

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-7 course as a webinar started from December 1-21, 2020, 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 65 students (one from aspirational district and others were from Tier-II and Tier-III cities).

The topics for the online course BIIS-7 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 3 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 Shodhyatra route to identify the innovation of particular area and grassroots problems; 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-7 (Biotech Innovation Ignition School) webinar on 21st December, 2020 was chaired by Prof. Seyed Ehtesham Hasnain, Vice Chancellor, Jamia Hamdard (Hamdard University) delivered the valedictory address.

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

Schedule of BIIS-7

Date	Time	1 st Week- Grassroots innovations, life sciences innovations and entrepreneurship	
1/12/2020	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. Shekhar C. Mande, Director General, Council of Scientific & Industrial Research, New Delhi
	11:20-12:30 AM	Role of BIRAC in nurturing biotech entrepreneurship	Dr. Shilpy Kochhar, Entrepreneurship Development Manager, DBT-BIRAC
2/12/2020	11:00 AM-12:30 PM	Role of state government in promoting entrepreneurship and innovations	Dr. Anand Bhadalkar, Business Development (Joint Director, GSBTM)
	2:00-3:30 PM	Women entrepreneurs in life sciences	Dr. Bindu Dey Secretary, Technology Development Board, Department of Science and Technology, Government of India.
	3:35-5:00 PM	Start-up development and Business Model	Vijay Kantharia, CEO, BioNest, SRISTI

3/12/2020	11:00 AM-12:30 PM	Clinical management of Covid-19 through traditional medicines	Prof. Tanuja Manoj Nesari, Director, All India Institute of Ayurveda, New Delhi
	12:45-1:45 PM	Intensive quality control of herbal drugs and its ethnopharmacological importance	Dr. S K Singh, Associate Prof. Panchkarma Department, NIA, Jaipur
	2:30- 4:00 PM	IPR, Patent and Ethical framework for accessing and exploring people's knowledge and grassroots innovations	Dr. Viswajanani Sattigeri, Head, CSIR-Traditional Knowledge Digital Library Unit, New Delhi
	4:00-5:00 PM	Assignment (Documentation of grassroots innovations, their problems and traditional knowledge)	Prof. Anil Gupta and Lab Team, SRISTI
4/12/2020	11:00 AM-12:30 PM	ShodhYatra	Mr. Chetan Patel, National Coordinator, ShodhYatra, SRISTI
	12:45-1:45 PM	Research Methodologies	Dr. Anupam Dhasmana, Scientist, University of Taxes, US
	2:30- 4:00 PM	The antiviral natural compounds – additional weapons in the fight against the COVID -19 pandemic	Prof. Rakesh Rawal, Dept. of Life-science, Gujarat University, Ahmedabad
5/12/2020	11:00 AM-12:30 PM	Herbal Drug Technology: Formulation Development and Regulatory Aspects	Dr. Narayan Prasad Yadav, Scientist, CSIR-Central Institute of Medicinal and Aromatic Plants
	2:30- 4:00 PM	Assignment discussion	Lab team, SRISTI
6/12/2020	11:00 AM-1:00 PM	Exam based on lectures (Descriptive)	Lab team, SRISTI
	2:00-4:00 PM	Modern Techniques for Identification of Bioactive compounds and Dereplication Approach	Dr. Abhijeet Kate, Assistant Professor, NIPER, Ahmedabad, Gujarat, India.

2nd Week- Basics and applications of life science

7/12/2020	11:00 AM-12:30 PM	Presentation by BIIS students	Prof. Anil Gupta and Lab Team, SRISTI
	2:00- 3:30 PM	The veterinary role in meeting key global challenges, now and for the future	Dr. Sujeet Kumar Jha Principal Scientist, Division of Dairy Extension, ICAR-National Dairy Research Institute, Karnal-132001, Haryana, INDIA
	3:45-5:15 PM	Nanostructures and Nanomaterials: Characterization and properties	Dr. Saurabh Kumar Srivastava (Chief Scientific officer, Vidcare Innovations)
8/12/2020	11:00 AM-12:30 PM	Development of herbal fungicide	Prof. Ramesh Chand, Head of Department of Mycology and Plant Pathology, Institute of Agricultural Sciences, Banaras Hindu University
	2:00- 03:30 PM	Biostatistics: Mean, Mode, Median, SE, SD, t-Test, ANOVA, biostatistics and experimental design	Prof. Rakesh Srivastava Department of Statistics Faculty of Science, The M.S. University of Baroda, Vadodara.
	3:45-5:15 PM	New Avenues for Old Natural Agents/Drugs: an Overview and Advancements	Dr. Richa Gupta, BIRAC GYTI- Coordinator, SRISTI
9/12/2020	11:00 AM-12:30 PM	Application of microbial diversity for sustainable health management of Crops: Use of Trichoderma spp.	Dr. Arup Kumar Mukherjee Designation: Principal Scientist Division of Crop Protection, ICAR-National Rice Research Institute, Cuttack, Odisha, India

