

विद्युयान तान्त्रगुयान अनुवादान

DEPARTMENT OF SCIENCE AND TECHNOLOGY NITTE UNIVERSITY TECHNOLOGY ENABLING CENTRE



DST NU-TEC Chronicle | June to September 2022

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Annual Review meeting of TEC

17 Sept 2022

The annual review meeting of Nitte University Technology Enabling Centre was held on 17 Sept 2022 at the TEC Centre, Paneer Campus, Mangaluru. Programme Advisory Group (PAG) expert, Prof Dr Gurumoorthy, DST Representatives, Dr Anita Aggarwal, Dr Krishna Kanth Pulicherla and the team from TEC Amrita headed by Prof Dr Krishna Shree and 2 members attended the meeting. The PAG meeting had 65 participants comprising academic and industry partners. Other dignitaries included the Chairman of TEC, Hon'ble Vice Chancellor Prof Dr Satheesh Kumar Bhandary, TEC Advisor and Head, Research & Patent, Prof Dr Iddya Karunasagar, Director TEC, Prof Dr Indrani Karunasagar, TEC Faculty, Industrial partners from CAMPCO, Puttur, Eshanaya Beverages, Mysore, Antidote, Delhi, Mangalore Biotech Lab, Section Infin-8 Foundation, Mangaluru, Jigsaw Bio Solutions Pvt Ltd, Bengaluru, Aquatic Biosystems, Mangaluru and academic partners from Canara Engineering College, Mangaluru, St Joseph Engineering College, Mangaluru, SDUAHER, Kolar Medical College and members from constituent colleges of Nitte. All participants actively involved themselves in the discussion at the meeting.

The meeting began with Prof Dr Indrani Karunasagar, Director TEC, welcoming the committee members and presenting a detailed report of the activities of the centre. Chairperson of TEC, Nitte (DU), Prof Dr Satheesh Kumar Bhandary explained how the centre has been following the TEC mandate to reach the goal of creating an ecosystem for technology transfer and establishing a network of institutions, a collaborative community of researchers, entrepreneurs and industrialists.



Dr Indrani Karunasagar, in her presentation of the activities of 2021-22, gave an account of all the meetings held, projects submitted, awarded, technologies in the pipeline, those developed and transferred, expenditure incurred, revenue generated and the budget requirements for the next year. Mr Sandeep Eshanya whose technology on betel leaf tea and Ms Nadia from Antidote, Delhi for a spray dried technology for almond milk expressed their gratitude and their experience with TEC at the meeting. Both the products are almost market ready and have been case studies that prove the purpose for which the TECs were created by the DST. Students and young entrepreneurs shared their ideas with the officials in the meeting. They will be further enabled at the TEC. EAG member Prof B. Gurumurthy and DST officials Dr Anita Aggarwal and Dr Krishna Kanth Pulicherla commended the activities of the centre and congratulated the team for achieving the targets slated.

Nitte University, represented by the Hon'ble Vice chancellor expressed heartfelt thanks to all the DST officials, experts, partner institution heads and industry representatives.



Prof B Gurumoorthy
TEC-EAG member
IISc, Bangalore



Dr Anita Aggarwal
Coordinator
DST TEC, Gol



Dr Krishna Kanth Pulicherla
Scientist D
TDT, Gol



Dr Krishnashree Achuthan
PAG member
Coordinator, TEC, Amrita University

Academic Partners



Canara Engineering College
Mangaluru



Sri Devaraj Urs Academy of Higher
Education and Research, Kolar



St Joseph Engineering
College, Mangaluru

Other members from Nitte (DU) constituent colleges: NMAMIT, ABSMIDS, NUCSER, KSHEMA, AIC, Nitte

Industrial Partners



CAMPCO, Puttur



Jigsaw Bio Solutions Pvt Ltd



Aquatic Biosystems, Mangaluru



Mangalore Biotech Lab, Mangaluru

Mr Anand Ramakrishnan from Mangalore Biotech Lab, handed over a cheque of Rs 50,000/- to Vice Chancellor Nitte (DU) as an advance to TEC for consultancy to be provided by Dr Juliet Mohanraj, faculty, NUCSER for providing phage therapy for *Vibrio* infection in aquaculture farming.

