ICAR-NIHSAD NEWS
ICAR - NATIONAL INSTITUTE OF HIGH SECURITY ANIMAL DISEASES, BHOPAL
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In this issue

DIRECTOR'S COLUMN

Warm Greetings for safe, healthy and a happy new year 2021 !!

We at NIHSAD have always tried to live to its name by actively pursuing our goal and institute mandate in keeping the preparedness for new and emerging diseases. This time the things were a bit different and the zoonotic disease that we were pitted against was not an ordinary one. COVID-19 as it emerged from China, and spread worldwide, hit India too. It was one of the top-priority pathogens to be dealt with, because of high transmissibility, severe illness and associated mortality, wide geographical spread, lack of control measures with knowledge gaps in veterinary and human epidemiology, immunity, and pathogenesis. The National Health machinery spin into action for the diagnosis and control of the same. With our experience of handling high risk pathogens earlier, COVID testing was initiated at NIHSAD on 12th of April, 2020. I congratulate the Team NIHSAD for rising to the occasion all scientists and a handful of research scholars with support from the engineering staff worked nonstop all through the lockdown till the end of 2020 to give their services for diagnosis different districts of Madhya Pradesh. Our Quality Control/Quality Assurance report for remained in 100% concordance with AIIMS, Bhopal and Gandhi Medical College Bhopal. Competency for nano-pore sequencing has been established in the institute and the whole genome sequencing of nine SARS-CoV-2 isolates was carried out.

Not only this, this year saw an entry of two new animal diseases; African swine fever and Lumpy skin disease, which were also promptly diagnosed with genomic identification and virus isolation. More than 8000 samples were tested from the quarantine centers for various exotic diseases and more than 14000 samples were tested for influenza during the year. My compliments to the team again for continuing the other routine responsibilities also unstintingly. Adding another feather to the cap was the release of indigenous Multiplex Real Time Reverse Transcriptase PCR Kit for Avian Influenza A typing and differentiation of H5 and H9 subtypes on the occasion of 92nd ICAR Foundation Day on 16th July, 2020 at Krishi Bhawan, New Delhi.

Like in previous years, ICAR-NIHSAD participated in FAO Proficiency Testing program, 2020, for Avian Diseases PCR Panel (Influenza A Type A, H-type, N-Type, and NDV), PRRS, ASF, and Swine Influenza Coordinated by CSIRO-Australian Centre for Disease Preparedness, AAHL, Geelong, Australia. The government mandated celebrations, like Celebration of 70th Anniversary of Indian Constitution, Mahila Kisan Diwas, Swachhta Pakhwada, International Yoga Day, Vigilance Awareness Week, Foundation Day and Republic Day etc. were celebrated with fervour and active participation.

The threat of corona virus is not yet over, so as I present this edition, I again wish a safe and healthy 2021 to all !

(V.P. Singh)

ICAR-NIHSAD
ICAR - National Institute of High Security Animal Diseases
Bhopal- 462022 (M.P.)
Tel: 0755-2759204 | Fax: 0755-2758842
Email: director.nihsad@icar.gov.in, director1nihsad@gmail.com
www.nihsad.nic.in

Editors:
- Dr. Richa Sood
- Dr. Naveen Kumar

Photo Courtesy:
- Mr. R.K. Shukla
- Mr. S.B. Somkuwar

SARS-CoV-2 testing and whole genome sequencing at NIHSAD

World Health Organization had declared COVID-19 as the global public health emergency and subsequently a pandemic in March 2020 after almost 3 months of it first detection in Wuhan, Hubei, China where its outbreak was first identified in December 2019. The quick detection of cases and isolating them was critical to contain it. While on one hand people across India and around the globe were largely confined to their homes with businesses and educational institutions all shut down in an attempt to contain the virus, and on the other hand doctors, health-care workers, and medical staff members are leading the battle against COVID-19 from the front emerging truly as our heroes in these challenging times, to meet the increasing demand of the diagnostic services, ICAR-NIHSAD also stepped in within a month of declaration of the disease as pandemic. SOPs were made and the staff of NIHSAD was all set. NIHSAD was recognised by ICMR and as per council's directions, testing of COVID 19 samples by RT-qPCR started at NIHSAD on 12th April, 2020. Dr. V. P. Singh, Director of the institute along with Dr. Sandeep Bhatia, co-ordinator COVID testing, are spearheading various teams that are involved with receiving, sample handling, biosafety, RNA extraction, real time PCR. Till date wholehearted contribution of each and every scientist along with young research scholars working in various projects has gone into providing nonstop diagnostic services and more than 20,000 human samples including the animals (tiger, dog, and cat) samples have been tested from various districts of Madhya Pradesh.

Furthermore, the whole genomes of SARS CoV-2 circulating in Madhya Pradesh state, were sequenced by a team led by Dr Anamika Mishra and Dr. Ashwin A. Raut and assembled in house using Oxford Nanopore Minion platform. Nine RT-PCR positive, clinical samples from Burhanpur, Ujjain, Mandsaur and Neemuch districts, collected between 19th April to 9thMay, 2020 were sequenced. Sequence data was generated on Oxford Nanopore Minion platform, as a multiplex sequencing run with barcodes. The genomes were assembled with reference to SARS CoV-2 isolate Wuhan-Hu-1 (NC_045512). The first batch of 9 SARS CoV whole genome sequences were submitted to GISAID database (SARS_CoV_2 accession numbers: EPI_ISL_452787 to EPI_ISL_452795). Based on the GISAID phylogeny, seven of the sequenced genomes belong to Clade G while two from Neemuch belong to Clade O (Other minor clades) which is equivalent to Clade B.1 and Clade B.6 respectively. This indicates the co-circulation of multiple clades in the district and emphasizes the need for continuous genome sequencing for tracking evolution and circulation pattern of virus in the region.