	2:00- 03:30 PM	Challenges in herbal insecticide, acaricide and growth promoter	Dr Raghu Raman, Banaras Hindu University
	3:45-5:15 PM	Biological Control Agents for Sustainable Agriculture	Professor Alok Dhawan, Director, CSIR-Indian Institute of Toxicology Research, Lucknow
10/12/2020	11:00 AM-12:30 PM	Assignment (Writing review article and prior art search of the 3 problems/disease related to human, agriculture and veterinary)	Lab team, SRISTI
11/12/2020	11:00 AM-12:30 PM	Role of bacteriocins in food safety	Dr. Vipin Kumar Singh, Center of Advanced Study in Botany, Institute of Science, BHU, Varanasi, India
	2:00- 03:30 PM	Importance of endophytic fungi in drug discovery and development	Ms. Neha Topno, Scientist, Division Of Microbiology, CSIR- Central Drug Research Institute, Lucknow, Uttar Pradesh, INDIA
	3:45-5:15 PM	Soil microbes isolation and screening for potential application in agriculture	Dr. Dharam Singh, Senior Scientist, CSIR – Institute of Himalayan Bioresource Technology, Palampur
12/12/2020	11:00 AM-1:00 PM	Exam based on lectures (descriptive)	Lab team, SRISTI
	2:00-4:00 PM	Presentation by BIIS students	Prof. Anil Gupta and Lab Team, SRISTI
13/12/2020	11:00 AM-12:30 PM	Microbiology: DNA vaccines/Edible vaccines/Subunit vaccines – what works? What doesn't?	Dr. Ravi P.N. Mishra, Principal Scientist, CSIR-IMTECH, Chandigarh

	02:00-03:00 PM	Exchange of views/open house Q&A.	Dr. Manish Diwan, Head-Strategic Partnership & Entrepreneurship Development, BIRAC, (A Government of India Enterprise), New Delhi
	3:30-5:00 PM	'Protein factories' : expression purification and applications	Dr. Ranjeet Kumar Research Engineer Chalmers University of Technology Department of Biology and Biological Engineering Division of Chemical Biology
3rd Week- Instrumentation, Medical devices and Live experiments			
14/12/2020	11:00AM-12:10 PM	Working and applications of general instruments in the field of biotechnology	Dr. Preety Bansal, Post doc, Jamia Millia, New Delhi.
	12:20 – 1:30 PM	Instrumentation and application of GC,GC-MS	Dr. Saurabh Kumar Srivastava (Chief Scientific officer, Vidcare Innovations)
	2:30- 03:40 PM	HPTLC and applications	Dr. Saikat, Scientist, Anchrome, Bombay
	3:45-5:15 PM	Assignment discussion (To design scientific protocol and detail proposal grassroots practices)	Lab team, SRISTI
15/12/2020	11:00 AM -12:30 PM	Paper-based Analytical Devices: Fabrication methods and Potential Applications as Point of Care Diagnostics	Dr. Amit Asthana, Principal Scientist, CSIR-CCMB
	2:00-3:30PM	An insight on Viral vector vaccines	Dr. Debasis Nayak, Associate Professor, IIT Indore
	3:45-5:15 PM	Portable biosensing devices for point-of-care diagnostics	Prof. Uday Maitra, Indian Institute of Science, Bangalore
16/12/2020	11:00AM-12:30PM	Biofilms: A cozy house for microbes	Dr. Prasun Kumar, Assistant Professor, Yeungnam

			University, Republic of Korea
	2:00-3:30PM	Host pathogen interaction: Cross-talk between infected host and the invading pathogen	Dr. Sheetal Gandotra, Senior Scientist, CSIR- IGIB
	3:45-5:15 PM	Paper-based Analytical Devices as Point of Care	Dr. Renu John Professor and Head Dept. of Biomedical Engineering IIT Hyderabad
17/12/2020	11:00 AM-12:30 PM	Phytochemicals and plant based drug discovery	Dr. Prem Prakash Yadav, Principal Scientist, Division Of Medicinal and Process Chemistry, CSIR-CDRI, Lucknow
	2:00-3:30PM	Biosensor Technology: Potential Applications, Scope, Challenges and Opportunities	Dr. Sunil Bhand, Dean (university wide), Sponsored Research and Consultancy Professor, Department of Chemistry, BITS Pilani, Goa
	3:45-5:15 PM	Optics and Microfluidics: scope, challenges and opportunities in basic and applied research	Sai Siva Gorthi Associate Professor, Instrumentation and Applied Physics, Indian Institute of Science (IISc)
18/12/2020	1:30-4:30 PM	Herbal grassroots formulation for caterpillar/insect problems in agriculture	Lab team, SRISTI
		Treating mastitis in cattle: Herbal grassroots formulation for mastitis problems in cattle	
		Soil microbes isolation, separation, colony identification and counting	

		Seed treatment and growth parameter study using herbal formulation	
19/12/2020	11:00 AM-12:30 PM	Phytochemical screening methods	Dr. Megha Barot, SRISTI
	2:00-3:30 PM	Devices for Diagnostics and Biosensing suitable for low resource settings. (Demonstration of live experiments for Point of care diagnostic devices developed at SRISTI lab)	Dr. Shahila Parween, SRISTI Lab team, SRISTI
20/12/2020	11:00 AM-12:30 PM	All assignment review	Prof. Anil Gupta and Lab Team, SRISTI
	2:00-3:30 PM	Novel Hybrid Technology for Bio-separation	Dr. Jayesh kumar Sevantilal Mevada, 2019 SITARE GYTI Awardee, Revoltech Technologies Private Limited, Gujarat
	3:45-5:15 PM	Design and development of phase change material change material based milking cum cooling pail	Dr. Ravi Prakash, 2018 SITARE GYTI Awardee, Incubated at SINED-TBI of ICAR-NDRI, Karnal
21/12/2020	10:00 AM-12:00 PM	Valedictory session , Feedback and Discussion	Prof. Seyed Ehtesham Hasnain, Vice Chancellor, Jamia Hamdard (Hamdard University)