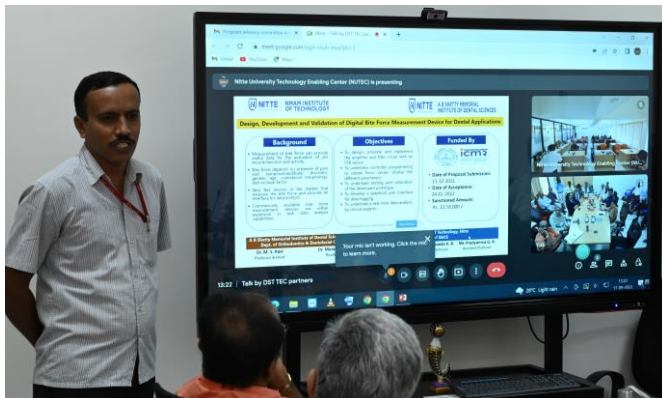


Section Infin-8 Foundation



Eshanya Beverages Pvt Ltd, Mysore & Antidote New Delhi presenting online

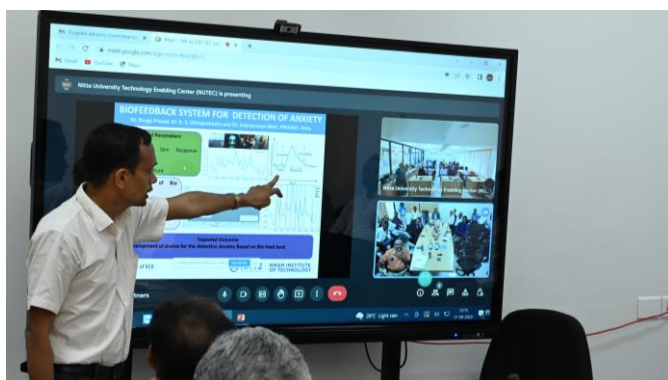
Project discussion and interaction



Mr Bommegowda et al., NMAMIT, presenting the project on 'design, development and validation of digital bite force measurement device for dental application'. This collaborative project between ABSMIDS & NMAMIT, funded by ICMR was enabled by TEC Nitte (DU).



Ms Meghana Prabhu, Mr Varun V Bhat & Mr Vasudev Bhat entrepreneurs who are alumni of Canara Engineering College presented an ongoing industry project on 'Generation of biofuel from plastic waste'.



Dr Subramanya Bhat et al., Dept ECE, NMAMIT, presented a proposal on 'Biofeedback System for the detection of anxiety'.



Dr Krishna Prabhu et al., faculty of Canara Engineering College presented a project on 'Developing a brick using tetra packets and 3D printing injector pipe from plastics waste'.

Other projects/topics submitted for presentation at the PAG meeting

- Development of a mobile unit for hygienic handling and processing of fish for door delivery using green energy and sustainable waste utilization (Mr Arjun K Punja, Resident Engineer, Nitte (DU))
- Design and development of autonomous wheelchair (students of St. Joseph Engineering College, Vamanjoor)
- Design and fabrication of combined wheelchair and bed (students of St. Joseph Engineering College, Vamanjoor)
- Development of an in vivo system for rapid detection of toxicant induced hematopoietic perturbation (Dr Anurag Sharma, faculty, NUCSER, Nitte (DU))
- Rapid and sensitive detection of novel coronavirus (SARS-CoV-2) using isothermal nucleic acid amplification (Dr Biswajit Maiti, faculty, NUCSER, Nitte (DU))
- Consortium of bacteriophages to control Vibriosis by *Vibrio parahaemolyticus* (Dr Juliet Mohanraj, faculty, NUCSER, Nitte (DU))

Nitte based Start-up enabled by DST TEC

Dentronics Private limited

Dentronics Pvt Ltd is the startup established in the year 2022 which intends to produce periodontal sub gingival temperature probe and is set to target India's dental market.