Release of Bird flu Diagnostic Kit

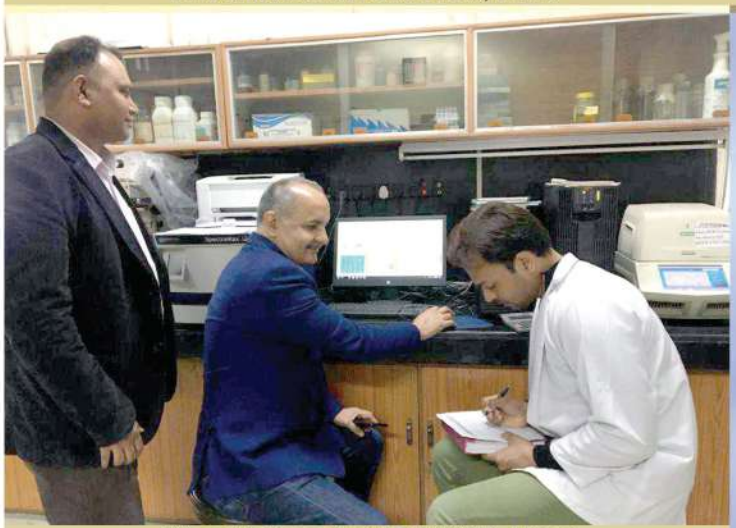
Hon'ble Union Minister for Agriculture and Farmer's Welfare Shri Narendra Singh Tomar released the diagnostic kit entitled "Multiplex Real Time Reverse Transcriptase PCR Kit for Avian Influenza A typing and differentiation of H5 and H9 subtypes" developed by ICAR-National Institute of High Security Animal Diseases, Bhopal on the occasion of 92nd ICAR Foundation Day, July 16, 2020 at Krishi Bhawan, New Delhi. The function was attended by Shri Parshottam Rupala and Shri Kailash Choudhary, Hon'ble Ministers of State for Agriculture & Farmers Welfare, Dr. Trilochan Mohapatra, Secretary, DARE and DG, ICAR, Shri S K Singh, Additional Secretary (DARE) & Secretary (ICAR), New Delhi as well as other dignitaries.

Poultry is one of the fastest growing segments of the agricultural sector in India. The recurrent outbreaks of Bird flu (Avian Influenza) in poultry are causing great economic losses to the poultry farmers of India. For the early detection of avian influenza infection and associated subtypes (H5 &/H9), a multiplex real time qPCR kit has been developed and validated as per the OIE criteria. The purpose of this kit is to confirm the presence of Influenza Type A infection and H5 &/or H9 subtypes in suspected or clinical cases. The diagnostic performance of the kit was evaluated and found to be 99.7% diagnostic sensitivity and 100% diagnostic specificity. The kit was also validated at 03 internal and 05 external labs including NABL Accredited Lab of ICMR-NIV, Pune; ICAR-IVRI, Izatnagar; ICAR-NRCE, Hisar, ICAR Research Complex-NEH, Barapani, Sikkim and Assam Agricultural University, Guwahati.

The kit developed will enhance the diagnostic capacity by three times and also reduce the cost of testing and save time, manpower and other resources. The kit can be used by National (Regional Disease Diagnostic Laboratories) and International laboratories for effective implementation of bird flu control program.

Kit validation at ICMR-NIV, Pune

Kit validation at Assam Agricultural University, Guwahati



Kit validation at ICAR-NRCE, Hisar

RESEARCH HIGHLIGHTS

Emergence of African swine fever in pigs in India

K. Rajukumar, Senthilkumar D, G. Venkatesh, Fateh Singh, V.P. Singh

African swine fever (ASF) is a highly contagious viral disease of domestic and wild pigs, with up to 100% case fatality rate, caused by an enveloped DNA virus belonging to genus Asfivirus, family Asfarviridae. During the early part of 2020, a disease outbreak in domestic pigs with unusually high mortality was observed in two districts of Arunachal Pradesh and subsequently in five districts of Assam (Fig. 1). Within two months, more than 4000 pigs were clinically affected, with a fatality rate of about 88%. A total of 79 samples were received at ICAR-NIHSAD, Bhopal on 26th April, 2020 for laboratory confirmation of African Swine Fever. All 17 tissue samples received from Assam, and 11 out of 62 samples from Arunachal Pradesh were positive for ASFV genome by real time PCR and nucleotide sequencing analysis. ASF virus was isolated from six samples using porcine pulmonary alveolar macrophage cultures. ASF virus genomic regions encoding VP72, CVR within the B602L gene and E183L-gene encoding the p54 protein were amplified by conventional PCR (Fig. 2) and were confirmed by nucleotide sequencing. Genetic analyses showed that the Indian ASFV isolates belong to genotype-II with 100% nucleotide sequence identity with ASF viruses reported from China, South Korea, Vietnam, Georgia and Hungary.

