SOCIETY FOR BIOTECHNOLOGISTS (INDIA)

News Letter

July 2021 Volume 06

Message:

Dear SBTI members,

I have great pleasure to greet you on the occasion of the release of the 5th edition of the SBTI News Letter. The past editions were received enthusiastically by the members and the content can still be improved with more innovations to make the News Letter a powerful medium for updating Society activities, both current and future activities, highlights of members and their laboratories and institutions, information about opportunities, important national and international academic events, advertisement links for jobs, fellowships and admissions, etc. The members may use this platform to highlight their achievements and recognitions in research and academics. I seek the members' active co-operation and help in this venture. I congratulate the office bearers especially Dr. Anju T R, Dr. Ajith and Dr. Naijil George for their hard work for bringing out the News Letter regularly. In the last edition, a scholarly article on Corona virus was published by Dr. Mohanan ValiyaVeetil, a member of our Society who has now moved to Institute of Advanced Virology, Thiruvanathapuram as Senior Principal Scientist. I congratulate him and wish him all success in his future research career. While mentioning this article here, the Corona virus and Covid-19 pandemic that has swept the entire world in 2020 are still looming around us. I request you to be vigilant against spreading of the virus and take all necessary precautions to remain safe and secure yourself as well as people around you. Many had lost life and many are fighting the infection. Let us pray for the departed souls and wish the affected persons speedy recovery. The pandemic has affected all human activities and one of the worst affected domains is academics at all levels. The students and teachers are forced to be on digital platforms, teaching, examination and new admission schedules are derailed and delayed. The worst affected are our research scholars and irreparable damages have been inflicted. The supervising faculty will do everything within their means to mitigate their student's burden. The research students should use the time to document their data collected so far and publish their work. The Society activities have equally suffered because of the lock downs and restrictions. With the enthusiasm and timely initiative of Dr. P. Vinayaga Moorthi, Department of Human Genetics and Molecular Biology, Bharathiar University, Coimbatore, the Society conducted a National Virtual Conference on Recent Breakthroughs in Biotechnology. I congratulate Dr. Moorthi and his colleagues for organizing a successful meeting. It looks we have to use the virtual platform again to organize the next meeting.

I wish you all good luck and health.

Stay safe and secure!

Prof. K. P. Joy

Vice President of SBT(I) and INSA senior Scientist, Department of Biotechnology, Cochin University of Science and Technology, Kochi-682022.

Member's offers/bidding for the conduct of

National Virtual Conference

&

Annual meeting of Society for Biotechnologists, India 2021

Interested members/institutions may contact SBTI officials
or write to societyforbiotechnologists@gmail.com before 15th September 2021

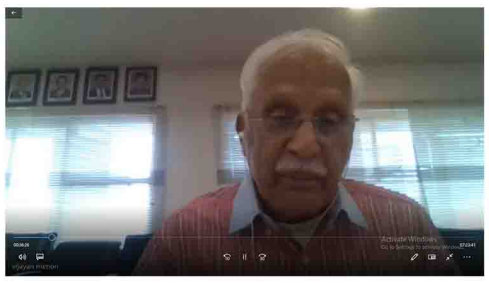
NATIONAL VIRTUAL CONFERENCE ON RECENT BREAKTHROUGHS IN BIOTECHNOLOGY (NCRBB-2021)

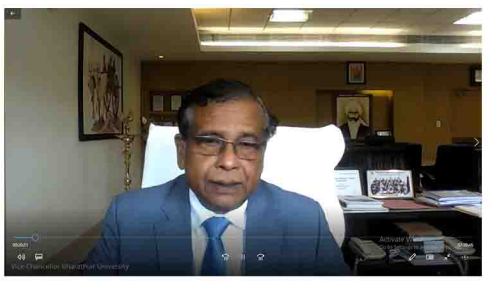
CONFERENCE REPORT

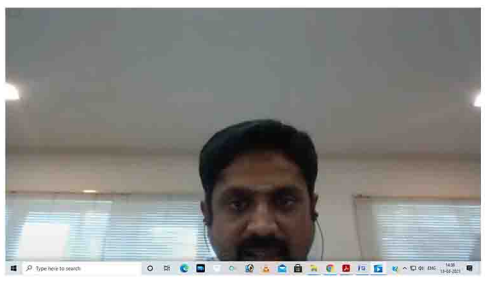
"The Science of today is the technology of tomorrow - Edward Teller"

The National virtual conference on Recent Breakthroughs in Biotechnology was organized by the Department of Human Genetics and Molecular Biology, Bharathiar University, Coimbatore in association with Society for Biotechnologists (India) SBTI. This two day National Conference was held on the 22nd and 23rd of January, 2021. The conference began with the inaugural session on the morning of 22nd February via Google meet online platform. The inaugural was graced by the presence of our Vice-Chancellor Prof. Dr. P. Kaliraj, Dr. Edathil Vijayan, President, SBTI, and speakers, several renowned Scientists, Dignitaries, Professors from various institutions and the conference participants, students, and staff. The inaugural began with the welcome address by Dr. R. Sivasamy, Assistant Professor and Head i/c, Department of Human Genetics and Molecular Biology, Bharathiar University, Coimbatore. Prof. Dr. P. Kaliraj, Vice-Chancellor, Bharathiar University, Coimbatore delivered the Inaugural address.