Periodontal temperature probe

- A unique device for measuring temperature in the subgingival area and periodontal pockets.
- Device is an indigenous product with the required level of sensitivity and provides the desired level of comfort for the dental practitioner
- The device can be used as an efficient diagnostic tool to record the subgingival temperature at the periodontally compromised sites to detect, diagnose and formulate a treatment plan for the same



Prof Dr Biju Thomas,
Faculty ABSMIDS



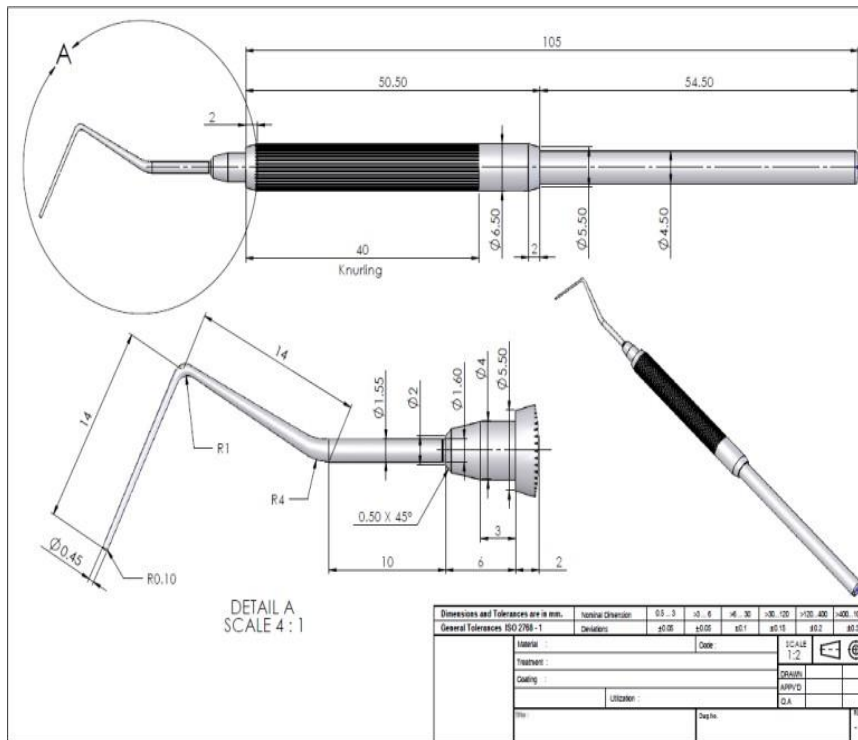
Prof Dr Shashikantha Karinka,
Faculty NMAMIT



Dr Karishma Ashok,
Student, ABSMIDS



Mr Karthik Kepul,
Student, NMAMIT



TEC supports pilot scale processing for the Vegan product company Antidote

5-7 Sept 2022

The Technology Enabling Centre facilitated the development of technology for the production of almond milk. A technology transfer agreement was signed between Nitte (DU) & Antidote, New Delhi. Dr Mamatha BS & Dr Feby Luckose were deputed to CFTRI, Mysore during 5-7 Sept 2022, for the pilot scale processing of almond milk. The product will now be available for pilot marketing as a start-up requirement. Spray-dried almond milk powder is an innovative product that can replace conventional dairy milk for making beverages, smoothies and soups. Using spray drying technology, liquid almond milk was transformed into a dehydrated form by short time exposure to high-temperature air.

This product will be particularly useful for those individuals with lactose intolerance. The main advantages of this spray dried technology for preparing nut based milk are long shelf-life, the inhibition of fermentation, all nutrients being retained and reduced volume for storage and transportation.