Fig. 1. Pig mortality under field condition

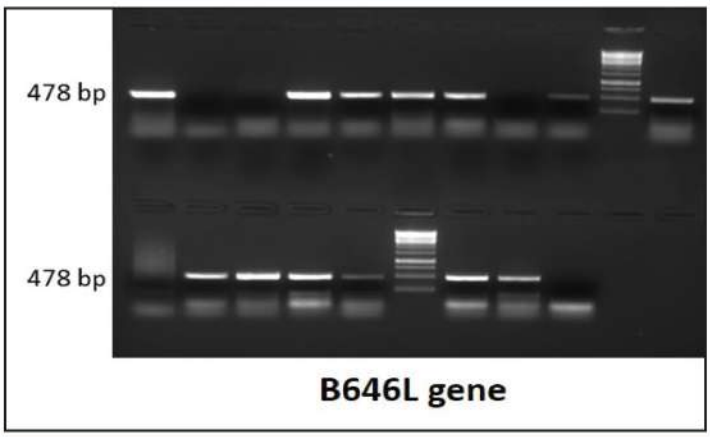


Fig. 2. Conventional PCR for amplification of ASFV B646L gene encoding p72 protein

Genetic analysis of lumpy skin disease virus (LSDV) isolated from cattle in India shows close proximity with historical African strains

S.B. Sudhakar, N. Mishra, S. Kalaiyarasu, R. Sood, V.P. Singh

Representative skin scab samples from LSD affected cattle in Odisha collected between August and October 2019, and found positive by capripoxvirus generic PCR and LSDV-specific real-time PCR were subjected to virus isolation using primary lamb testis (LT) cells. Five of the 13 scab samples of cattle yielded positive virus isolation results in LT cells after third passage as evident by LSDV characteristic cytopathic effects. The virus isolates were identified as LSDV by LSDV specific real-time PCR. In order to allow first molecular classification of LSDV responsible for the investigated field outbreaks in India, five LSDV isolates originating from skin nodules of LSD confirmed cattle in coastal districts of Odisha were sequenced in three genomic regions, P32 (LSDV074), F (LSDV117) andRPO30 (LSDV036). To determine the genetic relationship between the LSDV strains from India and those circulating in Africa, Eastern Europe and Middle East, representative sequences from both field and vaccine strains of LSDV were included. The phylogenetic analysis based on partial P32 and F genesequences and complete RPO30 gene sequences revealed three distinct clusters (LSDV, SPPV and GPTV) within capripoxviruses and the Indian LSDV strains were clustered with the wild type LSDV strains circulating globally, but separate from the cluster with the vaccine LSDV strains. All the five Indian LSDV isolates were identical in the analyzed sequences. However, the F and RPO30 gene sequence analyses revealed that Indian LSDV isolates are genetically closer to the African NI2490/KSGP-like strains than the strains

detected in Europe or Middle East, which was rather surprising. The phylogenetic analysis also indicated a single introduction event in India so far. However, the source of origin of LSD in India is not clear due to lack of evidence of any direct epidemiological link. Further genetic characterization of LSDV isolates from India in future will provide better understanding of origin and molecular epidemiology of LSDV in India.

HoBi-like pestivirus does not use alternate endocytic pathways for entry into bovine cells

N. Mishra, S. Kalaiyarasu, S.B. Sudhakar

A study was undertaken to elucidate whether the HoBiPeV uses the alternate endocytic uptake pathways for gaining entry into cells using the drugs, nystatin, which inhibits the caveolae-mediated endocytosis and cytochalasin-D, which inhibits macropinocytosis. The pre-treatment of MDBK cells with nystatin followed by infection with HoBiPeV resulted in 100% infectivity from 0.625 μg/mL to 1.25 μg/mL concentration as determined by IPMA. On the other hand, only a slight reduction in the virus infectivity (7.55%) was observed even at the highest nystatin concentration of 10 μg/mL indicating no involvement of caveolae-mediated endocytosis in the entry. There was no reduction in the infectivity of HoBiPeV in MDBK cells up to 0.05 μg/mL of cytochalasin-D, while only 1.45% virus reduction in infectivity was observed at the maximum concentration (0.5 μg/mL). Almost a similar extent of reduction was noticed involving cytochalasin-D treatment of HoBiPeV adsorbed cells indicating no involvement of macropinocytosis mediated entry. These results showed that HoBiPeV does not use either of the alternate pathways, caveolae-mediated endocytosis or macropinocytosis for gaining entry into bovine cells.

Molecular epidemiology of highly pathogenic avian influenza virus (H5N1 subtype) isolated in India, 2019 and 2020.

S. Nagarajan, Manoj Kumar, H.V. Murugkar, C. Tosh

Complete genome sequence of seven highly pathogenic avian influenza H5N1 viruses from six States (Bihar-01, Chhattisgarh – 01, Kerala – 01, Jharkhand – 01, Odisha-02 and Uttar Pradesh - 01) isolated from chickens, ducks, crows and wild bird in 2019-2020 in different epicenters was determined. Phylogenetic analysis of the hemagglutinin (HA) gene revealed that the Odisha, Kerala, Uttar Pradesh and Jharkhand viruses grouped separately from H5N1 viruses isolated in Bihar and Chhattisgarh (>5% divergence between the isolates) even though all viruses belonged to the HA clade 2.3.2.1a of H5N1 viruses. The phylogeny indicated that the outbreaks of H5N1 viruses within the groups may be epidemiologically linked (Fig. 3). All viruses had multiple basic amino acid sequence motif at HA cleavage site indicating high pathogenicity to chickens. The results of the study emphasize the need for intensive active surveillance to analyze the source of introduction of these viruses and the epidemiological factors involved in the recurring outbreaks of H5N1 viruses in India.