Following the inaugural address, Dr. P. Vinayaga Moorthi, Assistant Professor and Organizing Secretary – NCRBB-2021, Department of Human Genetics and Molecular Biology, Bharathiar University, Coimbatore gave a brief introduction about the conference. Following the Inaugural address, Prof. Dr. Edathil Vijayan introduced the SBTI to the participants and its activities.

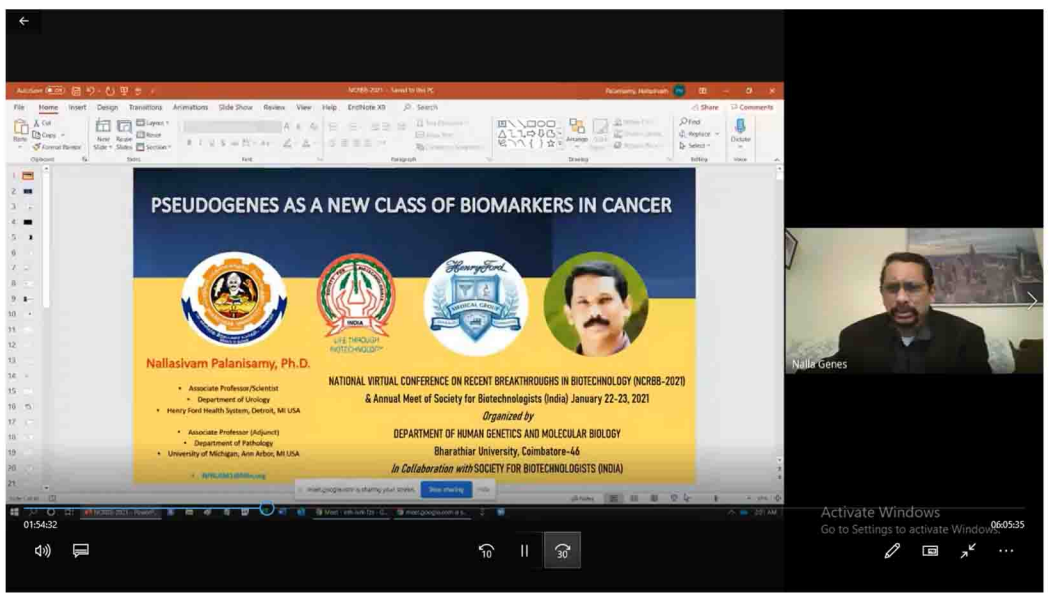




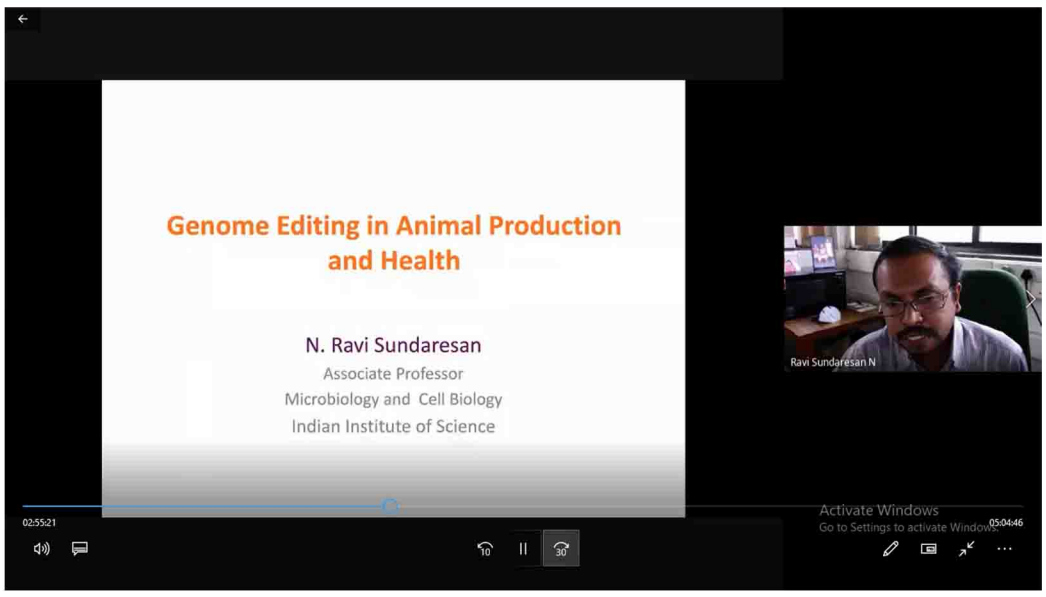


Dr. Kar Muthumani, Chief Scientific Development Officer, GeneOne Lifesciences, Inc. the United States of America delivered the Keynote address on the title "Immune and alternative therapeutic interventions utilizing synthetic nucleic acid". The inaugural session concluded with proposing the vote of thanks by Dr. KP Joy, Vice-President, SBTI.

