

## **90 Days Hands-on Training on**

**“Advances in the diagnosis and research techniques on infectious diseases”** under the DHR-ICMR sponsored institutional support project titled “Capacity Building and Development of Skilled Human Resources in the field of Zoonotic Diseases under One Health Initiatives” with project ID 2024-1023

*Organized by*

**Department of Animal Biotechnology, College of Veterinary Science, AAU, Khanapara, Guwahati-781022.**

**From: 5<sup>th</sup> November 2024 to 4<sup>th</sup> February, 2025**

Infectious diseases are illnesses caused by pathogenic microorganisms, including bacteria, viruses, fungi, parasites, and prions. Infectious diseases play a significant role in the overall burden of diseases, particularly impacting public health, economic productivity, and healthcare resources. Although, the focus on non-communicable diseases is increasing, infectious diseases remain a critical component of the health landscape in India, requiring sustained attention and resources for effective management and prevention. Zoonotic diseases further illustrate some of the more interesting and complex patterns that have evolved in nature. It is well established that more than 60% of the known infectious diseases in human can be spread from animals, and 3 out of every 4 new or emerging infectious diseases in human come from animals (NCEZID, USA).

Effective diagnosis and research are foundational for improving individual health, safeguarding public health, and advancing global health initiatives. Efficient diagnosis and research on infectious diseases are crucial for several reasons like early detection, treatment efficacy, public health, understanding resistance, vaccine development, global health security, socioeconomic impact etc.

There is a lack of well-trained and skilled human resources in the field of infectious disease research and diagnosis particularly in the North-Eastern region. College of Veterinary Science, AAU, Guwahati campus being a premiere institute with excellent teaching and research facility in the centre of the NE region can really play a pivotal role in the field of infectious disease research and generate well-trained and excellent human resources to fill the gap to some extent.

This training program will be organized with an aim to develop skilled human resources by giving hands on training to 15 selected biomedical/ medical/ veterinary research scholars/ teachers/ researchers/ veterinary officers/ biomedical workers on the basics to advanced infectious disease diagnostic techniques; isolation & molecular characterization of the pathogens, bioinformatics analysis and molecular epidemiological investigations; animal cell culture and virus isolation; gene cloning and expression of recombinant proteins; purification and characterization of recombinant proteins etc.

The training will not only merely help to enhance the knowledge and technical skills but also provide opportunities to the PG/PhD scholars or young faculties/researchers for designing and performing their thesis/project works in collaboration with this institute and thus develop their academic and research career in the field of infectious diseases.

### **Contents of the hands-on training: (Mostly practical and few theory classes)**

Overview of infectious diseases in the North-Eastern region and their diagnosis and control, Approaches to diagnosis of infectious diseases; Introduction to molecular diagnostics; Laboratory design and Good Laboratory Practices; Biosafety and biological waste management;

Classification of different zoonotic diseases: Concepts on One Health; Microbiological specimen collection, preservation, transport and processing of samples for clinical diagnosis; Collection of blood and tissues for diagnosis of bacterial and viral diseases; Collection of samples for diagnosis of rabies; Identification of bacteria by cultural, morphological and biochemical tests; Anti-microbial resistance and Antibiotic sensitivity test; Collection, fixation, processing and Staining of tissues for routine histopathological examination; Detection, isolation and identification of important pathogens of zoonotic importance from animal, human and environmental sources including foods of animal origin; Overview of emerging parasitic diseases; Faecal examination technique for detection of helminth ova/egg and protozoan cyst/oocysts; Collection of blood samples, smear preparation and staining techniques for detection of haemoprotozoan parasites; Collection, preservation, Fixation, staining, mounting of helminths and arthropod for their identification. Polymerase Chain Reaction (PCR), Multi-Plex PCR, Reverse Transcriptase PCR (RT-PCR) and Real-Time PCR for disease diagnosis; Isothermal amplification reaction for disease diagnosis; Gene chip technology and high- throughput sequencing technology; Primers and Probe designing by using Bioinformatics tools; NCBI and other databases, Nucleotide and amino acid sequence analysis, Multiple sequence analysis (MSA), Phylogenetic analysis; Media & Reagents for Animal Cell Culture, Primary culture techniques, Handling and maintenance of Animal Cell lines, Cryopreservation, Virus isolation in cell lines, immunocytochemistry technique, cell viability (MTT) assay; Strategies for Gene Cloning, Preparation of competent (*E. coli*) cells, Preparation of Vector & inserts, Ligation and Transformation, selection & screening of recombinant clones, Preparation of plasmids, Transfection of mammalian cells, Detection of expressed recombinant protein in cell lines (FAT), characterization of expressed protein by SDS-PAGE, Dot-Blot and Western blot, Purification of recombinant proteins. SPECIAL ASSIGNMENT.

#### **Application procedure:**

**One can directly apply online by using the web link <http://vetbifg.ac.in/icmrhrd.php>**

Download the application form from the link and upload the soft copy of the filled and signed application form through the mentioned link. For any other queries you can email to [hod-abt.cvsc@aau.ac.in](mailto:hod-abt.cvsc@aau.ac.in) OR [dipak.deka@aau.ac.in](mailto:dipak.deka@aau.ac.in)

No need to send hard copies of the applications. For any clarification, the interested applicants may contact Dr. Girin Hazarika (9954063161) or Dr. Chandra Bhattacharya (9435180061).

#### **Application Fee:**

**Application process and the training is free of cost.** A screening committee will finalized the list of selected applicants who will be allowed to register in the training program.


**No TA/DA will be provided to the participants from the organizer to attend this training.**

#### **Lodging & Food:**

Lodging for the selected candidates need to be arranged at their own. Only session tea will be served in the department for the participants during the training days. Breakfast, lunch and dinner will be available in the university guest house or college canteen on payment basis.

**Last Date of Application:**

Last date of application is **31<sup>st</sup> October 2024**. List of the selected candidates will be posted in the website <http://www.vetbifg.ac.in/> on **2<sup>nd</sup> November 2024**. Also selected candidates will be intimated through email or over phone.



15.10.24  
Head (i/c)  
Deptt. of Animal Biotechnology  
College of Veterinary Science  
A.A.U., Khanapara, Guwahati-22

**Organizers:**

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## NOMINATION FORM FOR TRAINING

Training Code: [DHR-ICMR – 2024-25/01]

1. Name of the applicant:
2. Sex: Male/Female:
3. Age (in years):
4. Highest Qualifications & Discipline (Graduate/ PG/PhD):
5. Designation (current status):
6. Name of organization/department:
7. Category: Teacher/ Researcher/ Veterinary Or Medical Officer/ Post-graduate scholar etc.
8. Address for communication:
  
9. Telephone No.:
10. WhatsApp No.:
11. E-mail address:
12. Have you attended similar training earlier?  
If yes, furnish details:
  
13. Details of working experience, if any:

Signature of the applicant

### Nomination:

I do hereby nominate \_\_\_\_\_ for participating in the training programme on “**Advances in the diagnosis and research techniques on infectious diseases**” organized by the Department of Animal Biotechnology, College of Veterinary Science, A.A.U., Khanapara, Guwahati-781022 from 5<sup>th</sup> November 2024 to 4<sup>th</sup> February, 2025.

Office seal

Signature of the Nominating Authority

*NB: Already passed out or independent candidate can avoid nomination part but need to fill the rest.*