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## *Applications of Techniques for Interdisciplinary Research*

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Dates: 20<sup>th</sup> Feb. to 2<sup>nd</sup> March 2023

Time: 3 hours. Per day

Duration: 30 hours

Convenor: Dr. Gauri Mishra

Members: Dr. Ushvinder Kaur, Dr. Gunjan Arora, Dr. Chandrashekhar, Ms. Akanksha Singh, Ms. Chanchal and Ms. Gayatri Meena, Mr. Rajendra Meena, Mr. Deepak Kumar,

No. of Students Registered: 94



Have you ever wondered how science can be fascinating!! To introduce the latest techniques used in science Swami Shradhanand College, University of Delhi organized an Add on course on “Application of Techniques for Interdisciplinary Research”. The event held from 20<sup>th</sup> February 2023 to 2<sup>nd</sup> March 2023. The event covered variety of topics like PCR, Genomics, Chem Draw, DNA Quantification, Nano formulation, Spectrophotometry and many others.

On the first day students were taught about Genomics for fast tracking crop improvement in Plants by Prof. Shailendra Goel, Department of Botany, University of Delhi. He talked about genomics from the scratch which gave students a good understanding of the topic. Students were taught about different types of genetic markers from traditional ones like RFLP, RAPD to the recently discovered markers like SNP. How genetic maps can redefine genomics was indeed a fascinating point. On the second day Dr. Shashank Maurya, Department of Zoology, University of Delhi was the speaker. He gave students an insight about Immunosorbent assay. He talked about ELISA and how it uses principle of affinity and specificity. Direct, Indirect and Sandwich were some types of ELISA which were discussed. Dr. Shashank showed the ELISA kit. He involved students by constantly asking them question and what point of view they share about the same. He also spoke about the application of ELISA in day-to-day life which include animal and plant disease diagnosis, detecting pesticides in crops which made student wonder that how a single technique can have several applications in day-to-day life. On third day 'Recent advances in PCR and qPCR applications in disease diagnosis' was covered with the hands on practice of the PCR machine by Dr. Archana Singh, Department of Botany, Hansraj College. How each component of the PCR machine work was discussed in detail. Even the minute details like difference between the qPCR to RT PCR were discussed.

'Introduction to Nanotechnology and hands-on synthesis of nanoparticles' was the topic of the fourth day where Dr. Gunjan Arora, Department of Chemistry, Swami Shraddhanand talked about nanoparticles and how they practically are used in every field these days from medicine to diagnostics. Nano particles which seem to be difficult, was simplified to an extent. Students were taught the methodology of how to make them using the potato and ferric oxide. On fifth day hands on practice of Chem Draw and Auto Dock 4.0 was taken up, which was entirely a new and fascinating aspect. Step by step taught by Dr. Nishant Kumar Verma, Department of Chemistry, Swami Shraddhanand to use Chem Draw. His enthusiasm and devotion is worth mentioning. Dr. Nishant even talked about docking and how it can help students to create a wonderful profile for admission abroad.

'Hands on Column Chromatography and its Applications' were covered by Dr. Isha Gunwal, Department of Botany, Swami Shraddhanand College. She talked about different types of chromatography and specifically about Column chromatography with its two different methods wet and dry ones. Students performed a hands-on Column chromatograph by separating

chlorophyll a, b and xanthophyll from spinach leaves. Next two days students learned by spectrophotometry, by Dr Chandershekhar, Department of Chemistry. He explained the principle and how the lambda max is obtained using the graph and how it is used to know the concentration of an unknown solution. All this was shown in real time with machines. Students learned about DNA quantification using spectrophotometry by Dr. Mukesh, Department of Zoology. Ninth day was by Dr Shaily Anand, Department of Zoology, Deen Dayal College on 'DNA quantification: Gel electrophoresis technique'. She taught students about the same with hands on practice and also taught them how to perform calculation for the same. The session was very interactive with students curious to know more about the same. The last day was the most interesting one where students were introduced to 'Forensic Techniques: Crime Scene Management' by Prof. G.S. Sodhi, Department of Chemistry, S.G.T.B. Khalsa College. He talked about several cases and how investigators caught them using science. He said the basic principle of forensic science is 'When two bodies come in contact there is exchange of matter'. This seems simple but quite fascinating. Sir also told students that how science behind fingerprints was first developed in India, which created a sense of pride among students for their culture.