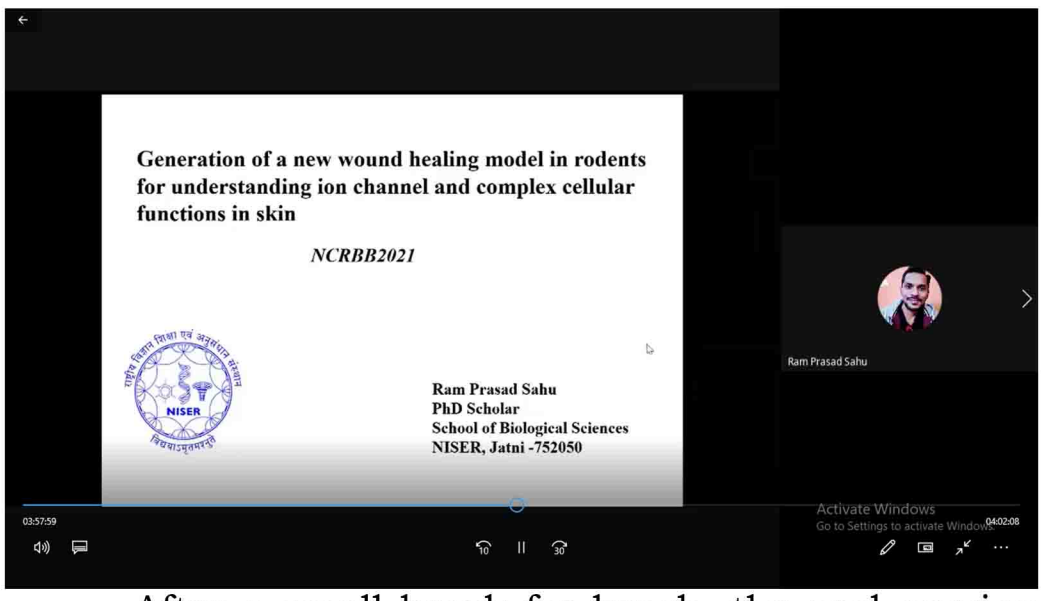
The first technical session of the conference commenced immediately after the inaugural session. The first plenary talk of the day was by Dr. Nallasivam Palanisamy, Associate Scientist, Department of Urology, U.S.A. on the topic, "Pseudogenes as a new class of biomarkers in cancer" and highlighted that "Pseudogene expression profiling pipeline has identified around 2000 tissue and disease specific pseudogenes that have the potential to be identified as diagnostic markers for cancer".



Next on the agenda was a talk on "Genome Editing in animal production and Health" by Dr. N. Ravi Sundaresan, from the Indian Institute of Science, Bangalore, Karnataka and emphasized that "The use of guide molecule enables cleavage of genome at specific sequence which then heals by the cell's natural phenomenon of non-homologous end joining (NHEJ) or homologous recombination (HR) whereby the broken strands of DNA rejoin to the former state. This is applied for producing disease and stress tolerant, hypoallergic products, fast growing and gender specific animals. That marked the end of the first technical session.

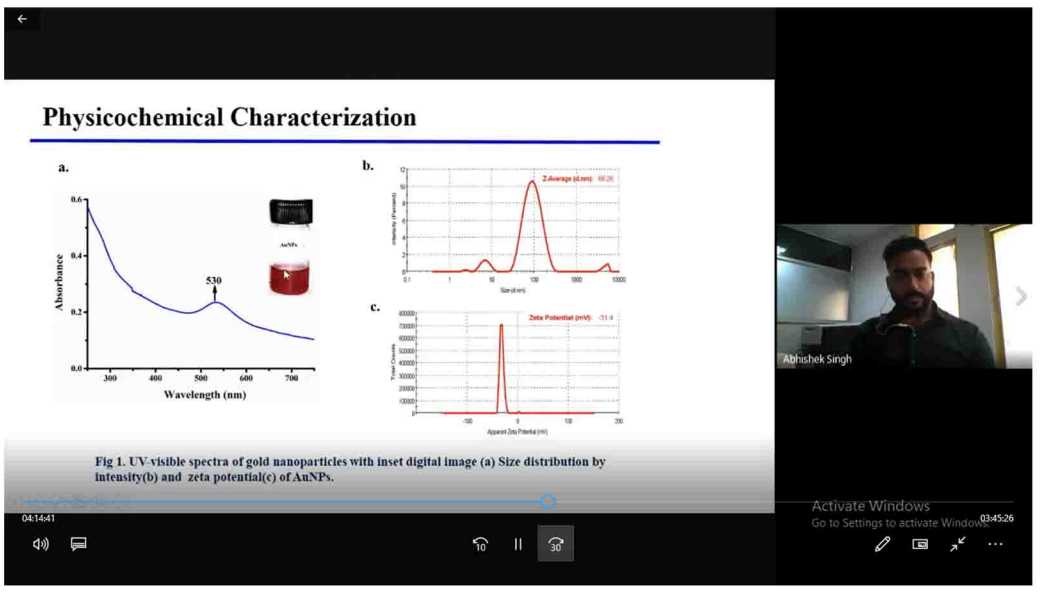


The call for abstracts for the oral presentation had an overwhelming response from students, research scholars, staff, and scientists from all over India including from states such as Tamil Nadu, Kerala, Karnataka, Maharashtra, Odisha, West Bengal, Uttar Pradesh, Uttarakhand, New Delhi, Meghalaya, etc. Owing to such a huge response for the participation and presentations, Oral presentations were methodically organized under different themes.