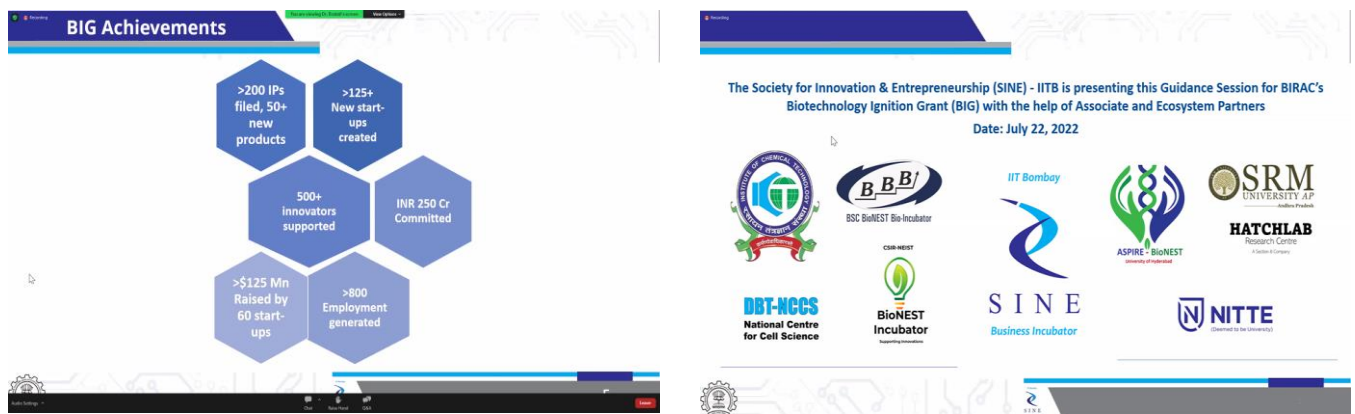


TEC establishes MoU with SINE



An MoU was signed on 12 July 2022 between Society for Innovation and Entrepreneurship (SINE), an umbrella organization of DST, based at IIT Mumbai & Nitte Deemed to be University. SINE is a technology business incubator that provides start-to-end incubation and acceleration support for start-ups. SINE also actively collaborates with Industry /corporates for various programs like the idea to prototype and entrepreneur fellowship program.

The collaboration is expected to provide support for start-up ventures, facilitate utilization of infrastructure and labs, provide technical and business mentorship, recommend start-up innovators for specific programs & funding support. The association is also expected to facilitate the co-incubation of start-ups between Nitte (DU) & SINE IITB.



Guidance/Interactive session was conducted for the potential BIG application virtually on 22 July 2022 & 10 Aug 2022

Projects mentored

- Development of a mobile unit for hygienic handling and processing of fish for door delivery using green energy and sustainable waste utilization (Presented by Mr Arjun K Punja, Resident Engineer, Nitte DU)
- Sensor-based detection of urine volume in the urine bag and bedwetting (presented by Dr Roopa Hegde, Dr Durgaprasad, Mr Bommegowda and Mr Pradyumna, faculty, NMAMIT)
- Recycle & reuse plaster of Paris (Presented by Dr Sai Kalyan, faculty, ABSMIDS)

The World food safety day celebration



Training of food handlers is a pre-requisite for ensuring food safety. With this mandate, an interactive session was organized for the Nitte University canteen and hostel mess workers to create awareness on hygienic practices to ensure food safety. The event was part of the 'World food safety day' celebration organized at the Technology Enabling Centre, Nitte (DU), on June 07, 2022. Dr Praveen Kumar, FSSAI designated district food safety officer, D.K., was the chief guest of the day. People involved in various food sector areas, including food system policy makers, processors and investors from in and around Mangaluru were invited to the celebration to create awareness about food safety and its importance. The session, on the whole, provided the audience with knowledge about the need for producing safe food for consumption by outlining necessary guidelines for the validation of food safety control measures. On this occasion, DST TEC Nitte (DU) organized a series of events for students and research scholars to create awareness among youngsters. The food safety celebration ended with the prize distribution to the awardees.



