

BIIS Webinar

SITARE BIIS: Opportunity for technology students to work on grassroots innovations

SRISTI (Society for Research and Initiatives for Sustainable Technologies and Institutions) in collaboration with BIRAC (Biotechnology Industry Research Assistance Council, Department of Biotechnology, Govt. of India) is organising a three-week SITARE BIIS (Students Innovations for Translation & Advancement of Research Explorations-Biotech Innovation Ignition School) for validating, value-adding and product development around grassroots innovations. The BIIS tries to develop solutions for grassroots applications for humans, animals, and agricultural including herbal technologies, medical devices, and microbial applications.

This time due to COVID-19 pandemic we have conducted BIIS-8 course as a webinar started from 25th January – 14th February, 2021, where the prime focus was to build the capacity of primarily undergraduate students to develop skills in the field of phytochemistry, pharmacognosy, extraction, separation of compounds, microbial diversity screening, pest control, development of extremely affordable solutions for farmers, livestock keepers, pastoralists, human applications, besides patent, biostatistics and ethical guidelines for work on grassroots knowledge and innovations.

There were total 49 students (one from aspirational district and others were from Tier-II and Tier-III cities).

The topics for the online course BIIS-8 were designed based on following fields. As a part of webinar we had assigned some projects to the students primarily in five action-research areas drawing upon the Honey Bee Network Database:

1. Pharmacognosy/Phytochemistry
2. Soil Microbiology
3. Veterinary Medicine
4. Agriculture
5. Medical devices.

The reading material for each subject was shared with the selected students in advance. There were experts lectures arranged in various techniques of microbiology, phytochemical extraction procedures, live experiments and demonstration of lab equipment during the webinar. The topics covered and the expert details are shown in table below. Total 2 exams (descriptive types) were conducted based on the expert lectures. Moreover there were 4 assignments given to the students, for assignment 1 they had to document the grassroots innovations, their problems and traditional knowledge from their grandparents, assignment 2 was aimed to prepare a report on BIRAC activities; Assignment 3 was about home experiments take up by students whereas assignment 4 was given to design scientific protocol and detail proposal grassroots practices.

These students would receive an expert feedback on their proposals from the reviewers. **The assignment, quiz and work done by students during BIIS webinar are under assessment. The outstanding studies (up to 10 per BIIS) may be identified for further support of INR 1 lakh each as SITARE-Appreciation Award Grant.** The grantees are expected to conduct further research on the topic given either at home institution or at SRISTI's lab.

All the output will be credited to the grassroots knowledge providers and can be published thereafter with prior written concurrence of the BIIS team and knowledge providers.

The valedictory session of BIIS-8 (Biotech Innovation Ignition School) webinar on 14th February, 2021 was chaired by Dr. Raghunath Anant Mashelkar, Fellow of the Royal Society, Royal Academy of Engineering (FREng), Foreign associate of US National Academy of Engineering and the US National Academy of Sciences, Former Director General, Council of Scientific and Industrial Research (CSIR).

During the last session, students had shared their experience and feedback of BIIS webinar.

Schedule of BIIS-8

Date	Time	1st Week- Grassroots Innovations, Life Science Innovations and Entrepreneurship	
1/25/2021	9:30-10:30 AM	Welcome and Introductory Remarks on Grassroots Innovations	Prof. Anil K Gupta Founder-Honey Bee Network, Coordinator-SRISTI, GIAN, Visiting faculty-IIM-A & IIT-B
	10:40-11:15 AM	Inaugural Address	Dr. Renu Swarup Secretary, Department of Biotechnology Ministry of Science & Technology, Government of India
	11:20-12:30 AM	Role of BIRAC in Nurturing Biotech Entrepreneurship	Dr. Shilpy Kochhar Entrepreneurship Development Manager, DBT-BIRAC
1/26/2021	10:00 -11:30 PM	Women Entrepreneurship in India: Challenges and Prospective	Dr. Anasuya Bhadalkar Joint Director, Gujarat State Biotechnology Mission (GSBTM), Govt. of Gujarat
	11:45-12:45 PM	Startup Ecosystems: Supporting Entrepreneurship for Sustainable Development	Dr. Premnath Venugopalan Head, Venture Center, CSIR-NCL, Pune
	1:00-2:00 PM	BioNest Incubation-Nurturing Entrepreneurship for Scaling Technologies	Dr. Poyini Bhatt Chief Executive Officer, Society for Innovation & Entrepreneurship (SINE), IIT-Bombay
1/27/2021	10:00 -12:00 PM	Success Story of Scientist	Prof. Samir K Brahmachari J. C Bose National Fellow, Founder Director CSIR-IGIB, Former Director General - CSIR, India
	12:15-1:30 PM	IPR, Patent and Ethical Framework in the Informal Sector	Dr. Arul George Scaria Associate Professor, National Law University, Delhi
1/28/2021	10:00 -11:15 AM	Writing Research and Review Articles	Dr. Anupam Verma Adjunct Professor, Indian Agricultural Research Institute,