The event most stimulating and enthralling part was the visit to University Science Instrumental Centre (USIC), University Of Delhi, where students were introduced to variety of instruments' like FT-IR (along with characterization of nanoparticles prepared on previous day), FE-SEM, XTD (powder and single crystal both), NMR, Mass spectrometer, VSM analyzer, Confocal microscopy etc. This was a rare opportunity for undergraduate students to see such high tech instruments and learn about their working. Overall this 10 day event was very successful as within such a short time span students were introduced to such variety of topics in depth. This event indeed inspired students to give their hundred percent in science and to become eminent scientist one day. The event was a big success. Students are looking forward to more such events in future.

Swami Shraddhanand College  
 University of Delhi  
 Add-On course on  
“Applications of Techniques for Interdisciplinary Research”

20<sup>th</sup> Feb.-2<sup>nd</sup> March 2023

Date & Time	Speaker	Title
20. 02.2023 10:30 am	Prof. Shailendra Goel Department of Botany University of Delhi	<b>Inaugural Session</b> Genomics for Fast Tracking crop Improvement in Plants
21. 02.2023 9:30 am	Dr. Shashank Maurya Department of Zoology University of Delhi	Immunosorbent assay
22. 02.2023 12:30 pm	Dr. Archana Singh Department of Botany Hansraj College	Hands on PCR -Recent advances in PCR and qPCR applications in disease diagnosis
23. 02.2023 9:30 am	Dr. Gunjan Arora Department of Chemistry Swami Shraddhanand	Introduction to Nanotechnology and hands-on synthesis of nanoparticles
24. 02.2023 9:30 am	Visit	University Science Instrument Centre
25. 02.2023 9:30 am	Dr. Nishant Kumar Verma Department of Chemistry Swami Shraddhanand	Hand on Practice of Chem Draw and Auto Dock 4.0

27. 02.2023 9:30 am	Dr. Isha Gunwal Department of Botany Swami Shraddhanand	Hands on Column Chromatography and its Applications
28. 02.2023 9:30 am	Dr. Chandershekhar Department of Chemistry & Dr. Mukesh Arora Department of Zoology Swami Shraddhanand	Spectrophotometric Nucleic Acid Quantification
01.03.2023 9:30 am	Dr Shaily Anand Department of Zoolgy Deen Dayal College	Hands on for DNA Quantitation using Gel Electrophoresis
02.03.2023 10:30 am	Prof. G.S. Sodhi Department of Chemistry S.G.T.B. Khalsa College	<b>Valedictory Session</b> Forensic Techniques -Crime Scene Management

### Brief Introduction of the Speakers

**Prof. Shailendra Gupta**, Guest of honour of the inaugural session of 10-day Add-on course. He was a Visiting Research Fellowship, Kihara Institute for Biological Research, Yokohama City University, Japan. Sir is having wide knowledge of Genomics, genome organization, Molecular Genetics, Molecular markers application. He is interested in Apomixis and its developmental aspects. He has developed a beautiful program on evolution of sex chromosome in Hippophae rhamnoids (Leh Berry) with Prof. R. Tandon. Prof. Shailendra has more than 100 publications in esteemed international journals and dozens of projects funded by DST, DBT, DRDO and UGC. He is Reviewer in many international journals like Plant Molecular Biology, Journal of Horticulture and Forestry , Plant Cell Reports (Springer), BMC Genetics and many more. He is

an Elected Member, The Linnean Society of London and Life Member, Society for Translational Research. Life Member of Association for the promotion of DNA finger printing and associated DNA technologies, Hyderabad. And the list is endless.

