



Insight and Hands-on Training Program on Techniques in Biotechnology

July 21-27, 2022

The Last Date of Registration
14th July 2022

UNDER THE AEGIS OF

Synergistic Training Program
Utilizing the Scientific and
Technological Infrastructure
(STUTI)

ORGANISED BY

Faculty of Applied Sciences and
Biotechnology, Shoolini University
In collaboration with
SAIF/ CIL Panjab University, Chandigarh

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REPORT

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**DST-STUTI Inaugural Day Celebrated by Faculty of applied Sciences and Biotechnology
at Shoolini University in Association with SAIF/CIL Panjab University**

21st July 2022- Day 1

The initiation of the DST-STUTI training program began with the ritual of lamp lighting while praying for the graciousness of Goddess Saraswati. Prof. Anuradha Sourirajan, gave a brief overview of the training program being conducted by Shoolini University, School of Biotechnology and Management Sciences. After, the felicitation of Prof. R.C. Sobti, Prof. Gangaram Chaudhary, Prof. P.K. Seth, the training program begun with its very first speaker, Prof. Gangaram Chaudhary, Director of SAIF/CIL, Punjab University, and Coordinator STUTI Program, addressed to the importance of bringing collaboration in research for utilizing 100% capability and usage of the instrumentation technologies. He introduced the SAIF/CIL instrumentation facilities which is being availed to the researchers all around the country for assisting their analytical research, as a collaborative provision undertaken by Punjab University and mentioned that the operative knowledge learning of the analytical instrumentation plays a key role in laying the research foundation. This was followed by the ceremony of releasing the technical bulletin as the inaugural ceremony of the Insight and Hands-on Training Program by Prof. P.K. Khosla, Smt. Saroj Khosla, Prof. Atul Khosla with Chief guests and session experts.

Prof. Atul Khosla, Vice Chancellor, Shoolini University encouraged the students to bring innovation in their research by breaking the containment zone, created by them within their laboratory area. He put forward his perspective in merging the different fields of Mathematics, Economics with Biotechnology, can bring a turn over in the research world. Prof. P.K. Seth, NASI Honorary Scientist and former director IITR, Lucknow, highlighted the importance of collaboration of institutions during his speech on

'Biotechnology Techniques: Transforming Human Lives and Economy' where he described how the COVAXIN, a collaborative work by Bharat Biotech-ICMR-NIV, has brought a change in global outlook of the Indian Biotech Industry. Vivek Atray, former IAS officer gave his definition on collaboration of research is all about leadership and the key to it is people. Prof. R.C. Sobti, former Vice Chancellor, chief guest of the event, described about that how the research and innovation has always existed in our history and Indian Mythology and how we need to interpret those ideas and recreate the research in future. Chief guest Karan Avtar Singh, retired IAS officer and former chief secretary of Punjab and talked about the importance of scientific knowledge and management, and this event is relevant in today's context.

Post Lunch, the introduction of the selected participants of the Insight and Hands-on Training Program was carried out. Research scholars and Professors from different institutions, namely Mangalore University (Karnataka), SRM (Tamil Nadu), Babasaheb Bhimrao Ambedkar University (Lucknow), Anna University (Chennai), GJU (Hisar), and few researchers from Shoolini University itself have joined the training program for learning the basic laboratory skills in Molecular Biology and Biotechnology. After the participants have been introduced, the Tree Plantation Drive was carried out with the chief guests and the participants, in Vrindavan Garden, situated in Shoolini University campus. The participants were further familiarized with the laboratories and workstations by Dr. Vihang and Dr. Lokender. The overall workflow of the training program which includes cloning the gene of interest into the vector of choice was conveyed to the participants.



Figure: At APJ Hall in Shoolini University with Guests and Session Experts.



Figure: Felicitation of Guest and Session Experts with traditional Himachali Cap, Shawl and Memento.



Figure: Dr. Vihang and Dr. Lokender with the participants.



