

## 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-6 course as a webinar started from 22nd September-12th October, 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 52 students selected for BIIS-6 out of which (30 applicants from life sciences and 27 from bioengineering; 16 from aspirational districts and from Tier-II and Tier-III cities).

The topics for the online course BIIS-6 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 5 exams (2 descriptive types and 3 MCQ based) 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 write a review article and prior art search of the 3 problems/disease related to human, agriculture and veterinary; assignment 3 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-6 (Biotech Innovation Ignition School) webinar on 12th October, 2020 was chaired by Prof. Gagandeep Kang, The Wellcome Trust Research Laboratory, Division of Gastrointestinal Sciences, Christian Medical College, Vellore, Tamil Nadu. During the last session, students had shared their experience and feedback of BIIS webinar.

### Schedule of BIIS-6

Date	Time	1st Week- Grassroots innovations, life sciences innovations and entrepreneurship	
9/22/2020	9:30-10:30 AM	Welcome and introductory remarks on grassroots innovations	<b>Prof. Anil K Gupta</b> , Founder-Honey Bee Network, Coordinator-SRISTI, GIAN, Visiting faculty-IIM-A & IIT-B
	10:40-11:15 AM	Inaugural address	<b>Dr. Shekhar C. Mande</b> , Director General, Council of Scientific & Industrial Research, New Delhi
	11:30 AM-12:40 PM	Role of BIRAC in nurturing biotech entrepreneurship	<b>Dr. Shilpy Kochhar</b> , Entrepreneurship Development Manager, DBT-BIRAC
	2:00-3:10 PM	Role of state government in promoting entrepreneurship and innovations	<b>Dr. Anasuya Bhadalkar</b> (Joint Director, GSBTM)
9/23/2020	11 AM-12:10 PM	Paths to entrepreneurship in the life sciences	<b>Dr. Madhusudan Rao /Dr. Ramjee Palela</b> , Atal Incubation Centre-CCMB
	12:20- 1:30 PM	IPR, Patent and Ethical framework for accessing and exploring people's knowledge and grassroots innovations	<b>Dr. Viswajanani Sattigeri</b> , Head, CSIR-Traditional Knowledge Digital Library Unit, New Delhi
	2:30-3:40 PM	Clinical management of Covid-19 through traditional medicines	<b>Prof. Tanuja Manoj Nesari</b> , MD, PhD, All India Institute of Ayurveda, New Delhi
9/24/2020	11:00 AM-12:00 PM	Assignment ( Documentation of grassroots innovations, their problems and traditional knowledge)	<b>Prof. Anil Gupta and Lab Team</b>
9/25/2020	11 AM-12:10 PM	Adapting Research Methodologies During Pandemic situation	<b>Dr. Debprasad Chattopadhyay</b> , Scientist G & Director ICMR-NITM

