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Promising Young Scientist of North East (24th issue)

Dr. Pankaj Deka has been working as an Assistant Professor in the Department of Veterinary Microbiology, College of Veterinary Science (CVSc), Assam Agricultural University (AAU), Jorhat, Assam since August 2014. He is also currently holding the charge of Assistant Virologist, Indian Council of Agricultural Research-All India Coordinated Research Project on Foot and Mouth Disease (ICAR-AICRP on FMD). He did his BVSc & AH from Lakhimpur College of Veterinary Science, AAU (1999) and MVSc in Veterinary Microbiology from CVSc, AAU (2003), and currently pursuing his Ph.D. from the same university on the topic “Development of oral Classical Swine Fever bait vaccine and evaluation of its immunogenic potential in pigs”. In the year 2020, Dr. Deka received the National Agricultural Higher Education Project (NAHEP) Fellowship, under which he successfully completed overseas training on “Multi-drug resistant bacteria, Bacteriophage therapy and Thermostable vaccine development against viral diseases” in the Antimicrobial Resistance and Infectious Disease Laboratory, Murdoch University, Perth, Western Australia under the supervision of Dr. Mark O’Dea. He has been broadly studying about the avian viruses and in particular the biology of Avian paramyxoviruses (APMVs): Newcastle disease virus (NDV) - disease diagnosis, virus isolation, biological and molecular characterization, seroprevalence study, and biological development. Recently in the year 2022, Dr. Deka and his team have developed a “Thermostable Live Newcastle Disease Virus Vaccine AAUPSD44C” against Newcastle disease (ND), commonly known as Ranikhet disease, of poultry that can remain effective at ambient temperature without refrigeration. This achievement has been highly significant in the glorious history of AAU in terms of biological development against ND, one of the most economically important viral diseases of poultry. He was also part of the team of “Cell culture adapted classical swine fever vaccine” development (2009-2011)

under the leadership of Dr. Dilip Kumar Sarma, Retd. Professor & Head, Department of Veterinary Microbiology, AAU, Khanapara and Former Director, ICAR-NRC on Pigs, Rani. Till date, Dr. Deka has published more than 80 research articles in leading journals and conference proceedings. He also writes newspaper columns and participates in radio talks. He is a life member of several scientific organizations and reviewed several research articles. Dr. Deka has also delivered lectures as a resource person in different institutes and trainings. He is also actively involved in institutional building activities at his institute.

Before joining AAU, Dr. Deka was serving as a Veterinary Officer in the Venky's India Limited Pune (2003-2009) and was engaged in poultry disease diagnosis and consultation services at different corners of the country. Later, he joined AAU as a Subject Matter Specialist (Animal Science) in the Krishi Vigyan Kendra (KVK), Jorhat (2011-2014). During his service period in KVK, he designed a "low-cost domestic incubator" for hatching poultry eggs. Another notable research achievement while in KVK was his role as an Associate Scientist in the development of a *Jatropha* oil-based soap and an ointment as a herbal remedy against ectoparasites and cutaneous wound-causing pathogens of veterinary importance. Dr. Deka also conducted a field trial on the productive performance of the Kamrupa variety of chicken before releasing it to the farmers.

After joining AAU, Dr. Deka started his research in the field of animal and avian viruses particularly, on Foot and Mouth disease virus (FMDV) and NDV. He is actively associated with the National Animal Disease Control Programme (NADCP) for control of foot and mouth disease (FMD). He has so far guided two MVSc students in Veterinary Microbiology discipline for their research as the Major Advisor and guided more than 15 MVSc students from various disciplines as member of the Advisory Committee. Besides, he has so far completed five extension/ research related projects successfully and is the Principal Investigator (PI) and/ or Co-PI to four ongoing research projects.

Dr. Deka is an expert in necropsies and diagnosis of poultry diseases. Recently, Dr. Deka and his

team have characterized parrot bornavirus (PaBV)-4 in naturally infected captive psittacines for the first time in India. They have also isolated PaBV for the first time using embryonated duck eggs as an alternate model system. In collaboration with the scientists from the Institute of Infection and Global Health, University of Liverpool and different parts of India, Dr. Deka detected QX-like infectious bronchitis virus (IBV), a novel variant for the first time from NE India. His team isolated avirulent and virulent NDV belonging to genotypes II, VII and XIII from domestic poultry such as chicken, duck, guinea fowl, turkey and Japanese quail as well as from wild birds including hornbill, peacock, parrot and different species of owl and raptors such as the vultures. The team also isolated Marek's disease virus (*Gallid alphaherpesvirus 2*) and fowl adenovirus (FAdV) causing inclusion body hepatitis in chicken. Dr. Deka and his team obtained 19 VTCC accession numbers for depositing these avian virus isolates to the repository of National Centre for Veterinary Type Cultures (NC VTCC), ICAR-NRCE, Hisar. Beside viruses, he isolated *Riemerella anatipestifer* from gadwall (migratory duck) and *Salmonella braenderup* from chicken.