Figure: Participants listen with interest about the training program in LAB.

**DST-STUTI Technical Workshop by Faculty of applied Sciences and Biotechnology at
Shoolini University**

22nd July, 2022- Day 2

The second day of the Insights and Hands on Training Program on Techniques in Biotechnology proceeded with the overview of the today's agenda for technical workshop training, which was given by Dr. Saurabh Kulshreshta, Dean Research (Shoolini University). He later introduced, today's session expert, Mr. Vishal Anand, Pro-Chancellor (Shoolini University) and technical speaker, Dr. Lokender Kumar.

Session Expert- Mr. Vishal Anand

Mr. Vishal Anand is a Co-Founder of Shoolini University and CEO of RNAVaxBio, through which he is reliving his dream by continuing his future journey in the field of science, as an investor. Mr. Vishal Anand spoke about that his investment in science is only to create an impact on society and the mRNA Vaccines are the future of the Indian pharmaceutical industries. He highlighted the fact that the Indian Pharma-Industry is going to increase its revenue by three fold till the year 2030, and the Indian Economy has been observed to have upgraded its increment speed in the past 70 years. So, he addressed the participants of the Program to be the manufacturers and build up their career in the field of science by using their research for building Indian Economy. He spoke about how pandemic had given India the opportunity to be recognized as the large scale drug manufacturer and every Indian researcher need to realize that their contribution towards research, should not only be manufacturing, but also securing their ideas and work by Intellectual Property Rights. This way Indian researchers can revert the grey picture of India deformed due to industrialization into a better image of what we had in renaissance era with ayurveda.

Technical Talk with Dr. Lokender Kumar

Dr. Lokender Kumar, Assistant Professor (Shoolini University), led the first technical session of the training program. He was a Research Assistant Professor at Department of Biophysics, CSM (USA). Dr. Lokender Kumar addressed his technical talk on Polymerase Chain Reaction and Agarose Gel Electrophoresis. He discussed the procedure of performing PCR and Agarose Gel Electrophoresis, with the basic knowledge of these techniques. Also, he emphasized some of the limitations observed while performing the experimental procedure, while answering some of the queries asked by the participants regarding the technical session. Later, the participants proceeded to have their hands on experimental session with Dr. Lokender Kumar and Dr. Vihang Ghalsasi after short tea break.

Post lunch, Practicals were conducted under the guidance of Dr. Vihang Ghalsasi. Participants were divided into 6 groups and had to perform experiment in different laboratories assigned. Those participant groups were assisted and volunteered by Dr. Swati, Mr. Kamel, Mr. Jagdish from Shoolini university. In the beginning, Dr. Vihang gave detailed insights about experiment topic and procedures relating to the first experiment, isolation of plasmid from bacterial DNA. He discussed about components of DNA mixture, DNA annealing and denaturation and steps involved in plasmid isolation.

He further demonstrated the steps of preparing the reaction mixture of PCR to each of the participant group. They performed the same in the assigned laboratories A- 103 and A- 105. Later on, they prepared materials for the other session experiment.

After the conduct of practicals, participants made a visit to the university library and Department of Physics along with Dean of Applied Sciences and Biotechnology, Dr. Anuradha Sourirajan and other faculty and staff members.



**DST-STUTI Technical Workshop by Faculty of applied Sciences and Biotechnology at
Shoolini University**

23rd July, 2022- Day 3

On the third day of the Insights and Hands on Training Program on Techniques in Biotechnology Dr Nitika Thakur, Assistant Professor, Faculty of Applied Sciences and Biotechnology (Shoolini University) initiated the event by giving a brief highlight of the previous day's session and addressed Dr. Dinesh Kumar Chatanta, Head of Department of Bioengineering and Food Technology, Shoolini University, to introduce the session expert, Dr. Sunil Gosipatala, Associate Professor (Babasaheb Bhimarao Ambedkar University).