			Central Delhi, India
	11:30-12:45 PM	Research Methodologies	Prof. Ranjit Kumar Freelance Research and Evaluation Consultant, Western Australia
	2:00-3:15 PM	Drugs and Medical Laws: Important Aspect Under Innovations	Dr. G B. Jena Associate Professor, NIPER- Mohali
1/29/2021	10:00 -11:15 PM	ShodhYatra	Mr. Chetan Patel National Coordinator, ShodhYatra, SRISTI
	11:30-12:45 PM	Interactive Session with Innovators	(1) Mrs. Arpita Doshi, Founder -Nutrient Dynamic Food (NDF) (2) Mr. Yash Bhatt, Founder-Brook & Blooms (3) Mr. Mansukh Prajapati, Founder - Mitticool
	2:00-3:15 PM	Interactive Session with Grassroot Innovators	(1) Mr. Ishvar Singh Kundu (2) Mr. Dharamvir Kambodh (3) Mr. Subhash Ola
1/30/2021	10:00 -11:30 PM	Career Pathways in Biomedical Sciences	Dr. Tanmoy Ray Career Adviser and Admission Consultant, Stoodnt Inc, Kolkata, Former Biomedical Scientist at University of Oxford (UK)
	11:45-12:45 PM	Assignment (Documentation of grassroots innovations, their problems and traditional knowledge)	Prof. Anil K. Gupta and Lab Team, SRISTI
	1:00-2:00 PM	Presentation by BIIS students	Prof. Anil K. Gupta and Lab Team, SRISTI
	3:00-4:00 PM	Exam based on lectures (Descriptive)	Lab Team, SRISTI
2nd Week- Basics of Life Sciences and Regulatory Aspects			
1/31/2021 Microbes and their Applications	10:00 -11:15 PM	Microbial Diversity of Soil and Their Industrial Applications	Dr. Asifa Qureshi Principal Scientist, CSIR- National Environmental Engineering Research Institute (NEERI), Nagpur
	11:30-12:45 PM	Antimicrobial Resistance: An Emerging Global Threat	Dr. Rajesh Prakash Ringe Ramalingaswami Fellow, CSIR-IMTech, Chandigarh
	2:00-3:15 PM	Application of Microbes in Environmental Management/ Sustainability	Dr. Dhanya M.S Assistant Professor, Central University of Punjab
2/1/2021 Agriculture and	10:00 -11:15 AM	Emerging Agricultural Biotechnologies for Sustainable Agriculture and	Dr. Sanjiv Kumar Scientist, ICAR-National Academy of Agricultural Research Management

