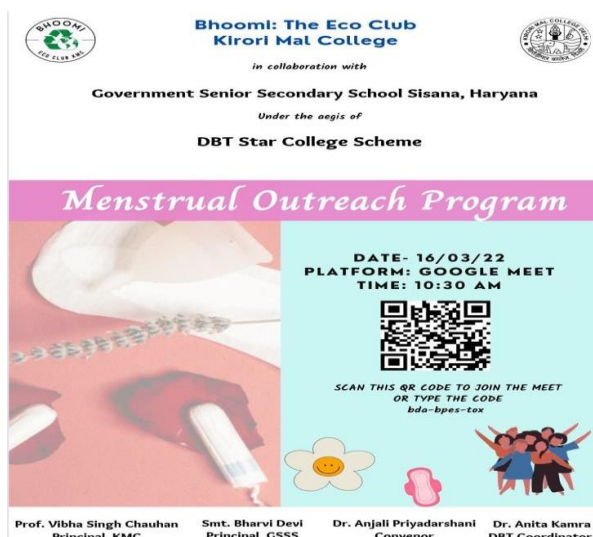
A herbal 'Holi colour' making workshop was organized by ECO CLUB in collaboration with an NGO, Harela society under the aegis of DBT star college scheme on 10th March 2022. All the Bhoomi members, a total of 39 attendees, prepared the colours with utmost enthusiasm and glee and played Holi. Many students went back home taking the knowledge and eventually prepared 'natural colours' at home. This ensured an eco-friendly holi!



Glimpse of the festive Holi colours making workshop

79. “Menstrual Hygiene Outreach Program” on 16th March 2022 for School Students under DBT Star College Scheme

Ending the month on a good note, on 16th March the club had an educational webinar mushrooming the knowledge pertaining to menstrual hygiene on the google meet platform. Class 8 Students from the Government Senior Secondary School of Sisana ,Haryana along with the School Principal Bharvi Devi ma'am joined us. This collaboration was quite successful as the girls were shown a skit prepared by Bhoomisapiens that bust myths related to menstruation. A YouTube video was also shown which explained the body functioning during menstruation. 48 audiences assured their presence in this initiative.



80. “World Environment Day” was celebrated by Department of Botany and Zoology on 6th June, 2022

To mark the occasion “Medini” the Botanical society and “Biocenose” the Zoological society jointly under the aegis of DBT Star College Scheme organized workshop on “**Sustainable Urban Gardening**” by **Mr. Pravin Mishra, Urban Farmer**. Nearly 40 students of I Sem of B.Sc. (H) Botany and Zoology and faculty members enthusiastically participated in workshop.

Detail Report

The World Environment day has created a platform to raise awareness that the world is facing problems such as air pollution, plastic pollution, global warming and sea level increasing day by day. Botany and Zoology Departments aim to inculcate the spirit of adventure, learn beyond what is available in the textbooks, and create awareness for spreading knowledge and supportive of their extracurricular interest. To combat such issues, this workshop was organized which is a small step towards sustainable environment. The event started with introductory and welcome remarks by DBT Star College Scheme, program coordinator, Prof. Anita Kamra Verma. The speaker was introduced by Dr. Sunil Dhiman and welcome by Dr. Gauri Garg Dhingra. **Mr. Pravin Mishra, a Delhi-based environmentalist from Burari who conducts workshops all over the Delhi-NCR area to encourage people to start their own kitchen garden in whatever land area that may be available to them, including on the terrace to protect environment.** Mr. Pravin scientifically explain all the steps of kitchen waste management and making compost from the waste. He also demonstrated preparation of mixture containing bioenzyme using jiggery and plant parts. At the end he explained growing seedlings in portrays. The workshop was followed by number of queries raised by students and faculty. The program ended with the vote of thanks by Subject coordinator Dr. Renu Kathpalia and group photograph of all the participants.