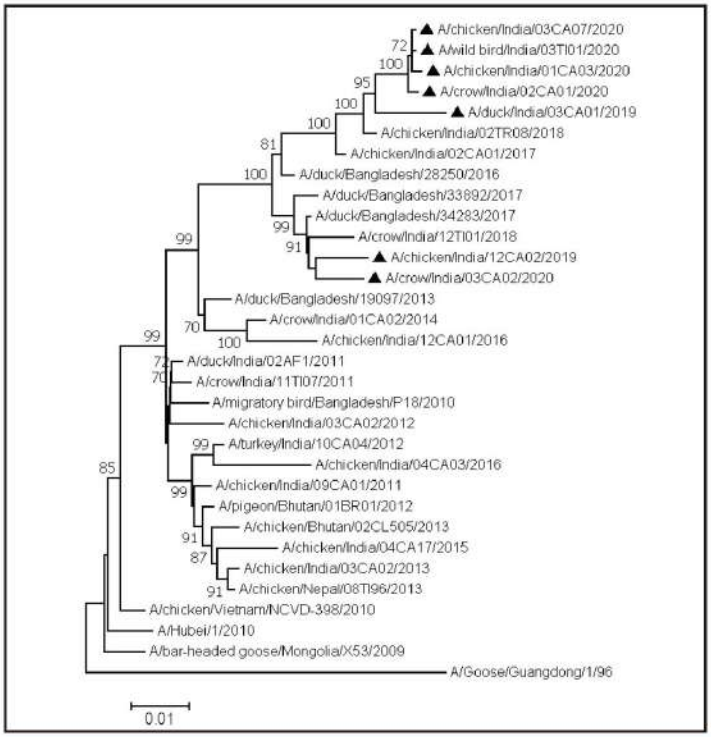


Fig. 3. Phylogenetic analysis of the hemagglutinin (HA) gene of highly pathogenic avian influenza virus (H5N1 subtype)

Identification and molecular characterization of H9N2 viruses carrying multiple mammalian adaptation markers in resident birds in central-western wetlands in India

Richa Sood, Naveen Kumar, Atul Kumar Pateriya, Sandeep Bhatia, Anamika Mishra, H.V. Murugkar, and V.P. Singh

A targeted risk-based study was carried out to investigate the presence of influenza A viruses at the migratory-wild-domestic bird interface across the major wetlands of central India's Maharashtra state during the winter migration season. The H9N2 viruses have been isolated and confirmed in 3.86 per cent (33/854) of the fecal samples of resident birds. To investigate the genetic pools of H9N2 circulating in resident birds, we sequenced two isolates of H9N2 from distant wetlands. Sequence and phylogenetic analyses have shown that these viruses are triple reassortants, with HA, NA, NP, and M genes belonging to G1 sub-lineage (A/quail/Hong Kong/G1/1997), PB2, PB1, and NS genes originating from the prototype Eurasian lineage (A/mallard/France/090360/2009) and PA gene deriving from Y439/Korean-like (A/duck/Hong Kong/Y439/97) sub-lineage (Fig. 4). It was confirmed not only that four of their gene segments had a high genetic association with the zoonotic H9N2 virus, A/Human/India/TCM2581/2019, but also that

they had many molecular markers associated with mammalian adaptation and enhanced virulence in mammals including the unique multiple basic amino acids, KSKR↓GLF at the HA cleavage site, and analog N-and O-glycosylation patterns on HA with that of the zoonotic H9N2 virus. These findings indicate the zoonotic potential of H9N2 isolates of this study. Importantly, due to the identification of these viruses at a strategic geographical location in India (a major stop-over point in the Central Asian flyway), these novel viruses also pose a possible threat to be exported to other regions via migratory/resident birds. Consequently, systematic investigation and active monitoring are a prerequisite for identifying and preventing the spread of viruses of zoonotic potential by enforcing strict biosecurity measures.

