Greetings and a warm welcome to NIHSAD!

This profile is a humble attempt to walk you through the corridors of our young and vibrant Institute which speaks of the responsibilities well taken and duties carried out with zeal and dedication. ICAR-National Institute of High Security Animal Diseases is a state of art facility and a unique amalgamation of engineering prowess and biological science designed to carry out scientific research on high risk pathogens within the confines of biosafety and biosecurity. This institution is the result of a far-sighted vision which envisages to contribute for the sustainable development of the animal health sector. The institute has now been certified under ISO 9001:2015 certification. The institute caters to the national as well as international requirement of disease diagnosis and research on emerging, exotic and high risk pathogens of animals and zoonotics significance.

Continuous efforts are being made towards catering to the needs of farmers. Expertise has been developed in line with internationally accepted reference tests recommended by ‘World Organization for Animal Health (OIE)’ to develop diagnostics for economically important exotic and emerging diseases. A mobile application (App) for avian influenza has been developed which will help the farmers and other stakeholders in enhancing their awareness and knowledge of bird flu. Falling in steps with “Make in India” program, diagnostic kits for avian influenza virus and porcine reproductive and respiratory syndrome virus antibody detection have been developed.

Keeping abreast with the latest in knowledge advancement, the institute is poised to use new high throughput technologies and inventions coming from basic sciences such as NGS, microarray, transcriptome studies on host-pathogen interactions, metagenome profiling approach to pathogen identification and molecular epidemiology to thwart the challenges and risk posed by emerging pathogens.

Being the first bio-containment laboratory of the country working 24X7 since last 20 years, its dedicated staff is torch-bearer for other organizations that are now trying to create and run bio-containment laboratories in India and thus Institute is regularly imparting trainings and conducting awareness programs on biosafety, biosecurity and the nuances of the working in the biocontainment laboratories. The institute has linkages with international organizations like FAO, WHO, OIE, IFBA, BBSRC and important national organizations like DBT, DST, ICMR, IISER and various research and educational institutes/universities.

NIHSAD is committed towards continuous improvement in research accomplishments and works tirelessly for identification and mitigation of threats due to emerging animal pathogens through its sophisticated infrastructure and dedicated work force.

It gives me immense pleasure to present Institute profile to the readers...

V.P. Singh, Director
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August, 2018

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Published by:
Dr. V.P. Singh,  
Director  
ICAR-National Institute of High Security Animal Diseases, Bhopal
ICAR- National Institute of High Security Animal Diseases (ICAR-NIHSAD) is a preeminent institute of India for research on exotic/emerging animal and zoonotic diseases. NIHSAD came into existence as a national institute under the aegis of Indian Council of Agricultural Research (ICAR) on August 8, 2014 from its original status of a regional station as High Security Animal Disease Laboratory (HSADL) of Indian Veterinary Research Institute (IVRI) at Bhopal. As a regional station of IVRI, HSADL was conceptualized in 1973-74 as a need-based special bio-containment facility for diagnostic preparedness of exotic/emerging animal diseases. With the support of ICAR and other international agencies like FAO, United Nations Development Programme (UNDP) and World Bank, the laboratory was established at Bhopal in an area of 132.85 acre of land allotted by the government of Madhya Pradesh. The fully functional facility, with its specialized bio-containment laboratory and animal facility was constructed under the supervision of National Dairy Development Board (NDDB) in 1998 and was dedicated to the nation on June 23, 2000.

The institute glimmers with a small and a dedicated team working with a mission of reducing the threats of emerging and exotic pathogens for the progress and sustainable development of animal husbandry sector. The institute is mandated to cover vast area of delivery to the animal health system of the country, right from being a national referral facility for exotic and emerging diseases of animals, a national training hub for biosafety & biosecurity and an OIE Reference Laboratory for Avian Influenza. The multifarious research programs of the institute include development of latest technology driven diagnostics and vaccines, host-pathogen interaction studies, risk analysis, genomics approach to pathogen research, molecular epidemiology and studies of pathogen survival in the environment.