Session Expert: Dr. Sunil Babu Gosipatala

Dr. Sunil Babu Gosipatala, specializes in the field of Immunology and Molecular Biology. He spoke on 'Techniques related to the functional validation of miRNA'. In his presentation, he discussed about Viral micro RNA (miRNA) and immune invasion, that how the miRNA can invade the host immune system and what is its strategy for invasion, through his research work.

Technical Talk: Prof. Saurabh Kulshreshta

Prof. Saurabh Kulshreshta, Dean of Research and Development, Faculty of Applied Sciences and Biotechnology gave the technical talk on 'DNA purification, Plasmid Isolation and Gel Extraction'. In his presentation, he discussed about the technical procedure for performing the purification of DNA and Isolation of Plasmid and their importance.

Later, the participants proceeded for performing the experiment in the respective laboratories after the tea break.

Post lunch, Dr Lokender Kumar and Dr. Vihang Ghalsasi co- guided all the participant groups and explained about the steps involved in the experiments to be performed. Both professors ensured each participant gets the equal number of opportunities to perform in the lab and gain maximum knowledge. Feedbacks from each participant are always taken on regular basis and participants were satisfied with the action taken.

Each student from the divided 6 groups were indulged and instructed to perform the basic steps of

the experiment protocol involved in DNA plasmid isolation using alkaline lysis method and plasmid DNA purification. Detailed information about each basic step such as buffer preparation, gel casting, instruments and devices used was given to participants as participants had diverse academic backgrounds.

Mr. Jagdish and Mr. Kamel (PhD. Research scholars) and Dr. Swati (Assistant professor) Shoolini University helped participants along with Dr. Lokender and Dr. Vihang in preparation of reagents, handling equipments being used in the experiments.



**DST-STUTI Technical Workshop by Faculty of Applied Sciences and Biotechnology at
Shoolini University**

24th July, 2022-Day 4

The seven-day DST-STUTI 'Insights and Hands-on Training Program on Techniques in Biotechnology', reached its half way mark on 24th July, 2022. Dr. Narendra Chirmule was the session expert for the Day 4. His session was followed by the technical session of the participants with Prof. Dinesh Kumar and Dr Rupak Nagraik.

The Day-4 event was initiated by the highlights of the previous day's session, given by the host of the event, Dr Nitika Thakur, Assistant Professor (Shoolini University), and proceeding to a welcome speech for the chief guest, Dr. Narendra Chirmule, given by Prof. Saurabh Kulshrestha, Dean (Research and Development, Shoolini University), followed by the talk session with the session expert.

Session Expert- Dr Narendra Chirmule

Dr Narendra Chirmule, CEO at Symphony Tech Biologics, former Head of R & D (Biocon), has three decades of experience in Immunology as a researcher, teacher and an advisor. In his talk session on 'Challenges in Development of a prevent vaccine against HIV: lessons learned from the past four decades', he uncovered the epidemiological history and serendipitous discoveries of the identification, process of infection spread, cure research on vaccines of the HIV-AIDS virus. This was followed by an interesting question and answer (Q & A) session between the expert and participants.

Talk Session: Prof. Dinesh Kumar

Prof. Dinesh Kumar, Head of Department of Bioengineering and Food Technology, gave his technical talk on 'Restriction Digestion of Vector and Insert and Transformation of

Cells', while giving an overview on restriction digestion basics, its procedural protocol and interpretation methodology. This was followed by a practical session with Dr. Vihang, Dr. Lokender and Team after a short tea break.

Post lunch, Dr Lokendra Kumar and Dr. Vihang team as routinely guided all the participant groups about the PCR equipment details and functioning alongside solving their queries for same. The team ensured each participant gets hands on experience in dealing the gel electrophoresis process also checking and understanding the bands in geldoc for documentation work.

Small question answer session went through for extracting best of their knowledge and to test so far what they have understood. Feedbacks are always welcomed for better performance.

