

विद्यया नान्तराग्यया नानुवादेन

DEPARTMENT OF SCIENCE AND TECHNOLOGY

NITTE UNIVERSITY TECHNOLOGY ENABLING CENTRE



DST NU-TEC Chronicle | October 2024 to January 2025

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FAO-ICAR-Nitte TEC Capacity building International workshop: "Utilising microbiome and genomic resources for understanding and mitigating antimicrobial resistance in aquaculture in One Health context"

18-22 Nov 2024



Nitte DU commemorated antibiotic awareness week by hosting an International hands-on workshop on "Utilising microbiome and genomic resources for understanding and mitigating antimicrobial resistance in aquaculture in One Health context," in accordance with the FAO Reference Centre's terms of reference on 18-22 Nov 2024. The workshop was organized in collaboration with the Indian Council of Agricultural Research, New Delhi, supported by UNESCO, Centre for Environment, Fisheries and Aquaculture Sciences, UK, National Fisheries Development Board (NFDB) and Marine Products Export Development Authority (MPEDA).

Dr M.S. Moodithaya, the Vice Chancellor, Nitte DU presided the inaugural function. Dr J.K. Jena, Deputy Director General, ICAR was the Chief Guest and Dr Eduardo Leano, Director General of the Network of Aquaculture Centers in Asia Pacific (NACA) based in Thailand was the Guest of Honour. Other Guests of Honour included Dr. Karthikeyan, Director, MPEDA and Dr. Robin Paul, FAO India. FAO Headquarters in Rome was represented by Dr Melba Reantaso and FAO Reference Center in UK was represented by Dr Athina Papadopoulou and the US Reference Center was represented by Dr Hossam Abdelhamed from Mississippi State University, USA. The Workshop included resource persons from Italy, Norway, Philippines, and Sweden. Delegates from Bangladesh, Cambodia, Ethiopia, Nepal, Malaysia, Saudi Arabia, Sri Lanka, Tanzania, Thailand, Uzbekistan, Zambia and India attended this workshop.



After inauguration, Day-1 had lectures from FAO, WHO, ICAR, National One Health Institute, MPEDA, FAO Reference Centers in UK and US and country presentations to share experiences in mitigation of AMR. The Day-2 of the workshop included lectures from various resource persons on adopting standardized methods for antimicrobial susceptibility testing and wet lab experiments on antimicrobial susceptibility testing. Prof. Dr Iddya Karunasagar presented on issues in phenotypic testing for AMR, Dr Athina Papadopoulou, CEFAS gave a lecture on generating data for epidemiological cut-off points. The talk on phenotypic testing for AMR in aquaculture associated bacteria in the EU was delivered by Dr Manfrin Amedeo. Dr Luana Cortinavis, IZSve presented on quality control in AMR testing laboratory and instructions on practical phenotypic testing for AMR. Mechanisms of AMR in aquatic bacteria in the USA was dealt by Dr Hossam Abdelhamed, MSU. Dr Gaurav Rathore, ICAR-NBFGR presented on Indian network for fisheries and animal antibiotic resistance via virtual mode. Dr Gunnar Kahlmeter, EUCAST Development Laboratory explained about MIC distributions and ECOFFs and their correlation between "wild-type organisms" as determined with phenotypic and genotypic methods via online presentation. Laboratory sessions were mentored by Dr Luana Cortinavis, Dr Amedeo Manfrin, Dr Athina Papadopoulou, Dr Deekshit, Dr Biswajit Maiti, Dr Praveen Rai, Dr Juliet Mohanraj (Nitte DU).



The Day-3 of the workshop included lecture series related to sequencing and bioinformatics sessions with the aim of training participants of different countries about the implementation of standardized methods for detecting antimicrobial resistance and to promote prudent and responsible use of antimicrobials in One Health. Lecture on introduction to Next Generation Sequencing (NGS) and sequence analysis was handled by Dr Praveen Rai and Dr Prithvisagar KS, Nitte DU. Dr Deekshit, Nitte DU explained about the sample preparation required prior to sequencing. Ms Divya Shetty, Zelle Biotechnology Pvt Ltd gave an overview of Oxford Nanopore Sequencing Technology followed by demonstration of Oxford nanopore Library Preparation, sequencing, and sequence retrieval post run.