The World Organization for Animal Health (OIE) recognized the institute as OIE Reference Laboratory for Avian Influenza in May, 2009 in view of its achievement towards timely diagnosis and control of ‘bird flu’ using its own expertise, facilities and resources. With this status, NIHSAD now has strong linkages with other OIE reference laboratories in the frontier areas of research on avian influenza.
Mandate

- Basic and strategic research on exotic, emerging and re-emerging animal diseases.
- Biorisk management and capacity building in the areas of biosafety, biosecurity and bio-containment for handling high risk pathogens.

Mission

Reducing threats of emerging and new pathogens for sustainable animal husbandry sector and safeguarding public health.

Vision

“Mitigating risks of known and unknown emerging infectious diseases in animals including zoonotic infections at human-animal interface through forecast, early detection of pathogens, emergency preparedness with diagnostics and vaccines while keeping vigil on changing host-pathogen and environment interactions and creating understanding of potential biorisks and disease threats among stakeholders.”

The Location of NIHSAD

Situated in the central part of the country, the city of lakes, Bhopal is located at a Latitude of 23° 16' N and Longitude of 77° 36' E and the institute is located in the eastern side of the city, off Raisen Road at Anand Nagar. It is about 12 km from Bhopal railway station, 10 km from Habibganj railway station and 25 km from Raja Bhoj airport, Bhopal.
The Bio-containment facility

The three floor design of the bio-containment facility is based on a model of High Containment Unit of Central Veterinary Institute at Lelystad, Holland.

The ground floor, which is a BSL-3+ bio-containment facility, is a double-walled windowless building ensuring all possible containment requirements. It has a laboratory wing and an animal wing. The entire area functions under gradient negative pressure (−50 pascals to −200 pascals). Both the wings have separate entries through airtight double-door airlock system. The exit system has compulsory showers operated with PLC control. The primary barriers installed in the laboratory include biosafety cabinets (BSC Class II B1 & B2), isolators (Class III BSC), powered air purifying respirators (PAPR), and other biosafety Personal Protective Equipment (PPE). The secondary barrier which is in the form of infrastructural facilities, plays a key role in preventing the escape of microorganisms into the environment. The first floor is occupied by the air-handling system that contains 23 air-handling units (AHUs) with 97 high efficiency particulate air (HEPA) filters fitted in 92 filter housings. The AHUs maintain a controlled air supply and exhaust out of the laboratory and animal bio-containment area ensuring the gradient negative pressure and environmental biosafety.

The basement has an effluent treatment plant (ETP) wherein all the liquid wastes received from the laboratory and solids/semisolids from the animal wing are decontaminated by heat sterilization. There is a rendering plant having a huge cooker of capacity 1500 Kg wherein the carcasses (after post-mortem examinations or experiments) are minced and rendered at 131°C for 20 minutes before the slurry produced is sent for incineration.

All solid and liquid wastes are decontaminated by heat sterilization/gaseous sterilization (formaldehyde/ethylene trioxide) or acids/alkalis. Depending on the type of decontaminated materials, they are taken out through airlocks/dunk tanks or barrier autoclaves, thus ensuring complete safety to man, material and the environment.
Bio-secure entry and exit system

The entry into the laboratory is through an access control system after unique identification of biometric fingerprint of the authorised personnel only. Entry and exit into the laboratory is through electronically controlled shower system. There are 12 shower rooms fitted with air-tight doors, and inner and outer change rooms with lockers. The airlock in the shower is secured to prevent both doors opening at the same time.

Entry of the visitors in the containment area is allowed only after training and ensuring their understanding of all biosafety procedures.

Bio-containment Laboratory

The laboratory wing is a unique box-in-box arrangement where-in a gradient negative pressure starts from the showers itself (-50 pascal). The outer clean corridor (-100 pascal) encompasses and surrounds the central laboratories (-120 pascal to -150 pascal). The central laboratories include separate rooms for disease diagnosis, immunology, pathology and infectious pathogen handling. The outer periphery has molecular diagnostic workflow, biochemistry laboratory, recombinant DNA work laboratory, cell culture, RNA extraction and infection room. Additional facilities include walk-in incubator (+37°C), cold rooms (+4°C & +10°C), cryo-preservation (liquid nitrogen) system, flow cytometer, automatic nucleic acid extraction system, automatic liquid handling system, glassware washing and preparation room, central store room, first-aid room, canteen, dirty dispatch area with double door barrier autoclaves and ETO unit.