	12:20- 1:30 PM	Ayurgenomics:Translational Research on Ayurveda	<b>Dr. Mitali Mukerji</b> , Chief Scientist Genomics and Molecular Medicine, Ayurgenomics
	2:30-3:40 PM	The antiviral natural compounds - additional weapons in the fight against the COVID -19 pandemic	<b>Dr. Bhavana Prasher</b> , Principal Scientist, CSIR-IGIB
9/26/2020	11 AM-12:10 PM	Biological Control Agents for Sustainable Agriculture, Safe Water and Soil Health	<b>Dr. D. P. Singh, Professor</b> , Department of Environmental Science, School for Environmental Science, Babasaheb Bhimrao Ambedkar University, Lucknow
	12:20- 1:30 PM	Herbal food formulation and regulatory aspects as per FSSAI,Organic Ecocert certification, etc	<b>Dr. Niyati Acharya</b> , Assistant Professor & Head, Department of Pharmacognosy, Institute of Pharmacy, Nirma University
	2:30-3:40 PM	Assignment discussion	Lab team, SRISTI
9/27/2020	11 AM-1:00 PM	Exam based on lectures (Descriptive)	Lab team, SRISTI
<b>2nd Week- Basics and applications of life science subjects</b>			
9/28/2020	11 AM-12:30 PM	Biostatistics software	<b>Prof. K. R. Sundaram</b> Head of Department, Biostatistics, School of Medicine, Kochi
	02:00-03:10 PM	The veterinary role in meeting key global challenges, now and for the future	Dr Adesh Kumar Sharma, Principal Scientist, ICAR-NDRI
9/29/2020	11 AM-12:30 PM	Data science in the fields of life sciences	<b>Rasmus bro</b> ,Professor, Dept. of Food Science, University of Copenhagen
	02:00-03:10 PM	Bioautography technique	<b>Dr. Saikat</b> , Scientist, Anchrome, Bombay
9/30/2020	11 AM-12:30 PM	Detection of adulteration in food products	<b>Dr. Prakash,Principal Scientist</b> ,Division Of Medicinal and Process Chemistry, CDRI
	02:00-03:10 PM	Role of Nano formulation in agriculture	<b>Prof. M H Fulekar</b> , Former Dean, CUG, Gandhinagar
10/1/2020	11 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
10/2/2020	11 AM-12:30 PM	Recent advancement in micro-extraction techniques	<b>Nathaly Reyes Garcés</b> , Applications Scientist, LC Solutions at Restek

			Corporation
	02:00-03:10 PM	Challenges in herbal insecticide , acaricide and growth promoter	<b>Dr. Ramesh Chand</b> , Professor, Department of Mycology and Plant Pathology, Institute of Agricultural Sciences, Banaras Hindu University
	03:15-4:20 PM	Engineered microbes for the production of industrially important secondary metabolites	<b>Dr. Anil Tripathi</b> , Director, BHU
10/3/2020	11 AM - 1:00 PM	Exam based on lectures (descriptive)	Lab team, SRISTI
10/4/2020	11 AM-1:00 PM	assignment discussion (To design scientific protocol and detail proposal grassroots practices)	Lab team, SRISTI
<b>3rd Week- Instrumentation and Live experiments</b>			
10/5/2020	11:00AM-12:10 PM	Instrumentation and application of GC,GC-MS	<b>Dr. Preety Bansal</b> , Post doc, Jamia millia, New Delhi.
	12:20 - 1:30 PM	Instrumentation and application of HPLC, HPLC-MS	<b>Dr. Saurabh Kumar Srivastava</b> (Chief Scientific officer, Vidcare Innovations)
	02:30-03:40 PM	Instrumentation and application of HPTLC, HPTLC-MS	<b>Dr. Vinay J Sukla</b> , HoD, Pharmaceutical lab, Gujarat Ayurvedic University, Jamnagar
10/6/2020	11:00-1:00PM	Affordable and Rapid Devices for Diagnostics and Biosensing	Lab team, SRISTI
	2:00-3:30PM	Rapid and easy milk adulteration /glucose detection strips/card	Lab team, SRISTI
10/7/2020	11:00AM-1:00PM	Herbal grassroots formulation for caterpillar/insect problems in agriculture	Lab team, SRISTI
	2:00-3:30PM	Herbal grassroots formulation for ectoparasite infestation in cattles	Lab team, SRISTI
10/8/2020	11:00 AM-12:30 PM	Soil microbes isolation, separation, colony identification and counting	Lab team, SRISTI
10/9/2020	1:30-2:30 PM	Green synthesis of nanoparticles	Lab team, SRISTI
10/10/2020	11:00-12:30PM	phytochemical screening methods	Lab team, SRISTI
	2:00-3:30 PM	All assignment review	<b>Prof. Anil Gupta and Lab Team</b>
10/11/2020	11:00AM-12:30PM; 2:00-3:30 PM	Seed treatment and growth parameter study using herbal formulation	Lab team, SRISTI