The Day-4 and Day-5 of the workshops focused on Bioinformatics sessions which were handled by Dr Krishna Kumar B, Dr Prithvisagar KS, Dr Deekshit, Dr Praveen Rai Nitte DU, and Mr Ashwin, Biokart India Pvt Ltd. Hands on session included microbial whole genome sequence analysis, microbiome analysis including raw data QC, trimming & quality filter, assembly of the raw reads, annotations and AMR, virulence and mobile genetic element identification and analysis.

The participants also had a chance of visiting various research facilities available at NUCSER. The Mentimeter quiz sessions were conducted in between the sessions to assess the knowledge gain on topics covered in the workshop. The Workshop was a huge success with active participation of 48 faculties from 22 different Countries.





Celebration of World Food Day 2024

16 Oct 2024

The DST Technology Enabling Centre, Nitte DU and Nitte University Centre for Science Education and Research (NUCSER) jointly celebrated World Food Day-2024 on 16 Oct 2024 at the Seminar Hall in NUCSER. The theme for the year 2024 was 'Right to food for a better life and a better future'. Dr Vinod Kumar MG, Radboud University Medical Centre in Nijmegen, The Netherlands was the chief guest for the program.

Prof. Dr Anirban Chakraborty, Director NUCSER welcomed the gathering and introduced the chief guest and the resource persons, Prof. Dr Iddya Karunasagar, Advisor (Research & Patents), Nitte DU and Prof. Dr Indrani Karunasagar, Director (DST TEC & Projects), Nitte DU to the gathering and also briefed about their contributions to the scientific community. Dr Mamata BS, Assistant Professor & HOD, Department of Food Safety and Nutrition mentioned the importance of World Food Day to the audience gathered. Later, the chief guest of the event, Dr Vinod Kumar MG addressed the gathering and the importance of research to tackle challenges arising in the food sector. He also mentioned the importance of gut microbiome on the health of an individual.

Prof. Dr Iddya Karunasagar gave a lecture on the topic 'One Health for better food, better life and better future'. In his talk, he spoke about the set-up and launch of FAO, its objectives and programs. He highlighted the status of food security and nutrition in the world and the challenges faced in ending hunger. He emphasized the need to follow international best practices from farm to fork and comply with standards set by international standard setting bodies like Codex Alimentarius Commission, World Organisation for Animal Health (WOAH) and International Plant Protection Convention in line with the World Trade Organization's Sanitary and Phytosanitary (SPS) and Technical Barriers to Trade (TBT) Agreements.

Prof. Dr Indrani Karunasagar addressed the gathering on the topic 'Right to quality food and water'. In her talk, she mentioned various types of hazards in food and water like physical, chemical and biological agents and the health hazards they can lead to in animals and humans. She also provided examples of various incidents of foodborne illnesses and toxicities due to a lack of food and water safety measures. She cautioned against the use of harmful chemicals as flavoring agents, coloring agents and preservative agents and cited various regulations and bans on them in recent times as a health care concern. Dr Akhila DS, Assistant Professor, NUCSER proposed the vote of thanks. Around 120 participants, including faculties of NUCSER, research scholars and students, attended the event.

Celebration of the National Start-up Week

18 Jan 2025



DST TEC, Nitte DU organized a panel discussion on “Challenges faced by Start-ups” on the occasion of National Start-up Week on 18 Jan 2025, at the seminar hall, NUCSER. Prof. Dr Indrani Karunasagar, Director (Projects & DST TEC) gave the opening remarks and welcomed the gathering.

Prof. Dr Iddya Karunasagar introduced the panelists to the gathering, and also moderated the discussion. Mr Aravind Kumar, Mrs Priya Latha, who deals with the production of paper from cow dung and other agro wastes; Ms Madhurima Mukherjee, Molsys Pvt Ltd a start-up dealing with genomic solutions; Dr Sudhakaraprasad, Papersens Pvt Ltd addressing affordable point-of-care testing platforms for need-based clinically relevant biomarkers and novel drug delivery routes and Mr NS Ranjith, Vasuki Agro Chemicals LLP developing biofertilizers from agro-wastes were the invited panelists who represented various start-ups.