All the 6 groups of participants were indulged and instructed to visualize DNA on Agarose gel following excising the purified DNA from across gel, thereafter a restricted digestion reaction was done for insertion and vector ending it by incubating it for 2 hours under -20°C .

Mr. Jagdish and Mr. Kamel (Ph.D. Research scholars) and Dr. Swati (Assistant Professor) Shoolini University helped participants along with Dr. Lokendra and Dr. Vihang in preparation of reagents, handling equipments being used in the experiments and made sure to explain the core concepts to best considering the diversity in the fields of all participants coming along.



**DST STUTI Technical Workshop by Faculty of Applied Sciences and Biotechnology at
Shoolini University**

25th July, 2022, Day-5

The 5th Day for the training program initiated with the routine highlights of the previous day by Dr. Nitika Thakur, followed by a welcome speech for the chief guest Dr. Anand Bachhawat, Professor, IISER, Mohali given by Prof. Anuradha Sourirajan.

The expert session began thereafter, where Dr. Anand Bachhawat, gave his talk on 'Introduction to Synthetic Biology'. Dr. Anand Bachhawat, Dean of Faculty at IISER (Mohali), is an awardee of National Bioscience Award for career development and has published research papers in Biochemistry and Synthetic Biology.

He spoke on synthetic biology, and its emergence as a merged field with Mathematics, Genomics, and Engineering. Further, he discussed the historical background of discovery of Antimalarial drug Artemisinin, its biological pathway and production and his research on SARS- CoV-2.

Dr. Vihang Ghalsasi, Assistant Professor (Shoolini University), gave his technical talk on DNA Ligation, where he discussed about its basics, procedural protocols and better alternatives used in methodology in terms of cost effectiveness, time, and productivity.

Later the session was followed, practical session with Dr. Swati, Mr. Jagdish and Mr. Kamel after a short tea break.

Post lunch, Dr. Vihang showed results of yesterday's DNA digestion experiment and denatured yield of PCR product. Dr. Vihang elaborated practical steps in the process of DNA ligation and theoretical aspects of practical protocols of bacterial transformation. Each student performed from the 6 groups, divided the practical work load. Settled up

the ligation reaction. Competent cells and carried out bacterial cell transformation, selected transformants via blue-white screening. Media plates were prepared in incorporating IPTG and X-gal. Heat Shock method is used.

In addition, Dr. Vihang demonstrated the basic microbiological lap methods like media plating and spreading onto media plates.

DST-STUTI Technical Workshop Organized by Faculty of Applied Sciences and Shoolini University

26 July 2022- Day-6

The second last day of the DST-STUTI 'Insight and Hands-On Training Program on Techniques in Biotechnology' began with the previous day highlights given by Dr Nitika Thakur, Assistant Professor (Shoolini University). Dr Azhar Khar, Assistant Professor (Shoolini University) introduced the session expert Prof. Inderjit Singh Dua to the participants.

Session Expert- Prof. Inderjit Singh Dua

Prof. Inderjit Singh Dua, Professor and former Chairman of the Department of Botany at Panjab University, Chandigarh popularizes in the field of Agricultural Biotechnology. In his session, he talked about historical build up journey of science, its transformation from mythological conceptual science to the era of discovery and invention, while rediscovering the footprints of life on earth.

Technical Session- Prof. Kamal Dev

Prof. Kamal Dev, Director (IPR) and Professor (Shoolini University), gave his technical talk on observation of transformation results by blue white selection. In his talk he discussed about recombinant screening, selection and analyzing methodology.