The air lock room is fitted with fumigation cycle facility and connects with outside through an airtight ante-room. The supply of filtered and conditioned air to all laboratory rooms is through micro and fine filters, and the contaminated air is exhausted through the HEPA filters.
Animal Wing/ Experimental Animal Containment Facility

The animal wing has facilities for experimentation on large and small animals, laboratory animals and poultry. Each room has a separate air handling system, which prevents escape of pathogens to surrounding areas or the environment and cross-contamination in adjoining rooms. Three separate isolators (class III cabinets) are provided for handling of birds inoculated with hazardous pathogens.

In between the two rows of animal rooms, there is a post-mortem facility which is at maximum negative pressure (-200 pascal). It also has a cold storage room for carcass storage (-10°C) till it’s rendering for safe discard. The post-mortem room is connected to the clean area of the animal containment facility by an alkali wash.

Outside the bio-containment area, the facility that complements the smooth functioning of NIHSAID is the Specific Pathogen Free (SPF) chicken unit. The SPF chicken unit is established in a separate building. It has two super isolators with a total capacity to rear 100 SPF birds and an incubator hatcher. The infection free chicken and chicken eggs are used for diagnosis as well as research on avian influenza and other poultry diseases.

Another facility that is housed in a separate building is the Transmission Electron Microscope (TEM). This TEM (JEM-1400, Jeol, Japan) was commissioned for ultra-structural studies on pathogens and other molecules. It is fitted with a digital CCD camera that enables focusing and image verification on the screen, providing filmless recording of images.

For molecular and other non-infectious work under genomics, a pathogenomics laboratory has been established outside the containment laboratory.
Complementing the animal containment facility, there are two independent facilities; The Animal Receiving Shed wherein animals are procured from outside sources for experimental purpose and kept in quarantine for 21-28 days before their shifting to another housing facility, the Animal Holding Shed where they are kept till further experimental use. The Biosafety Engineering Unit forms the major backbone for non-stop functioning of the laboratory. Besides the air handling unit and effluent treatment plant, other supporting facilities for functioning of the laboratory/animal wing are steam raising plant (boilers) for sterilization, de-mineralization plant, soft water plant, air conditioning plant, air compressors, a 33 KV electrical substation along with UPS and DG sets back up, and engineering workshop etc. which supports the overall functioning of the biocontainment facility.

The institute has a residential campus of 40 acres with playground, community hall and guest house. Besides the constructed part, the institute also has a sprawling green cultivable land planted with teak, amla, mango, and guava plants.
Achievements

N

IHSAD has played a pivotal role as a watchguard to prevent the entry of diseased animals or infected/contaminated biologicals into the country by providing quick diagnosis for the animal quarantine samples; Rabbit Haemorrhagic Disease in 2001, H7N7 Avian Influenza in the smuggled pigeons in 2001 and Malignant Catarhal Fever and Bovine Viral Diarrhoea Virus (Exotic strain) in cattle imported from Australia in 2003. All these viruses were checked at the point of entry into the country. The institute provides referral diagnostic services for 12 diseases for certification of disease free status of various livestock products (>5000 samples/year) for import/export on request of Animal Quarantine and Certification Service (AQCS), Department of Animal Husbandry, Dairying and Fisheries (DAFD), Government of India and state government organizations.

A. Disease Investigation

- NIHSAD has also been a forerunner in the diagnosis of prioritized exotic and emerging diseases of animals. On an average, about 40,000-50,000 diagnostic samples are tested annually. The crisis of disease outbreaks at national level has been efficiently handled of which the most prominent one is the rapid and accurate diagnosis of the first outbreak of Highly Pathogenic Avian Influenza (H5N1) in 2006, in poultry at Navapur and Nandurbar (Maharastra). The timely diagnosis coupled with an immediate action by the Government of India led to containment of disease well on time. Since then, the institute has confirmed over 159 outbreaks of bird flu and also identified various subtypes of avian influenza viruses such as H3N8, H4N6, H5N8, H6N2, H9N2 and H11N9 apart from H5N1. Notifiable H5N8 avian influenza subtype was detected from dead migratory birds and captive zoo birds from National Zoological Park and other places of Delhi and Gandhi Zoological Park, Gwalior in the year 2016. The same virus subtype has also been detected in ducks from Kerala and Punjab.