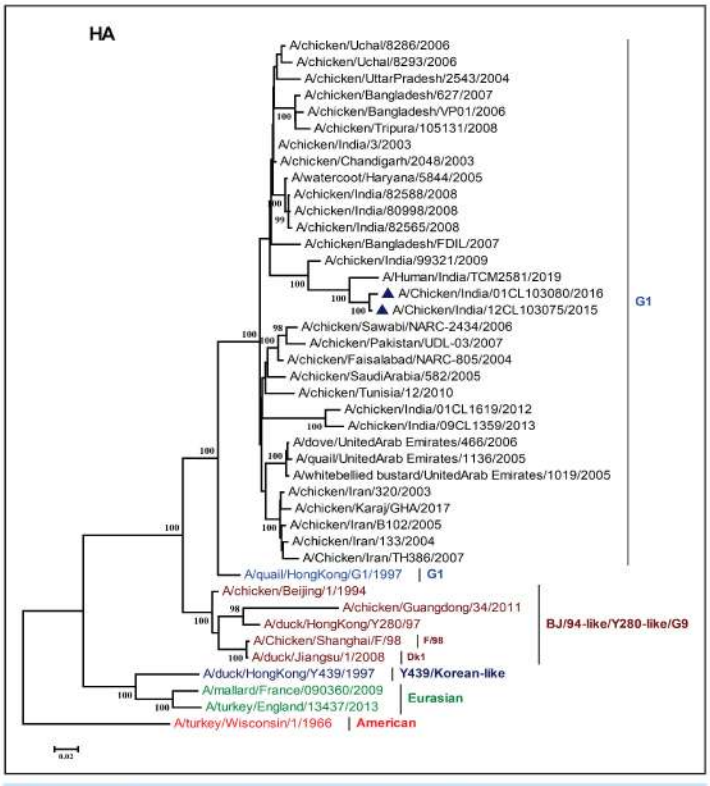


Fig. 4. Phylogenetic analysis of HA genes of avian influenza H9N2 viruses

Detection of coinfection with a divergent subgroup of genotype I Japanese encephalitis virus in classical swine fever virus infected pigs

Ashwin A Raut, Anamika Mishra, V.P. Singh

A divergent subgroup of JEV genotype I was identified upon retrospective investigation of pig tissue samples from different classical swine fever virus (CSFV) outbreaks of Assam. This is the first report of detection of coinfection of JEV and CSFV in pigs and the first incidence of JEV genotype I in pigs in India. Pigs being amplifier host and the major source of virus in JE infection cycle, the impact of coinfection status on the enzootic cycle of virus transmission needs elaborate investigation.

Complete genome sequencing and annotation of Swinepox virus indicates divergence of Eurasian lineage virus

Anamika Mishra, Ashwin A Raut

Complete genome sequencing of the Swinepox virus from a clinical sample of a naturally occurring was done on the MinIONnanopore sequencer from Oxford Nanopore Technologies. The genome was assembled with average depth of 77X and two new annotations were added to the genome. As compared to the only other reported whole genome of Swinepox virus, which was isolated from America in 1999, the sequence divergence was approximately 2%. Since pox viruses highly conserved in nature this divergence indicates that the sequenced Swinepox virus is a Eurasian lineage virus that is geographically distinct from the Swinepox virus of American lineage.

CELEBRATIONS

Republic day

The Republic Day-2020 was celebrated with fervor and fanfare with flag hosting by Dr. V.P. Singh, the Director, ICAR-NIHSAD. In his speech, he saluted the sacrifices of the country's freedom fighters, soldiers and great leaders and emphasized the future scientific challenges while highlighting the institute's achievements over the past year.

International Yoga day

Due to ongoing COVID-19 pandemic, the international yoga day was celebrated as Yoga@home on 21st June, 2020 according to the instructions issued by the Govt. of India using digital media to raise awareness and its adoption. All the staff and their family members performed the yoga asana as per common yoga protocol.

Foundation day of NIHSAD

The Seventh Foundation Day of NIHSAD was celebrated on 8th August, 2020 in virtual mode. The function was presided by the Director of the institute with the Chief Guest of the function, DDG, (Animal Science), Dr. B.N. Tripathi and guest of honours, ADG (AH) Dr Ashok Kumar; Director, Central Institute of Agriculture Engineering, Dr. C.R. Mehta; Director, Indian Institute of Soil Science, Dr A.K. Patra, and Dr. S.C.

Dubey, former joint director, HSADL. The function was attended by many distinguished guests from various institutes and staff of the NIHSAD.

Mahila Kisan Diwas

Mahila Kisan Diwas was celebrated on 15th Oct., 2020 to emphasize, recognize and acknowledge the role of women farmer in India. The event was attended by women farmers and the staff members of the institute. Dr. Anamika Mishra, Sr. Scientist coordinated the program and delivered a lecture on "Contribution of women farmers in agriculture". The Director of the institute, Dr. V.P. Singh in his remarks highlighted the status and role of women in agricultural practices in India. He also stressed on recognizing the contribution and agricultural inputs of women farmers by giving them the due credit, status and respect as farmers. On this occasion, a short video film about successful women farmers from Rajasthan was also played to highlight the potential of women farmers.

Vigilance Awareness Week

The Vigilance Awareness Week, 27th October to 2nd November, 2020 was observed with fervor and commitment. The day started with administration of Pledge in the virtual mode at the campus of ICAR-NIHSAD, Bhopal. The Director, ICAR-NIHSAD, Dr V.P. Singh administered the Vigilance Awareness Week pledge in a virtual mode to all the staff to mark the start of the Vigilance Awareness Week-2020 which had the theme "Satark Bharat, Samriddh Bharat (Vigilant India, Prosperous India)". Dr. Singh, addressing the employees stressed on the importance of integrity and transparency in all spheres of activities which includes improvement of internal processes, and time bound disposal of work. Vigilance Officer, Dr Richa Sood also addressed the staff and stressed upon the fact that society need to be vigilant in order to uphold integrity in all aspects of our national life. Poster competition was organized for all the staff members on 31st Oct, 2020 which saw creativity and imaginations at its peak and a wide range of anti-corruption posters and pictures were sketched. Elocution contest was also organized on 2nd November before the closing of the week long awareness program. The competitions were judged by a panel of judges from Institute and the winners were awarded with certificates and prizes.