81. Two- Day Workshop on Arduino Programming: Level 01’ Physics Department, Kirori Mal College, University of Delhi 28th -29th June, 2022

A two-Day Workshop on Arduino Programming: Level 01', was organized under the aegis of DBT Star College Scheme on from 2:00 pm to 5:00 pm in the college. This workshop was for B.Sc.(Hons) Physics students of KMC. The registration of students for the workshop was done through a Google form (<https://forms.gle/4PaE4E8ED1LY4PFTA>). Since the equipment to provide hands on experience to students were limited so only first 35 registered students were invited to attend the workshop.

Detail Report

The workshop was held with the help of resource persons from by TI Centre for Embedded Product Design, Netaji Subhas University of Technology, Delhi: Mr. Naman Puri, Mr. Mudit Aggarwal, Mr. Rohan Deswal and Mr. Reshul. The Google Classroom was also created for the students to give relevant exercises to students to have better understanding of the concept.

The work plan of the workshop is as follows:

This workshop was based on the Arduino Nano to introduce students with basics of the Arduino Platform and how to use elementary components for physical computing like LEDs, switches, sensors, buzzers and displays. The students also learnt how to use the serial monitor to debug problems with their circuits.

Project Demonstration

Prof. Dhananjay Gadre, demonstrated various projects made at TI-CEPD, NSUT to showcase the use cases of Arduino and similar platforms (ESP32, MSP430, ATTiny etc.)

Introduction to Micro-controller

It began with introduction of Arduino and explaining the difference between a Microcontroller and a Microprocessor and the use of Arduino.

Setup and Installation

Showing students how to install the required software and familiarising students with the UI of the Arduino IDE and the serial monitor.

LED Blinker

Explaining the code structure and showing how to upload with LED Blink example code of the pre-attached LED on the board.

Breadboard

Showing how to use a breadboard and assemble circuits on it.

Digital Output

Explaining what are digital pins and using digitalWrite() to make a text to morse-code convertor while showing how to use an external LED and doing the same with a buzzer.

Digital Input

What is pull-up and pull-down? Physical structure of an Omron Switch. Making an LED memory game with digitalRead() and digitalWrite() function.

Analog Input

What is an ADC? analogRead() function, AREF pin and analogReference() function and how to use sensors with LDR as an example and how to use a Potentiometer.

Analog Output

What is PWM? Using analogWrite() function for fading LED and driving a buzzer.

20x4 LCD Display

Using external libraries, Liquid Crystal Library, 4 pin (D4-D7) and 8 pin (D0-D8) mode and making a Dinosaur Jump game with OmronSwitch, Indicator LED and LCD as a displayblob:<https://web.whatsapp.com/f8d23eb7-f594-43e5-a74b-59f16bd2e1ca>



82. Seminar on 'Formation of Structures in the Universe' organised by Department of Physics on 30th June 2022

Physics Department, Kirori Mal College, University of Delhi has organised a seminar on 'Formation of Structures in the Universe' under the aegis of DBT Star College Scheme on 30th June, 2022 at 2:00 pm in the college.

Detail Report

The lecture was delivered by **Dr Sampurn Anand, Assistant Professor, Central University of Tamil Nadu, India,** for undergraduate students in chalk-talk mode. He discussed the formation

of structures in the Universe starting from Big Bang Theory followed by formation of planets, expansion of the universe etc. He explained the difficult concepts like black holes, space-time equivalence, in a very simple way using minimum mathematics. It was an interactive session where students kept on pouring their queries and doubts about the topic. The speaker of the seminar answered them very patiently giving lots of examples for the physical world.