- The outbreaks of porcine reproductive and respiratory syndrome (PRRS) in the North-Eastern region of the country were promptly investigated between 2013 and 2018 using proven diagnostic methods and the situation was analysed and the recommendations for disease control submitted to Government of India.

- New and emerging strains of bovine viral diarrhea virus (BVDV) exotic to the nation, have been identified in cattle and other ruminants. Genetic and antigenic characterization demonstrated occurrence of BVDV-1b, BVDV-2a, 2b, BVDV-3c and 3d in cattle, BVDV-1b and 1c in buffaloes and BVDV-1b, 1c, BVDV-2a and 2b in sheep and goats. BVDV-1b is the
predominant subtype circulating in Indian cattle. Molecular analysis of BVDV-3 originating from cattle revealed circulation of two novel and divergent lineages of BVDV-3 viruses in India. Among free-ranging ruminants, BVDV-1c has been identified in yaks in Himalayan region and the serological evidence of BVDV infection has been demonstrated recently in mithun (Bos frontalis), in the North-Eastern region of India, indicating a broadening of BVDV host range in ruminants.

5. Once considered exotic to India, border disease virus (BDV) has been identified in sheep in India and the genetic analysis revealed that it belonged to BDV-3 subtype. In India, BD in sheep and goats is caused by BDV (BDV-1 and BDV-2).

6. Surveillance of H1N1 influenza virus (Swine Flu) indicated its presence in Indian pig population. Two pandemic influenza H1N1 2009 virus strains have been isolated and characterized.

7. Malignant catarrhal fever (OvHV-2) was detected in bison, cattle, buffalo, pigs, sheep and goat in India. The prevalence in asymptomatic carrier sheep was found to be 24.5% in Karnataka, 55.3% in Maharashtra and 40.9% in Telangana in a cross-sectional surveillance. Multispecies (goats, cattle and sheep) infection of OvHV-2 in a farm of Tamil Nadu has also been detected.

8. Molecular and serological identification of enzootic bovine leukosis in buffaloes/cattle has been made in the states of Uttarakhand and Gujarat during 2016-18. The disease is important for the trade point of view.

9. The presence of crimean-congo haemorrhagic fever (CCHF) virus genome in ticks and animals in the vicinity of human outbreaks in Gujarat was confirmed in the years 2011, 2012 and 2015.

Besides the above mentioned diseases during last 20 years, the disease spectrum has been expanded for development of expertise in disease diagnosis at par with OIE, and the institute also provides diagnostic services for the following diseases/ infections; nipah virus (NiV), rabbit haemorrhagic disease (RHD), nairobi sheep disease (NSD), rift valley fever (RVF), caprine arthritis encephalitis (CAE), schmallenberg virus (SBV), porcine epidemic diarrhoea (PED), transmissible gastroenteritis (TGE) and avian metapneumovirus (aMPV).

10. As an OIE reference laboratory for avian influenza, the diagnostic services have also been extended to the neighboring countries such as Bhutan, Nepal and Bangladesh.

B. Technology

Avian Influenza Antibody Detection Kit

The recombinant nucleoprotein based indirect ELISA kit has been developed for the qualitative detection of antibody against H1-H16 AIV subtypes in the serum samples of un-vaccinated chicken population with high degree of accuracy. This indigenous kit is highly competitive to the expensive commercial ELISA kits and thus can be used for large scale surveillance of avian influenza virus infection in chickens in India.
C. Copyrights

Mobile App “Bird flu Se Suraksha”- The bilingual (Hindi & English) mobile app titled “Bird flu se Suraksha” has been developed to provide the know-how of bird flu for various stakeholders such as poultry farmers, veterinary professionals, consumers and bird handlers.