Veterinary Biotechnology		Food Security	(NAARM), Hyderabad
	11:30-12:45 PM	Role of Biotechnology in Veterinary Science: Potentials and Future Developments	Dr. Narayan Dutta Principal Scientist, ICAR-Indian Veterinary Research Institute (IVRI), Izatnagar
	2:00-3:15 PM	Conservation and Bioprospection of Native Diversity of Horticultural Importance from Andaman and Nicobar Islands, India	Dr. Ajit Arun Waman Scientist (Spices, Plantation Crops, M&A Plants) ICAR-Central Island Agricultural Research Institute, Port Blair
	4:00-5:15 PM	Regulatory Aspects of Agriculture Practices for Indian Medicinal Plants	Dr. P Manivel Principal Scientist, Directorate of Medicinal and Aromatic Plants Research (DMAPR), Gujarat
2/2/2021 Pharmacognosy	10:00 -11:15 AM	Indian Medicinal Herbs as Sources of Antioxidants	Prof. Utpal Bora Professor, Indian Institute of Technology, Guwahati
	11:30-12:45 PM	Analytical Methods For Natural Products	Dr. Satyanshu Kumar Principal Scientist, Directorate of Medicinal and Aromatic Plants Research (DMAPR), Gujarat
	2:00-3:15 PM	Integrative Medicines: Innovative Approach for Drug Discovery	Dr. Dayanand Mani Senior Scientist & Head, Department of Herbal Medicinal Products, CSIR- Central Institute of Medicinal and Aromatic Plants (CIMAP), Lucknow
2/3/2021 Herbal Drugs and Regulatory Aspects	10:00 -11:15 AM	Regulatory Risk Assessment: Toxicological Aspect	Dr. D.K. Patel Principal Scientist, Regulatory Toxicology CSIR-Indian Institute of Toxicology Research, Lucknow
	11:30-12:45 PM	Standardization and Quality Evaluation of Herbal Drugs: A Complete Insight	Dr. Alok Lehri Senior Principal Scientist, CSIR-National Botanical Research Institute (NBRI), Lucknow
	2:00-3:15 PM	Assignment (Writing review article and prior art search of the 3 problems/disease related to human, agriculture and veterinary)	Prof. Anil K Gupta and Lab Team, SRISTI
2/4/2021 Data Science and Bioinformatics	10:00 -11:15 AM	Biostatistics: Mean, Mode, Median, SE, SD, t-Test, ANOVA, Biostatistics and Experimental Design	Dr. Ranjana Singh Associate Professor, Indian Institute of Public Health, New Delhi
	11:30-12:45 PM	Application of Computational Tools and	Dr. Debasis Dash CSIR - Institute of Genomics and

		Softwares for High-Throughput Biological Data Analysis	Integrative Biology (IGIB), Delhi
	2:00-3:15 PM	Toward the Replacement of Animal Experiments through the Bioinformatics or Computational Biology	Dr. Parthasarathi Ramakrishnan Principal Scientist, CSIR-Indian Institute of Toxicology Research, Lucknow
2/5/2021 COVID-19 Management Strategies	10:00 - 11:15AM	Post COVID Waste Management Strategies: Challenges and Remedies	Mr. Sourabh Manuja Fellow, Centre for Waste Management, The Energy and Resources Institute (TERI), New Delhi
	11:30-12:45 PM	Emerging Technologies and Innovations to Combat COVID-19 Pandemic	Dr. Souvik Maiti Senior Principal Scientist, CSIR - Institute of Genomics and Integrative Biology (IGIB), Delhi
	2:00-3:15 PM	Interactive session with Student Innovators	(1) Mr. Ankur Kumar Chief Executive Officer, Kriya Labs Pvt Ltd. (2) Mr. Narayan Gujjar Founder, EF Polymer Pvt. Ltd., Rajasthan
2/6/2021	10:00 -12:00 PM	Success Story of Scientist	Prof. Shashidhara L. S. Professor, IISER-Pune, Distinguished Visiting Professor, Ashoka University
	12:30-1:30 PM	Presentation by BIIS students	Prof. Anil K Gupta and Lab Team, SRISTI
	3:00-4:00 PM	Assignment discussion (To design scientific protocol and detail proposal grassroots practices)	Prof. Anil K Gupta and Lab Team, SRISTI
	5:00-6:00 PM	Exam based on lectures (Descriptive)	Lab Team, SRISTI
3rd Week- Instrumentation, Bioengineering and Live Experiment Demonstration			
2/7/2021 Instrumentations and Techniques	10:00 AM- 11:15 PM	Advances in Various Chromatographic Techniques	Dr. Lodha Laxminarayan Professor, Department of Pharmaceutical Chemistry, College of Pharmacy, Kota
	11:30-12:45 PM	Applications of HPTLC in Plant Drug Discovery	Dr. Saikat Mallick Assistant Manager (R&D), Anchrom Enterprises Pvt. Ltd., Bombay
	2:00-3:15 PM	DNA Fingerprinting: Current Perspective and Future Challenges in India	Dr. Sunil Kumar Verma Sr. Principal Scientist, CSIR - Centre for Cellular & Molecular Biology (CCMB), Hyderabad