10/12/2020	10:00AM-12:00 PM	Valedictory session , Feedback and Discussion	<b>Dr. Gagandeep Kang,</b> Professor in the Department of Gastrointestinal Sciences at the Christian Medical College, Vellore, India and the executive director of the Translational Health Science and Technology Institute, Faridabad
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### Schedule for bioengineering students

2nd Week- Basics and applications of bioengineering			
9/28/2020	11 AM-12:30 PM	Biostatistics software	<b>Prof. K. R. Sundaram</b> Head of Department, Biostatistics, School of Medicine, Kochi, krsundaram@aims.amrita.edu,
	02:00-03:10 PM	Biosensors (types and application)	Dr. BansidharMalhotra, Department of Biotechnology, Delhi Technological University
9/29/2020	11 AM-12:30 PM	Data science in the fields of life sciences	<b>Rasmus bro</b> ,Professor, Dept. of Food Science, University of Copenhagen
	02:00-03:10 PM	Recent Advances in Biosensor Technology for Potential Applications	Dr. RohitSrivastava, Professor, Biomedical Engineering in Department of Biosciences and Bioengineering, IIT Bombay
9/30/2020	11 AM-12:30 PM	Future outlook of biosensor technology	Dr. Shaikh M. Mobin Associate Professor IIT Indore
	02:00-03:10 PM	Medical Devices: Basics and Applications	Dr. SantanuDhara Professor, School of Medical Science and Technology, IIT Kharagpur
10/1/2020	11 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
	02:00-03:10 PM	Medical Devices: scope, challenges and opportunities	Dr. B. Ravi Institute Chair Professor, Indian Institute of Technology Bombay
	03:20-04:20 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)
10/2/2020	11 AM-	Introduction to lab-on-a-	Dr. Shalini Gupta, Associate Professor,

	12:30 PM	chip	Department of Chemical Engineering Room 282, Block II Indian Institute of Technology, Delhi
	02:00- 03:10 PM	Point-of-Care Diagnostics (Evolution and Technology Development)	Dr. Arnab Chanda Assistant Professor Indian Institute of Technology Delhi HauzKhas, New Delhi-110016
	03:15-4:20 PM	Paper-based Analytical Devices as Point of Care	Prof. Renu John Professor and Head Dept. of Biomedical Engineering IIT Hyderabad
10/3/2020	11 AM - 1:00 PM	Exam based on lectures (descriptive)	Lab team, SRISTI
10/4/2020	11 AM-1:00 PM	assignment discussion (To design scientific protocol and detail proposal grassroots practices)	Lab team, SRISTI
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	2:00- 3:30PM	Rapid and easy milk adulteration /glucose detection strips/card	Lab team, SRISTI
10/7/2020	11:00AM- 1:00PM	Fabrication and Patterning of Paper- based Analytical Devices	Dr. Amit Asthana, Principal Scientist, CSIR-CCMB
	2:00- 3:30PM	Portable biosensing devices for point-of-care diagnostics	Dr. Sandeep Kumar Vashist IDS Immunodiagnostic Systems Deutschland GmbH, Rahmhofstr. 2-4, 60313
10/8/2020	11:00 AM- 12:30 PM	Soil microbes isolation, separation, colony identification and counting	Lab team, SRISTI
10/9/2020	1:30-2:30 PM	Green synthesis of nanoparticles	Lab team, SRISTI

10/10/2020	11:00-12:30PM	Application of nanotechnology in biosensing devices	Prof. Sri Sivakumar Centre for Nanosciences IIT Kanpur
	2:00-3:30 PM	All assignment review	<b>Prof. Anil Gupta and Lab Team</b>
10/11/2020	11:00AM-12:30PM; 2:00-3:30 PM	Microfluidic Devices and Their Applications	Dr. Rahul Prajesh Senior Scientist, CEERI-PILANI
10/12/2020	10:00AM-12:00 PM	Valedictory session , Feedback and Discussion	<b>Dr. Gagandeep Kang</b> , Professor in the Department of Gastrointestinal Sciences at the Christian Medical College, Vellore, India and the executive director of the Translational Health Science and Technology Institute, Faridabad