D. Translational Research Initiatives

- Reverse Genetics based DIVA (Differentiating Infected from Vaccinated Animals) enabled Avian Influenza H5N2 Marker Vaccine. The institute generated and tested a potential vaccine candidate virus (rgH5N2) using reverse genetics technology that provided high level of protection in chickens to previous (clade 2.2) and current (2.3.2.1) circulating clades of Influenza A virus in India. The H5N2 DIVA marker vaccine has been developed for future use as part of preparedness for emergency situations wherein biosecurity measures alone cannot control highly pathogenic H5N1 influenza.

- Equine Influenza Virus H3N8 Vaccine Candidate. The vaccine candidate H3N8 was developed using reverse genetics in collaboration with ICAR-NRCE, Hisar to provide a better alternative to the wild type H3N8 strain as vaccine virus.

- Peptide Nucleic Acid Assay for Avian Influenza. A rapid and label-free, visual peptide nucleic acid based test has been developed for detection of matrix gene of influenza A viruses.

- Pen-side field test for Avian Influenza. The test is based on lateral flow technique that is simple, quicker and can be used at the field level. It has been developed for detection of H5 avian influenza virus in poultry.

- Nucleoprotein gene based RT-PCR for diagnosis of Avian Influenza. A nucleoprotein gene based reverse transcription polymerase chain reaction assay has been developed, which can be used by peripheral veterinary laboratories that do not have real time PCR facility for active surveillance of AIV.

- Taqman Real-time PCR for Pestiviruses. A TaqMan based one-step real time RT-PCR assay has been developed and evaluated for simultaneous detection and genetic typing of ruminant pestiviruses, namely BVDV-1, BVDV-2, BVDV-3 and BDV in clinical samples, germlasm and biological products. The test is being used routinely for BVDV/BDV diagnosis during suspected outbreaks, import/ export testing and quick release of animals from animal quarantine stations.

- Immuno-peroxidase Monolayer Assay for Pestiviruses. A microplate based immuno-peroxidase monolayer assay (IPMA) employing indigenously developed reagents has been developed as import substitute and is being used for detection of BVDV antigen and BDV neutralizing antibodies in cattle.

- PRRS Antibody Detection Test. The test has been developed for detection of seropositivity in pigs for PRRS virus to identify positive farms to prevent spread of the infection to other pig farms/ areas.

E. Basic Research

Apart from the translational research for development for diagnostics and vaccines, the
Institute is poised to make significant advances in basic aspects of exotic and emerging diseases. Expertise in the field of bioinformatics, metagenomics, and study of host response at molecular level has been gained.

1. Pathogen identification using meta-genomics approach. A cutting edge methodology combining molecular biology, high throughput next generation sequencing and bioinformatics analysis has been developed for identification of viral pathogens from meagre amounts of biological /clinical samples. This can help to identify the viral pathogens even without any prior knowledge of their sequences; hence can be used for outbreak investigation and surveillance for emerging viruses in high-risk zones.

2. Molecular basis for host resistance/susceptibility to avian influenza infection Applying the state of art tools of omics to avian species experimentally infected with different avian influenza viruses, the molecular differences underlying their variable response to these viruses have been systematically analyzed. Comparative transcriptomics by microarray and next generation sequencing has revealed various molecular pathways that differ between the different avian species (Turkey, chicken, duck, crow, pigeon and goose), that delineates them as susceptible, tolerant or resistant to avian influenza. Proteomics by LC MS/MS has been able to validate the findings of transcriptomics in ducks and chicken to explain the molecular pathways that allows the duck to harbor avian influenza infection as carrier.

3. Environmental persistence of avian influenza viruses Various factors involved in the persistence of avian influenza virus in faeces, water and environment have been identified, on the basis of which recommendations have been framed for the storage and dispatch of avian influenza samples and also the control of avian influenza infection in the poultry farms and laboratories. Virus persistence studies identified that Atyopsis moluccensis (Bamboo shrimp) can accumulate the virus mechanically which can infect chicken eggs up to 11 days.

4. Surveillance for anti-viral resistance among avian influenza viruses Studies through systematic surveillance of susceptibility to currently approved FDA drugs, amantadine and oseltamivir, zanamivir for avian influenza revealed the presence of drug resistant viruses. Continuous surveillance is being carried out to elucidate a baseline data and to develop strategies for pandemic preparedness.