Dr Praveen Kumar, FSSAI designated district food safety officer discussed the rules and regulations of FSSAI, the penalty for selling unsafe food and not having an FSSAI license. He also touched on various incidence of unsafe food practices to sensitize the audience regarding the importance of safe food. He detailed various opportunities in the FSSAI sector for undergraduate and postgraduate students to pursue their careers.



Prof Dr Iddya Karunsagar, Advisor Research & Patents, explained how food safety is everyone's responsibility starting from primary producers, consumers, manufacturers, processors, warehouse logistics operators, food handlers, importers, retailers and distributors. He enlightened the audience on various food safety standards set by various international regulatory bodies like FSSAI, Codex Alimentarius and FAO. He explained the significance of implementing good hygiene practices (GHP) and hazard control plans.



Prof Dr Indrani Karunasagar, Director, TEC, Nitte (DU), explained how food safety training reduces the risk of contamination and illness at all stages. She enlightened the mess workers on the sanitation of chopping boards, kitchen slabs and sinks, utensils, food storage, and preservation. She stressed that personal hygiene is of utmost importance and plays a significant role in food safety. She gave relevant examples with the recent outbreaks of foodborne illnesses to make the mess workers understand the intensity and gravity of food safety.

Dr Iddya Karunasagar attends WHO advisory group meeting



Dr Iddya Karunasagar, Advisor Research & Patents Nitte (DU), attended the WHO Advisory group meeting in Geneva on 13-15 Sept 2022. The advisory group consisting of experts from different parts of the world were invited to revise the list and antimicrobial categories as high priority and critically important antimicrobials. Antimicrobial resistance (AMR) is a major problem in treating bacterial infections that affect vulnerable populations all over the globe, and AMR is perceived as one of the top public health threats by WHO. A global study published in the prestigious journal Lancet indicated that in 2019, 1.27 million deaths were attributed to AMR infections. The first physical meeting of the advisory group was held at WHO headquarters, Geneva. Dr Iddya Karunasagar spoke regarding provisions in Codex Alimentarius Commissions & avoiding the use of critically important antimicrobials in animals. Dr Iddya Karunasagar is the chair of Scientific Panel on Residues of Antimicrobials of the Food Safety & Standards Authority of India.



The artwork of Dr Caroline DSouza, Senior Project Associate at DST TEC, Nitte (DU), has been accepted for publication in the journal of Blood and Thunder - a medically themed art journal from the University of Oklahoma, US. The theme of the artwork is 'Narrative medicine'.

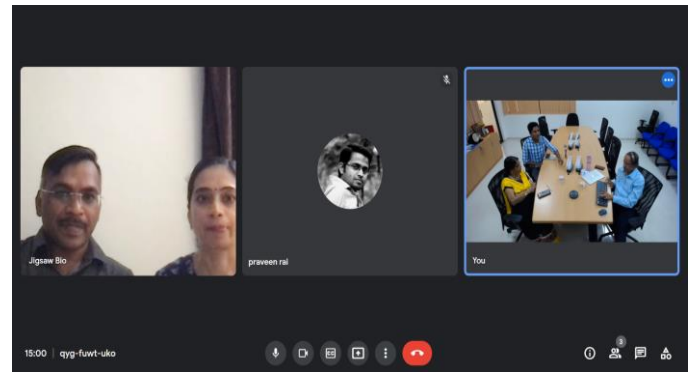


Ms Akshatha K, Junior Project Associate at DST TEC, Nitte (DU) and Research Scholar at Nitte University Centre for science education and research, Nitte (DU), has been awarded the best poster presentation award at the 62nd Annual International Conference of Association of Microbiologists of India (AMI) organized at University of Mysore under the session Microbial Therapeutics and Anti-microbial Resistance. She presented her data on RNA-seq-based transcriptomic analysis of non-typhoidal Salmonella serovars upon bile. She is pursuing her doctoral studies under Dr Deekshit, Associate Professor at NUCSER in the division of infectious diseases.