2/8/2021 Biomedical Sciences	10:00 -11:15 AM	The Role of Machine Learning in Biomedical Sciences	Dr. Pratik Shah Principal Research Scientist, Massachusetts Institute of Technology, Media Laboratory, Cambridge, MA, USA
	11:30-12:45 PM	Protein Factories: Expression Purification and Applications	Dr. Ranjeet Kumar Research Engineer Department of Biology and Biological Engineering Chalmers University of Technology, Gothenburg
	2:00-3:15 PM	Insight into Bio-inspired and Bio-derived Materials to Meet Unmet Needs in Treating and Diagnosing Disease	Prof. Jayanta Halder Associate Professor, Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Bengaluru, Karnataka
2/9/2021 Bioenginee ring	10:00 AM- 11:15 PM	Paper Based Diagnostics: Emerging Technologies and Commercial Aspects	Dr Pranjali Chandra Assistant Professor, Indian Institute of Technology- BHU, Varanasi
	11:30-12:45 PM	Microfluidics Based Point- of-Care (POC) Platforms: A Low-Cost, Sensitive Substrate for Analytical Applications	Dr. Dhananjay Dendukuri Chief Executive Officer & Co-Founder, Achira Labs, Bangaluru
	2:00-3:15 PM	Recent Trends in the Development of Paper- Based Diagnostic Devices: An Affordable Sensor Technology	Dr. Amit Asthana Principal Scientist, CSIR - Centre for Cellular & Molecular Biology (CCMB), Hyderabad
2/10/2021 Bioenginee ring	10:00 -11:15 AM	Biofluid Dynamics: Exploring Biological Fluid Systems using Engineering Approaches	Dr. Priya Gambhire INSPIRE Faculty Fellow, Centre of Biosystems Science and Engineering, Indian Institute of Science, Bangalore
	11:30-12:45 PM	Tissue Engineering and Textile Technology: Exploring the Interface	Dr. Sourabh Ghosh Professor, Indian Institute of Technology Delhi (IIT-D), New Delhi
2/11/2021	10:00 AM- 12:00 PM	Success Story of Scientist	Prof. Partha P Majumder Distinguished Professor and Founding Director, National Institute of Biomedical Genomics (NIBMG), Kalyani
	2:00-3:15 PM	Interactive Session with Biotech & Life Science Entrepreneurs	(1) Mr. Rahul Rastogi, Founder Agatsa Software (SanketLife: Portable ECG machine), Noida (2) Mr. Jaimin Patel, Founder Natural

			Water Cooler, Gujarat
	4:00- 5:00 PM	Exam based on lectures (Descriptive)	Lab Team, SRISTI
2/12/2021 Live Experiments	10:00 -12:00 AM	Herbal Grassroots Formulation for Caterpillar/insect Problems in Agriculture	Lab Team, SRISTI
		Treating Mastitis in Cattle: Herbal Grassroots Formulation for Mastitis Problems in Cattle	Lab Team, SRISTI
		Soil Microbes Isolation, Separation, Colony Identification and Counting	Lab Team, SRISTI
		Seed Treatment and Growth Parameter Study using Herbal Formulations	Lab Team, SRISTI
	2:00-3:15 PM	Phytochemical Screening Methods	Dr. Megha Barot SITARE- BIIS Coordinator, SRISTI
2/13/2021	10:00 - 11:15AM	Presentation by Students	Prof. Anil K Gupta and Lab Team, SRISTI
	11:30-12:45 PM	All Assignments Review	Prof. Anil K Gupta and Lab Team, SRISTI
2/14/2021	10:00 AM- 1:00 PM	Valedictory Session, Feedback & Discussion	Dr. Raghunath Anant Mashelkar Fellow of the Royal Society, Royal Academy of Engineering (FREng), Foreign associate of US National Academy of Engineering and the US National Academy of Sciences, Former Director General, Council of Scientific and Industrial Research (CSIR)