Day 7 (27th July):

- 27th July 2022 marked the ending day for the 'Insight and Hands-on Training Program Techniques in Biotechnology' organized by Shoolini University in collaboration with SAIF/CIL (Panjab University, Chandigarh), under the aegis of DST-STUTI. The day session began with the technical talk session by Dr. Azhar Khan, Dr. Chandresh and Dr. Nitika Thakur (Assistant Professors at Shoolini University) followed by expert talk session from Dr. R.C. Sobti and Prof. Ashish Khosla and then finally proceeding towards the closing ceremony.
- Technical Talk started sharp at 9:20 AM conducted by Dr. Azhar Khan at PDH hall enlightening about Animal Cell Culturing. He gave insights about its applications, types of cell cultures, also mentioning cellular confluence and cell culture contamination. He described about cell imaging and its advantages alongside acknowledging some question answer sessions by the end of his session.
- Prof. R. C. Sobti, a Padma Shree awardee, former Vice-Chancellor of Panjab University and BBAU, and a cell biologist was the session expert and chief guest for last day of the training program. In his talk on 'What Biology can do', he talked about rerouting biology through emerging technologies, in his words that is 'From Basics to Emerging'. He also discussed about convergence of Biology, Chemistry, Physics and Mathematics through discoveries and inventions, and rediscovering their pathway through new emerging fields like Bioengineering, Instrumental and

Analytical Technology, and Artificial Intelligence can be a great benefit for human enhancement.

- Prof. Ashish Khosla, is a Professor at Yogananda School of AI, Computer and Data Sciences (Shoolini University), gave his talk on 'Artificial Intelligence'. He emphasized the need of merging Biotechnology and Artificial Intelligence.
- Post the expert talk session the closing ceremony began with the workshop report of the 7-day training event given by Dr. Anuradha Sourirajan. This was followed by vote of thanks and some last interaction between the chief guest Dr. R.C. Sobti, Prof. P.K. Khosla, Prof. Sunil Puri, and Prof. Atul Khosla and the participants. Before closing in on the last part of the closing ceremony, some of the participants gave their feedback, 'on-stage', for the technical training program. The participant were then awarded with the certificates by the chief guest, Dr. R.C. Sobti, Prof. P.K. Khosla, Prof. Sunil Puri and Prof. Atul Khosla.
- As the ending part of the day's event approached, Prof. Sunil Puri, reread some of the feedbacks given by the participants and wished them for the future, and further observed that we have much to be thankful for at Shoolini University, receiving a great support thanks to our fine administration and faculties. He specially mentioned the IT team of Chaitanya, Saurabh, Manish, and Saket, with Director Operations Brigadier Mehta and his team along with MD Sharma and his finance operations team. The University's own photographer Prem Bhatti, and the entire team of School of Hospitality under Pratip Mazumdar.

- Dean Biotechnology mentioned the magnitude of the work taken by Dr. Nitika Thakur and Dr. Chandresh Thakur, and acknowledged the unflinching support received from Professors, Associate Professors and Assistant Professors of the Faculty of Applied Sciences & Biotechnology of Shoolini University. Dr. Vihang Ghalsasi and Dr. Lokender Kumar who provided the round the clock technical expertise all throughout the seven days of the program. Session experts such as Prof. Kamal Dev, Prof. Saurabh Kulshrestha, Prof. Dinesh Chatanta, Dr. Azhar Khan and Dr. Rupak Nagraik were instrumental in delivering great knowledge as well as handle various aspects of the event, the continuous news coverage of the event supervised by Dr. Debajyoti Bose with Deeksha Sharma, Ishita Sharma, Srishti Mathur and Manishi Raturi along with Nisha Kapoor and Prof. Vipin Pubby from Journalism department, finally with Prof. Somesh Sharma, Dr. Pankaj Chauhan with Dr. Vinay Chandel looking after the welfare and stay of the participants.