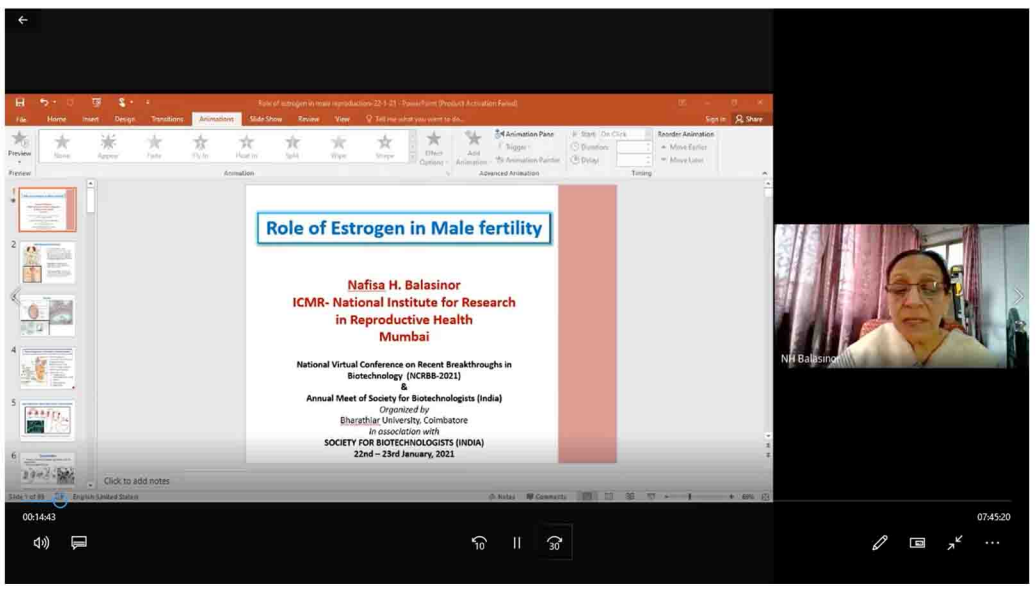
After a small break for lunch, the oral session for the KAPL Award under the theme Industrial Biotechnology and Oral presentation award for the IBS Award under the Medical Biotechnology/Application of Software technologies in medicine. There were 07 and 13 abstracts received for the oral session for the KAPL Award under the theme Industrial Biotechnology and Oral presentation award for the IBS Award under the Medical Biotechnology/Application of Software technologies in medicine respectively in which 5 and 11 papers were presented respectively. There were 08 abstracts received for the oral session for the Shri. C V Jacob Award under the theme Plant Biotechnology/Spices in which 8 papers were presented by the participants. There was 12 out of 16 Oral presentations for the "Best Presenter Award under the theme General Biotechnology were presented by the participants.

To bring on a cheerful closure to the day, the SBTI meeting was conducted with members of the SBTI and interested participants. Thus Day 1 came to a delightful end.



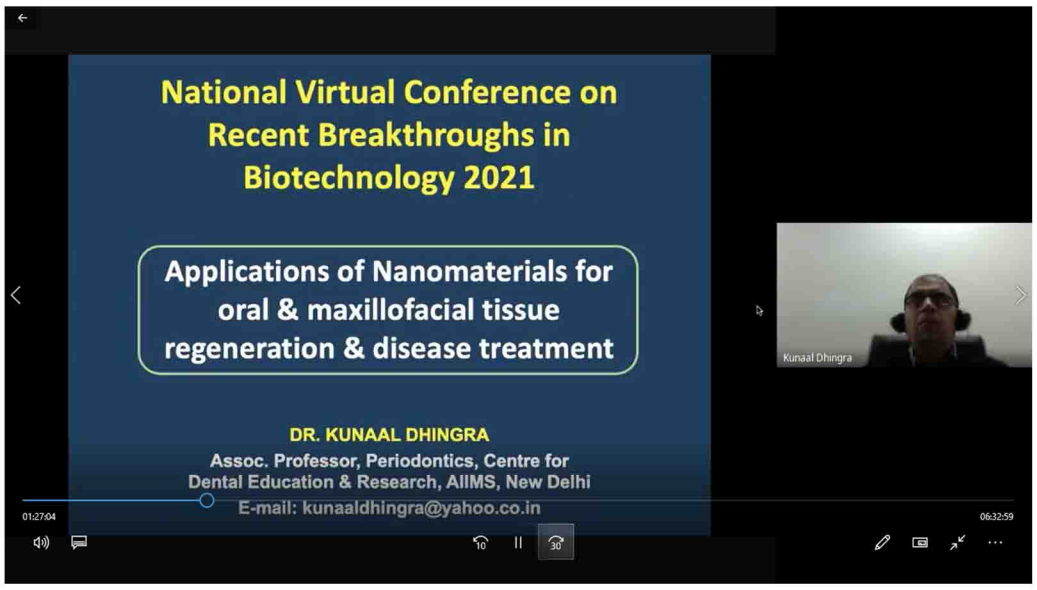
DAY 2

The second day was packed with information with 2 plenary talks. The first talk of the day was by Dr. Dr. NAFISA H BALASINOR (Scientist F), Sr. Dy. Director, National Institute for Research in Reproductive Health, (INDIAN COUNCIL FOR MEDICAL RESEARCH), Ministry of Health and Family, elfare (Govt. of India) Parel, Mumbai – 400 012. India on the topic, "Role of oestrogen in male fertility" and highlighted that "A recent discovery has been showing how oestrogen makes its presence a crucial one in spermatogenesis. Oestrogen was discovered in 1930s and their receptors ERα while absent in Sertoli cells, ERβ is present on Sertoli cells. The apoptotic cells increased upon treating with agonists and are the probable reason for infertility in male".