83. Two day International Conference on Recent Advances in Nano Medical Sciences (RAMS-2022) was held on 22-23rd June 2022 at VPCI, University of Delhi



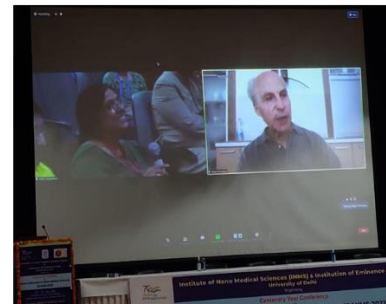
RANMS 2022 conference was held in collaboration with DBT Star College Scheme, Kirori Mal College, with Prof Anita Kamra Verma as the Co-convenor of the conference. The conference revolves around two key themes, namely “Role of Science and Technology in Society: India’s Vision 2050” and “Nanomaterial Sciences based new generation of affordable healthcare”. Nanotechnology and Nano medicine have evolved to overcome various challenges

that mankind faces today, which include fast depletion of fossil fuels, environmental pollution, global warming, need for more efficient transportation and communication tools, extensive black marketing of food and other consumable products, skyrocketing healthcare costs, as well as significant increase in deadly diseases such as cancer, cardiovascular and neurological disorders, emergence of new strains of pathogenic microbes. These emerging areas of Nano-cell biology or Nano medical Sciences have wide applications to tackle various practical challenges of today, which include drug delivery to diseased sites, stem-cell biology, molecular and atomic stimulations of nanoparticle interaction with biological *mileu*, interventions of various photo-activated therapeutic, ultrasensitive sensing and biosensing, sanitation, cosmetic products and affordable healthcare. These advances have high societal impact, and promise to significantly enhance the quality of life of the common man.

There were more than 180 registrations for the conference. It was attended by over 100 enthusiastic students and faculty. List of eminent speakers were invited who enthralled the students.

Wednesday, June 22nd, 2022	
08:30-09:30	Registration
09:30-10:00	Inauguration and Introductory Remarks Technical Session-I Chairman: Prof. S. E. Hassanli, IIT Delhi Prof. Hans D. Mahrotra, IIT, Delhi
10:00-10:40	PL-1: Prof. G. P. Talwar; Talwar Research Foundation, New Delhi Title: Mission-Oriented Research on Problems of Relevance
10:40-11:20	PL-8: Prof. Sandeep Verma; Secretary, SERB, New Delhi Title: Peptide-Based Palette in Antibiotic Action and Stem Cell Engineering TEA BREAK
11:20-11:45	Session-II Chairman: Prof. T. P. Singh; Distinguished Biotechnology Research Professor, AIMS, New Delhi Prof. Vibha Tandon; SCMM, JNU
11:45-12:15	PL-3: Prof. S. E. Hassanli; IIT Delhi Title: Repurposing drugs to fight against TB and other diseases
12:15-12:30	IL-1: Dr. Sneeta Singh; IIT Delhi Title: Engineering New Materials for Drug Delivery: A Chemist's Perspective
12:30-13:15	IL-2: Prof. Anita Kamea Verma; Kirori Mal College, University of Delhi Title: siRNA-Au-Chitosan nanoparticles to knockdown SIRT gene for osteoporosis therapy LUNCH BREAK & POSTER SESSION-I
13:15-14:30	Session-III Chairman: Prof. K. C. Gupta; INSA Senior Scientist, Department of Chemistry, University of Delhi, Delhi Prof. Anil K Mishra; Director, Institute of Nuclear Medicine & Allied Sciences INMAS, Delhi
14:30-15:10	PL-4: Prof. T. P. Singh; AIMS Delhi Title: Exploitation of Substrates of Innate Immunity Mammalian Heme Lactoperoxidase Against Invading Microbes
15:10-15:35	IL-3: Prof. Indrajit Roy; Department of Chemistry, University of Delhi Title: Nanomimes for light-activated anticancer and antibacterial applications
15:35-16:00	IL-4: Dr. Suveen Kumar; Department of Chemistry, University of Delhi Title: Nanomaterials-based biosign for non-invasive detection of oral cancer. TEA BREAK
16:00-16:20	Session-IV (Online Session) Chairman: Prof. M. K. Pandey; CEO, Institution of Eminence (IoE), University of Delhi Prof. D. S. Chaudhan; Chancellor, GIA University, Mathura, U.P.
16:20-17:00	Inaugural lecture by Nobel Laureate Prof. Roger D Kornberg; Stanford University, USA Title: Chromosome Structure and Transcription
17:00-17:40	IL-5: Prof. Gleb B. Sukhorukov; Queen Mary University, London Title: Micro and Nanosystems for address and remote controlled delivery of therapeutics and its perspective and current medical applications
17:40-18:00	IL-6: Prof. Nikolay Evgeny; Skolkovo Institute of Science and Technology, Moscow, Russia Title: Mass spectrometry based quantitative proteomics and its applications in medical research
18:00-18:20	IL-7: Dr. Andrei V. Zvonin; Deputy Director, Institute of Molecular Therapeutics, Moscow Medical State University, Sechenov University, Moscow, Russia Title: Biodegradable Nanomedicine for cancer therapeutics
18:20-18:40	IL-8: Prof. Nagender Kaushik; Kwangjuwon University, Seoul University, South Korea Title: Nonthermal biocompatible plasma for immuno-modulation, Virus Inactivation, and Synergy with Nanomaterials
18:40-19:00	IL-9: Prof. Gagandeep Kaur; Molecular and Cellular Medicine, Texas A&M University, Texas 77843, USA Title: Mesenchymal stem cell-derived extracellular vesicles ameliorate experimental autoimmune arthritis in mice via suppressing autoreactive T cell infiltration
19:00	Gala Dinner