**Dr Shashank Kumar Maurya** is Assistant Professor at the Department of Zoology, University of Delhi, India. He earned his B.Sc. (H) Zoology from Ramjas College, M.Sc. in Zoology from University of Delhi, followed by Ph.D. in Zoology from Banaras Hindu University and Postdoctoral Research experience from the Indian Institute of Science, Bangalore. He served for 2 years as Assistant Professor at Ramjas College and was got selected for faculty position at Cluster University of Jammu and Allahabad University. He is working in the area of neurobiology from past nine years. He has published various research articles in journals of national and international reputed.

**Dr Archana Singh** did her graduation n Post graduation from Delhi University (Miranda House) and obtained her Ph.D. in Plant Molecular Biology from National Institute for Plant Genome Research. Dr. Singh is a recipient of IOE Fellow, IOE, DU (2022); EMBO Fellowship (2019) by European Molecular Biology Organization, Heidelberg, Germany; SERB-Early Career Research Awarded with UGC-Raman post-doctoral fellowship in 2018, DST-Young Scientist Award (Fasttrack, 2012) from Ministry of Science of Technology, Govt. of India. Dr. Singh has worked as visiting scientist at Department of Plant Pathology, University of Kentucky, Lexington, USA and also at Department of Molecular Ecology, Max Planck Institute of Chemical Ecology, Jena, Germany. She was Awarded “Outstanding Woman Researcher in Plant Molecular Biology” in the 7th Venus International Women Awards and many more. She has published more than fifty research articles in various journals of National and International repute.

**Dr. Gunjan Arora** has done her Bachelors and Master’s degree in Chemistry from Hansraj College, Delhi University. She earned her Ph.D. degree from department of chemistry, University of Delhi. She has published more than 20 articles in journals of international repute. Her

research interests include Green Chemistry and Nanocatalysis. Her doctoral studies focused on design and synthesis of novel magnetic nanoreactors for various organic transformations. She has won a few best oral and poster presentation awards in National and International conferences. She is an active member of Green Chemistry Network Centre and American Chemical Society. She serves as 'Year Representative' of RSC Student chapter and Treasurer of ASC Student Chapter, University of Delhi. She is currently working as an Assistant Professor at Swami Shraddhanand College, Delhi University.

**Dr. Nishant Verma** is working as Assistant Professor in Swami Shraddhanand College. Formerly he worked in Kalindi College. Dr. Verma earned his Ph.D. Degree from IIT Roorkee, Uttarakhand and he served as Research Associate in IIT Delhi and University of Delhi. He published 14 Research Article and 2 Book Chapters in international Peer Reviewed Journal and a Member of American Chemical Society since Jan 2016. He is involved in 5 Research projects, out of these 4 completed. Recently, He received International Kalp-Young Scientist Award -2021. Dr Verma is National level Chess Player and he got an opportunity to hold Baton relay in Asian commonwealth games -2010. Dr. Verma is associated with a Service wing named Sri Sathya Sai Seva Organisation, and serving as State Youth Coordinator.

**Dr. Chandra Shekhar Jeengar** is an Assistant Professor in Swami Shraddhanand College, University of Delhi. He completed his Bachelor and Master Degree from MLV govt college Bhilwara, and PhD from JNV University Jodhpur Rajasthan. His PhD topic is related to chemical factors responsible for Biodiversity of plants. He published his research paper in various peer reviewed Nation and Internationally recognized journals. He has experience of handling various instruments like Flame photometer, UV Visible Spectrophotometer, FT-IR, MPAES (Microwave Plasma Atomic Emission Spectrophotometer). During PhD Dr. Chandra Shekhar travelled across country in Science Express Biodiversity Special train for 7 month and 52000 km in Indo-German project of DST and MOEF managed by Vikram A Sarabhai community science centre. Dr. Chandra Shekhar is an alternate healing therapy practitioner named Cranio Sacral therapy from Sri Sri Tattva center of Healing Arts. He is also associated with spiritual organisation Art of Living as youth coordinator.