Celebration of 70th Anniversary of Indian Constitution

As part of continual celebration of 70th anniversary of Indian constitution with our commitment for adoption of the Constitution of India, a talk was organized on "Important

Constitutional Amendments & their significance" on 30th Jan. 2020. Professor (Dr) Mona Purohit, Dean & HOD, Department of Legal studies and research, Barkatullah University, Bhopal delivered the talk. She highlighted the role and limitation of Central & States Governments, President of India, Governor, and Judiciary for inclusion of any new amendment.

EVENTS

Webcast of the interaction of the Hon'ble Prime Minister Shri Narendra Singh Modi on the occasion of 3rd Global Potato Conclave

Hon'ble Prime Minister Shri Narendra Singh Modi addressed 3rd Global Potato Conclave at Gandhinagar, Gujarat through remote video conferencing on 28th of January 2020. The Conclave provided an opportunity to bring all stakeholders at one common platform to discuss all the issues and future plans related to the potato sector.

Swachhta Pakhwada

Taking one more step towards fulfilling the Mahatma Gandhi's dream of a clean and hygienic India by 150th birth anniversary in 2019, ICAR-National Institute of High Security Animal Diseases started the celebration of 'Swachhta Pakhwada' with a pledge for cleanliness administered by the Director, ICAR-NIHSAD to all the employees. During the pakhwara, the institute carried out several activities as prescribed by the Indian Council of Agricultural Research. In the wake of novel coronavirus (COVID-19) pandemic, all the participants followed guidelines (social distancing, sanitizing hands, and putting on masks) prescribed by the Govt. of India.

The children are the future of the nation and the citizens of tomorrow. Keeping in view the well-known quote, the institute organized awareness campaigns on 'water harvesting for agriculture and horticulture applications', and 'Hygiene and Sanitation' at two villages viz. Kokta village, Pathar Village. The masks, hand soaps, and hand towels were distributed among the villagers including the children. The villagers were communicated the role of hygiene and

sanitation in improving the health of human beings and the environment. The institute also organized a cleanliness drive including creating awareness among public at Kankali Mandir, Bhopal. The theme of this cleanliness drive was to create awareness on hygiene, and sanitation and its potential impact on the environment and human health among the visitors and shopkeepers. Besides, three different competitions viz. drawing competition, elocution competition, and essay competition on the topics, waste management, clean India and developed India, and recycling of waste water, respectively, were organized. In these competitions, participants from the scientists, research scholars, administrative, and contractual staff put on their unique and innovative ideas on paper in the presence of the judging committee. On the concluding day (Dec. 31), the activities carried during the 'Swachhta Pakhwada' (Dec. 16- 31, 2020) were briefed to all the staff of

the institute. The winners of the competition were awarded on the concluding day of Swachhta Pakhwada.

MEETINGS

Research Advisory Committee (RAC)

The sixth meeting of Research Advisory Committee (RAC) of ICAR-NIHSAD was held on 26th August, 2020 via video conferencing and the meeting was chaired by Professor M.P. Yadav, Vice-chancellor of SVBPUA&T, Meerut and former Director of IVRI. Dr. Ashok Kumar, ADG (AH), ICAR, New Delhi; Dr. M.L. Mehrotra, former Joint Director, CADRAD, IVRI, Izatnagar; Dr. S.C. Dubey, Former, Joint Director, HSADL, Bhopal; Dr. G. Dhinakar Raj, Project Director, TANUVAS, Chennai; Dr. S. K. Rana, Head, Animal Health, NDDB; and Dr. Mala Chabra, Consultant, Ram Manohar Lohiya Hospital, Delhi were present. The institute achievements were presented by the Director and the status of projects was presented by individual group heads. Dr. Sandeep Bhatia, I/C PME and Member Secretary presented the previous proceedings and the action taken report. Prof. M.P. Yadav, Chairman, RAC appreciated the research work carried out in the institute.

The Institute Technology Management Committee (ITMC)

The ITMC meeting was held on 17th January, 2020, and discussed the IPR issues involved and recommended following three technologies (Diagnostic kits) for IP

protection and transfer of technology/commercialization; (1) Lateral flow test for rapid detection of H5 avian influenza virus antigen in poultry, (2) Multiplex real time RT-PCR kit for avian influenza A virus typing and H5N1 subtyping, (3) Multiplex real time RT-PCR kit for avian influenza A virus typing and H5 and N9 subtyping. Another ITMC meeting was held on June 27, 2020 for recommendations regarding draft MoU between NIHSAD and Denovo Biolabs, Bengaluru for the implementation of BIRAC funded COVID-19 project.

Institute Research Committee (IRC) Meeting

The IRC meeting was held on September 29-30, 2020 under the chairmanship of the Director, ICAR-NIHSAD by virtual mode. The Director of the institute emphasized that the progress of work in the priority areas will be reviewed every three months by the Research Monitoring Committee to ensure timely deliverable in terms of technology, patents, and publications. He also stated that the scientists should focus on impact based research and stressed upon the development of diagnostics and vaccines for emerging and exotic diseases and conversion of those in the pipeline into deliverable.