DISCUSSION WITH FSSAI/INDUSTRIES



Discussion with Dr Sanu Jacob, Director, FSSAI Southern Region Office, Gol on 03 June 2022 regarding having analytical services for the food industry and training of young people



Discussion with Dr Madhukar, Director Makers nest Pvt Ltd on developing a collaborative project on point-of-care bedside diagnostics for Dengue

Continued discussion on the project 'Empowering aquaculture farmers with pond-side shrimp health screening for early diagnosis of pathogens and prompt crop management with Jigsaw Bio Solution Pvt Ltd Bangalore



Discussion with Dr Vishwas Rao, Director Section Infin-8 and Suhas Gopinath, Founder & CEO of Globals Inc, visited TEC to examine the potential for setting up a biotech incubator for medical devices



Demonstration of the electronic version of Channarayapattana doll, followed by discussion with Mr Vishwas Rao, section infin-8 for the support towards technology maturation to make it industry ready. Dr Ankitha, faculty of Canara Engineering College, discussed on the patentability of the device to detect mastitis in cattle (21 Sept 2021).



Alumni of Canara engineering college presented their start-up company 'Organic Mile Pvt Ltd, which produces biofuel from plastic waste. Mr Vinod Kumar, faculty of engineering college, presented the project on 'developing a brick using tetra packets and 3D printing injector piped from waste plastics. TEC partner Mr Vishwas Rao (Section Infin-8) introduced Mr Abhijit Hegde to the young entrepreneurs and provided information on platforms that can help the technology move forward. Dr Iddya Karunasagar discussed the patentability of technology (21 Sept 2021).

Project Details

Project Topic	Institutions involved	Status of the project
Development of isothermal nucleic acid amplification kits for detection of novel coronavirus (SARS-CoV-2)	NUCSER, Section Infin -8, MMM & KSHEMA	Submitted for PACE (BIRAC)
Development of immune fluorescent nano-diagnostic assay as a point-of-care detection of dengue virus	NUCSER & KSHEMA	Submitted to DST

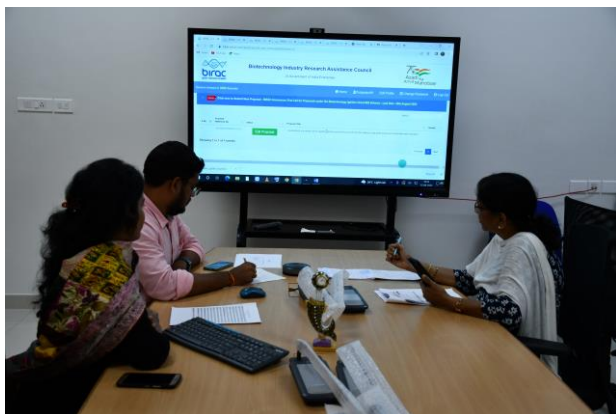
Enabling Translational Research Projects through collaborations with academia



Discussion on joint project with University of Chemistry & Technology Prague Czech Republic on plasma treatment of foods



Dr Srikanth Airpady senior post-doctoral fellow University Hospital Zurich, visits the TEC facility on 03 Aug 2022 to explore possible collaboration in Anti Microbial Resistance research.



Discussion on developing mobile unit for hygienic handling and processing of fish for door delivery using green energy on 12 Aug 2022 with Mr Arjun Punja, Resident Engineer, Nitte (DU)



Discussion on the patent 'Calibrated base formers' for preparation of study casts in dentistry on 12 Aug 2022 involving ABSMIDS.