The panelists shared an in-depth account of their journey in establishing a start-up, focusing on the challenges encountered from the inception stage to the present. They detailed the complexities involved in registering a start-up, including navigating legal procedures, complying with regulations, and managing the paperwork, which often posed initial hurdles for entrepreneurs. Additionally, they elaborated on the obstacles faced in the early days, such as resource constraints, securing a reliable customer base, and building a competent team. The panelists highlighted how they tackled these issues with perseverance and strategic planning. They discussed exploring multiple funding avenues, such as bootstrapping and government grants such as Nidhi Prayas, emphasizing the importance of the funding strategy to align with the start-up's goals. They cautioned against neglecting financial planning, underestimating competition, or rushing decisions without adequate data. To inspire budding entrepreneurs, the panelists concluded with motivational tips, emphasizing the importance of persistence, adaptability, and maintaining a positive mindset. They encouraged aspiring founders to view failures as learning opportunities and to never give up on their entrepreneurial dreams, no matter how frightening the journey may seem.

About 150 participants, including the staff and students of NUCSER and representatives of start-ups, participated in the panel discussion.



Grant of patent facilitated by DST TEC

The DST-TEC Nitte DU is happy to announce a remarkable achievement in protecting Intellectual Property. Dr Raghavendra M Shetty, Dr Manoj Shetty and Dr N Sridhar Shetty from A B Shetty Memorial Institute of Dental Sciences have been officially granted a patent for their invention “Elbow guard to prevent thumb/finger sucking habit in children”. The complete process of preparation and filing of complete specifications, responding to objections in the first examination report, attending hearings and submitting written responses to objections were facilitated by DST TEC Nitte DU. DST TEC congratulates the inventors on this significant achievement and looks forward to the positive impact of the unique innovation through commercialization of this technology

Awareness session on Karnataka Biotechnology policy

02 Dec 2024



The Nitte-GoK Centre of Excellence in Aquamarine Innovation (NITTE-GOK COE | AQUAMARIN) organized an awareness session on the Karnataka Biotechnology Policy at NUCSER on 2 Dec 2024. Smt. Parnika Pavanram, General Manager (Biotechnology), KITS, Dept of Electronics, IT, BT, and S & T, Govt of Karnataka, was the resource person for this program. She mentioned the main features of the biotechnology policy of the state, highlighting the achievements of the biotech sector and its growth through the various initiatives offered by the department. She apprised the audience of the various incentives & concessions provided under the policy for start-ups, MSMEs and large industries. The session was engaging as several concerns of the participants were clarified by the speaker. Over 90 delegates representing start-ups, biotech, pharma and food industries; higher education institutions; business incubators; other government organizations; fish processing plants and PG students participated in this event.





Expert talk by Dr Ram Siddappa, Investment Manager, University of Leiden, The Netherlands

26 Dec 2024

Dr Ram Siddappa, Investment Manager, University of Leiden, The Netherlands visited DST Technology Enabling Center, Nitte DU on 26 Dec 2024 and delivered an expert lecture on "IP Protection, evaluation and Licensing strategies". About 20 faculty and students attended the lecture, which was in hybrid mode. This mode facilitated the participation of two faculties from Gulbarga University. Prof. Dr Iddya Karunasagar introduced Dr. Ram Siddappa and explained his journey from Bachelors and Masters degree in Fisheries Sciences in Mangalore and moving to Wageningen University, Twente University in The Netherlands for Masters and PhD and MBA from Rotterdam University and his role on the Board of Directors of several companies in Europe and his present position as Investment Manager in Life science Start-ups at Leiden University Medical Center.

Dr Siddappa began his talk by explaining about the process for early identification of patentable inventions in University of Leiden and the basis for making decisions on what should be the coverage – national or under Patent Cooperation Treaty (PCT) and the policy on royalty while licensing patents. He explained about different strategies to be adopted and how to decide whether licensing should be on exclusive or non-exclusive basis and the policy regarding equities in spinoff and start-up companies. He explained about different methods of patent valuation and the practice of socially responsible licensing. He provided case study of licensing human dermal cell lines for cosmetic and pharma applications. He presented another case study of data/IP generated through clinical trials and the value generated by this, which was millions of dollars. He also explained about Leiden Bioscience Park and the process of attracting companies to such a Park. The talk was followed by question and answer session and the talk was very much appreciated by all the participants.