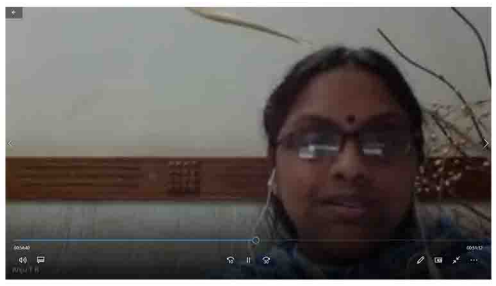
"Applications of Nanomaterials for oral and maxillofacial tissue regeneration and disease treatment" was given by Dr. KUNAAL DHINGRA, Associate Professor, Periodontics Division, Centre for Dental Education and Research, AIIMS, New Delhi – 110 029, India. He said that "When nanomaterials are providing us with many benefits, they also possess many toxicity effects which should be monitored for while applied. This could negatively affect the cellular physiology of the host in many ways and adequate recommendations in the form of safety regulations and barriers should be followed to reduce this and to make nanodentistry more effective and reliable for the treatment".

On day two, 23.01.2021, 5 out of 7 abstracts received for Oral presentations award for the Shri. K.N. Narasimhiah Award under the Cancer Biology were presented by the participants. There were 11 and 05 abstracts received for the oral session for the Kunnath Pharmaceuticals Award under the theme Herbal medicine and disease management and Oral presentation award for the Prof. Edathil Vijayan Award under the Neuroscience/Neuroendocrinology theme respectively and 10 & 4 papers were presented respectively.



VALEDICTORY FUNCTION

The Valedictory session began on a grand note with welcome address by Dr. A. Vijaya Anand, Professor, Department of Human Genetics and Molecular Biology, Bharathiar University, Coimbatore. Dr. K. Murugan, Registrar i/c, and Professor and Head Department of Zoology Bharathiar University, gave the valedictory address and Dr. Anju TR Secretary, SBTI, delivered special note. A detailed conference report was presented by Dr. P. Vinayaga Moorthi, Assistant Professor and Organizing Secretary – NCRBB-2021.



Next on the agenda was the announcement of SBTI awards. The awardees are, M.P. Sudhakar, Research Associate, Marine Biotechnology, National Institute of Ocean Technology, Ministry of Earth Sciences, Chennai for oral presentation for the KAPL award, TUSAR KANTA ACHARYA, Ph.D. Scholar, National Institute of Science Education and Research(NISER), Jatni, Odisha for Oral presentations for the "IBS Award", Dr. SAHAYA SHIBU, Assistant Professor & Head, Dept. of Biotechnology,, SAFI Institute of Advanced Study (SIAS), Malappuram, Kerala for Oral presentations for the "Shri. C V Jacob Award", for UNNIKRISHNAN B S, Research Scholar, TC 20/305, Kadakamthalakal house, Melaranoor, Karamana P O, Thiruvananthapuram for Oral presentations for the "Shri. K.N. Narasimhiah Award", Dr. TAPAN BEHL, Associate Professor, Chitkara College of Pharmacy, Chitkara University, Punjab, for Oral presentations for the "Kunnath Pharmaceuticals Award", PREETHI B, Research scholar, Department of Human genetics and molecular biology, Bharathiar University, Coimbatore for Oral presentations for the "Prof. Edathil Vijayan Award and a award for general biotechnology from the Department to DEBAJYOTI DEBNATH, Ph.D., Student, Department of Chemistry, Presidency university, West Bengal. The valedictory session was concluded with the vote of thanks proposed by Dr. P. Vinayaga Moorthi, the organizing secretary-NCRBB-2021.