Discussions regarding the patentability of 'Insect repellent efficacy of *Premna serratifolia* extract against *Drosophila melanogaster* sps on 13 Aug 2022 involving KSHEMA & Mangalore University



Support to National Innovation Repository on 07 Sept 2022 with Mr Shoumik representative of Institute Innovation Council



Dr Indrani Karunasagar was the keynote speaker in the Aquamarine Ideathon-2022 organized by Ktech Advanced Biotech Innovation Centre, held on 22 June 2022 at the College of Fisheries Mangaluru.



Dr Indrani Karunasagar was the resource person in a seminar 'Chemergence' organized by the Department of Chemistry, St Aloysius College, Mangaluru, on 13 Sept 2022. Dr Indrani Karunasagar spoke on exciting discoveries in the field of chemistry, the role of chemistry in everyday life, the importance of interdisciplinary chemistry research and various career choices in the field of chemistry.



Dr Iddya Karunasagar participated in the 'Biotech Start-up Innovations' event towards Aatmanirbhar Bharat to celebrate ten years of Biotechnology Industry Research Assistance Council (BIRAC) 's enabling efforts towards progressing India's Biotech Sector. The event was organized by DBT, DST, DPIIT & Ministry of Education on 9-10th June 2022 at Pragati Maidan, New Delhi.



Dr Iddya Karunasagar participated as Speaker and Panelist at the Brainstorming Session on "Regulating the use of chemicals and veterinary medicines in Indian aquaculture" organised by the Indian Council of Agricultural Research at the National Academy of Agricultural Sciences, New Delhi, August 25-26.



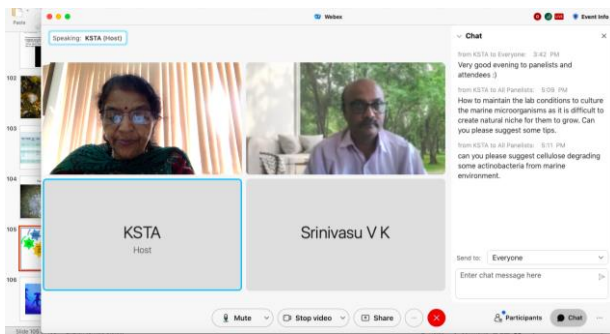
Dr Iddya Karunasagar was invited by UNIDO to deliver training on "Food Safety regulatory framework in Agri-Food and Fisheries Sectors - Current situation, challenges and Roadmap" at Phnom Penh, Cambodia, July 25-26, 2022.



The Government of Indonesia invited Dr Iddya Karunasagar to assess the current situation concerning Aquatic Biosecurity and advise on actions needed to strengthen the implementation. The meeting was in connection with the capacity building need in the region, as one of the mandates of FAO Reference Centre.



Dr Iddya Karunasagar was invited to inaugurate ICNR 'Foodnet digital platform' for Foodborne Pathogen Survey Research Network, Northeast India, held at ICNR – RMRC Dibrugarh, Assam on 3 Aug 2022



Dr Indrani Karunasagar, recipient honorary fellowship by KSTA, DST, GoK, was invited as a distinguished speaker to deliver a talk on the topic 'Marine Biotechnology & its application' in a one-week online workshop on 'Skill Vignan on Biotechnology organized in collaboration with Karnataka Innovation & technology Society (KITS) with funding support by DBT on 18 Aug 2022

An online meeting with FAO and other candidates of FAO Reference Centres was held to discuss declaring Nitte (DU) as FAO Reference Centres in Aquatic Biosecurity and Antimicrobial resistance.



Dr Iddya Karunasagar was invited by the International Trade Centre of United Nations to deliver a training workshop on "Codex code of Practice for fish and fishery products" in Kuala Lumpur, Malaysia, September 26-28, 2022.

Editorial team

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Dr Indrani Karunasagar *Director-Projects & DST NU-TEC*

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Ms Akshatha K *Junior Project Associate*

Mr Anoopkrishna K *Junior Project Associate*