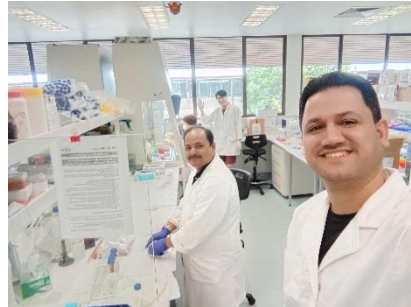
Another interesting area where his team is working is the development of a thermostable vaccine against ND, one of the most economically important viral diseases of poultry worldwide. It is caused by Avian Paramyxovirus-1 (APMV-1). Vaccination is the only key tool to prevent ND. Since decades, conventional live vaccines have been used, and they require maintenance of cold chain from production to administration to remain effective. Once the cold chain breaks, potency of the product is lost by more than 50% or even lost completely in a few hours at ambient temperature. Moreover, up to 80% of the cost of vaccination program is consumed by the cold chain infrastructure. In remote areas, continuous refrigeration and/ or maintenance of cold chain for these live vaccines is difficult. However, no effective thermostable vaccine has been developed till date. Therefore, there has been a need for a more stable vaccine. **Every success story starts with a DREAM!** Dr. Deka and his team successfully developed a “Thermostable Live Newcastle Disease Virus vaccine AAUPSD44C”. The team members included Dr. Sangeeta

Das, MVSc Student, Department of Veterinary Microbiology; Dr. Rofique Ahmed, MVSc Student, Department of Veterinary Epidemiology and Preventive Medicine and Dr. Pubaleem Deka, a JRF. This achievement of AAU was recognized on the auspicious occasion of India's 76th Independence Day (Aug 15, 2022) and the Dean, FVSc, AAU presented the "Certificate of Appreciation" to Dr. Deka on behalf of Hon'ble Vice-Chancellor, AAU. Further, the entire team was appreciated for this achievement on the occasion of the 74th Republic Day of India (Jan 26, 2023). Recently, Dr. Deka received the "**Outstanding Innovation Award**" for his contributions to poultry health, in particular the development and technology transfer of thermostable vaccine against ND in the 9th Kolkata International Poultry Fair 2023 held at Science City Exhibition Ground, Kolkata. Ventri Biologicals Pvt. Ltd., Pune, India (Venky's) and AAU have recently inked a Memorandum of Understanding (MoU) on technology transfer (Jan 13, 2023) for developing the thermostable ND virus vaccine. It is an honour and privilege to be fraternized by an organization like Venky's which is the largest fully integrated poultry group in Asia.

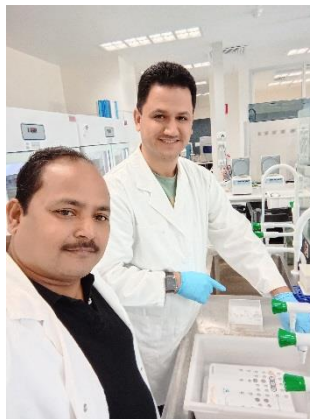
Dr. Deka has also served the farming community with many extension activities which included conduction and/ or coordination of training, health campaigns, farmers-scientists interface programmes, on farm testing, front line demonstration, workshops and awareness programmes etc.



Dr. Deka with Dr. Mark O’Dea, Senior Virologist, Murdoch University



Dr. Deka performing phage isolation with Dr. Ali from Iraq in Murdoch University



Dr. Deka preparing samples for whole genome sequencing with Dr. Ali from Iraq



MoU signing ceremony (Jan 13, 2023) between AAU and Ventri Biologicals Pvt. Ltd.,

Pune, India (Venky's) for technology transfer of the thermostable NDV vaccine



**Team members of the Thermostable Live Newcastle Disease Virus vaccine AAUPSD44C;
Standing (from left): Dr. Rofique Ahmed, Dr. Pubaleem Deka, Dr. Sangeeta Das and Dr.
Pankaj Deka**



Dr. B.N. Saikia, Dean, CVSc, AAU presented the “Certificate of Appreciation” to Dr. Deka on behalf of Hon’ble Vice-Chancellor, AAU, Dr. Bidyut Chandan Deka on 76th Independence Day (Aug 15, 2022) for development of thermostable NDV vaccine



Dr. Deka associated in ICAR-DFMD TSP Programme



Dr. Deka receiving the “Certificate of Proficiency” in the 30th Annual review Meeting of State FMD Centres held at Meerut



Dr. Deka receiving the “Best Oral Presentation Award” in IAVMI 2022 held at LUVAS, Hisar



Dr. Deka delivering lectures as resource person in an “Outreach Programme for Pig Framers & Entrepreneurs” organized by Advanced Level State Biotech Hub (Assam) in collaboration with KVK, Nagaon and in a “Capacity Building Training Programme” under SITA, Govt. of Assam funded “Samridhhi Poultry” Project in Goriaghuli Village, Sonapur



Dr. Deka being felicitated by Sjt. Atul Bora, Hon'ble Minister, AH & Veterinary etc., Assam during the Regional Livestock and Poultry Show 2023 for developing the thermostable NDV vaccine



West Bengal Poultry Federation (WBPF), Kolkata presented Dr. Deka the "Outstanding Innovation Award" for his contributions to poultry health, particularly for developing the thermostable NDV vaccine during the 9th Kolkata International Poultry Fair 2023 held at Science City Exhibition Ground, Kolkata