AWARDS

S. No	Award Category	Name of the Participant and Designation	Abstract Title	Abstract. No
1	*Industrial Biotechnology* -- **Oral presentations for the "KAPL Award"**	**M. P. SUDHAKAR** Research Associate Marine Biotechnology, National Institute of Ocean Technology, Ministry of Earth Sciences, Pallikaranai, Chennai-600100, Tamilnadu, India E-mail ID: mpsdhkr@gmail.com Ph No: +91 97874 34003	Extraction of seaweed biopolymers for the production of lactic acid using *Lactobacillus plantarum*	IB004
2	*Medical Biotechnology/Application of software technologies in medicine* Oral presentations for the "**IBS Award**"	**TUSAR KANTA ACHARYA** Ph.D. Scholar National Institute of Science Education and Research(NISER), Jatni, Odisha-752050 E-mail ID: tusar.acharya@niser.ac.in Ph No: +91 91786 80462	TRPM8 channel inhibitor-encapsulated CMT:HEMA hydrogel as a 1 tunable surface for bone tissue engineering	MB012
3	*Plant Biotechnology/Spices* - **Oral presentations for the "Shri. C V Jacob Award"**	**Dr. SAHAYA SHIBU** Assistant Professor & Head Dept. of Biotechnology, SAFI Institute of Advanced Study (SIAS), Malappuram, Kerala E-mail ID: shibubt@gmail.com Ph No: +91 97892 12939	In vitro conservation of *Eria pseudoclavicaulis* Blatt., threatened orchid of Western Ghats, India via asymbiotic seed germination and callus induction	PBS003
4	*Cancer Biology*- Oral presentations for the "**Shri. K.N. Narasimhiah Award**"	**UNNIKRISHNAN B S** Research Scholar TC 20/305, Kadakamthalakal house, Melaranoor, Karamana P O, Thiruvananthapuram-2 E-mail ID: ukbsbio@gmail.com Ph No: +91 96334 75271	Theranostic Nano probe for the laser mediated tumor ablation coupled with Raman spectroscopic analysis	CB006
5	*Herbal medicine and disease management*- **Oral presentations for the "Kunnath Pharmaceuticals Award"**	**TAPAN BEHL** Associate Professor Chitkara College of Pharmacy, Chitkara University, Punjab, India E-mail ID: tapanbehl31@gmail.com Ph No: +91 85275 17931	Uncurtaining the beneficial effect of *Terminalia catappa* seed extract in streptozotocin induced diabetic retinopathy in rats	HMDM09
6	*Neuroscience/ Neuroendocrinology* **Oral presentations for the "Prof. Edathil Vijayan Award"**	**PREETHI B** Research scholar Department of Human genetics and molecular biology, Bharathiar University, Coimbatore E-mail ID: preethibasava17@gmail.com Ph No: +91 99526 21427	Apolipoprotein-E Polymorphism Influences The Risk Of Cognitive Impairments In A Case-Control Study On South Indian Population	NN002
7	General Biotechnology -**Oral presentations for the "Best Presenter Award"**	**DEBAJYOTI DEBNATH** Research scholar Department of Chemistry, Presidency university, College St,Kolkata, West Bengal E-mail ID: tukus84@gmail.com Ph No: +91 70035 33517	Transport properties of artificial microswimmer, a theoretical approach	GB006

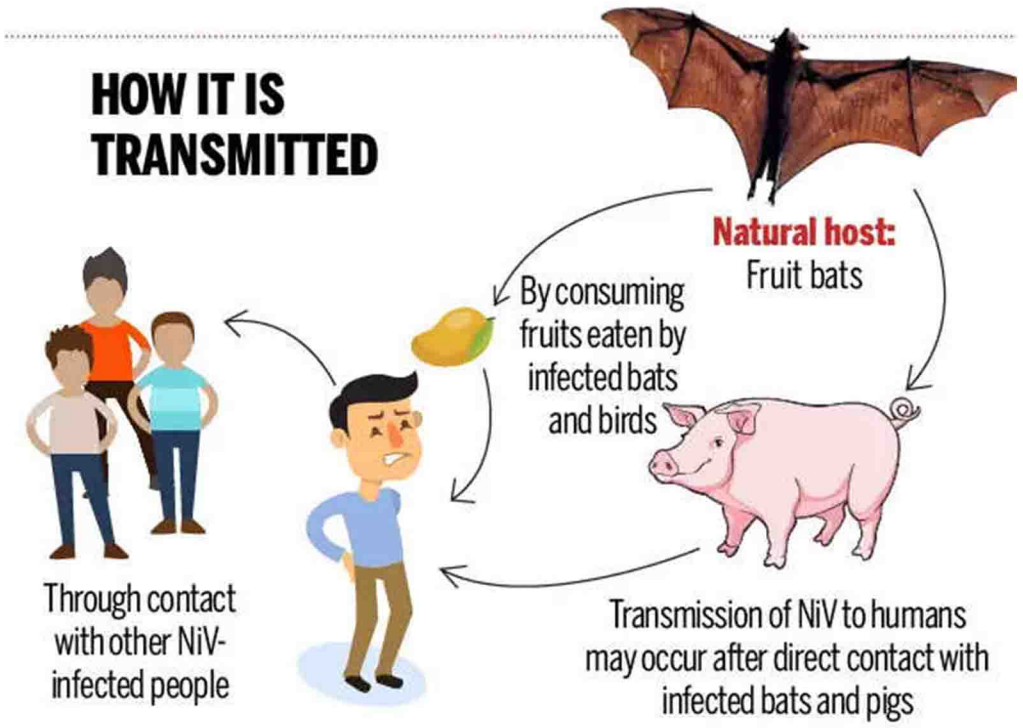
Dr. Mohanan Valiya Veettil talks about Nipah virus