Nitte DST-TEC enters into Material Transfer Agreement (MTA) to access microbial germplasm from ICAR- Central Plantation Crops Research Institute

03 Jan 2025

Recognising the importance of microbial germplasm for technology development and the rich collection with the Central Plantation Crops Research Institute (CPCRI) of Indian Council of Agricultural Research (ICAR), Nitte DST Technology Enabling Centre entered into Material Transfer Agreement (MTA) with CPCRI. The MTA was exchanged on 03, Jan 2025 at CPCRI Kasaragod, in the presence of Dr Himanshu Pathak, Director General of ICAR. Prof. Dr Iddya Karunasagar, Advisor (Research and Patents) received the MTA from Dr K. B. Hebbar, Director CPCRI during the inauguration of the National Seminar on “Harnessing Plantation Sector for Sustainable Development Goals”. During the event, Directors of other ICAR institutions like Dr V. Venkatasubramanian, Director, Agriculture Technology Application Research Institute (ATARI), Bangalore; Dr. Grinson George, Director, Central Marine Fisheries Research Institute (CMFRI), Kochi; Dr George Ninan, Director, Central Institute of Fisheries Technology, Kochi; Dr Dinakara Adiga, Director, Directorate of Cashew Research, Dr V.B. Patel, Assistant Director General, ICAR were present. The MTA was facilitated by Dr Murali Gopal, Head of Division of Physiology, Biochemistry, harvest and Postharvest Technology of CPCRI, Kasaragod, Kerala.



13-14 Nov 2024: TEC faculties Dr Nishith and Dr Ashwath Nayak participated in a symposium on TEC-connect & convergence, held at Kalinga Institute of Industrial Technology-Technology Business Incubator organized by KIIT-TEC, Bhubaneswar.



Jan 2025: Discussion with Mr Ananthesh Prabhu, Proprietor, Aruna Masala regarding processing and packaging technologies for ready-to-cook and ready-to-eat food products.



Feb 2025: Discussion with Mr Aravind Kumar, and Mr Vishwas Rao, Section Infin-8 regarding Improvisation of the prototype on paper making from agro-waste.



Oct 2024: Discussion regarding a food processing technology for empowering visually disadvantaged persons for employment in food industry - Developed by Mr Vishnu M Avula, a visually handicapped entrepreneur. Mr Susanta Mohanty, Accenture Technology, provided information on investment for start-up.



Jan 2025: Dr Gopalakrishnan, former Director, CMFRI, was invited by TEC to explain to Marine Biotech post graduates the potential for exploration of marine resources for Biotech products.



Oct 2024: DST TEC promoted consultancy project-Team Nitte at the review meeting with CEFAS scientists from UK regarding molecular approaches to study antimicrobial resistance in the fish pathogen *Streptococcus agalactiae* and comparative genomics of isolates from clinical, veterinary & environmental sources.



Delivering keynote lectures at Global Conference on Infection Prevention, Control and Antimicrobial Stewardship – G SPARC 2024 at Hyderabad

3-5 Oct 2024



The Infection Control Academy of India (IFCAI) in association with Pragyaan Sustainable Health Outcomes Foundation (PRASHO) organized the Global Conference on Infection Prevention, Control and Antimicrobial Stewardship (G – SPARC 2024) at Hyderabad on October 3-5. Dr Iddya Karunasagar and Dr Indrani Karunasagar were invited as lead speakers and moderators of sessions in this important conference. Dr Iddya Karunasagar spoke on “Antimicrobial Resistance, One Health and assessment of food safety risk” and Dr Indrani Karunasagar spoke on “Antimicrobial resistance and One Health: implications and mitigation strategies in aquaculture”. Over 1000 distinguished scientists from medical, veterinary and environmental sectors and students attended these lectures.

Highlighting phage research by convening a session at VIROCON-2024

11-13 Nov 2024



Dr Indrani Karunasagar, Vice President (Veterinary and Aquatic Virology) and executive committee member, Indian Virological Society convened a session on phage research at VIROCON-2024 held at Defence Research and Development Organization, Gwalior during 11-13, Nov 2024. She chaired the session and also delivered a keynote address on “Application of phages in food and water safety in One Health context”. The session included invited speakers from clinical, veterinary, aquatic and environmental sectors.