5. Phylogenetic and pathological characterization of Avian Influenza strains
   ◆ A recently identified highly pathogenic avian influenza H5N1 clade 2.3.2.1c in Indian poultry showed significant antigenic divergence to 2.3.2.1a that was correlated with the amino acid changes at 8 HA antigenic sites. This clade was found to carry PB2 gene of H9N2 subtype.

   ◆ Possible role of migratory birds as source of introduction of H6N2 (Kerala) and H5N8 (Delhi & Gwalior) viruses and reassortment events were elucidated.

   ◆ Intravenous pathogenicity tests indicated that only H5 viruses isolated from India are highly pathogenic and all other subtypes isolated from India viz. H3N8, H4N6, H6N2, H9N2 and H11N9 are low pathogenic to poultry.

   ◆ The identified clades of H5 viruses in India differed in their mice pathogenicity (0–100% mortality) under experimental conditions. Besides, H9N2 viruses with different receptor specificity also differed in their pathogenicity to mice.

   ◆ Experimental transmission studies indicated that the crows are susceptible to H5N1 virus infection but ineffective propagators/disseminators of the virus and the risk posed by the crows with respect to transmission of H5N1 to poultry would be less than that for other susceptible avian species.

   ◆ In vitro generation of chicken bone marrow and monocyte derived dendritic cell (BMDC and MoDCs) have been optimized to study the immuno-pathogenesis of avian influenza in a monocyte derived dendritic cell model. Three DC binding peptides were identified for the delivery of antigen targeting chicken dendritic cells.

   ◆ The factors that influenced codon usage biases in influenza viruses and henipaviruses have been identified using various bioinformatics and statistical tools.
6. Molecular basis of BVDV persistence/immune evasion

- The molecular features of early events associated with BVDV replication in ovine cells have been unravelled. NS2-3 protein is found cleaved at early period of infection and in proliferated leukocytes of acutely infected sheep. Cellular localization of BVDV genome revealed that the kinetics of BVDV-1 distribution in lymphoid tissues of non-pregnant sheep follows almost a similar pattern to that demonstrated in BVDV infected cattle.

- Both BVDV-1 and BVDV-2 enters through clathrin-dependent endocytosis, endosomal acidification and low pH dependent fusion. Also, the siRNA cocktail targeting 5’-UTR is a stronger inhibitor of BVDV-1 replication and extends the targets for siRNA inhibition to BVDV-1 envelope protein genes.

- Molecular aspects of BVDV persistence in immune cattle and immune evasion have been deciphered having implications for BVD control. Study on BVDV permissivity demonstrated that PBMCs from BVDV-immune cattle in field are susceptible to re-infection with homologous or heterologous BVDV. A complex interplay of cytokines and antigen presenting cells in sheep and goats following acute BVDV infection, leads to transient immunosuppression, making the animals more vulnerable to secondary infections. Pathological studies of BVDV-1 and BVDV-2 isolates have been elucidated in calves, sheep and goats indicating a moderate pathogenicity.

7. Genetic and pathogenic characterization of Indian PRRS viruses

The Indian PRRS viruses isolated from Mizoram showed the presence of the 30-amino acid-deletion in nsp-2 that is typical for highly pathogenic PRRSV (HPPRRSV). Phylogenetic analysis of PRRSV isolated from NE India, between 2013 and 2018 showed grouping with PRRSV genotype 2 isolates from Myanmar in 2011 and China around 2010, and indicated the possibility of independent evolutions and/or separate introductions in Mizoram and Meghalaya. Pathogenetic characterization of PRRSV of Indian origin in experimentally infected piglets also revealed its highly pathogenic nature to pigs. The role of High Mobility Group Box-1 protein and pro-inflammatory cytokines in PRRS has been elucidated.
Human resource development program