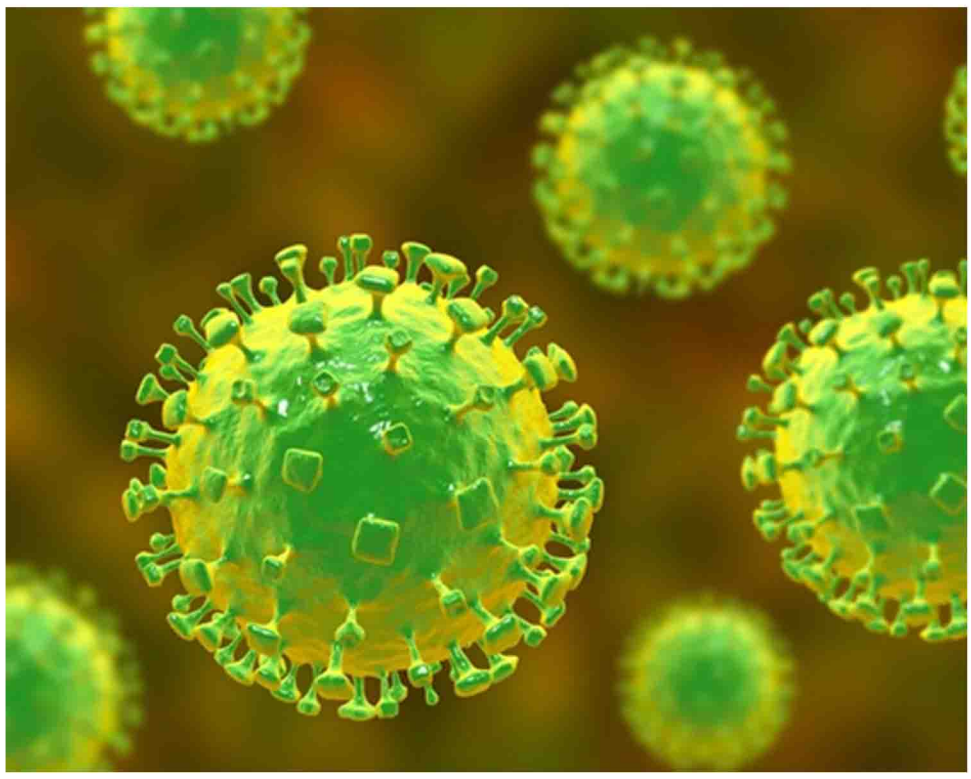
1. The WHO recently raised the alarm for the Nipah virus, which it could represent a new potential and fearful pandemic. How real is this risk?

Although WHO has announced the possible risk of Nipah virus (NiV) turning into a pandemic virus, it could be much considered a precaution or awareness to be prepared for possibility of a virus mediated pandemic. As the R0 (number of people infected from a single infected person) of NiV infection reports happen to be less than 1 and humans being a non-natural host leads to the possibility of NiV not being a real threat in the present scenario. Anyhow being an RNA virus potentially holds the higher chances of acquiring more random mutations and heterogeneity among the lineages so far identified fortifies its capability of high mutability. The drastic change in pathophysiology and symptoms during lineage variance has already been evidenced in rapid spreading and severe Bangladesh strain compared to lesser severe Malaysian strain, thus still holding the possibility of turning into a rapid spreading variant, hence the pandemic possibility still persists.

2. At the moment, in which countries has Nipah spread and how many people has it already infected?

NiV outbreak has been reported in Malaysia (1998), Bangladesh (2001, 2004, 2007, 2008, 2009, 2011, 2012, 2015 etc.) and India (2001, 2007, 2018), Singapore (1999). Sero-surveillance reports state that antibodies against NiV were detected in fruit bat populations in Cambodia, Thailand, Madagascar and Ghana. Worldwide NiV has infected approx. 620 people, demographics show 43% of NiV incidence in Malaysia, 42% in Bangladesh and 15% in India of the total incidences.





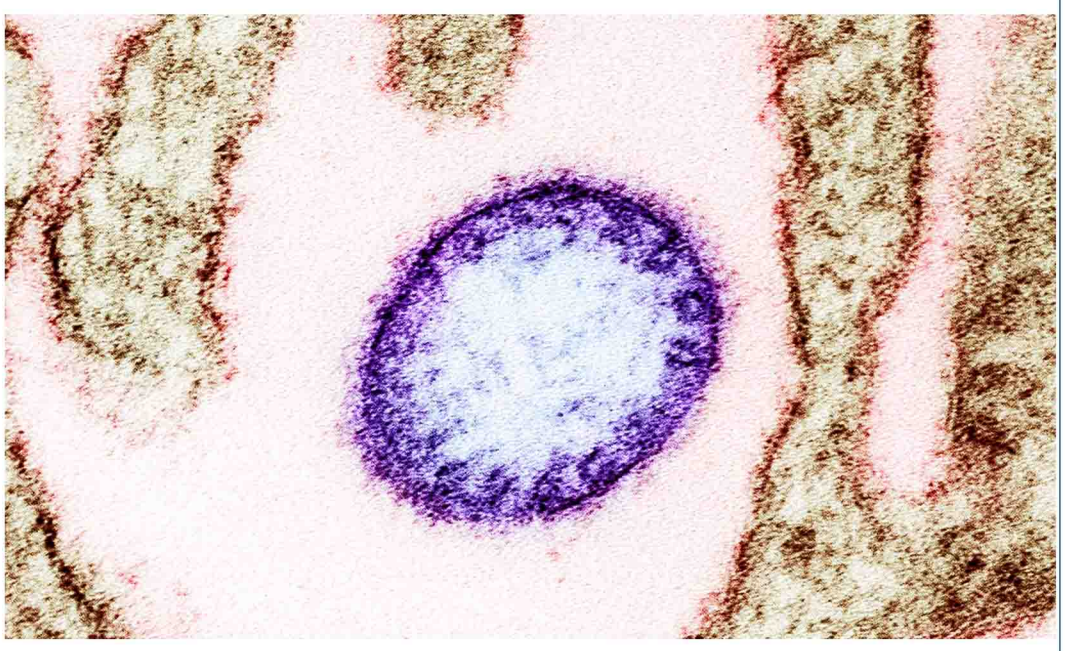
3. Unlike Covid, the Nipah has a rather high lethality rate. But how can such a contagious virus become pandemic? Isn't the rule always valid that the infectiousness and mortality rates are indirectly proportional and the more a virus kills the host, the less it can infect other organisms?