**Dr. Mukesh Kumar** was awarded Master's in Zoology from Kurukshetra University. He received his Ph.D degree from University of Delhi. He worked as Postdoctoral fellow in University of Louisville, KY, USA and National Academy of Agricultural Science (NAAS), Rural Development Administration (RDA), Suwon, South Korea. His area's of research are Targeted drug delivery to cancerous cells through immunoliposomes, Microbial and Viral genome sequencing, Microbial systematics using polyphasic approach, Study of signal transduction pathways of cytokines and miRNA mediated gene regulation. He has published his research in reputed national and international journals.

**Dr. Shailly Anand** is currently working as an Assistant Professor in the Department of Zoology at Deen Dayal Upadhyaya College, University of Delhi since 2012. She completed her graduation from Ramjas College, University of Delhi in 2006 and M. Sc Zoology from Department of Zoology, University of Delhi in 2008. She specializes in the field of Cell & Molecular Biology. In appreciation of being the university rank holder, she was awarded the University Teaching Assistantship for a period of 4 years from 2008 to 2012 in the Department of Zoology, University of Delhi along with her Ph.D. coursework. She has 14 research papers and articles in peer reviewed National and International Journals of repute to her credit. She has also contributed 11 e-chapters in Biotechnology and Molecular Biology under the MHRD Project National Mission on Education through ICT of the Institute of Lifelong Learning, University of Delhi. Her current research work is in the field of metagenomics and molecular microbiology. Since 2018, she has been organizing rural Outreach Programs at Bani (Bani School Innovation Camp, BaSIC) and Biar (Biar Initiative: A School Outreach Program for Enrichment, BIϕSCOPE) villages in the interiors of Hamirpur District of Himachal Pradesh in association with Prof. Rup Lal (NASI Senior Scientist Platinum Jubilee Fellow at The Energy and Resources Institute, New Delhi). She also holds several academic and administrative positions within her institution.





# SWAMI SHRADDHANAND COLLEGE

UNIVERSITY OF DELHI, ALIPUR, DELHI-110036



Is organising an

**Add-On Course from 20<sup>th</sup> Feb-2<sup>nd</sup> March, 2023**

on

## **Applications of Techniques for Interdisciplinary Research**

### HIGHLIGHTS

ELISA  
PCR  
Nanotechnology  
Molecular Modeling  
UV Spectrometry  
DNA Quantification  
Forensic Technology  
Chromatography  
Visit to a Research Institute

Open for all streams

Registration fees- Rs. 300,  
Registration open till 17th  
Feb, 2023  
Contact Committee  
Members