- The institute regularly conducts awareness programs on Biosafety and Biosecurity and dual use of research among the students/researchers/professionals.
- Trainings are imparted to the researchers/professionals for developing diagnostic competence and know-how for accurate diagnosis of emerging and exotic animal diseases at national and international level.
- Post-graduate students of ICAR Institutes, State Agricultural / Veterinary Universities work in the laboratory for their post-graduate/doctoral dissertations/thesis.
Dr. K. Mishra and Dr. H.K. Pradhan  ICAR Hari Om Ashram Trust Award for the biennium 2005-06.
Dr. S. Nagarajan  USDA sponsored Norman E. Borlaug Fellowship, 2006.
Dr. S.C. Dubey  Dr. Rajendra Prasad Puraskar of ICAR,  2006.
Dr. S.C. Dubey  Shri Rajeev Gandhi Rashtriya Puraskar, 2006.
Dr. K. Rajukumar  Dr. C.M. Singh award for the Best Research Article, Indian Journal of Veterinary Pathology, 2006.
Dr. S. Bhatia  USDA sponsored Norman E. Borlaug Fellowship, 2008.
Dr. H.V. Murughar  IAVPHS Fellow Award, 2008 from Indian Association of Veterinary Public Health Specialists.
Dr. S.C. Dubey, Dr. D.D. Kulharni & Dr. P.R. Vanamayya  Fellow of NAVS, 2008.
Dr. S. Bhatia  ICAR National Fellow, 2010.
Dr. Ashwin Ashok Raut  BOYSCAST Fellowship of DST, 2010 -2011.
Dr. Richa Sood  USDA sponsored Norman E. Borlaug Fellowship, 2011.
Ms. B.K. Singh  Certificate of Distinction under Cash Award Scheme for Administrative Category Employees of ICAR, 2015.
Dr. Richa Sood  D.C. Blood Gold Medal, 2015 from Indian Society of Veterinary Medicine.
Dr. Naveen Kumar  Young Scientist Award, 2016 from Indian Virological Society.
Dr. H.V. Murughar  Biosafety Hero’s Award, 2016 from International Federation of Biosafety Association.
Dr. V.P. Singh  IAM Fellow, 2017 from Indian Association of Mycoplasmoalogists.
Dr. S. Bhatia  IAVMI Fellow, 2017 from Indian Association of Veterinary Microbiologists, Immunologists and Specialists in Infectious Diseases.

Scholastic Awards
- Dr. S. Nagarajan  Dr. R. Eswaran Memorial Prize for Best Biotechnology Student, 2008, TANUVAS.
- Dr. Richa Sood  Dr. C.M. Singh Best PhD Scholar Award 2010, IVRI.
- Dr. Richa Sood  Silver medal for Best Student Award 2010, IVRI.
- Dr. M. Karikalan  Dr. Ram Raksha Kiran Shukla Best MVSc Thesis Award, Veterinary Pathology, 2013 (Dr. K. Rajukumar as Guide).
- Dr. Shailesh Kumar Patel  Dr. Ram Raksha Kiran Shukla Best MVSc Thesis Award, Veterinary Pathology, 2015 (Dr. K. Rajukumar, as Guide).
- Dr. S. Kombiah  Dr. Ram Raksha Kiran Shukla Second Best MVSc Thesis Award, Veterinary Pathology, 2016 (Dr. Manoj Kumar, as Guide).
I had the privilege of visiting NIHSAD, the country's most premier Laboratory. It is serving the sector for control and containment of animal diseases across the nation. The premises within and outside are well maintained and the staff is very dedicated and has a good leader. I wish the NIHSAD team all the best and place on record their dedicated work.


Visiting HSADL was a longtime dream, and today, it was a learning experience for me. The tour of the laboratory was revealing and gave me an idea of the requirements of this lab. Compliments to all colleagues at the lab and best wishes.

Dr. S. Ayyapan, DDG (Fisheries), ICAR 13.05.2007

I was anxiously looking forward to visit this great laboratory. I am impressed by the facility and commitment of the scientists. We are all proud of the lab and the dedicated team of the staff. Best wishes to the Director and all of you. Congratulations ! keep up the good work.

Dr. P. L. Gautam, Chairman, National Biodiversity Authority 10.02.2010

Its unique facility created under ICAR. This shows the visionary power of our scientific community. Really a dedicated team.

Dr. Vandana Dwivedi, Joint Adviser, Agriculture, Planning Commission, 27.04.2012

I am very much impressed to see this wonderful containment facility created in the country by dedicated scientists. It is a matter of pride for the whole nation.