EXTENSION ACTIVITIES

Exhibition at ICAR-IIPR, Phanda, Bhopal

Dr. S Bhatia, Dr. Richa Sood, Dr. SB Sudhakar, Dr. Fateh Singh & Dr. Pradeep N. Gandhale of ICAR-NIHSAD exhibited of the institute stall and delivered the technical

information on control and prevention of emerging/ exotic animal diseases to the farmers/ livestock owners on the occasion of World Pulses Day and ICPulse2020 Exhibition at ICAR-Indian Institute of Pulses Research, Regional Station, Phanda, Bhopal on February 10, 2020. The event was attended by more than 150 farmers and 30 college students. The Director of the institute was also present on this occasion.

Participation in Kisan Sanghoshti at ICAR-CIAE, Bhopal

Dr. Pradeep N. Gandhale & Dr. S. Kalaiyarasu of the institute participated in Kisan Sanghoshti and Technology and

Machinery Demonstration Mela organized by ICAR-CIAE, Bhopal on occasion of its 45th foundation day on 14th Feb., 2020. The event was attended by 1500 farmers and 100 farm machinery manufacturers. An academia-industry interaction meet as well as an agri-expo were also organized as a part of the event.

TRAINING ORGANIZED

A 10-days training program on 'Animal Health Worker' under Agriculture Skill Council of India (ASCI)was organized at the Institute during February 27 to March 7, 2020. A total of 15 participants (farmers and unemployed rural youth) were trained with an aim to generate self-employment. During this training program, theory and practical sessions on various aspects of Veterinary Science and Animal Husbandry practices such as artificial insemination techniques, preservation of semen straws, dressing of wounds, minor surgeries, diagnosis and treatment of animal diseases, vaccination for preventing animal diseases, dairy management, poultry rearing and management etc. were arranged.The participants also visited Government Veterinary Hospitals, Semen station, Dairy and Poultry farm in Bhopal.

AWARDS

G. Venkatesh: Received the *Best Oral Presentation Award* on "Development and evaluation of a lateral flow test for detection of H5N1 highly pathogenic avian influenza virus in chickens" in the International Conference of Virology held at Indian National Science Academy, New Delhi during February 18-20, 2020.

Fateh Singh: Received the *Best Oral Presentation Award* on "Development of one-step reverse transcription PCR for detection of porcine epidemic diarrhoea virus in pigs" in XXXIII Annual convention of IAVMI held at ICAR-IVRI, Izatnagar during February 6-7, 2020

S. Kalaiyarasu

- Received the *Best Oral Presentation Award* on "Selection and characterization of bovine viral diarrhea virus vaccine candidate strains from India"in the International Conference of Virology held at Indian National Science Academy, New Delhi during February 18-20, 2020.
- Received the *Best Oral and Poster Presentation Award* on 'Evaluation of humoral immune response against BVD

vaccine candidate strains in guinea pig model' and 'Evaluation of TaqMan one-step real time RT-PCR assay in identification and differentiation of emerging ruminant Pestiviruses', respectively in the International e-Conference on "Paradigm shift in Animal Disease Diagnostics: Veracious path in Disease prevention and Control" organized by Department of Veterinary Microbiology and Department of Veterinary Public health and Epidemiology, Veterinary College and Research Institute, Tirunelveli during October 7-9, 2020.

Naveen Kumar

- Received the *Best Poster Presentation Award* on "A label-free peptide nucleic acid biosensor for visual detection of multiple strains of influenza A virus"in the International Conference of Virology held at Indian National Science Academy, New Delhi during February 18-20, 2020.
- Received *Rajpal Best Paper Award* for his research paper on 'Immunoinformatics: Where Immunology Meets Bioinformatics' at the VII Annual Convention of Society of Immunology and Immunopathology and International e-conference on "Immunology in 21st Century for Improvising One Health" held at SVPUAT, Meerut during August 7-8, 2020.

RECOGNITIONS & HONOURS

- **Dr. V.P. Singh:** Attended International Virtual Experts meeting on Promoting Sustainable Agriculture Development in Dryland on 10th August, 2020 in Riyadh, Kingdom of Saudi Arabia
- **Dr. V.P. Singh**: Nominated as Member of Executive Council, Dau Shri Vasudev Chandrakar Kamdhenu Vishwavidyalaya, Durg (Chhattisgarh).
- **C.Tosh:** Invited Panelist, Immunobiological Agents for Animal Disease Management VAIBHAV, global submit of overseas and Indian scientist and academicians, at ICAR-IVRI, on 21st October 2020.
- **Richa Sood**: Nominated as DBT nominee for the IBSC of AIIMS, Bhopal.

CAPACITY BUILDING

- **Richa Sood**: Participated in online workshop for Vigilance Officers of ICAR from 5th-7th August 2020 conducted at ICAR-NAARM, Hydrabad.
- **S. Nagarajan** participated in 4th International Animal Biotechnology Regulatory perspectives conference Virtual Workshop Series on Regulatory 'Approaches for Agricultural Applications of Animal Biotechnology' conducted in six sessions from 8th September to 3rd December, 2020.
- **S.B. Sudhakar** participated in 'Lumpy skin disease (LSD) Preparedness' organized by FAO Regional Office for Europe and Central Asia (REU) and European Commission for the Control of Foot-and-Mouth Disease (EuFMD) under the umbrella of GF-TADs from 9th July to 23rd Aug., 2020.
- **Pradeep Gandhale** attended a training program on 'Geospatial Analysis using QGIS & R' at ICAR-NAARM, Hyderabad from Feb. 27 – March 3, 2020.
- **Anamika Mishra, Manoj Kumar, Pradeep Gandhale** and **S. Kalaiyarasu** participated in an online Training Programme on Advanced bioinformatics Tools and its Applications in Agriculture (SKILL-BIF, ICAR-NAARM) Organized by ICAR-NAARM, Hyderabad during September 14-19, 2020.
- **Anamika Mishra** and **Naveen Kumar** participated in a three days Online Hands-on 'International Workshop on Metabarcoding and Metagenome Analysis' organized by IBAB's Bio-IT Centre, Bangalore and DAFNAE, University of Padova, Italy during December 15-17, 2020.