It is well understood that a virus of high lethality is less possible to infect more organisms or larger number of same species as they end up killing the infected host immediately and thereby limiting the possibility of more and wide spread. While a virus of less lethality would usually be capable of spreading via formites, scaly skin etc. and would persist for long in asymptomatic as well as symptomatically infected hosts. Generalisations said, there are exceptional viruses such as NiV, that would infect and certainly kill the host due to its high lethality but do display different set of symptoms when infected with different lineages, the Bangladeshi strain has a high respiratory involvement while in comparison the Malaysian strain had less respiratory involvement. Another interesting fact of NiV is the source of infection, in all the outbreaks so far reported none had been predicted, identified or thoroughly understood or recorded of how and when the species barrier breach occurred and lead to its outbreak. This has been very much critical in case of the pandemic outbreak of SARS CoV-2 also. Adding to the agony is the wide spread of the NiV carrier host Pteropus bats across the continents, stretching from East Africa through central and eastern Asia and down to the Australian coasts. Being recently identified virus, although its related Hendra virus had been known earlier, no precise prophylaxis or vaccine are yet available against NiV and thus adds more worries to infection by viruses of similar capabilities. This would mean that viruses could behave different than expected depending on the external factors influencing its host as well as its own growing conditions.

4. Where did this virus originate and how is it transmitted?
NiV is believed to have originated in fruit bats particularly Pteropus bats, due to the presence of NiV neutralizing antibodies in their sera, although a thorough sero-surveillance and infection history check is highly warranted, as in most cases the source is being studied only after the onset of an outbreak and later the identification of infectious agent. Pigs, the intermediate hosts are infected by the consumption of bat bitten fruits. Transmission from pig to human and human to human occur through direct contact, aerosols or fomites (in very close proximities). In Bangladesh patients have been reported to have consumed raw palm sap suggesting the contamination of sap with NiV-infected bats.

5. What are the symptoms and what are the most serious complications?
Acute encephalitis with fever, head ache, vomiting, and respiratory discomfort are the major clinical features while pneumonia, behavioural changes and disorientations were observed in some of the patients. Outbreaks in India and Bangladesh reported higher number of cases with respiratory distresses.

6. What are the tools that have been put in place so far to prevent and combat Nipah in the areas where it has spread? Are there any medications or treatments deemed more effective?
Ribavirin and acyclovir are the two drugs used in earlier outbreaks of NiV in Malaysia and Singapore, while ribavirin failed in its in-vivo studies. Ribavirin although has not proven effect on NiV infection could still be employed along with supportive therapy. The monoclonal antibody m102.4 against Hendra virus developed and used in Equines is the only available as well as tested monoclonal antibody against NiV. Antibody m102.4 has been understood to be effective in primate models challenged with NiV. Absence of any specific antiviral as well as vaccine makes treatment against NiV more imperative.



7. How much does the practice of intensive farming affect the development of new viruses that are potentially harmful to humans?
Bats particularly among all other mammals carries a wide variety of viruses capable of zoonotic spread as evidenced during the incidence of SARS-CoVs as well as rabies and lyssa viruses. There are handful of reasons leading to increased frequency of bat human interactions and co-existence resulting in hotspots of species spillover and barrier breach. Human intervention in varying levels has reduce bat foraging, propensity and feeding habits as well as could impact on their physiology and immunology. Intensive farming and animal husbandry are very much implicated in NiV outbreaks. Deforestation for farm lands leads to lose of natural habitat and roosts, grazing of animals in forest and hinterland causes animal to bat (reservoir host) interactions by means of food, water, viral exchange via arthropods, fruit farms and orchards established in otherwise forest area can attract bats as well as other lower mammals leading to high human- animal interventions and thus zoonosis.

8. Nipah aside, how high is the risk that the world could develop a new global epidemic in the short term?
Any factor that is capable of breaking the integrity of the host ecosystem will cause serious consequences in the life cycle of the virus. Animal associated virus change its adaptivity due to various reasons such as loss of host habitat, wild life trade, climate change, and deforestation. Based on the knowledge gained from the outbreaks of several new viral diseases and the breadth and width of the destruction caused by them, it may be assumed that such a combination of factors results in sudden emergence of more deadly and fatal forms of viruses from animals, and their unexpected transmission to humans can occur anytime. A combination of unique qualities of viruses such as extreme adaptive capacity, ability to mutate, and learn new tricks could lead to the emergence of novel strains of pandemic virus. It is also known that certain lethal mutations may act as vital factor in the process of animal virus transmission to humans as well as in the emergence of deadliest human specific viruses.

Dr. Mohanan Valiya Veettil, PhD
Senior Principal Scientist (F)
Institute of Advanced Virology
Life Sciences Park
Thonnakkal, Trivandrum, Kerala

This article is reproduced from the interview given by Dr. Mohanan Valiya Veettil with Prof. Mario C Raviglione, Professor at University of Milan, Italy for an Italian newspaper ("Il Biellese") regarding his opinion about Nipah/ Covid Viruses and its outbreak