Thursday, June 23rd, 2022	
Session-V Chairman: Prof. Javed Iqbal; Cosmic Therapeutics, Hyderabad	
09:30-10:10	PL-5: Prof. M. A. Aziz; Director, Interdisciplinary Nanotechnology Center, Aligarh Muslim University, Aligarh, India Title: Precision and personalized medicine in colorectal cancer
10:10-10:35	IL-10: Prof. Ritu Kulshrestha; V.P. Chest Institute, New Delhi Title: Nano Approaches to modify Lung EMT
10:35-11:00	IL-11: Prof. Monalisa Mukerjee; Amity University, Noida Title: Emergence of Heptazine based Graphitic Carbon Nitride within hydrogel nanocomposites for scarless healing of burn wounds
11:00-11:20	TEA BREAK
Session-VI Chairman: Prof. M. A. Aziz, Director, Interdisciplinary Nanotechnology Center Aligarh Muslim University, Aligarh Prof. Shaija Gupta; Chief Project Director, Ind-CEPI Project, THSTI, India	
11:20-11:45	PL-6: Prof. Avinash C. Pandey; IUAC, New Delhi Title: TBA
11:45-12:10	IL-12: Prof. S. P. Singh; Department of Biochemistry, IIT-Banaras Hindu University Title: Neuroprotective potential of Indian medicinal plant and their bioactive compounds against Parkinson's disease.
12:10-12:30	IL-13: Prof. Deepa Ghosh; INST Mohali Title: Exploring a cellular self-destruction strategy with biosynthesized magnetic nanoparticles for health care applications
12:30-13:30	Oral Presentation (OP-1-6)
13:30-14:30	LUNCH & POSTER SESSION-II
Session-VII Chairman: Prof. S. Chandrasekhar; Secretary DST, New Delhi Prof. Rajesh Gokhale; Secretary DBT, New Delhi	
14:30-15:00	PL-7: Prof. Amulya Panda; Associate Director at Panacea Biotech, Delhi Title: Addressing the Challenges of Vaccine and Immunotherapy using Nanotechnology
15:00-15:20	IL-14: Prof. Sanyog Jain; Department of Pharmaceutics, NIPER, Mohali, Punjab Title: Dual drug therapy of cancer using nanomedicine. Oral Presentation (OP-7-10)
15:20-16:00	Oral Presentation (OP-7-10)
16:00-17:00	Centenary lecture Prof. Ajay K. Sood; Principal Scientific Advisor to the Govt. of India Title: Centenary Address
17:00-17:30	Prof. Yogesh Singh; Vice-Chancellor, University of Delhi Title: High tea
17:30-18:00	



Interacting with Nobel Laurete Prof Roger D. Kornberg.