PERSONNEL

Promotions:

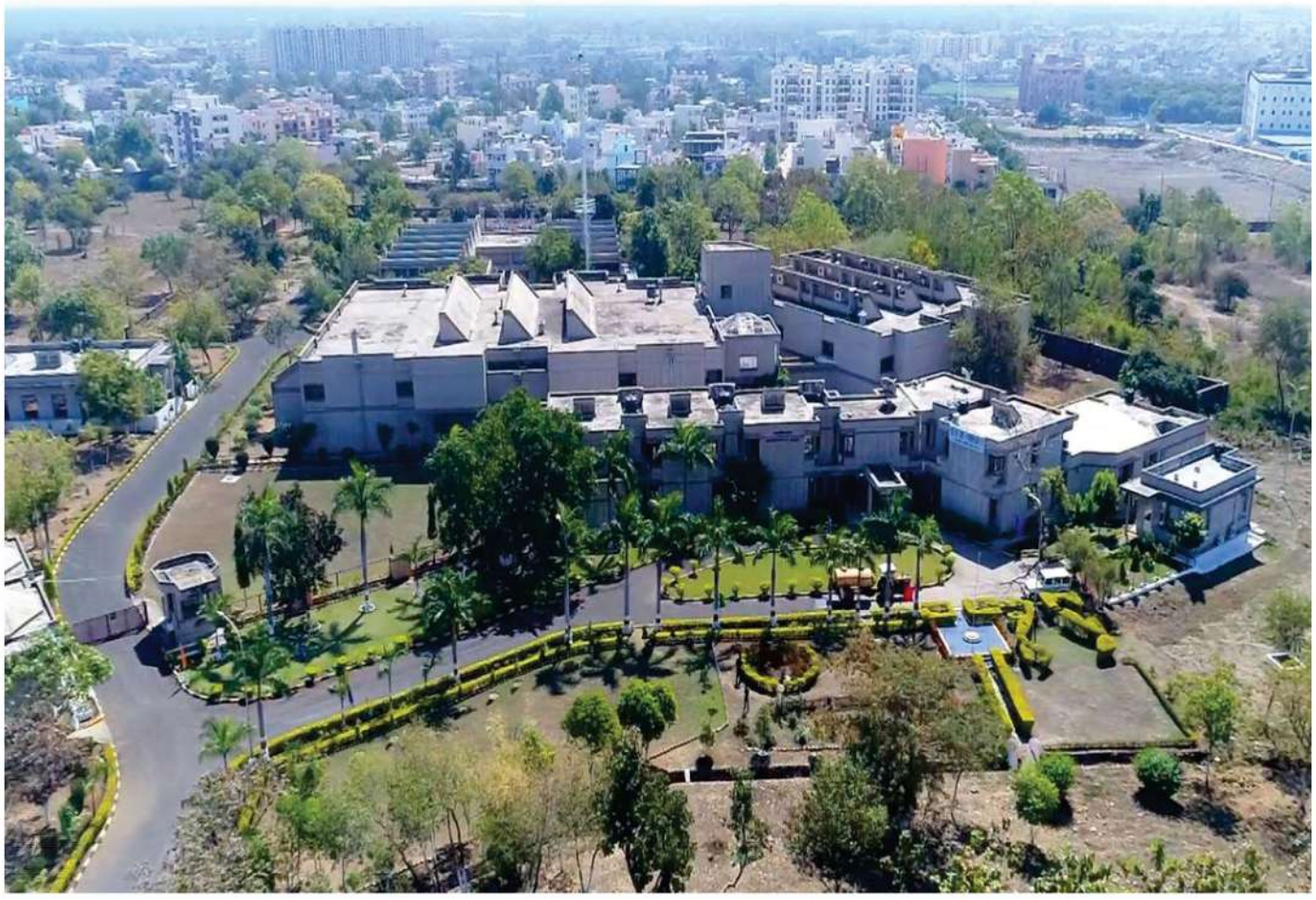
- **Drs. A.K. Pateriya, S. Kalaiyarasu, Fateh Singh**, and **P. N. Gandhale** have been promoted to Senior Scientists w.e.f. 11.12.2018, 10.02.2019, 10.02.2019, and 21.01. 2019, respectively.
- **Dr. Naveen Kumar**, Scientist has been promoted in the next higher grade w.e.f. 01.01.2019.

Transfer:

- **Mr. Mukul Raj Singh**, Administrative Officer of the institute was transferred to ICAR-NAARM, Hyderabad w.e.f. 20.08.2020.

New Joining:

- **Mr. P. S. Sunil Kumar** has joined as Administrative Officer at this institute w.e.f. 12.10.2020.



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Director,
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