Limited Seats

Prof. Parveen Garg  
Principal

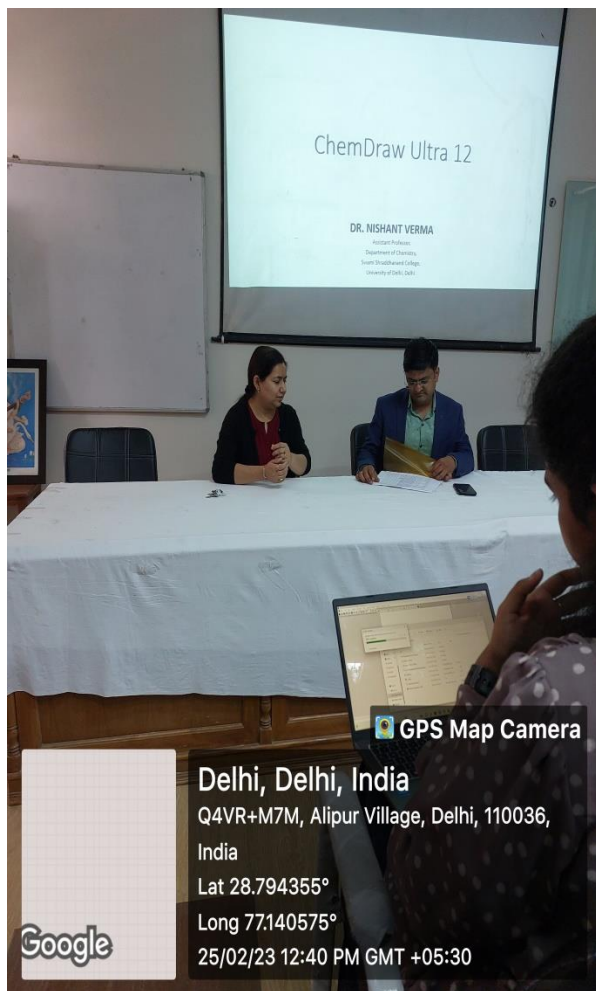
Dr. Gauri Mishra  
Convener

Committee Members  
Dr. Ushvinder Kaur  
Ms. Akanksha Singh  
Dr. Chandrashekhar  
Dr. Gunjan Arora  
Dr. Rajendra Meena  
Mr. Deepak Kumar  
Ms. Chanchal  
Ms. Gayatri Meena













*Add-On Course*



*Application of Techniques  
for Interdisciplinary Research*

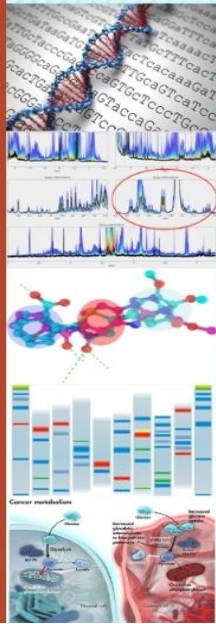
20<sup>th</sup> February to 2<sup>nd</sup> March 2023

# Valedictory Function

Guest of Honour: Dr. G. S. Sodhi

*Convenor:  
Dr. Gauri Mishra*

*Principal:  
Dr. Parveen Garg*



**ADD-ON COURSE ON APPLICATIONS OF TECHNIQUES FOR INTERDISCIPLINARY RESEARCH  
(20 FEB,2023-02 MARCH,2023)**

S.o.	Student Name	Course
1	Preeti Yadav	B.Sc.(P) Life Science
2	Bitupon Lalung	B.Sc. (Hons.) Zoology
3	Shashank Barnwal	B.Sc. (Hons.) Zoology
4	Bikash Mahto	B.Sc. (Hons.) Zoology
5	Sarita	B.Sc.(P) Life Science
6	Cherena Thokchom	B.Sc.(P) Life Science
7	Deepanshi Dagar	B.Sc. (Hons.) Microbiology
8	Vivek kumar Verma	B.Sc. (Hons.) Microbiology
9	Neha Zachariah	B.Sc. (Hons.) Zoology
10	Debangshi Dasgupta	B.Sc. (Hons.) Zoology
11	Madhav Dawar	B.Sc.(P) Life Science
12	Muskan Gaur	B.Sc.(P) Life Science
13	Anshu Kushwah	B.Sc.(P) Applied Life Science
14	Puneet Kohli	B.Sc.(P) Applied Life Science
15	Shaili Rohilla	B.Sc.(P) Applied Life Science
16	Meera Kumari	B.Sc.(P) Applied Life Science
17	Vanshika Sharma	B.Sc.(P) Life Science
18	Shashank Pandey	B.Sc.(P) Applied Life Science
19	Darpan Vats	B.Sc.(P) Life Science

20	Mamta	B.Sc.(P) Life Science
21	Gavya Sharma	B.Sc. (Hons.) Zoology
22	Saarim Ateeq Fatmi	B.Sc.(P) Applied Life Science
23	Faiza Parvez	B.Sc.(P) Applied Life Science
24	Megha	B.Sc. (Hons.) Zoology
25	KM Neeloo	B.Sc. (Hons.) Zoology
26	Aimen	B.Sc. (Hons.) Zoology
27	Khushi Pandey	B.Sc. (Hons.) Zoology
28	Anushka Kotrala	B.Sc.(P) Life Science
29	Annu Kumari	B.Sc.(P) Life Science
30	Lakshita Chhabra	B.Sc.(P) Life Science
31	Khushi Malik	B.Sc.(P) Life Science
32	Priya	B.Sc.(P) Life Science
33	Shivam Kr. Singh	B.Sc.(P) Life Science
34	Sumit Kumar Jha	B.Sc. (Hons.) Zoology
35	Yashika Mehra	B.Sc. (Hons.) Zoology
36	Bhavya Priya	B.Sc. (Hons.) Zoology
37	Surabhi Singh	B.Sc.(P) Life Science
38	Shubhi Tyagi	B.Sc.(P) Life Science
39	Jayantika Aggarwal	B.Sc.(P) Life Science