GALLERY







Date: 21st- 27th July 2022

Sr. No	Candidate Name	Gender	Educational Qualification	Institution Name
1.	Dr KN Arul Jyothi	Male	Ph.D	SRM, Chennai, Tamil Nadu
2.	Dr Laveena KB	Female	PhD	Manglore University, Mangaluru, Karnataka
3.	Dr Dakshayini	Female	PhD	Manglore University, Mangaluru, Karnataka
4.	Rajalakshmi Subramaniam	Female	Ph.D (Pursuing)	Anna University, Chennai, Tamil Nadu
5.	Dr Bhavyashree Udyawar	Female	Ph.D	Manglore University, Mangaluru, Karnataka
6.	Kartik Adake	Male	Ph.D (Pursuing)	Fergusson Collage, Pune, Maharashtra
7.	Arun Kumar	Male	PhD	APG University, Shimla, Himachal Pradesh
8.	Garima Singh	Female	PhD	Babasaheb Bhimrao Ambedkar University, Lucknow, Uttar Pradesh
9.	Dr Jaswant Singh Saini	Male	Ph.D	SV Govt. Collage Gumarvein, Bilaspur, Himachal Pradesh
10.	Neeraj Bhardwaj	Male	Ph.D (Pursuing)	MVN, Palwal, Haryana
11.	Sonali Kalotra	Female	Doctor of Philosophy (Botany)	Nauni University, Solan, Himachal Pradesh
12.	Mamta Devi Sharma	Female	Doctor of Philosophy (Botany)	Shoolini University, Solan, Himachal Pradesh
13.	Lakita Verma	Female	PhD	Nauni University, Solan, Himachal Pradesh
14.	Navneeti Chamoli	Female	PhD	H.N.B.Garhwal University, Srinagar, Uttarakhand
15.	Sourabh Dwivedi	Male	Ph.D (Pursuing)	Guru Jambheshwar University, Hisar, Haryana
16.	Umesh K Narta	Male	Doctor of Philosophy (Botany)	SIMA college, Shimla, Himachal Pradesh
17.	Dr Somveer Singh	Male	Doctor of Philosophy (Clinical Genetics)	Chandigarh University, Punjab
18.	Nitesh Singh	Male	Doctor of Philosophy (Biotechnology)	Chandigarh University, Punjab

19.	Yojana Thakur	Female	M. Pharma (Pharmacology)	Govt collage Rampur, Shimla, Himachal Pradesh
20.	Uttkarsh Kumar Sharma	Male	Ph.D (Pursuing)	Amity University, Gurugram, Haryana
21.	Umamahesh	Male	Ph.D (Pursuing)	Stratup-Clean Green Tech, Chennai, Tamil Nadu
22.	Pallavi Sharma	Female		Amity University, Gurugram, Haryana
23.	Devanshi Gautam	Female	MSc, LLB, MA	Amity University, Gurugram, Haryana
24.	Shelly	Female	PhD	PAU, Ludhiana, Punjab
25.	Senthil Kumar Palanisamy	Male	Ph.D	SRM, Chennai, Tamil Nadu
26.	Vikas Kumar	Male	M.Sc	Chandigarh University, Punjab
27.	Nitin Kumar	Male	Ph.D (Pursuing)	Chandigarh group of Colleges, Landran, Punjab
28.	Jitender Kumar	Male	PhD	Central University Himachal Pradesh, Dharamsala, Himachal Pradesh
29.	Sneha Kumari	Female	Ph.D (Pursuing)	Babasaheb Bhimrao Ambedkar University, Lucknow, Uttar Pradesh
30.	Anurag Kumar	Male	Ph.D (Pursuing)	Babasaheb Bhimrao Ambedkar University, Lucknow, Uttar Pradesh
31.	Rachna Verma	Female	B.Tech, M.Sc	Shoolini University, Solan, Himachal Pradesh
32.	Amita Sharma	Female	Doctorate	Shoolini University, Solan, Himachal Pradesh
33.	Mamta Garla	Female	Doctorate	Shoolini University, Solan, Himachal Pradesh
34.	Nidhi Negi	Female	Ph.D (Pursuing)	Shoolini University, Solan, Himachal Pradesh
35.	Rajat	Male	Ph.D (Pursuing)	Shoolini University, Solan, Himachal Pradesh