Delivering address as Chief Guest and invited speaker at ICAR-CIFE winter school

08 Jan 2025



As Chief Guest and invited speakers, Dr Iddya Karunasagar and Dr Indrani Karunasagar contributed to the ICAR-CIFE Winter School on Analytical Tools in Seafood Quality Management and Risk Assessment and on Aquatic Animal Health Management, 08 Jan 2025. Dr Iddya Karunasagar inaugurated and explained about international risk assessments forming the basis of food safety standards at Codex Alimentarius Commission and about standards from World Organisation of Animal Health (WOAH) forming the basis of import risk analysis and import control measures for trade in aquatic animals and their products. Dr Indrani delivered talks on “Application of phages in food and water safety” and “Harnessing bacteriophages for disease management in aquaculture”. The Winter School was attended by faculty from different Universities and ICAR Institutes.

Highlighting technology development at the convocation address

03 Dec 2024



Dr Iddya Karunasagar was invited by the Vice Chancellor, Rani Channamma University, Belagavi to be the Chief Guest at the 12th Annual Convocation on 03 Dec 2024. In his Convocation address, Dr Karunasagar highlighted the importance of developing an ecosystem for technology development and technology transfer in Universities. He further emphasized the need for developing entrepreneurship skills among students and facilitate emergence of faculty and student based start-ups.

WHO expert group consultation on 'Risk benefit analysis of food substitutes', Porto, Portugal.

11-15 Nov 2024



Dr. Iddya Karunasagar was nominated by the World Health Organisation (WHO) to be an expert committee member of Risk Benefit Assessment Group (RBAG) working on optimal intake of animal – source foods. The Expert committee meeting was held in Porto, Portugal during Nov 11-15, 2024. The RBAG discussed microbiological and chemical hazards associated with various foods and considerations for the possibility of replacement of red meat with other healthier foods.

Delivering keynote lectures at the International symposium on “Aquaculture medicine and aquatic animal health management” – AQUAMAP organized by Cochin University of Science and Technology

16-18 Jan 2025



Dr Iddya Karunasagar and Dr Indrani Karunasagar delivered keynote lectures at the International Symposium on Aquaculture Medicine and Aquatic Animal Health Management – AQUAMAP organized by Cochin University of Science and Technology, Kochi, 16-18, Jan 2025. Dr Iddya Karunasagar enlightened the audience on the “Recent developments in disease diagnosis and field level application of diagnostics”. He also served as moderator for the Panel discussion on Cell line development. Dr Indrani Karunasagar moderated the session on sustainable aquaculture production systems in practice and delivered lead lecture on the topic “Vaccination and immune stimulation as two facets of preventive healthcare and drug delivery systems in aquaculture industry”.

Guest speaker at ICMR-CDC one health webinar on foodborne disease surveillance

27 Nov 2024



Dr Iddya Karunasagar was guest speaker at the One Health Webinar organized jointly by the Indian Council of Medical Research (ICMR) and the Centers for Disease Control (CDC), USA on Foodborne Disease surveillance on 27 Nov 2024. Dr Carmen Savelli from World Health Organization and Dr Heather Carleton from CDC were the other speakers. Dr Iddya Karunasagar highlighted the resources available from FAO/WHO on foodborne disease surveillance including the use of whole genome sequences of pathogens.

Regional group meeting of World Organization of Animal Health (WOAH) experts

30 Oct - 1 Nov 2024



Dr Iddya Karunasagar was invited by the World Organization of Animal Health (WOAH) to deliver three lectures at the Regional Workshop on Antimicrobial use (AMU)/Antimicrobial Resistance (AMR) in Aquaculture for Asia and Pacific from 30 Oct - 1 Nov 2024 at Singapore. The meeting was hosted by NParks (National Parks Board) of Singapore. Dr Iddya Karunasagar deliberated on the WOAH E-module on antimicrobial stewardship, AMU/AMR in shrimp industry and alternatives to antibiotics in aquaculture. About 50 experts from countries in Asia Pacific Region and experts from WOAH Asia Pacific Regional Office Tokyo, WOAH Headquarters, Paris attended the Workshop.



Ms Apoorva R Kenjar