40	Ojasvi Singh	B.Sc.(P) Life Science
41	Swastik Nandi	B.Sc.(P) Life Science
42	Saumya Sharma	B.Sc.(P) Life Science
43	Sarthak Kaushik	B.Sc.(P) Life Science
44	Aakriti Singh	B.Sc.(P) Life Science
45	Aakanksha Yadav	B.Sc.(P) Life Science
46	Yuvraj Singh Gill	B.Sc.(P) Life Science
47	Aryan Prakash	B.Sc.(P) Life Science
48	Arun Yadav	B.Sc.(P) Life Science
49	Aksh Kumar	B.Sc.(P) Life Science
50	Tamanna Bansal	B.Sc.(P) Life Science
51	Prakriti	B.Sc.(P) Life Science
52	Anjali Vashishta	B.Sc.(P) Life Science
53	Rashid	B.Sc.(P) Applied Life Science
54	Priyanshi Goyal	B.Sc.(P) Applied Life Science
55	Ritu	B.Sc.(P) Applied Life Science
56	Vishnu Gupta	B.Sc.(P) Life Science
57	Anjali	B.Sc.(P) Applied Life Science
58	Indira. V	B.Sc.(P) Life Science
59	Tejaswi Pradhan	B.Sc.(P) Applied Life Science

60	Aarfeen	B.Sc.(P) Applied Life Science
61	Nancy	B.Sc.(P) Applied Life Science
62	Harshdeep Singh	B.Sc.(P) Life Science
63	Prashant Kumar	B.Sc.(P) Life Science
64	Sakshi	B.Sc.(P) Life Science
65	Kajal	B.Sc.(P) Life Science
66	Anshu	B.Sc.(P) Life Science
67	Shivani	B.Sc.(P) Life Science
68	Gayatri Devi	B.Sc.(P) Life Science
69	Parul	B.Sc.(P) Life Science
70	Jatin Kumar	B.Sc.(P) Life Science
71	Mohammad Kashif	B.Sc. (Hons.) Chemistry
72	Nikita Kumari	B.Sc. (Hons.) Chemistry
73	Kiran Kumari	B.Sc. (Hons.) Chemistry
74	Chirag Tewatiya	B.Sc. (Hons.) Chemistry
75	Richa Sharma	B.Sc(Hons.) Chemistry
76	Vipin	B.Sc. (Hons.) Chemistry
77	Nikhil Kumar	B.Sc. (Hons.) Chemistry
78	Papan	B.Sc. (Hons.) Chemistry
79	Manish	B.Sc. (Hons.) Chemistry

80	Md. Ishtiaque	B.Sc. (Hons.) Chemistry
81	Udita Mukherjee	B.Sc. (Hons.) Microbiology
82	Ritu Kumari	B.Sc.(P) Life Science
83	Riya Yadav	B.Sc.(P) Life Science
84	Yogesh	B.Sc. (Hons.) Microbiology
85	Saransi Deo	B.Sc. (Hons.) Botany
86	Asfia Hasan	B.Sc. (Hons.) Botany
87	Gayatri Mann	B.Sc. (Hons.) Botany
88	Govind Upadhyay	B.Sc. (Hons.) Botany
89	Shakti Pandey	B.Sc. (Hons.) Botany
90	Prabhat Arora	B.Sc. (Hons.) Botany
91	Kanupriya	B.Sc. (Hons.) Botany
92	Falita	B.Sc.( Prog.) Applied Life Science
93	Prachi	B.Sc.(P) Life Science
94	Nidhi	B.Sc.(P) Life Science