Dr. Lalji Singh, CCMB 05.05.1999
Very impressive facility and dedicated staff. It is indeed the management namely the lab director highly qualified and friendly. FAO is highly interested in the designation of the facility as Rinderpest holding facility for storing Rinderpest virus containing material. FAO promises to assist in the process of the designation, recognizing the importance of India in the region.

Dr. Samia Metwally, FAO
08.02.2018

A great institution with devoted scientists. Special assistance for such institute is very important.

Dr. Panjab Singh, President, NAAS
24.03.2018

It is wonderful to come back to NIHSAD after 6 years to see the facilities and happy faces. The institute is running very well and doing some wonder innovative work, Congratulations.

Dr. John Weaver, OIE PVS Evaluation Team for India.
27.04.2018

I found the scientific discussions to be of high quality that makes the trip invaluable to me. I feel this is the beginning of a good collaboration between our two laboratories.

Dr. David Suarez, South East Poultry Research Laboratory, USA
27.01.2007

I am very impressed by your dedicated and competent team. You have a truly very important facility, not only for India, but also for the whole of the sub region. I look forward to revisiting you and establishing collaborative activities.

Dr. Subash Movzaria, Regional Manager,
Emergency Center for Transboundary Animal Diseases, FAO
15.09.2010
Certificate of Registration

This is to certify that
The Quality Management Systems
Of
ICAR - NATIONAL INSTITUTE OF
HIGH SECURITY ANIMAL DISEASES
at
ANAND NAGAR,
BHOPAL - 462 022 (M.P.)
(INDIA)
Has been found to conform to the Quality Management System Standard:
ISO 9001:2015
This certificate is valid for the following Product or Service ranges:
RESEARCH ON EXOTIC AND EMERGING ANIMAL DISEASES OF
NATIONAL IMPORTANCE, PROVIDING DIAGNOSTIC SERVICES AS
WELL AS HUMAN RESOURCE DEVELOPMENT IN THESE AREAS AND
IN BIORISK MANAGEMENT

Certificate No.: PCMS/QMS/1570 - 2016
Initial Issued Date: 29/04/2016
Transition Date: 16/12/2017
Validity Date: 28/04/2019
1st Surveillance: Done
2nd Surveillance Due On: 29/03/2018

The validity of certificate is subject to regular surveillance audit on or before
above mentioned dates and it’s only valid after successful surveillance with continuation
letter issued by PCMS

Authorised by
CHAIRMAN / DIRECTOR

P.C Management System Pvt. Ltd.
134-A, 11th Floor, Tajmoor Nagar,
New Friends Colony, New Delhi – 110 065 (INDIA)
This is Single Site Certification

IAF
JAS-ANZ
Current Research Projects at ICAR-NIHSAD

Institute Funded
1. Surveillance of exotic and emerging animal diseases in Indian and imported livestock and poultry and their products.
3. Cross sectional study on role of live bird movement and market biosecurity in the epidemiology of influenza A in Assam.
4. Rapid visual diagnostic assay for influenza A viruses using gold nanoparticles and peptide nucleic acid.
5. Development of indirect ELISA for detection of Anti CCHFV antibodies in Livestock and investigation of CCHFV prevalence in ticks and bats of Assam.
6. Diagnostic preparedness for porcine epidemic diarrhoea and transmissible gastroenteritis in pigs.
7. Selection of BVDV vaccine candidate strain(s) and characterization of master seed virus stock(s).
8. Development of whole genome sequencing protocols for viruses on Nano pore sequencing platform.
9. Diagnostic preparedness for detection of avian meta pneumovirus infection in poultry.

ICAR Funded

Outreach program
1. Outreach project on Zoonoses - Avian Influenza

Consortia on Research Platform on Vaccines and Diagnostics
2. Development of recombinant nucleoprotein based ELISA for Avian Influenza antibody detection.
3. Development of antibody based rapid test for detection of H5 Avian influenza in poultry.
5. Development of NS3 specific monoclonal antibody based BVDV diagnostic.

Externally Funded
1. Establishment of Advanced Animal Disease Diagnosis and Service Management Centers in the North East (DBT)
2. Investigation of Antarctic Animal Metavirome: An initiative for Pathogen Discovery with special reference to globally emerging avian influenza and other high risks viruses (ESSO-NCAOR)
Team NIHSAD.... Together we can....